Winging It: Rehabilitating Animals, Rehabilitating Animality at Chicken Sanctuaries

By

Heather Rosenfeld

A dissertation submitted in partial fulfillment of

the requirements for the degree of

Doctor of Philosophy

(Geography)

At the

UNIVERSITY OF WISCONSIN–MADISON

2019

Date of final oral examination: 09/12/2019

This dissertation is approved by the following members of the Final Oral Committee:

Sarah A. Moore, Associate Professor, Geography
Stephen Young, Assistant Professor, Geography and Environmental Studies
Nicole C. Nelson, Associate Professor, Medical History and Bioethics
Paul Robbins, Professor, Environmental Studies

Contents

Acknowledgements

I joked a few times that this project is about how Quincy Markowitz is a superhero, and of course that wasn't entirely a joke. Quincy, Alicia, Todd, Jennifer, Jamie, and so many of the other folks who work or volunteer at sanctuaries made this project possible, from inspiring it, to talking through ideas with me, to letting me volunteer and do interviews, to convincing me to take chicken rescue road trips, to simply sharing an obsession with chickens (and maybe even convincing me that cows and other critters are also worthy of obsession).

So many times, when I was talking about comics and my work, people would ask if I'd had trouble with my committee, since the stodginess of academia is still strong. While I can for sure sympathize with the unfortunately many folks who have faced this, in terms of visual storytelling or some other issue, my committee has been at worst neutral on, and frequently a supporter and helpful critic of my comics. Lynda Barry, who had to drop out of the committee due to moving and sabbatical and personal issues, was so magically helpful. In the body of this project I talk about comics with more intellectual rigor (or something like that), but here I want to acknowledge how great it's been to be able to *play* and add joy to a project like this.

Even so, it would be trivializing to say that all my committee did was let me get away with making comics and occasionally gave me feedback on them. No way. Sarah Moore, Nicole Nelson, and Stephen Young enabled me to have a lot of freedom with this project. They also gave me some invaluable feedback and criticism along the way, which probably stopped it from exploding. They all asked questions that I wouldn't have thought of, and I learned new things in having to answer them. Those are the best kinds of questions. This project looks really different than I'd planned, which is the norm, but I wound up surprising myself a few times, and cackling with glee at solving some of the problems and challenges they gave me or inspired (apparently cackling about solving research problems is not the norm in academia! That is truly a bummer, but I am so grateful to my committee for giving me questions, tools, and a research ethic that enabled cackling). Paul Robbins, before he was on my committee, came up to me and started asking about whether Marx would have accepted the idea that (nonhuman) animals could be laborers. It's a great question, and though I think this dissertation has skirted the answer to it, it's indicative of the conversations Paul has added to this project.

Other members of the University of Wisconsin and beyond created intellectual community with me and also supported me emotionally. I'm not going to separate the two here, and I'm sure I'm missing people who I'll have to sneak in before submitting this and/or apologize to over beer/juice boxes. The Cartography Lab was a great space for working and for sharing ideas about visual storytelling, and my co-conspirators in the Applied Comics Kitchen (ACK!) taught me so much about making comics and developing a good work ethic. Tanya Buckingham, Morgan Robertson, Elizabeth Johnson, and Rob Roth all asked great questions that in some way influenced this project. Once in Somerville, Laura-Alex Frye-Levine became a great coworking buddy and friend. Additionally, Sarah Bennett (Scarabcat), Jamila Siddiqui,

Sara Rezvi, Daniel Huffman, Minku Sharma, Ren Pilinger, Irene Pilinger, Danya Al-Saleh, Rafi Arefin, Alexandra Lakind, Simon Goldberg, Tia Tanzer, Carl Sack, Chelsea Nestel, Katie Gillespie, Styger, and Oscar were all great co-conspirators, mentors, friends, and folks to lean on or be inspired by.

Field work was rough. In addition to my chicken-friends dying, I ran into some difficult situations while in California. Andrew Cone and Julie Sinistore were ridiculously great at helping me get out of a bad situation.

I also created some imaginary characters to think about who I was writing to, so I could think about what they'd need to understand what I wanted to say. Imaginary Tanya Buckingham is, of course, not the same as Actual Tanya Buckingham, but Imaginary Tanya was great at being a sharp, thoughtful person who didn't have quite the same opinions or approach to things, but was willing to listen. Imaginary Tanya was great at reminding me to not mystify things or get lost in the weeds.

I want to say something here about my Grandma, but "acknowledging" isn't the right word for her. She is thoughtful and obstinate and tells great stories, and she always said I took after her. She is probably responsible for this dissertation in some way. As far as I can remember, she and my late Grandpa Marty were really good at this conversation: "How are you?" "Eh, pretty busy." "That's good!" I probably wouldn't have the terrible work-life balance that grad school seems to ask for if not for them.

"Acknowledging" also isn't the right word for Sparkletron, feline wonder, who accompanied me across the country to my California field sites, who has the most convenient allergy to chicken and/or eggs (the vet wasn't sure which), and whose health problems don't seem to impede her purring (or snoring) in the least. She is also uncannily good at sitting on my forearms as I type, which encourages me to keep typing lest I disturb her.

"Acknowledging" isn't the right word for Maya Nigrosh, but "Acknowledgements" is (she asked how I was going to spell it, and pushed for the version with three "e"s). Maya did a lot of reproductive labor to support me when I was working late on things. She also helped me build things for chickens (actually, it was more like I helped her), dances with turkeys, has read far more comics than I have, and... "eek! A mouse."

The Geography Department, the Holtz Center for Science and Technology Studies, the Center for Culture, History, and Environment, and the Mellon-Wisconsin Foundation all supported this work financially.

Finally, in the spirit of rehabilitating animality, I say this and hope it will be interpreted in a positive light: this project is very much *for the birds*.

Abstract

Farmed animal sanctuaries rescue, rehabilitate, and care for animals often considered commodities. I examine the co-construction of medical knowledge, political economy, and politics of representation at farmed animal sanctuaries. As chickens are in many respects the most socially marginal, even at sanctuaries, this project focuses primarily on chicken sanctuary.

Methodologically, this project constructs a "feminist toolkit," in the words of Sara Ahmed (2017). I practice a critical politics of citation, in terms of, first, attempting to amplify marginalized voices – scholarship that is by women and nonbinary individuals, people of color, younger scholars, and writers on the margins of academia. Second, I attempt to use citations in an accessible way, emphasizing ideas over "name dropping." Thus, I braid together methods including ethnography, interviews, Q-sort surveys, grounded theory, cartooning, and mapping.

Using this approach, I literally and conceptually map the rise of farmed animal and chicken sanctuary movements in the United States, identifying four threads with different foci, inclusions, and exclusions. These approaches are united in their challenge to farmed animals' status as commodities. Building on this, I suggest that sanctuaries take animals out of commodified, capitalist production situations through hoarding. I characterize hoarding as a practice of deviant accumulation (Herring 2014), in which sanctuaries counter the social norm of exchange value by refusing to exchange animals. This can lead to problematic practices traditionally associated with hoarding, but it also opens space for creating other values.

The following chapter explores these other values. I identify perspectives on interspecies relations and concepts such as pets, dear monsters, and ambassador animals, all of which contribute to rehabilitating animality (Ko and Ko 2017). Finally, I turn to animal care, demonstrating how chickens fall out of existing medical care systems. I explain how sanctuaries do the "undone science" (Frickel et al 2010) of learning how to care for rescued chickens. Synthesizing understandings of witnessing from STS, queer feminist theory, and activism, I suggest that witnessing provides a method for activist knowledge production outside of mainstream institutions.

Introduction. "The Wrong Species to Love"

It's my first day volunteering at Heartland Farm Sanctuary. They had recently supported a large rescue of birds from a cockfighting ring bust: the Society for the Prevention of Cruelty to Animals (SPCA) had found that hundreds of birds were being raised for cockfighting in Northwest Wisconsin. On the grounds of cockfighting being illegal across the United States, the SPCA was able to intervene. They first contacted Chicken Run Rescue, a sanctuary in Minnesota well known for rescuing chickens, and relatively close to the bust. Unfortunately, it was outside of their jurisdiction. Taking birds across state lines requires going through bureaucracy and medical testing. This is extensive and expensive, often prohibitively so for sanctuaries, as many are nonprofits and operate under many of the usual budget and staff constraints as other such organizations. Though Heartland was newer and hadn't done a large-scale rescue before, the founder of Chicken Run Rescue, Mary Britton Clouse, contacted them and asked if they would step in. They said yes. Well, Quincy Markowitz, the budding (crowing?) "bird person" of the sanctuary said yes. It took some convincing to get the executive director, Dana Barre, on board. As Dana recalled, "we had some staff who were passionate about doing it, so we did it" (personal communication, June 2017).

Two members of the sanctuary staff rented a truck and drove out to meet the birds, while the others set up makshift and temporary habitats in anticipation of their return. The condition of the birds was, in Dana's words, horrific:

> *Birds with severe respiratory infections, fleas, mites, with dead birds in cages. Extremely dark and small cages, possibly feces not cleaned out in months, or ever. Chicks chirping for mamas. Really hazardous conditions, a lot of torn suits [vets and volunteers wore Tyvek suits when treating birds]. And the birds were traumatized because whenever they were held by humans something bad happened. (personal communication, June 2017).*

The "large-scale rescue," in this case, meant that Heartland was able to rescue 126 birds. A few months later, Heartland was called again by the SPCA. More birds had been found to be part of the ring, at multiple sites. The SPCA called it "one of their most complex rescues," and set up mobile command centers, veterinary trailers, and brought in a network of people from across the country. It turned out, in Dana's words, that "This was the tip of the iceberg." The 2015 bird flu epidemic had begun, and officials were placing stricter limits on bird transport. This meant that Heartland at this point wasn't able to rescue them. Instead, they were euthanized.

Back at Heartland, there were additional complications: it was winter, and quarantine was the first step of intake for the birds. This meant that they would need shelters for them separate from the other birds and farmed animals, warm enough to withstand the Wisconsin winter, and separate from one another. Lorri Houston, a cofounder of the first farmed animal sanctuary in the United States, had been living in Madison and gotten involved with Heartland as it began. She described the importance of the quarantine procedure. "Sanctuaries by their nature are taking in animals from horrific conditions where disease is rampant ... so when we were rescuing birds from factory farms, they'd all had influenza vaccines, things like that were standard protocol. But when we rescued from small operations, and small slaughterhouses that aren't as regulated, that's when we started seeing more [disease]" (personal communication, June 2017). She foresaw the risks of that happening with this rescue, and led the quarantine coordination. Following precedent from other sanctuaries, birds were placed in temporary housing. Often this meant sanctuary volunteers' and staff members' basements, houses, or garages.

Even with quarantine, Alicia Torres, the barn manager, told me, "the next couple months were literally hell, Heather. Some of them were so sick, and we took chicken after chicken after chicken to be

euthanized" (personal communication, June 2017). Heartland had a large empty barn, and volunteers built two big insulated sheds and runs in it and gathered some large dog crates. It was not enough space, but it was a start. After those first few months, most of the birds were moved there from home quarantine sites. Partial quarantine was still in effect, which meant putting on plastic boot covers and disposable gloves when in the "arena," as this barn was named. And a few birds, who were sick or just in more comfortable situations at their hosts' houses, stayed in the houses, garages, and basements to which they'd originally been brought. One staff member, Quincy's, studio apartment became the infirmary. "If they seemed sick I would take them home ... That's kinda how I learned everything," she said. "I was at the UW at that time, so I did like internships and focused on ornithology and stuff like that" (personal communication, July 2017). At first, though, trips to Quincy's apartment often were one-way and followed by trips to the veterinarian for euthanasia.

Cockfighting birds are bred (testosterone), trained (aggression), and sometimes drugged (amphetamines) to fight to the death upon sight of another rooster. Depending on where they come from, their combs and wattles might be cut off, and razor blades might be attached to their spurs. The breeds of chickens from this ring were primarily associated with Central American cultures and white people in the Southern United States, whereas the taller roosters I would meet later, with intact combs and wattles, were from Hmong rings. As a volunteer told me:

> *One of my pet peeves is how readily people can jump on how horrific cockfighting is while they're eating an omelet. But I think there's some xenophobia in it, that people think cockfighting is something these "foreigners" bring to America ... It's [also] something that a lot of Americans do, a lot of white men in the south. It's a very difficult issue because you want to be culturally sensitive, but at the same time fuck you, it's not a tradition that should be carried on, but at the same time we should recognize it as a tradition, recognize where people come from" (personal communication, July 2017).*

Twenty-seven of the rescued birds are roosters. The rest are hens, originally kept for breeding and to give the illusion of the operation not having to do with fighting. The hens don't fight, at least not more than most hens do. In one of the sheds are all of the hens and one rooster. Teenage roosters occupy the other big shed: these roosters still have their combs and wattles, and some of them are a little smaller than the grown birds. The grown birds, around two years old, are in crates. We go back and forth between calling them "crates" and "cages." Each crate has a rooster and one to three hens, so no one is alone. No crate is tall enough for me to fit in without crawling, but each has a perch so the birds can get off the ground if they want. Each crate has metal wires and is separated visually from the other crates, so the adult roosters can't see each other. One larger crate (I can walk in it, though it's a bit of a challenge for taller people) houses two teenage roosters, because they were buddies but one had started fighting with some of the other teens.

Roosters bred and raised for fighting are often deemed unable to be rehabilitated, even in the sanctuary world. Heartland is trying, though, using strategies for desensitization they learned from VINE (Veganism is the Next Evolution) Sanctuary in Vermont and one or two other sanctuaries. It's spring now, and it's my first day at Heartland Farm Sanctuary. I've just raked up the poop of about 100 chickens, the straw it landed on, and scraped off the windowsills, perches, and tops of nest boxes using a paint scraper. I replaced the old poopy straw with wood shavings and new straw. I've brought a few roosters and hens in crates to outdoor runs, since it's not that cold outside, and since it's easier to clean out their crates when they're not right there. I've given them food and water, standard chicken food pellets from a farm store, in dishes for backyard flocks. Someone else has cut up fruit: strawberries and grapes and some greens, donated from a nearby grocery store. I bring them to the birds. They love the

grapes, but for the most part are meh on the greens. It's been maybe 4 hours, but I'm a bit slow since it's my first day.

What else can I do? I ask. I'm tasked with exposure, a strategy sanctuaries use to rehabilitate fighters. Jaime, the adult rooster, is in a crate in the shed with the teenage roosters. Treats are placed in and around Jaime's crate. A step before this, Jaime's crate was covered so the birds could hear and smell each other, but not see each other (I later learn how central vision is to chickens' life and how much better and more complex their sight is than that of humans). When they've eaten together, in the relative comfort of separation by wire, it's time to let Jaime out, until they start fighting. Then Jaime goes back into the crate, and someone tries again later. I learn this, and Quincy asks me to let Jaime out, but put him back in when fighting starts. I do. Seconds pass. Fighting starts. I put him back.

It's easy to spot Jaime, in part because he has no comb or wattles, and because he's a little bigger than the teenage roosters. But it's also easy because they're all so distinctive. Jaime has a white-blond mane of sorts, descending into speckled orange-browns, and dark blue-black wings and body. His wings have a purplish iridescence to them, and his tail has some white fuzz and teal.

I ask if it could be helpful if I'm holding him near the other roosters, providing a sort of intermediate step between crate and no barrier. Quincy says sure. So I'm doing that. Jaime seems pretty content with being held, and it seems to be working: the teenage roos don't seem to mind my kneeling presence. Putting Jaime down is another story: they get back to fighting, so I pick him up again. I've hung out with chickens before, mostly in a friend's backyard, and know some of them like headscritches. Gingerly, I try that.

After a few seconds of this, one of Jaime's eyes closes: the eye that's essentially facing my torso. The other eye, on the other roosters, remains open, but starts blinking more, and then it too closes. I stop scritching and he sort of side-eyes me until I begin again. We're having a moment, and I'm hoping it's helpful for facilitating rooster socialization. Socialization, in this case, means encouraging them to be comfortable enough around at least some humans to be part of sanctuary life, comfortable enough that we can go in their spaces to clean and give them food and water, and sometimes comfortable enough to carry them between daytime and nighttime areas. In any case, I'm enjoying it.

An unknown amount of time later – likely minutes, a small number – Quincy calls out to me, asking for help with something. I bring Jaime with me. Turns out she wants me to reach something in another crate, since I'm smaller and there are some tight spaces. Another volunteer is holding the rooster whose crate it is. I'm reaching, and then Jaime is upset, and the other rooster is upset – I probably shouldn't have let them near each other like this. The volunteer puts the rooster, Calvin, back in the crate. I notice that Jaime has gouged a hole in my arm, and it's bleeding freely. Trying to ignore this, I put Jaime back in the crate in the shed, and go sit down. Quincy brings me some gauze and I put direct pressure on the hole. I'm feeling a little dizzy and nauseated and foolish, but try to hide it.

A few minutes later, I get woozily to my feet, go apologize to Quincy for bringing Jaime out, am assured that it was no big deal, and get ready to leave. Quincy asks me to name a hen she's holding, who isn't doing so well. Quincy's going to bring her home to try to take care of her. "Red," I suggest. Red it is. Before I go, I glance in on Jaime, who seems unperturbed at this point. As I leave the barn, I hear a loud crow. I hope it's Jaime, telling me he doesn't hate me, but I can't know that, and besides, I don't yet recognize his crow. I also can't know that that was the first and last time I'd see the hen who was briefly

named Red: she would die of Marek's, a disease that chickens in more regulated production situations are often vaccinated against, but these birds were not from industrial agriculture. Marek's causes deadly tumors. A veterinarian who worked with the sanctuary recalls, "Many of them were dying of Marek's disease, left, right, and center, so I spent the first 4-5 months of my residency just euthanizing them as they succumbed to that" (personal communication, August 2017).

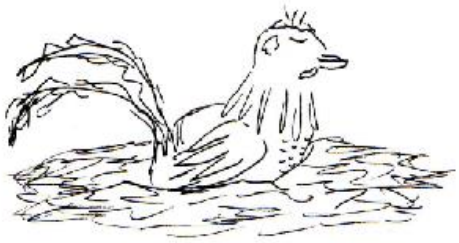
And Marek's is not the half of it, although it turns out to be the most common deadly affliction during these first few months of the rescue. Many of the surviving hens and roosters will suffer from reproduction-related diseases. For roosters, this means heart disease exacerbated or caused by testosterone production. For hens, this means ovarian cancers, as well as the reproductive disease egg yolk coelomitis and prolapses. The last is when their bodies literally fall apart: their oviduct falls out of their body. After another death, Quincy cautions me: "You chose the wrong species to love if you're trying to avoid heartbreak."

A few weeks later, I'll be able to differentiate between many of their crows and other sounds. Jaime has a four-syllable crow with emphasis on the third syllable (er-er-ERRR-er), Harvey has a low pitched crow that someone called a "smoker's crow," and Rickity Cricket tidbits an order of magnitude more excitedly than anyone else about snacks (tidbitting is a noise roosters and sometimes hens make when they've found a treat and want to share, or just want to share their excitement about anything in particular). A few weeks later, my nose has adjusted to dealing with poop, and my body no longer recoils as I'm shoveling or when I smell it.

A few weeks later, another volunteer and I are talking about chickens as we're setting up a foot-bath for Regis the rooster, who has a foot infection. It's interesting how people learn about chickens here, I say. It's interesting how we interact with them. I could do my dissertation on this, I joke. A few weeks later – probably a few weeks earlier, but I hadn't thought it consciously – it's no longer a joke.

Situating Chicken Sanctuary

In a sense, this project began with the story told in the prologue, with Quincy-human, Jaime-rooster, and a lot of coop-cleaning at Heartland Farm Sanctuary. Yet, Heartland wouldn't



have existed in the way it did, let alone supported a cockfighting rooster rescue, if not for sanctuaries and other rescues that started decades earlier.

Scholars trace the term "sanctuary" to several contexts. Philosopher and animal advocate Timothy Pachirat highlights a tension between sanctuaries as Edenic, sacred places and more militaristic "staging grounds for resistance" to an oppressive status quo (2018, 338). Historically, these places have been intertwined in complex and contradictory ways. Medieval references to sanctuaries, or to give sanctuary, most frequently described a place, such as a

church, where fugitives of the law would be protected (Fusari 2017, 143).[1] The church here is simultaneously a sacred place, a site of resistance, and a manifestation of an oppressive status quo, and these contradictions emerge, too, at farmed animal sanctuaries.

The first sanctuaries for nonhuman animals emerged out of a colonial context in which white supremacist occupying forces in the Caribbean attempted to set aside forested areas to preserve "wild" animals. In so doing, they displaced indigenous peoples (Pachirat 2018, 342). Later, during the Industrial Revolution, areas were set aside for the protection of nonhuman animals and plants. Tracing the linguistic history of the word, Sabrina Fusari described this kind of sanctuary as "[a]n area of land within which (wild) animals or plants are protected and encouraged to breed or grow" (1879, Fusari 2017, 143). Fusari notes that what "protect" meant was vague; these areas were sometimes refuges for hunting. To call these sanctuaries anthropocentric alone would be misleading. Rather, they demonstrate what Sylvia Wynter (2015) calls "liberal monohumanism." Liberal monohumanism does not simply entail prioritizing humans over other species, but valorizing the racist and specifically white supremacist hierarchy of "humanness" present during and since the Industrial Revolution. Indigenous Caribbean peoples, after all, were excluded from both these animal sanctuaries and colonial human spaces.[2]

[1] Fusari describes the linguistic history of the word "sanctuary," which goes farther back than described here.

[2] This is a common theme in colonialism. See, for example, Willems-Braun's (1997) work on the erasure of Nuu-chah-nulth peoples from Vancouver Island rainforests, and Krug's (2018) work on fugitive communities outside imperialist states.

Farmed animal sanctuaries contrast in part with this legacy, in that they emerge from critiques of industrial and late industrial agriculture, rather than seeking to complement it. The tensions and problems of this legacy foreshadow the challenges faced by farmed animal sanctuaries: between refuge and resistance to a status quo, between liberation and colonial politics (in additional to the practices discussed, in the United States, most, and likely all, sanctuaries are on stolen land), and the significance of "protection."

Indeed, contemporary animal sanctuary affiliates frequently debate what constitutes sanctuary and what sanctuaries should be doing. For the sake of a general working definition, it is helpful to turn to the Global Federation of Animal Sanctuaries (GFAS), the largest sanctuary accreditation organization in the US and worldwide. GFAS characterizes sanctuaries as follows:

> [A]ny facility providing temporary or permanent safe haven to animals in need while meeting the principles of true sanctuaries: providing excellent and humane care for their animals in a non-exploitative environment and having ethical policies in place, regarding:
>
> - Tours,
> - Commercial trade,
> - Exhibition,
> - Acquisition and disposition,
> - Breeding and more
>
> (GFAS n.d.)

It is worth noting that GFAS focuses on animal sanctuaries as a whole, which include farmed animal sanctuaries, primate sanctuaries, wildlife sanctuaries (e.g., for big cats), dog and cat sanctuaries, and equine sanctuaries. Each of these have different priorities, which are sometimes in conflict with one another. For instance, big cats and dog and cat sanctuaries will

often offer food made from farmed animals. GFAS executive director Allan Kornberg describes how farmed animal sanctuaries are unique:

> Farm animals who are on a sanctuary win the lottery, 'cause 99.9 to the 8th power are in torturous environments. So the education component has meaning and value *maybe* in a different way than some other taxa. I mean, if you're running a big cat sanctuary, you're probably doing some education about why it's effing stupid to like, cart tigers around, have people get in an enclosure with tigers. There's a whole bunch of education stuff there. But around farm animal issues, because the number of animals who aren't in sanctuary is so much higher, the education stuff becomes huge. (personal communication, July 2017)

Farmed animal sanctuaries are thus united by a critique, variously articulated, of industrial animal agriculture and their creating a site that attempts to operate differently, but also have an impact off-site (e.g., Donaldson and Kymlicka 2015). Abrell (2016, 5) suggests that sanctuaries can be understood as Foucauldian heterotopias, or "counter-sites to the political-economic arenas of animal use that spatially manifest an ethical critique of such use by enacting different ways of living ethically with animals. However, they also struggle with the reinscription of some of the same modes of interaction they subvert, such as the restriction of animal freedom to the spaces of the sanctuary." A heterotopia contrasts with the no-place of a utopia, but reflects some of its aspirations in being a "counter-site" that subverts the status quo.

However, there is considerable variation in how farmed animal sanctuaries subvert the status quo of animal agriculture. For this reason, Pachirat remarks that "existing sanctuaries make a mess of the abstract requirements established by the coordinates of philosophy and political theory" (2018, 346). It is this "mess" that this project purports to study. In the following section,

I zoom in: from animal sanctuary to chicken sanctuary in particular, and then, I outline the project.

Chickens as marginal

Chickens and other birds account for over 95% of food animals in the US (Baur 2008, 157; Potts 2012). Compared to the 7 billion chickens slaughtered annually in the US and the more than 400 million used in factory farms for egg production, one sanctuary's "large scale rescue" is trivial.

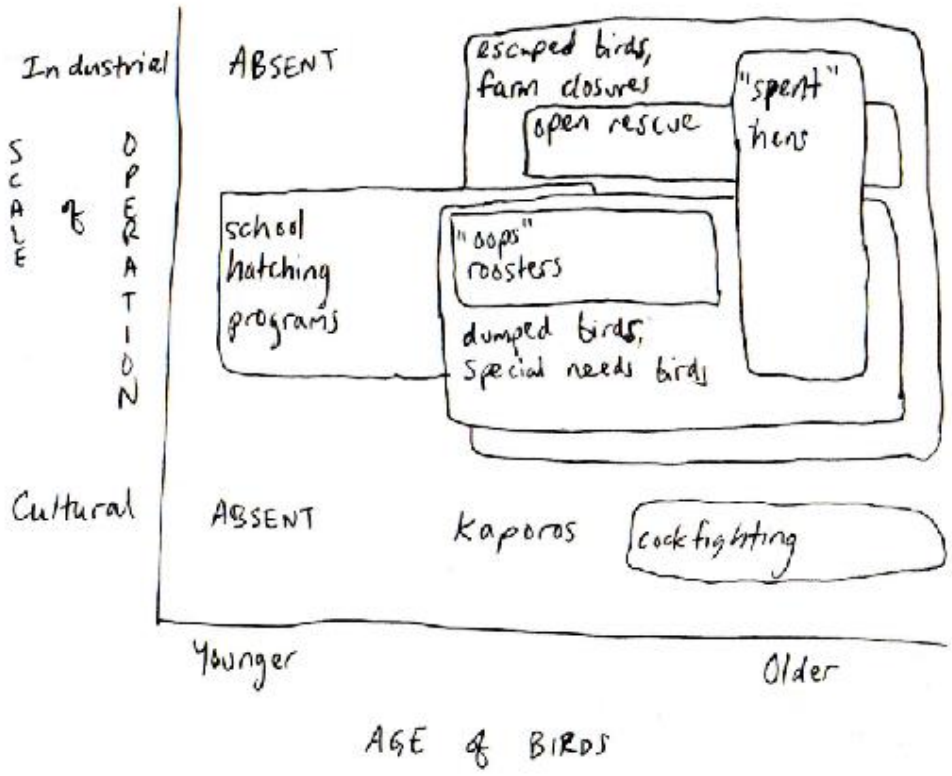
Chickens are also legally marginalized, even among farmed animals. "In the country," Striffler (2005, 38) writes, describing the mid-20th century United States, "chickens were the lowliest of farm animals. In cities and towns, they were a backyard nuisance." The Humane Methods of Slaughter Act, passed in 1958, and now called the Humane Slaughter Act, is the first and only federal law pertaining to farmed animals (additional legislation has since been passed at the state level, though scholars and activists debate its efficacy). It states that mammals, such as cattle, sheep, and pigs, must be "rendered insensible to pain … before being shackled, hoisted, thrown, cast, or cut" and killed. Chickens and other birds are notably excluded from this. (United States Code 2015, see also Baur 2008) Furthermore, the Animal Welfare Act does not apply to "food animals" (Wilkie 2010).

Chickens' marginality extends to farmed animal sanctuaries, too. As Heartland's Administrative Director, Jamie Monroe, commented:

> Another big problem, and it's reality, is that birds don't bring in donations. A small horse and Baine the special needs goat [bring in most of the donations] … Me, you, Alecia, and Todd are probably literally the only ones who know the names of all the hens. And even, I might not even know. There was one time Billie was jumping up on our shoulders, and I was staring at Laurie, and I was like who is that because Billie never jumps on shoulders, but Laurie's on Todd's shoulders, and so I turned around and was like it had to be Billie. (personal communication, May 2017)

This predicament is far from unique to Heartland. A study done by animal advocacy group Mercy for Animals found that "[p]osts about pigs and cows got 25 percent more impressions than ones about chickens" (Mercy for Animals n.d.). It is present in farmers, too, who tend to consider cows more likeable than poultry (although among farmers, pigs are also lumped in with poultry) (Wilkie 2010).

For all of these reasons, their health challenges, and other issues that this project will frequently return to, Quincy described chickens as "the wrong species to love." As the most modified, the most populous, and the least well-regarded of farmed animals, focusing on chickens highlights the challenges of farmed animal sanctuary. The places sanctuary chickens come from lends additional perspective to this. I outline these below (using the positional mapping strategy of Adele Clarke (2003, 2005), described in the Methods chapter).



School hatching programs. A common practice in elementary schools is to hatch chicken or duck eggs, letting students monitor the eggs' progress and then take care of the chicks or ducklings as they grow. Sanctuaries are contacted by these programs, especially early on when it seems that a chick will grow up to be a rooster, and then later if the school has trouble finding homes for the chicks of any sex, because they are getting older and whatever lesson they had offered to students is no longer relevant. Sanctuaries will attempt to find homes for these birds using their networks, but will rarely take the birds in themselves, and they will often try to work with the school to get them to stop hatching chicks.

Open rescue. Animal activists will go into factory farms or other farms or slaughterhouses, taking footage of what they see to try to expose the normal conditions animals live in, and denormalizing their acceptance. Activists will often plan to take out one or more animals, give

them medical care, find them a home at a sanctuary, and tell their rescue story. Because factory farms only keep animals through their maximum productivity, these animals can be children or adults. Birds rescued from meat-producing farms are likely younger, simply because they are only raised to 6-12 weeks (Potts 2012). Birds from egg-producing farms will be up to 12 or 18 months old, which is an adult age, and an age after which production decreases. Birds rescued from slaughterhouses can vary, as they often, but not always, are from meat-producers. Sanctuaries establish deliberate boundaries between their activities and open rescue in that sanctuaries, as nonprofit institutions, do not do open rescue, as it is technically illegal. Often sanctuaries will still endorse open rescue, though one sanctuary went so far as to fire an employee for having previously been involved with open rescue activities (personal communication, August 2017). Additionally, they will often accept animals who are taken through open rescue, though covertly, so as not to endanger the animals, who are considered property and could technically be claimed by the farm.

Kaporos rescue. Kaporos is a ritual chicken sacrifice practiced by certain groups of Orthodox/Hasidic Jews in the fall. It involves transferring one's sins to a chicken and then slitting their throat to gain absolution. Chickens used in Kaporos are almost always Cornish crosses, a breed used for meat and known for rapid weight gain; thus, they are older than chicks but still quite young when used in the ritual. Activists and sanctuaries critique this practice. Activists will take these chickens, and sanctuaries will often adopt them.

"Oops" roosters. Backyard chicken keepers will often order eggs or chicks from hatcheries. Because "sexing" chicks is unreliable, many of these chicks wind up to be cockerels (young

roosters). Once a backyard chicken keeper learns that one of their chickens is a rooster, they are less likely to want to keep the bird around, either because they don't want a rooster, or, more frequently, because "backyard chicken movement" is somewhat misleading. It only refers to hens, and in most cities, it is illegal to keep roosters (Chicago is a rare exception). Some of these backyard chicken keepers, when they find out that they have an accidental, or "oops" rooster, will reach out to a sanctuary to try to rehome the bird. Sanctuaries are highly reluctant to take in these birds, in part because they don't want to encourage the backyard chicken keepers' and hatcheries' behavior. Additionally, though, doing so would stretch sanctuaries' capacity, given the number of requests to take in "oops" roosters. Some sanctuaries make an exception, if the owner agrees to surrender their entire flock and not take in any more birds. More common, though, is that sanctuaries will allow these backyard chicken keepers to use sanctuary social networks to try to rehome the birds, with varying success.

"Spent" hens: large scale. At 12 to 18 months, hens bred for egg-laying pass their peak productivity, leading farms to "depopulate" them. Inspired by programs in the U.K., one sanctuary in the U.S. works with these farms (battery cage and cage free), seeking to adopt as many as they can and then adopt them out to people wanting backyard flocks. This sanctuary is the exception to the rule here, in that other sanctuaries will not work with factory farmers.

"Spent" hens: small scale. The older version of the "oops" rooster is the spent hen. Backyard chicken keepers will sometimes keep older birds around, but often, they become less interested in doing so once the birds are less "productive," or have stopped laying eggs. Again, sanctuaries will often refuse to take in these birds, but will sometimes make exceptions.

Escaped birds. Sometimes, an animal will escape from a farm, transport truck, or slaughterhouse. These birds are often adults. Frequently, sanctuaries will happily take these birds in, and attempt to amplify these stories, as they are about animals showing agency in their own rescue.

Dumped birds. Backyard chicken keepers, small farmers, and others will often "release" birds into public parks, forests, or parking lots, under the pretense that they will be able to live independently there. Sanctuaries critique this, arguing that chickens are prey animals and unacclimated to the climate of most of the United States (the feral chickens of the Florida Keys and Kauai are exceptions). Sanctuaries will often attempt to catch these birds and take them in. These birds are often adults, and are fairly common at sanctuaries.

Farm closures. In cases where a farm closes, such as out of bankruptcy or retirement, sanctuaries will sometimes take the abandoned birds. Depending on how many there are, they will often try to adopt some of them out.

Cockfighting. Because cockfighting is illegal in the United States, the Society for the Protection of Cruelty to Animals works with the police to stop cockfighting rings. Sanctuaries are not involved with the busts themselves, and will selectively take in birds from cockfighting rings. Cockfighting roosters are often older, but not always.

Special needs birds. So-called special needs birds include birds with limited mobility (injured, broken, or missing legs or wings), blindness, crossbeak (when the top and bottom of the beak don't meet), and other issues. Sanctuaries will often take these birds in, whether or not they are from farms or production situations that they usually refuse to work with.

Absent perspective: hatcheries and younger birds. Clarke (2005) points out that positional mapping is useful for identifying absent perspectives in a theme, and one major such absence here is hatcheries, and to a lesser extent, younger birds. Sanctuaries and activists have little to no interaction with hatcheries. In some ways, critiquing them would be more in line with the structural critique put forth by sanctuaries than protesting slaughterhouses, as it is not simply the end of life that sanctuaries critique, but the breeding of animals for agriculture. I suspect this perspective is absent in part because hatcheries are centralized and more distant from sanctuaries than most farms. It is likely also because of societal affinities for baby animals that permeate the work of sanctuaries. Critiquing death (slaughterhouses) and cruelty (industrial agriculture) is perhaps more intuitive than critiquing birth.

Outline of the project

> Most people don't think about the horrendous suffering that those animals must endure simply in order to become food products to be consumed by human beings. And I think that the lack of critical engagement with the food that we eat demonstrates the extent to which the commodity form has become the primary way in which we perceive the world. Angela Davis, recorded interview, 2012

The intellectual focus of this project in some ways begins with Angela Davis' critique of the commodity form. The guiding question of this project is: how do sanctuaries decommodify chickens, and to what ends? This is a political economic question, or a question about value

and how value circulates, especially given chickens' long history as commodities and producers of commodities. It is well documented that the word "cattle" is derived from the Latin word "capital" (Wilkie 2010, 115-6), and the section above discussed how this applies to chickens. It is also a question about representation, of how different values come into circulation and how, if not as commodities, sanctuary animals are understood. Finally, it is a question about knowledge production – given that most knowledge about chickens is premised on them being commodities, sanctuaries need to develop or find new information on the chickens they seek to help.

I suggest throughout this project that decommodification at sanctuaries is about both *rehabilitating animals* and *rehabilitating animality*. In this way, the work of sanctuaries is about praxis, or integrating theory and practice. Specifically, it can be understood through lenses that bridge Black feminism, disability studies, and animal studies. Black vegan feminists Aph and Syl Ko (2017) expand Sylvia Wynter's (2015) critique of humanism. Humanism, for Wynter, is inherently racist, colonialist, and Eurocentric, premised on an "ideal" white, Western male figure, in contrast to human "others" (or "Others"). The Ko sisters note that this entails not simply dehumanizing Black people or treating them as "subhuman," "inhuman," or "not-quite-human" (Ko and Ko 2017, 66, 73) but *animalizing* them. Racism and other forms of oppression thus become "anchored," conceptually, in a human-animal divide. They suggest that addressing racism thus requires reclaiming animality. "'It's just an animal,'" they write, "can no longer be an excuse for treating a being as if s(he) merely existed for us" (ibid., 69). The argument for reclaiming animality uncannily mirrors that of disability studies scholar Sunaura Taylor (2017), who points out how disabled people, too, are animalized. Though a major

response to this has been to argue that disabled people are not animals, but humans, Taylor suggest that a stronger response would also include reclaiming animality, such that being an animal is no longer an insult.

These arguments are not cases for comparing oppressions, as the Ko sisters especially note. They instead suggest that "[t]he popular move to stress marginalized and privileged groups' similarities and to minimize their differences is motivated by the implicit assumption that these presumed differences are fueling the disparity in treatment" (Ko and Ko 2017, 40). Instead of trying to find similarities, such as saying humans are animals, or invoking "crudely drawn and elementary images or analogies of oppression," such as comparisons between the slavery of animals and enslaving black people (ibid., 84), – they suggest addressing and destabilizing the conceptual roots of oppression. One of these roots is Western understandings of animals: "'[a]nimal' is a category that we shove bodies into when we want to justify doing violence against them" (ibid., 131).

This project sees sanctuaries as part of that project. Through rehabilitating animals, they also rehabilitate animality, creating new concepts and ways of understanding and interacting with domesticated animals that are not inherently "inferior," and that are not justifications for violence or oppression. Animals at sanctuaries might be dependent (e.g, Abrell 2016), but, as Taylor points out, "we are *all* vulnerable beings who will go in and out of dependency and who will give and receive care (more often than not doing both at once) over the course of our lives" (2017, 171). Likewise, there are many differences between and within animals at sanctuaries, which this dissertation emphasizes.

Even so, in parts of this project I express critiques of sanctuaries or provide information that can be read as critiquing sanctuaries. My research questions and approach follow the oft-cited point of Susan Leigh Star (1991, 43): "It is both more analytically interesting and more politically just to begin with the question, cui bono? [who benefits?] than to begin with a celebration of the fact of human/non-human mingling." Especially in the critical parts of this project, but also throughout, I attempt to critique without condemning. As I discuss, critiquing animal treatment at sanctuaries is something of a taboo. It's risky, given that most sanctuaries are nonprofits, and thus not incredibly well-resourced. Further, animals at sanctuaries have few to no other places to go. I do my best to be sensitive to this. I am not trying to endanger or threaten the animals at sanctuaries. Nor am I trying to give a primarily negative impression of sanctuaries to those less familiar with them: I think many sanctuaries are amazing, inspiring places, and this is a personal as well as an intellectual statement! Consequently, the more critical pieces of this project are not (for the most part) intended to condemn the work of sanctuaries, but rather, they are attempts to start difficult conversations.

Chapter 2 discusses the methodology and methods used for this project. This project is undergirded by intersectional feminist perspectives, and I frame it in terms of feminist and queer theorist Sara Ahmed's "feminist toolkit" (2017). I use multi-sited ethnography and mixed methods, the latter including Q sorts. I discuss these methods and how I integrate them, as well as what a feminist approach means in terms of research ethics. Finally, because much of this project involves comics, this chapter includes a (somewhat satiric) section on "why comics," that also details how and why I integrate visual and textual methods.

Chapter 3 maps and analyzes the chicken and farmed animal sanctuary movements in the United States. I use the concept of a safe space as an analytical frame to examine questions of inclusivity and priorities at sanctuaries, identifying four distinct but overlapping threads of the chicken sanctuary movement.

Chapter 4 discusses the political economy of chicken rescue and sanctuary. I argue that hoarding is a pivot point in the decommodification process. Drawing on more and less traditional interpretations of hoarding, I suggest that definitions converge in a notion of (socially) deviant accumulation. Sanctuaries present one such example: regardless of whether they are hoarding in more problematic ways, they are, as responses to contemporary agriculture, accumulating animals valued for exchange, and refusing to exchange them. This opens up space for the creation of other values, a possibility-rich anomie for animal care at sanctuaries. This open space can also, dangerously, lead to more traditional hoarding situations. This chapter, though, reorients the problem of hoarding and the challenges sanctuaries face as less one of individual deviance and more as a response to a social problem. Though this chapter is indeed critical and emerged out of a challenging situation at one specific sanctuary, it aims to, again, critique without condemning. At least for the most part.

Chapter 5 turns to the challenge of rehabilitating animality, focusing on interspecies relations at sanctuaries. Where Chapter 4 concluded with the argument that sanctuaries are united in their opposition to treating animals as commodities, as valuable in terms of exchange, this chapter asks, "if not commodities, then what?" Because I have been closer to the "participant"

end in terms of "participant observation," in this chapter I use Q sorts layered with ethnographic work to gain critical distance. I identify different "animal figures" (Haraway 2008), or ways of conceptualizing nonhuman animals, alongside different perspectives about interspecies relations

Chapter 6 is a largely visual interlude, juxtaposing images of Margaret Atwood's poem, "Cell," comics from interviews and participant observation, and necropsies of birds done by a sanctuary in California. It attempts to illustrate and introduce the health issues faced by hens bred for egg production, and the struggles faced by the hens and the humans treating them.

Chapter 7 asks how sanctuaries produce and circulate knowledge. I make the case that sanctuary science is a different form of medical knowledge production than that practiced in mainstream institutions, one with different perspectives, goals, norms, and practices. Multispecies ethnographer Abrell (2016, 19) writes, "I treat sanctuaries as laboratories where activists conceive and operationalize new models for ethical relationships with animals – models they hope will influence broader public debates." I treat sanctuaries not as laboratories in the traditional sense at all, but do suggest, along with Abrell, that they are sites where new interspecies relations are practiced. Unlike Abrell, however, I also emphasize that sanctuaries are sites of medical knowledge generation and circulation, and that while it is not laboratory science, it is indeed its own form of science. I synthesize understandings of witnessing from science studies, feminist theory, and activism to argue that witnessing is how sanctuaries learn about rescued chickens. Building on the material of the interlude I focus this discussion on how sanctuaries treat reproductive issues in hens bred for laying eggs.

Finally, the Conclusion is a lament of chapters that were unwritten in this dissertation, but deserve attention and might be written on some future occasion. It also discusses the implications of the work and projects it has inspired. Just as this introduction paints sanctuaries in fairly broad strokes so that subsequent chapters can zoom in, the Conclusion again zooms out, returning to questions that may have been apparent in this introduction, which were hopefully put into further relief in the body of the project, but, despite the anti-natalist project of farm sanctuaries, may have spawned further questions.

Chapter 2. Methods, or, a feminist toolkit for studying "the wrong species to love"

This project braids together several different methods, ranging from qualitative to quantitative, and textual to visual. In this chapter, I discuss how I studied, and in some cases refrained from studying, what Quincy had called "the wrong species to love." In the first section, I introduce the approach to my research. After that, I discuss many of the research methods I used and the process of braiding together methods in ways that might seem incongruous. I conclude this chapter with a discussion of my field sites and some notes on ethics that I have attempted to integrate into my research.

Approach: Building a feminist toolkit

> "We need to diversify our tools, expand our range; we need to become more and more inventive, because so often when we do one thing, we find ourselves blocked." (Ahmed 2017, 241)

In developing a methodology for this project, I follow queer philosopher and self-proclaimed feminist killjoy Sara Ahmed's (2017) call to build a feminist toolbox as part of a feminist survival kit. For Ahmed, "survival" is not about individualized keeping-on or neoliberal self-care, but a way of doing and continuing to do feminist work. Ahmed keenly recognizes that the master's tools cannot be used to demolish the master's house (Lorde 1984). Thus, feminist work – including feminist research – cannot use the same tools as those used to do work that ignores or erases feminist praxis. This does not necessarily mean using tools that are strict opposites. As she writes, "[s]he might not be using things the way she is supposed to. She might queer use or find a queer use for things" (Ahmed 2017, 241).

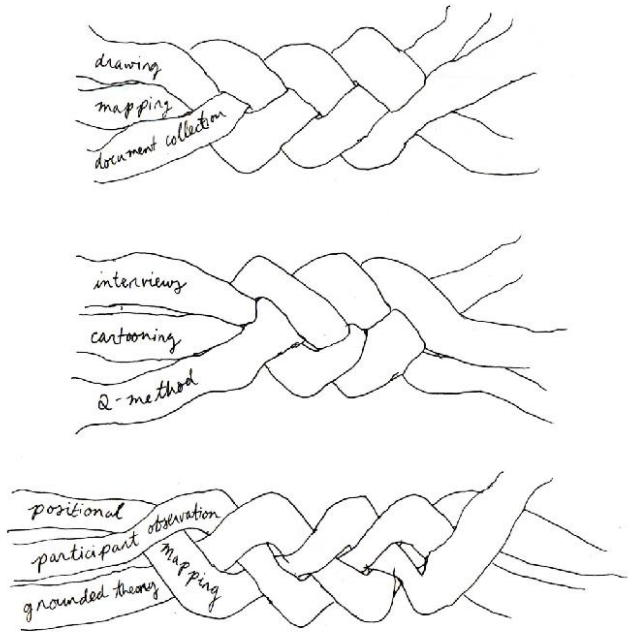
This project uses mixed methods, but mixed methods intended to preferably listen to voices, human and nonhuman, that have been deliberately silenced or unheard. This is slightly different from terms like *giving voice*, in which agency is still foremost in the person doing the giving. Listening is more about creating space, stepping back, and admitting limited agency. Thus, I put together a toolkit for studying sanctuaries – sometimes using feminist literature and training through coursework, sometimes through bumbling, and sometimes through playing. Literature, materials from coursework, bumbling, and playing are arguably quite significant tools in themselves, all of which I return to throughout this project.

The toolkit is not composed of the methods alone. Rather, it is how I approach, shape, and integrate these methods – in a sense, they can be thought of as the box that holds the tools. The first part of this box is *situating knowledge*. Positionality begins with the assumption that all knowledge comes from one or more perspectives: there is no "universal," "out-there-objective" truth waiting to be discovered. This means that all knowledge is partial, and one's social position, identity, biography, body, interests, and so forth are a lens that influence what each researcher sees, learns, and communicates (Haraway 1988, England 1994). One's position can be *mobile* – a researcher is not always trapped in the same lens, but no one can see "from nowhere" (Haraway 1988). In many cases, this means that the researcher is privileged in some way relative to the researched, if only in terms of the research encounter itself (Rose 1997). Even with my mobile positionality, throughout the project I saw myself as part of the sanctuary movement. I was a volunteer before and during, and hope to volunteer again, and to stay involved. This manifests in my writing as well. When I refer to "sanctuary affiliates," for instance, I mean myself, too, and I often use "we" instead of "they."

Further, one's position or perceived position can gain or limit access. I certainly encountered this in that I had been vegan for over 10 years when I began the project. I learned that this was a way of building trust, especially with people I sought to interview at West Coast sanctuaries. I'm still not sure whether one person, with whom I did participant observation, kept referring to my girlfriend as "my friend" because of generational variation in terminology or because of passive homophobia. In retrospect, this became a distancing move. "The researcher-self that many feminist geographers give themselves to reflect on, then, seems at some level to be a transparently knowable agent whose motivations can be fully known" (Rose 1997, 309).

Reflexivity is another part of situating knowledge. It entails thinking about one's position in relation to the research and in relation to research participants. In so doing, reflexivity is an important feminist tool to acknowledge and recognize partiality and avoid "the false neutrality and universality of so much academic knowledge" (Rose 1997, 306). In other words, reflexivity is a tool to reveal positionality. Reflexivity should not simply be applied to researchers, but to research participants as well, recognizing that they are dynamic and multifaceted, presenting partial pictures that are influenced by the research dynamic (Domosh 2003, Pile 2010). However, as England notes, "recognizing or even being sensitive to these power relations [inherent in research] does not remove them" (England 1994, 85). In this way, reflexivity is an important tool, but also a limited one. Nonetheless, reflecting on perspective and power relations is important. For example, my use of "who" instead of "that" to describe farm animals belies a certain perspective. Because of this and simply because of my emotional investment in the project, practicing reflexivity (Mattingly and Falconer-Al-Hindi 1995, Rose 1997,

Domosh 2002) is especially important, as my positionality undoubtedly varies relative to different organizations and institutions.



The third tool is braiding. I braid methods together, creating juxtapositions that likely seem weird to some and quite normal to others. My process for braiding methods together was acutely shaped by the need to balance proximity and distance. In much of my approach I was a participant at a sanctuary and embedded in a few specific sanctuary perspectives. It was thus acutely important as a researcher to avoid creating situations where interviewees respond to meet what they think are my expectations or desired answers, following Pile (2010).

Additionally I was (and am) so darn opinionated myself. There was a huge risk of me projecting what I wanted to see onto sanctuaries (e.g., sanctuaries as awesome anticapitalist DIY inclusive feminist spaces. My "elevator speech" to non-academics is, after all, "chickens and how they are so good."). I therefore used several methods to produce critical distance: Q sorts and mapping, and a method to play with distance, and to play more broadly: cartooning.

Ethnography

This project takes the form of a multi-sited ethnography, using an approach that synthesizes feminist work in geography (Nagar 2006, Gillespie 2018), poststructuralist grounded theory in science and technology studies (Clarke 2005, Friese 2012), and interdisciplinary and extradisciplinary attempts to cultivate surprise.

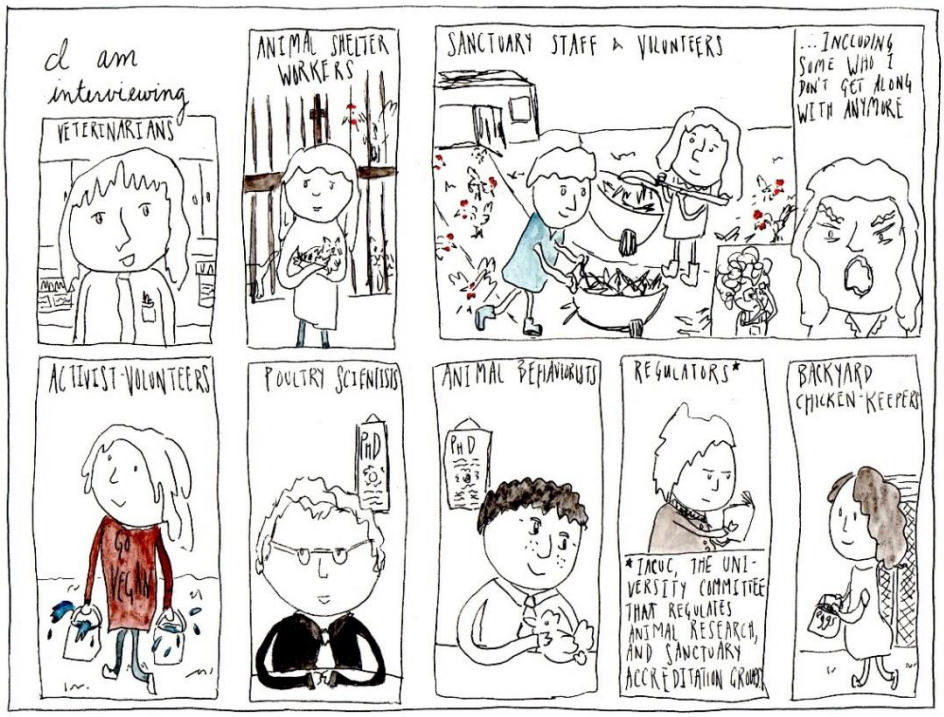
I officially began doing research in summer 2016, after the IRB approved my protocol. I had been volunteering at Heartland Farm Sanctuary and part of online social networks for sanctuaries for over a year before then. While this earlier volunteering and participation wasn't official research, it nonetheless shaped my research questions and research plan.

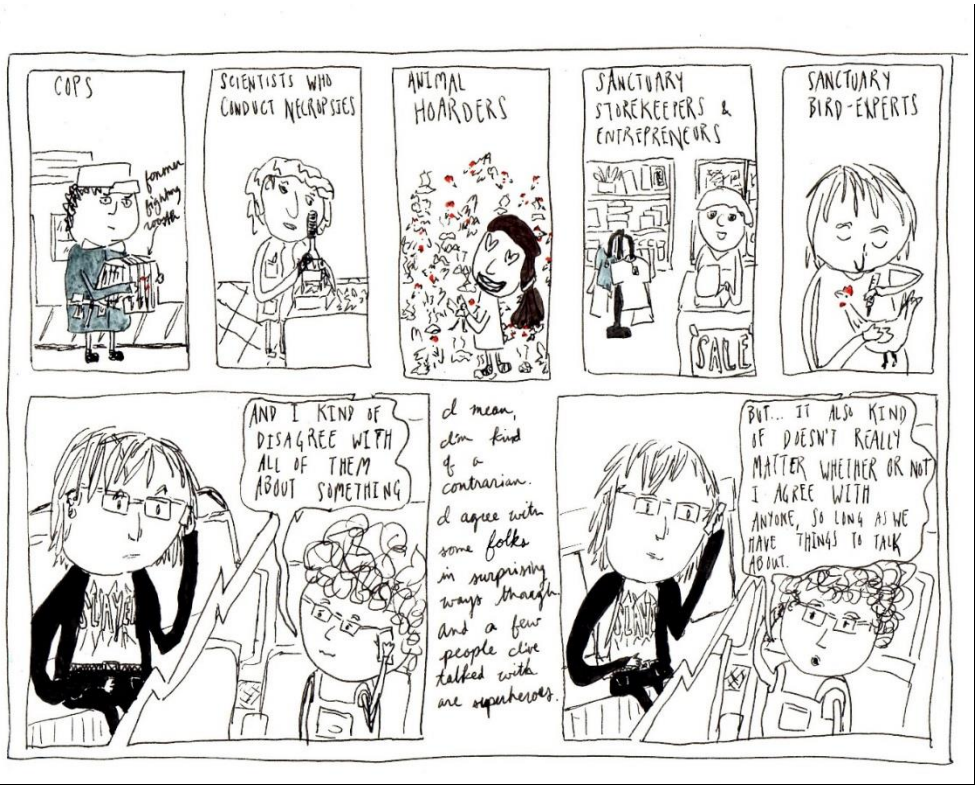
This project seeks to understand specific *practices*, rather than single sites or cases. In these respects, it takes inspiration from multi-sited ethnography (Marcus 1995), rather than a single-site case study. This project also takes inspiration from grounded theory (Friese 2013, Clarke 2005, Clarke 2003) and weak theory (Gibson-Graham 1996). I use techniques from both of these to understand the political economy and politics of representation at sanctuaries, not as universal, but as complex, contingent, and sometimes contradictory. Grounded theory and weak theory contrast with formal theory in that they are emergent – carefully and thoughtfully emergent – from the situation at hand, rather than derived from principles in the abstract. In seeking to understand practices, I nonetheless focus on individual sites or cases, recognizing limited generalizability and attempting to be specific about how broadly a case might apply. Recalling the "mess" that sanctuaries make, I thus turn to this sort of theorizing.

Per grounded theory, "'sampling' is driven not necessarily (or not only) by attempts to be 'representative' of some social body or population (or its heterogeneities) but especially and explicitly by *theoretical* concerns that have emerged in the provisional analysis. Such 'theoretical sampling' focuses on finding *new data sources* (persons or things) that can best explicitly address specific theoretically interesting facets of the emerging analysis." (Clarke 2003, 557)

Interviews

I completed over 60 semi-structured interviews. This means that interviews were only with humans, but there were many different humans involved.


I am interviewing
VETERINARIANS
ANIMAL SHELTER WORKERS
SANCTUARY STAFF & VOLUNTEERS
...INCLUDING SOME WHO I DON'T GET ALONG WITH ANYMORE
ACTIVIST-VOLUNTEERS
GO VEGAN
POULTRY SCIENTISTS
PhD
ANIMAL BEHAVIORISTS
PhD
REGULATORS*
*IACUC, THE UNIVERSITY COMMITTEE THAT REGULATES ANIMAL RESEARCH, AND SANCTUARY ACCREDITATION GROUPS
BACKYARD CHICKEN-KEEPERS


COPS
SCIENTISTS WHO CONDUCT NECROPSIES
ANIMAL HOARDERS
SANCTUARY STOREKEEPERS & ENTREPRENEURS
SALE
SANCTUARY BIRD-EXPERTS
AND I KIND OF DISAGREE WITH ALL OF THEM ABOUT SOMETHING
I mean, I'm kind of a contrarian. I agree with some folks in surprising ways though and a few people I've talked with are superheroes.
BUT... IT ALSO KIND OF DOESN'T REALLY MATTER WHETHER OR NOT I AGREE WITH ANYONE, SO LONG AS WE HAVE THINGS TO TALK ABOUT.

I did interviews to clarify or identify specific economic or medical practices and to explore in more detail how humans represent and value nonhuman animals. Interviews were sometimes a distance-producing practice, in that they produced material that contradicted my own situated observations. Interviews built on participant observation, and in turn shaped the Q concourse shown later in this section. Semi-structured interviews entail asking certain questions or about certain topics, but many of the questions and topics are open-ended and invite storytelling. There was considerable variation in what I asked, based on who I was talking to and where I was in the research (for instance, I didn't ask about hoarding in my first few interviews). Sample interview questions, though, can be found in the Appendix.

Interviews were often done at sanctuaries, as in the examples at the beginning of this chapter. Some were done alongside helping out with something, as in the Q sort interview with Alicia. Some of them were alternately done in veterinary offices, coffeeshops, online, or over the phone.

Document Collection

I used document collection to examine the rise of the sanctuary movement, the circulation of medical knowledge, and the politics of representation at sanctuaries. Many documents were materials that sanctuaries and sanctuary affiliates put together: mission statements, newsletters, brochures, and internal documents such as budgets and guidelines for animal care. I also followed facebook pages such as Vegans with Chickens, Chicken Vet Corner, and anti-cockfighting groups. As many sanctuary affiliates are "organic intellectuals" (Gramsci 1978), I also compiled news articles and the (few) popular press books about sanctuaries, as well as

documents sanctuaries use, such as medical information from veterinarians and other sanctuaries. Lastly, I have dozens of files of necropsies, which were given to me in the course of a set of interviews.

Participant Observation

I volunteered at several sanctuaries and participated in online social media, including Vegans with Chickens and the Global Coalition of Farm Sanctuaries. For the most part, this meant cleaning chicken coops and runs, bringing chickens and other animals food and water, and bringing chickens between indoor and outdoor areas. I participated in (legal) animal rescue, intake, quarantine, integration, and adoption. I also participated in medical care, including veterinary visits and more day-to-day activities, such as administering medications; wrapping feet with infections, and, toward the end of my time at Heartland, doing periodic health checks. I also participated in events and programming that sanctuaries offer, such as staff and volunteer meetings, outreach and education events, tours, themed work days, etc. Finally, I supported construction projects, such as building a set of screen doors for a shed and assembling runs.

Participant observation grounded and provided background for the interview questions I wound up asking. It also allowed me to see for myself the ways sanctuaries were different from and similar to agricultural settings.

Analysis

To analyze ethnographic material, I took notes from participant observation, sometimes as comics, doodles, or diagrams, and sometimes in writing. I transcribed and then analyzed interviews. Analysis included coding for specific topics, such as those associated with deslorelin implants, hoarding, and formal versus informal training in chicken care. Some themes I knew in advance, such as medical knowledge, and I asked about those and then coded for them in interviews by looking for keywords or key phrases. Other themes developed along the way, such as hoarding, which I asked about once it had developed as a theme. Analysis also included mapping, as explained later in this chapter. Finally, though drawing from interviews was used for communication more than analysis, sometimes drawing part of an interview was informative in analysis.

Additionally, analysis was an iterative process. Statements for the Q concourse were derived from interviews, and Q sorts were done alongside interviews. Likewise, comics and playing revealed additional surprises and questions. Finally, I included auto-ethnography, writing from my own experience. In this dissertation, auto-ethnographic sections are italicized.

Q Sorts

In terms of studying the politics of representation at sanctuaries, simply asking sanctuary affiliates how they conceptualize rescued chickens seemed likely to yield either an idealistic answer (how folks think or feel about how chickens should be treated) or one that respondents might believe I wanted, consciously or unconsciously (see Pile 2010). More survey-oriented social scientists call this the problem of self-reporting. Another challenge was that the

"participant observation" I was doing was highly oriented toward participation. I had opinions and ideas myself about interspecies relations at sanctuaries, and was worried about projecting these. In other words, reflexivity on my part or the part of my research subjects is of some, but limited, use (Mattingly and Falconer-Al-Hindi 1995, Rose 1997, Domosh 2002).

To get around these problems, I used Q methodology to complement participant observation and interviews. Q methodology is a way of studying "operant subjectivity": how people make sense of the world in practice, rather than in theory (Webler et al 2009, Robbins and Krueger 2000). It "seeks to identify shared views … It can then measure individuals' affinity with those views, as well as similarities and divergences among individuals" (Eden, Donaldson, and Walker 2005:414). It entails developing a series of statements called a concourse that encapsulate the main opinions associated with a specific theme or question. In this case, the guiding theme/question was "how do you relate to or conceptualize sanctuary chickens?" or, more plainly, "what is a sanctuary chicken?" Using and adding to statements from interviews and participant observation, I developed a concourse, shown in table 1. The concourse includes statements that came up in interviews and statements based on participant observation. Some are direct quotes and others are paraphrased. After drafting the concourse, I "piloted" my Q statements with an animal advocate who had visited several sanctuaries. Per the pilot, I wound up eliminating one statement, because it was redundant: "[s]anctuaries should priorities the welfare of the flock over that of individuals."

The Q sort process entails asking subjects to sort the statements into a table based on a Likert scale: how much they agree or disagree with each statement, in the sense of how well it captures

Number	Statement
1	Chickens should be treated as pets, like dogs and cats.
2	Chickens should be treated as family members.
3	I bring chickens to the veterinarian as often as I would a dog or cat.
4	Chickens should be companion animals.
5	The most important job of rescued chickens is to be ambassadors.
6	Chickens with good stories are important.
7	Less friendly chickens should be socialized to be friendlier with humans.
8	Hens are completely different creatures with roosters around.
9	The value of chicken rescue is to save individual lives.
10	The value of chicken rescue is to promote alternatives to chicken exploitation.
11	The value of chicken rescue is to encourage humans to become vegan.
12	There's nothing natural about chickens.
13	Chickens cannot take care of themselves.
14	Chickens are friendly.
15	Chickens are intelligent.
16	Chickens should be able to preen, dust-bathe, forage, and perch.
17	Chickens should be able to establish a pecking order, including fighting.
18	I communicate with chickens through learning their different sounds (e.g., predator whistles, tidbitting) and body language.
19	I communicate with chickens using baby talk or cutesy language.
20	I communicate with chickens through establishing dominance.
21	I communicate with chickens through touch.
22	It is difficult to understand and communicate with chickens.
23	Sanctuaries should prioritize the welfare of the flock over individual chickens.
24	Roosters and hens need each other.
25	It's important that both humans and chickens benefit from the relationship.

Table 1: Q concourse.

what they do. However, the Q sort relies on a pyramidal structure. Only a few statements can be placed in the extreme categories, and more in the middle, forcing the sorter to prioritize. Figure 1 shows the structure I used. Per standard Q practice, I asked participants to think of a specific situation or a specific chicken if they were unsure where to place a statement.

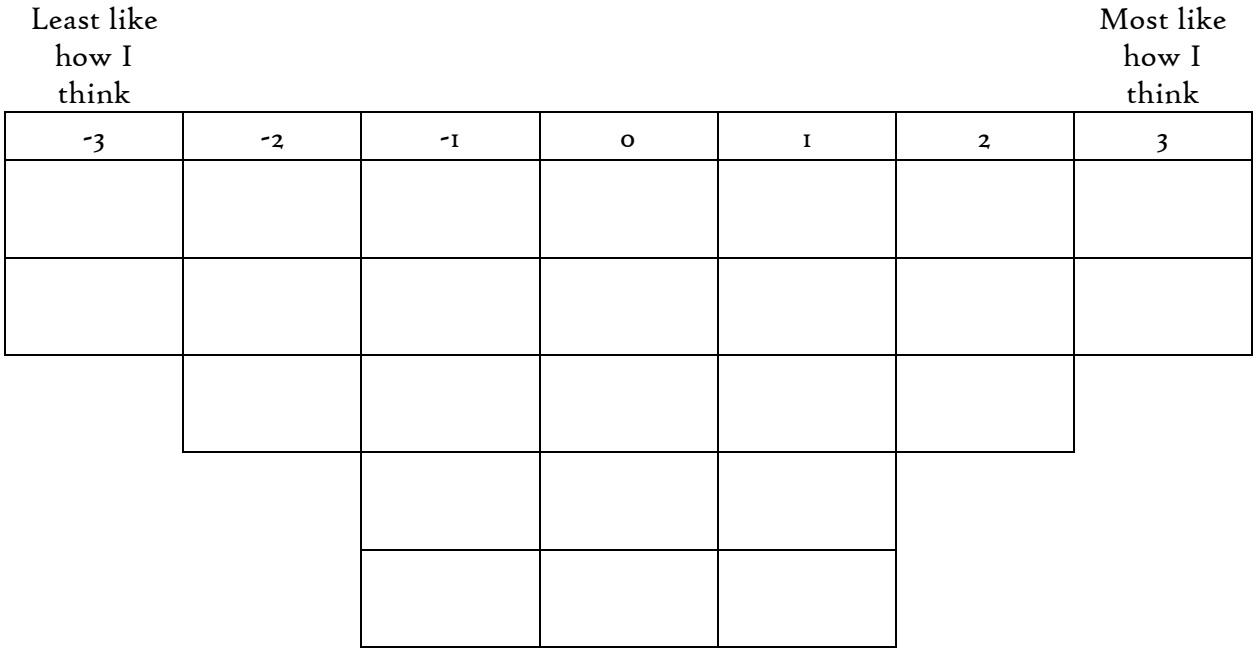


Figure 1: Q sort structure for 25 statements.

I attempted to include a mix of statements that were more conceptually deterministic and explicit, and statements that were more open to interpretation. I did this to allow for the possibility of perspectives that were partly or entirely based on pre-existing concepts (such as a pet or ambassador) and perspectives that were emergent from sorts, interviews, and participant observation. The sorting process allows for participants to combine statements in ways that yield new concepts or new twists on existing concepts. For example, a subject might place a statement strongly associated with pets in the +3 category, along with a statement that has seemingly little to do with pets. Depending on the rest of the sort, this could indicate a novel interpretation of what it means to be a pet, or something else entirely.

I deliberately did not include statements that were more common in society but less so at sanctuaries, such as "chickens are food" or "chickens are resources for humans." Though these sorts of statements are commonplace, they are much less so among sanctuary affiliates. I take

for granted that sanctuary affiliates disagree with these statements, at least concerning sanctuary residents. Moreover, the ways that exceptions or different interpretations might exist, such as chickens being emotional resources, are captured by the concourse.

Q sorts can be conducted online or in person. I weighed advantages and disadvantages of each: with the online one, I would likely be able to reach more people and also possibly reduce my influence on the sorts. However, Q methodology can be done with a very small number of sorts: unlike other survey tools, it is not aimed at a "representative sample" of a population so much as capturing a series of interesting perspectives. Thus, the researcher seeks representativeness in terms of perspectives, so a large sample size is unnecessary (the Appendix details subject selection). Q sorts rely on subjects with strong and well-formed opinions (Webler et al 2009:22).

The advantage of the in-person version is the ability to use it as an interviewing tool. With online versions, you can include space for commenting on particular statements or on aspects of the sort, but that differs from the back-and-forth or immediate follow up questions of an interview.

Thus, I opted for the in-person version, building on studies that use in-person Q-sorts alongside semi-structured interviews (ibid., Gallagher and Porock 2010, Sandbrook et al 2013). I speculate that my influence and a sense of wanting to represent sanctuaries positively would have been somewhat present were I to have done online Q as well, given that I had already worked alongside most research subjects (some had even seen presentations on my work). I

determined that by emphasizing that participants should think of examples when sorting would, hopefully, enable sorts that reflected participants' beliefs and practices well enough. Also, the advantage of being able to see participants doing the sort would enable me to identify and explore any placements that contradicted another statement or my experience doing participant observation.

Mapping

This project undertakes several kinds of mapping: cartographic and positional/situational mapping (Clarke 2003, 2005). All are united in their exploration of socio-spatial relationships, be they on a Cartesian coordinate system or less place-bound. Just as Massey describes space as "stretched out social relations" (1994), both kinds of maps complement one another.

Critical Cartography

Mapping sanctuaries draws on work in critical cartography which recognizes that maps, like any form of knowledge production, always present a specific perspective. Projects like counter-mapping, autonomous cartography, and resistance mapping attempt to subvert the legacy of imperial cartography to challenge dominant cartographic narratives and tell stories that support social and environmental justice movements (e.g., Peluso 1995; Harris and Harrower 2005; Harris and Hazen 2005; Counter Cartographies Collective, Dalton, and Mason-Deese 2012; Sack 2017). Harris and Hazen (2005, 116) use the term "(counter)mapping" to signify an engaged opposition to standard mapping practices, calling instead for "using mapping to overcome predominant power hierarchies, interspecies injustices, and other power effects." They also seek to recognize limits to mapping altogether. Critical maps seek to foreground

inequalities, in which maps are both used to tell a story from a marginalized perspective. But they do not stand alone.

Such maps also seek to tell stories *differently* in terms of design conventions. There is a substantial thread of work on indigenous cartographies that elaborates ways of telling stories differently (see, e.g., Johnson, Louis, and Pramono 2005 and Pearce and Louis 2008). This project is not an indigenous cartography project, but it does take inspiration from the concept of "process cartography," which is "an incorporative, as opposed to an inscriptive, practice that places emphasis on the process rather than on the artifacts that result from the process" (Pearce and Louis 2008, 110). I discuss the process below and, in using footprints as symbols in the map, attempt to make reference to the process of mapping sanctuaries.

Data for the map are from several websites that compiled lists of sanctuaries (sanctuaries.org, upc-online.org/sanctuaries, vegan.com/farm-sanctuaries, all-creatures.org/links/sanct.html) supplemented by interviews and participant observation. I used these to generate a list of sanctuaries and their general location. To find information on each sanctuary's location, the year they were founded, and whether they are still open, I did individual searches of these sanctuaries' internet presence (websites, Facebook, Guidestar and other nonprofit reporting services).[3] I did not collate address-level information on sanctuaries. It was not necessary for this work, but more importantly, some sanctuaries keep their specific locations private to avoid

[3] Frequently, sanctuaries operate for months to years before receiving nonprofit status, though a few received nonprofit status before they claimed to be operating. Because of these incongruities and in the interest of accuracy, I mapped the year that the sanctuary says it started when available. When I couldn't find this, I used the year it became a nonprofit.

people "dumping" animals there. Out of respect for this, I only recorded the city, town, or nearest town.

Further, the map uses not one uniform symbol, but almost 200 different symbols for the almost 200 different sanctuaries. This is to challenge the ableist implications of showing one "standard" footprint (Taylor 2017, Epstein 2008). While many chickens have three toes, several have more, due to incidental effects of breeding. Some are missing one or multiple toes because of frostbite or infections. Some chickens wear bandages or shoes on their feet, and this can be due to infection or for additional support. I have attempted to capture this variation, and return to the medical issues faced by rescued chickens later in this project.

Additionally, the map is deliberately oriented with East-up, rather than North-up. This builds on critical cartographic disruptions to map orientation (Krug 2018). I use East-up because of roosters' infamy for disturbing humans around sunrise, attempting to both promote the perspective of chickens at sanctuaries with access to daylight and the outdoors, and to amplify the disturbance they and sanctuaries make to anthropocentric-capitalist norms (though the cartographic norm is more imperialist than that of factory farming).

Also, some sanctuaries operated for a while and then closed, for various reasons. While the records of this are even sparser than the data on existent sanctuaries, it is nonetheless important to recognize. In some cases, owners/founders passed away or moved on to other projects. In many cases, sanctuaries became overrun and became hoarding situations. Managers didn't say no or got addicted to the glamour of rescue but not the less glamourous

aspects of long-term care, were not skilled enough at fundraising, or didn't have the knowledge and support to run a sanctuary (and of course these are all related). I discuss hoarding further in Chapter 4. For now, it merits noting that the map likely underreports sanctuary closings, as others likely opened and closed and couldn't be tracked.

Situational and positional mapping

Situational and positional mapping are used to show the "messy complexities" of a situation and to show different social positions, respectively. Situational maps do not try to simplify or add clarity to a situation, but rather to *complicate* what might seem to be going on, and what is left out of a preliminary or more speculative analysis. Messy situational maps include "all the analytically pertinent human and nonhuman, material, and symbolic/discursive elements of a particular situation *as framed by those in it and by the analyst*" (Clarke 2005, 87). They include as many of the elements of a situation of concern or interest as the researcher can come up with, including human and nonhuman, individual and collective, discursive, events, ideas, places, concepts, and so on (Clarke 2003, 559, 562).

Relational maps add what cartographers would call visual hierarchy to situational maps: through circling and drawing connections between the relevant elements, the researcher is able to show which elements are part of a situation or topic of concern. In the case of medical care at chicken sanctuaries, organizations such as the ASPCA are less relevant, though if the focus were on chicken rescue, they would be included in the network.

Finally, positional maps are another technique for analysis and for adding surprise. Using different discursive axes of "variation and difference, concern, and controversy found in the situation of concern" (Clarke 2003, 560, see also Friese 2013), positional maps show positions taken *and* not taken on an issue. These maps are another way of presenting complexity, inviting the researcher to speculate on why certain perspectives are absent (sometimes the reason might be obvious, other times less so), which can be productive. They are also able to show contradictions between positions.

Mapping in both cases are ways to add context and setting, to lend support to or challenge hypotheses, and to generate surprise. I had suspected, for example, that there were relative clusters of sanctuaries in the Upper Midwest and North-Central California, and mapping allowed me to see and demonstrate that this was the case. Likewise, I suspected that the number of sanctuaries was growing, and the map allowed me to see not only that this was the case, but that it was happening in rough time periods. This planted a seed for what eventually became the four threads of the sanctuary movement. On the other hand, positional mapping allowed me to identify the absent position.

Cartooning

My use of comics can be situated in the rise of "creative geographies" (Marston and de Leeuw 2013), which includes geographers collaborating with artists and geographers producing their (our) own creative projects. Examples come from the early history of geography[4] but also

[4] They trace this back to Ancient Greece and the work of Strabo, romantic naturalist-colonialists such as Alexander von Humboldt, but I take little to no inspiration from this thread (indeed, I heard of it only after doing most of the creative work for this project).

discuss a recent "creative ferment" (ibid., v) of new scholarship/art projects. As Hawkins (2013: 54) writes, geographers have been using the arts to address themes "as diverse as touch, the body, landscape, rubbish, nature, commodities, activism, mental health, identity, space, home, memory, urban politics, posthumanism and postcolonialism, to name but a few." Likewise, Katz' comics in "Playing with Fieldwork" (2013) amplified the synthesis of play and auto-ethnography in cartooning, and undoubtedly made it easier to realize that comics could be part of fieldnotes and worth sharing. Mostly though, this creative ferment was simply enabling. By "simply enabling" I don't mean to trivialize it at all, but to say that it wasn't very complicated. It set precedents for me to play and cartoon, which likely made doing so easier and more acceptable. Likewise, it would be negligent to too strongly separate comics and cartography from one another in this project. Mapping and cartooning are both forms of visual storytelling, and I took inspiration from a legacy of critical cartography and activist/artistic mapping.

Comics also jive with the rise of multispecies ethnographies. As Heimreich and Kirksey (2010:546) write of an interdisciplinary "salon" gathering, "[a]rt served as a companion and catalyst practice for thinking through and against nature-culture dichotomies." Indeed, my comics about how sanctuaries respond to the commodification of animals builds on such work.

Primarily, though, the comics in my project are drawn from training by the fantastic Lynda Barry; co-training with the Applied Comics Kitchen (ACK!)—a collective of folks, including

myself, using comics for research and teaching—; and the many graphic novels I've voraciously consumed. This all gave me exercises that helped me develop as a cartoonist, examples of ways of synthesizing words and pictures, amplifying pictures, and ways to put aside the part of my brain that's typing this text right now. The main way has been

The main rationale for using comics, to me, is: Why not? I expound upon this in the rest of this section.

Why Not? The Case for Using Times New Roman in a Word Processing Software such as Microsoft Word and Printing on Letter Paper

There is a plethora of reasons to create dissertations and other academic works using Times New Roman, in Word Processing software, and printing on letter-sized paper. First, however, some qualifications: dissertators and other academics who use other fonts, such as Garamond and Arial, or even Calibri, need not feel threatened. One can do much the same with these fonts as with Times New Roman. Garamond is even known for being dyslexia friendly and using less ink. And other Word Processing softwares are also acceptable. I'm sure Apple has something like Word that is slightly snazzier and more expensive. Finally, some printers use A4 paper rather than letter paper. That, too, is fine. So, no shame against those making documents in Open Office using Garamond and printing on A4 paper. So, when I write Times New Roman, and Word Processing Software such as Microsoft Word, and Letter Paper, if you use a variant such as one mentioned above, please swap that one in.

A second qualification: “Creating.” Don’t you mean writing, or at least “communicating?” Yeah. Definitely not generating ideas, playing with material, getting lost in puzzles and stories, and cackling with glee when you solve a research puzzle. No cackling here. Sorry for the confusion.

And a final qualification. This section isn’t a dig at folks who make comics or write by hand. It’s just a statement that Word Processing *tends* to have certain advantages. By “tends to” I mean it’s not deterministic: you could probably make a comic in a very Word Processy Way and it would be almost as good. Some of these tendencies are super strong, and others less so. Other media have other advantages, too.

Okay, now that you’ve read this overly long introduction, here are some reasons.

It’s good for retaining information

Typing is known to be far better than writing by hand and drawing for retaining information, making it especially good for field notes. One technique Cook and Crang (2007) offer is that you carry index cards in your pocket, for taking emergency notes in the bathroom. They probably didn’t know that carrying a laptop for typing out some quick notes in a porta-potty is even better.

It adds context and exposes positionality

Geographers often talk about the importance of context, through languages of space and place. And you can certainly add context through pictures, even maps, but words printed on a page are truly the best for this.

Feminist social scientists more broadly talk about the importance of positionality and reflexivity.

So-called "objective" reality doesn't "exist": everything comes from a perspective. Writing in a word processing software exposes positionality in a way that a comic just doesn't, especially not one where you draw yourself into the story and tell it from your point of view. Drawing myself into interviews allowed me to show that I was there, that I was "one person looking at things from this perspective" (Wilson and Jacot 2013:145), and to an extent, how I fit in or didn't fit in.

Through cartooning, I was trained and encouraged to ask what Sacco called "visual questions" (questions that Lynda Barry asks on the regular, too) (Wilson and Jacot 2013, 148), and to make visual observations. This was invaluable for studying the politics of representation at sanctuaries, as well as noting the subtle ways sanctuaries departed from – or didn't depart from – agricultural aesthetics and practices. I feel like this made me a more lively observer and better storyteller. A statement I quote several times in the text –"it looks a lot like a farm" – is indeed telling, but also points to the sort of "where's waldo" game I had to play of observing subtle differences and similarities.

It's harder

On the flipside, drawing was also challenging – technically (though my left hand often solved that puzzle) and emotionally. This panel stuck with me since I encountered it:

This panel illustrates how drawing is not only a way of *expressing* positionality but of *trapping oneself in a space*. "You have to be in it" to draw it, which entails getting into your own position and viewpoint, and then, mechanically if not psychologically, inhabiting others positions' to draw them, mimicking their movements. (And I'm sure this was more significant for Sacco, given the subject and detail of his work).

Because of this, writing is so much easier… and thus, better.

It changes up the pace

Full credit to Lynda Barry for this one. Her drawing classes often included "Drawing Fast and Slow," which sort of flexes your brain to work in a few different ways, and often to chill out and stop bossing the material. Drawing fast: less brain-bossing. Drawing slow: weaving a story, in a way that you can, certainly, do with typing. But I'd say typing is less conductive to this kind of storytelling because there's more stimulation, at least with how we've organized computers (of

course, you can turn the internet off. I have before. Better people probably have more often than I do.) And oh gosh, does drawing take longer. But then you have something that seems to require less revision.

Ooops, I wrote "drawing." I meant, typing! In Word Processing Software!

It encourages focus

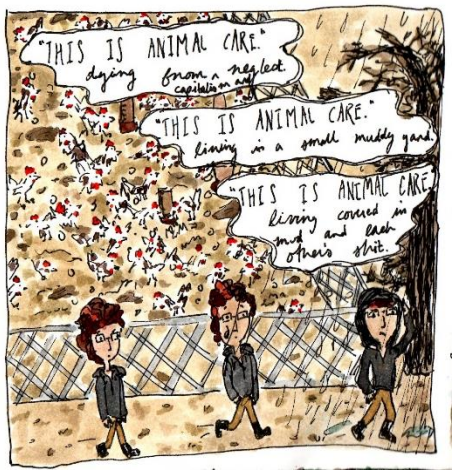
With drawing a comic, you're less exposed to the distractions structured into Word Processing software. Likewise, there are writing techniques designed to help focus.

With typing, you can easily jump around. Lynda Barry told us about a study where people don't type in sentences or paragraphs. It's a different kind of thinking.

And yeah, there's that Pomodoro stuff. Isn't that a tomato?

It is a good vehicle for generating surprise

There's an odd parallel between what I'm working on with regard to commodities and decommodification and the importance of typing in Word Processing software. Marx talks about the "aha" moment of creating things: that there's a distance that emerges when you've created something external to yourself. And that can be helpful for seeing what's going on in your work, as you interpret your "data." You'll look at something you've typed and then realize what's missing from the picture. For example, it happened with this bit of Word Processing below:



I made it. I mean. Typed it. And then realized that capitalism is part of the picture. You can sort of see that in how "capitalism" is added in rather than integrated into the original text.

I'm not saying this doesn't happen with other media, like comics, but it seems to especially happen with Word Processing.

People love reading things in this format

When you create a comic, most people are like "yeah okay." Or perhaps "a good comic is a done comic!" It definitely doesn't draw people in the way the on-screen, Word Processed page does. People who are otherwise uninterested in reading academic texts get excited and curious when I mention that I'm using the likes of Microsoft Word.

It is accessible to folks with different learning styles

I'm not saying that Microsoft Word documents are inherently or always easier to read, and that that's what makes them accessible. The folks that I worked with at sanctuaries were pretty sharp, but these days people have so much to read, and when you say you're making comics they just

don't get nearly as excited as when you say "I'm typing out a long ass manuscript." They definitely don't put the comic field notes they are in on their wall.

Likewise, I started handing out zines in lieu of giving PowerPoint presentations. Creating these helped me clarify arguments for myself. Also, after presenting, folks approached me and thought they were a good accessibility tool, in that people didn't have to remember everything in an argument and could flip back in the zine to refresh themselves.

Field sites

When I started this project, I was thinking specifically about sanctuaries as the sites where anti- and/or non-capitalist chicken care and interspecies relations took place. I quickly learned, however, that many other places are part of the picture. Sanctuaries often rely on staff and volunteers, for one, to take care of chickens before they come to the sanctuary, to take care of chickens who need more attention than the sanctuary can offer, and/or to shelter animals in extreme weather. Sanctuaries will sometimes work closely with veterinarians, Sometimes volunteers and staff adopt chickens from the sanctuary, either after negotiating with the sanctuary, or to adopt birds the sanctuary can't take in, for reasons of space, flock dynamics, or otherwise. And some sanctuaries will also adopt birds out to vetted members of the public.

However, sanctuaries are not always the sort of central institution involved. Sometimes Animal Care and Control, animal shelters, and the Society for the Prevention of Cruelty to Animals will take in and place chickens. Sometimes veterinarians will adopt chickens. One veterinarian interviewed discussed how, for legal and health reasons, if she treats hens with

certain medicines, people shouldn't eat any eggs the bird lays for a specified amount of time, possibly indefinitely. This could mean a choice: the person would have to either reunite the bird with their flockmates and then throw out all of the eggs (exceptions could exist if the chicken lays differently colored eggs or otherwise noticeably different eggs than others in the flock), or they could separate the bird, likely with a reduced quality of life (because of loneliness). Because many backyard chicken keepers don't want to lose their egg supply, this veterinarian explained, "a lot of the time they'll end up turning their chickens over to us, and then I treat them, and that's why I have a lot of chickens at home." This, too, counts as doing chicken rescue and providing sanctuary, and yet it is not at a sanctuary.

While I still believe it makes sense to focus on sanctuaries, as sites where this is deliberately taking place on a more collective level, and as sites where medical innovation is taking place, it is important to recognize that similar work takes place outside of the sanctuary world. While I did interview veterinarians, as well as people involved with animal control and humane societies, and emailed with the SPCA, given that there were so many fringes of sanctuary where chickens were treated differently, I focused on sanctuaries.

The primary research area for this project is the Upper Midwest, for two kinds of reasons that I see as equally important: intellectual and political. First, in terms of tracing the development of reproductive care for rescued chickens, interviews often pointed not towards Farm Sanctuary or another well-known sanctuary, but to Chicken Run Rescue in Minnesota. Likewise, in terms of studying knowledge circulation, I found that Heartland's recent status enabled participants to speak on both learning from and sharing knowledge with others.

Finally, Heartland had a more diverse visitor and volunteer pool than many other sites I encountered, and was, during my research, going through a flashpoint about veganism and inclusivity, and also developing protocol for chicken care, to which I contributed. As my research wound down, several volunteers wound up starting their own sanctuary, Farm Bird Sanctuary, which built on this knowledge and experience.[5] Thus, the issues of representation and knowledge production were more explicit there than at other sanctuaries. This can be summed up as the Upper Midwest being a good location to answer my research questions.

On the other hand, I focused on sanctuaries in the Upper Midwest for reasons best described as political (switch to positionality), though they are also intellectual. The Upper Midwest was a *good* location to answer several of my research questions, on an intellectual level. It was the *best* location to focus my participant observation for political reasons. This project began, as the Preface explained, by accident. I had been volunteering at Heartland and became interested in researching sanctuaries. To leave soon after deciding to do research on sanctuaries in order to study elsewhere would have entailed abandoning my volunteer work there. I don't mean to overinflate my importance as a volunteer: there were many others whose work was also important (and often more important), and my absence when I did leave didn't leave them in the lurch. Yet, the sanctuary worked because of interdependence between so many (human and nonhuman) people. This echoes Gillespie's (2018) research on dairy cows, and her decision to choose Washington State as a major field site despite it being a smaller dairy producer. She writes:

[5] Another volunteer is also starting a sanctuary, and yet another volunteer currently has a "microsanctuary" with several cows and chickens that used to be at Heartland, including Jaime.

> I chose Washington because it is the state in which I reside, and while this may seem to be a trivial reason, my feminist geographic training makes me attuned to the way the places we live and work are important sites for deep intellectual and ethical engagement. (2018, 19-20)

Gillespie's reference to attunement captures the way I felt about working in the Midwest. I was attuned to the stubborn anti-vegetarian/anti-vegan culture of "America's Dairyland," to the "Midwest nice" passive attitudes that I sometimes found infuriating, and to the challenges of attempting to care for chickens during frigid winters – all of which shaped the work that took place at Heartland. This was important in terms of the kinds of observations I was able to make and not only what questions I asked, but how I asked them. Similarly, through my work, I was able to contribute to Heartland in ways that would have taken considerable relationship-building at other sites. For example, as discussed in Chapter 7, I helped draft a protocol for bird health checks.

It was equally, if not more, important in terms of the ethical challenges of multispecies research. As a project that involved studying human and nonhuman animal subjects, but did not experiment "on" nonhumans in the ways characteristic of animal testing, this project is a multispecies ethnography (Kirksey and Helmreich 2010). Having both human and nonhuman animal subjects, it falls into a regulatory lacuna (I return to this theme in the Conclusion), in that regulations only exist for human subjects (Institutional Review Board, or IRB) and animal testing (Institute for Animal Care and Use Committee, or IACUC). I went through and followed IRB protocol for human subjects, and had several discussions that led me to decide that IACUC approval would not be relevant nor helpful. To operate ethically in this regulatory lacuna, therefore, I relied on my training, my own sense of ethics, and, perhaps most importantly, close relationships with some of my research subjects.

A first ethical challenge that this relationship-based practice helped address was in terms of consent. I followed IRB protocol for informed consent and assent documents, but also knew that the words in the document were of unequal importance. For instance, "psychological risks" are a commonly included part of IRB consent forms on the risks of participating in a study. My consent forms included the following statement:

> Risks include psychological stress in discussing what takes place at farm sanctuaries. In particular, sanctuary workers and volunteers may recount unpleasant memories of nonhuman animals they know or knew having health difficulties or dying. To mitigate this risk, you do not have to answer any question you do not wish to, and you may stop at any point. The research team will also be available during and after the interview process.

Because of my experience at Heartland, I knew that this risk would be more significant than it has been in many of my other IRB-approved studies. I attempted to take seriously the injunction that interviews can be psychologically difficult. This meant not only the statement that subjects could stop talking about a subject at any time and that I was available to talk, but reiterating that at key moments to create space for subjects' refusal. I also did additional emotional labor, in validating people's experiences when difficult subjects came up, and allowing time to talk through topics that were sometimes tangential to what I was studying, but which seemed emotionally important to the interviewee.[6] This is another example of Gillespie's point about attunement, in that I learned to be aware of which questions were more psychologically risky in advance.

[6] Reflecting on my experiences interviewing after the fact, I wish I had had training in or knowledge of trauma-informed interviewing, and will likely pursue this in the future.

Some research subjects were afraid of certain topics being discussed in this dissertation, and expressed as much. This meant that I could not answer some of my research questions as originally imagined, in order to respect the wishes of research subjects. Especially because research subjects in this case often meant "comrades," and/or "friends" (as opposed to interviews on, for instance, elites), I had to alter certain dimensions of the project. Also though, I relied on relationships to guide me in ethically grey areas, as some research subjects didn't explicitly ask me to not talk or wrote about certain topics, but hinted at not wanting me to talk about them. Other times, someone would very much want me to talk about the same topic that someone else had expressed or implied wariness about. I had to navigate these desires, and overall, this research was certainly "transformed by the input of the researched" (England 1994, 84).

Though in my research elsewhere, I formed similar bonds, the level of trust and camaraderie I had with my comrades was keenly important. This isn't to say that I couldn't go elsewhere and cultivate those relationships. Indeed, to answer some of my other research questions, I did go elsewhere, but it seemed irresponsible, as a socially-engaged researcher, to not work with Heartland. This is also in keeping with colonialist critiques of studying "the field" as a site that is "out there" and othered. I was part of a "we" that I was studying, rather than a separate "I" studying a "they" (e.g., Counter-Cartographies Collective, Dalton, and Mason-Deese 2012; Sangtin Writers and Nagar 2006).

I did additional ethnographic work in North-Central California, as an area where several chicken rescues were clustered, including Happy Hen Chicken Rescue, which involved a veterinarian and a pre-teen working together; Hen Harbor, a site outspoken about DIY chicken care and simultaneously often working with veterinarians; Clorofil, a microsanctuary that also offered classes on chicken care. This area was also the main home of Direct Action Everywhere's open rescue activities, and I interviewed several participants in open rescue. And I did additional work digitally and remotely, participating in facebook groups (Vegans With Chickens), and doing interviews remotely.

I believe this range of sites was especially important given that my work *is* critical. Though I emphasize that I attempt to critique without condemning, sanctuaries are, again, offering a marginal and marginalized critique of agriculture, and chickens are especially marginalized. Being attuned to how sanctuaries, more broadly than the Midwest, operate and communicate

(including, of course, variation therein) enables me to offer embedded critique that is, hopefully, productive.

I specifically didn't do ethnographic work in the Northeast because Farm Sanctuary founder Gene Baur and VINE co-founders pattrice jones and Miriam Jones are very much organic intellectuals, having written significantly about their own work, so I was able to review their writings. Additionally, I had originally planned to focus to a greater extent on cockfighting and rooster rehabilitation. This project is still worthwhile and important, particularly in the issues it raises on the intersection of and conflict between race, class, gender, and species. I return to this in the conclusion as a subject of future work, but I didn't do this in large part because the project had already taken its own twists and turns and become quite wieldy enough without addressing that theme.

Finally, it merits stating that choice and individual agency are exaggerated by neoliberalism, and that this applies to academic and activist research as well. To say "I chose" to study/study at Heartland, in the Midwest, and on the West Coast would erase the fact that I had strong feelings and motivations about doing so. In this same respect, institutional and emotional constraints influenced my field work. I had some grant money, but not enough to travel much more extensively than I did (I am writing this neither to complain nor to imply that I wasn't able to put together and follow through with a research project that answered many of my questions. Rather, I think it's important to recognize that capitalist constraints are a part of research, and especially important to do so in a dissertation that talks about political economy). Likewise, Farm Bird Sanctuary, founded by Heartland volunteers and staff, would be a

fantastic field site to study many of the same issues for reasons different from Heartland: its specific focus on birds, and special needs birds within that. Similar things could be said of the Open Sanctuary Project, which I do discuss in Chapter 7. These started after I was done with most of my research, and I didn't want to extend my position as a precarious graduate student-worker to work on these. For reasons of precarity, the fact that I was studying "the wrong species to love," and not least that I encountered an abuse situation at one of my field sites (a site not listed mentioned above), the emotional dimensions of field work were exhausting, to put it mildly. I think things worked out alright – maybe even pretty well! But to say that they were purely of my "choosing" would be a lie.

Notes on Ethics in Writing

Pandora is not a symbol (or a pseudonym)

I deliberated extensively about naming chickens in this project. With humans, the decision was easier, in that we had a discussion and they signed consent forms stating whether and how they wanted to be referenced, and/or they were quoted on publicly available sources. That doesn't mean the decision was easy, but there were guidelines and norms that were more in place. With chickens, I decided to name them when the sanctuary was comfortable being identified, because that was a possibility.

Using chickens given names I see as part of seeing them as subjects in ways that many sanctuaries attempt to do, but a bigger part of this is not analyzing their names out of context. Some of the chickens I worked with have analytically evocative names, of which Pandora is perhaps the most obvious. Pandora evokes the extensive and lively discussions about

technology, hope, and the monstrous (Law 1990, Latour 2011, Lorimer and Driessen 2013) in Science and Technology Studies, as well as the mythology itself. I don't know who named Pandora or why, and while she has a fantastic (as in fantasy-rich or playful) name, I do know how sanctuary chickens are often named (such as the example in the Introduction, when I named "Red"). Further, many of them have names that are less or differently evocative, of whom Jaime Lannister, the former fighting rooster, is the first who comes to mind. Jaime Lannister evokes a very different set of associations: the rapist in *Game of Thrones* (GoT aficionados probably have more to say about him, but that's my main bit of information?). And yet, Jaime is maybe the gentlest rooster I have ever met, and likewise, Pandora is aloof and independent, but not the most curious or adventurous of chickens. Both, thus, are unlike their namesake.

In this dissertation, I do an analysis of certain kinds of politics of representation. But in using chickens' names and not analyzing their names, I reject another kind of representation, which is that of not allowing chickens' names to stand for chickens as a whole. Thus I reject a politics of representation that sees Pandora or Jaime as a symbol more than as a chicken. This takes inspiration from an anthropocentric norm that is often quite tacit, which is that we don't analyze the names of our research subjects in this way. My Earthname, Heather, is a shrubby flower often found in Scotland, but to presume it has much to do with who I am in most situations is silly, and not even an exciting kind of silly. It subtly both shows and hides my ancestry, in that my parents chose to give me a name starting with "H" after my late grandfather, yet Heather is also a Scottish name, and I have exactly no Scottish descent (to the best of my knowledge). For Heather, the person I've become has certain associations and

sometimes a reputation that is far afield from Heather the shrub, or Heather the Scottish name used for Jewish tradition. Thus, I let Pandora the chicken be Pandora the aloof chicken, and Jaime Lannister is Jaime, the rooster who is quite content to be bossed around by and supportive of Ginger, a very loud and assertive hen.[7]

The politics of citation

This project attempts to challenge a status quo politics of citation, departing in many respects from a canon in geography that is largely white, male, and authoritarian. By citation, I mean, first, whose voices or ideas I present, credit, and amplify, as in Ahmed's (2017) project of not citing men in her book on feminism and academic culture.[8] Though her project is amazing and inspiring, I don't emulate it here. However, in terms of thinking about who I cite, when the same idea can be credited to an established white male academic and someone without that kind of identity-based or structural privilege, I turn to the latter. This is based on the hypothesis that if an established white male academic has said something about a certain topic, there are likely others who are less privileged who have also written and/or spoke about the topic, possibly earlier and in more thoughtful ways. In some cases, this meant additional searching to see whether scholars of color, female and nonbinary scholars, and less established scholars had written about the same topics (the answer was often yes). In other cases, I was

[7] That said, I have heard that Jaime being content to be bossed around is actually closer to the Game of Thrones character than I had thought, though in his case the roosters from that rescue were named randomly after different GoT characters, because a few volunteers were also watching the show.

[8] There are now tools for educating about gender and race in citations. For instance, Jane Summer built a tool to help teachers see the likely demographics included in their syllabi: https://jlsumner.shinyapps.io/syllabustool/. Though names are an imperfect predicter of gender and race, and it uses binary gender (male and female), it can be seen as a way into to thinking critically about whose work is included in a syllabus (and I suspect it works for other documents).

fortunate about my social networks, and could turn to a colleague and ask about the piece they've been working on, or just keep my eyes open on social media. At its best, this contributes to rewriting or expanding a canon. Why Angela Davis is cited less than Gary Francione or Peter Singer is not entirely a surprise, as she doesn't focus so primarily on animal issues. Why she is cited *so* much less than them, to the point that I cited a recorded speech originally found on YouTube, rather than a traditional academic article, is a testament to the failures of animal studies scholarship.

A critical politics of citation is not simply a matter of "dropping names," though: it is also in terms of who I'm thinking with, and therefore what ideas and ways of thinking inform the project. In some cases, I turn away from and don't primarily engage with ideas or scholarship that might, again, seem obvious to engage with, in favor of others that are less well known and whose ideas take the project in another direction. This means creating a different project than I would were I sticking to a more traditional "canon" of geographical thought. As Syl Ko writes (2017 [2015], 48), "I don't see why we have to try to *extend* the views of, say, John Rawls or Immanuel Kant instead of just turning to other views, rooted in different, anti-racist traditions, or even coming up with our own." Fortunately, I don't have to entirely string together my own canon here: many sanctuary affiliates are what Antonio Gramsci (1978) calls "organic intellectuals,"[9] writing from their own experience about sanctuaries. For example, VINE Sanctuary's co-founder pattrice jones' has long been involved with critical animal studies (e.g., jones 2014); the annual Animal Rights Conference will occasionally include scholars, and in

[9] However, when reviewing much of the literature produced by these organic intellectuals, I found that most of it is devoted to outlining the problems of animal agriculture or advocating for veganism as an alternative (e.g., Baur 2008, 2015, Bohanec 2013, Davis 2019). In other words, it underestimates the importance of sanctuaries themselves, which is additional motivation for this project.

general entails discussing and debating key issues in animal advocacy; and organizations such as The Microsanctuary Movement and the Open Sanctuary Project will often research and develop documentation on and for sanctuaries.

Also, there is now considerable work in feminist economic geography, and there are even precedents for using comics in academic work. Creating this alternative canon does entail additional work, though. To give one example, it might seem obvious to critical geographers, science and technology studies scholars, and animal studies scholars talk about Derrida or Agamben when talking about animals and liminality, for example. And it might seem obvious to cite Camus and Tolstoy when talking about witnessing. At some point, it did seem obvious to me to do this. Then I realized that that would be amplifying voices that didn't really need more amplification, and also that there are others that talk about these themes, in ways more attentive to inequality (the Ko sisters and younger geographers, and Ahmed, respectively). In a few places I footnote these sites of possible engagement and turning away, to make visible this work. It's not to brag or say that I've wildly succeeded, but to show places where I struggled, how I worked with my own desires (of the above white male authors, I was neutral on Agamben and Tolstoy but did indeed want to engage at some point with Derrida and Camus). So if anything, it's a trace of the limits of where I'm at now.

Finally, Mott and Cockayne (2017:965) note, citation is also about *how* we write:

> Citation is often a way of *not* talking about something or *not* engaging, a perfunctory act that assumes the reader is familiar with the same set of assumptions about a text as the author. Citation is a form of shorthand, a reference to an earlier work, which, if deemed 'appropriate' to reviewers and readers, confers the writer's capacity to speak adequately on a given topic.

Through assuming that readers are familiar with texts that are cited, citation becomes exclusionary, as alluded to in the first part of this passage. I attempt to not repeat this exclusionary practice by reflecting on when it might be helpful to explain works and concepts that I cite, and acting on this. This is in part because I hope to continue to engage sanctuary folks in this project. While often pretty darn sharp, sanctuary folks who are not also academics will likely not be familiar with some of the texts and ideas I cite – though they will likely be more familiar with other parts, particularly the empirical work, than most academics! Arguably this is good practice anyway, as using citation to not engage is often an indicator that the person doesn't know what they're talking about or how to explain it in their own words. It is even more necessary for a project such as this that works against and outside of a "canon" in its interdisciplinarity: just as sanctuary affiliates might have experience with certain pieces of the project, so might academics. Thus, through explaining the ideas and texts I cite, I am (hopefully!) able to be inclusive in my writing. I try to use citations to elaborate and credit rather than using them as shorthand, so someone not familiar with the work will understand the point I'm drawing from it.

Chapter 3. Mapping the rise of a movement: Sanctuaries as multispecies safe spaces

As the introduction demonstrated, farmed animal sanctuaries emerge from and against colonial norms and industrial agriculture, and also add priorities of their own. In this chapter, I suggest that understanding sanctuaries as multispecies safe spaces is a helpful framework for understanding the contemporary farmed animal and chicken-specific sanctuary movement. Unlike much of the literature on safe spaces (e.g., Boostrom 1998, Stengal and Weems 2010, Roestone 2014, Clark-Parsons 2018), sanctuaries do not, for the most part, describe themselves as such. Thus, in thinking of sanctuaries as multispecies safe spaces, I do two things. First, I make descriptive connections, explaining how sanctuary characteristics map onto characteristics of safe spaces. Then, building on the literature on safe spaces and my experience with them and at sanctuaries, I show how thinking with the concept illuminates important characteristics, reorients debates about, and invites specific questions about sanctuaries.

Common misconceptions about safe spaces interpret them to be simply about comfort and avoiding emotional challenges writ broadly, often in a classroom context where students are "sheltered" from difficult or challenging ideas (cf. Clark-Parsons 2019). The term has, however, been variously defined, and should be seen as a "living concept" with variations in how it is used (Roestone Collective 2014). Simultaneously, definitions have specific tendencies and foci, including that safe spaces are far from the placelessness of utopianism and rather are the products of their contexts (Abrell 2016).

A major tendency of safe spaces is the significance of safety. They are premised on mainstream society being hostile to marginalized groups or voices. This fits with the work of sanctuaries, in that they emerge in response to the status of agricultural animals, seeking to provide these animals a safe refuge. The kind of safety offered can thus be paradoxical (Roestone 2014, after Rose 1997) or contradictory, because safe spaces exist in the face of "oppressive behaviors and norms." "Safe" in safe spaces is often described and sometimes renamed as 'safer space' (Clark-Parsons 2018, 2019) to reference its contrast with both mainstream (unsafe) society and complete safety. Concerning the latter, safety is always partial and incomplete (Roestone 2014, Clark-Parsons 2019). This limited and partial safety describes what Abrell terms the "captive freedom" (2017) of sanctuaries. Captive freedom entails a limited and liminal freedom, given the capitalist domestication of chickens and other farmed animals, their own individual limits and desires, and sanctuaries' limits in terms of space, staff, materials, and knowledge. It also builds on and adds specificity to Pachirat's (2018) argument that sanctuaries can be sites of refuge from a battle against animal exploitation, as described in the Introduction.

The work of producing safe spaces is generative – which is a second tendency. Safe spaces are not "fixed 'places' but ongoing, evolving, dynamic relationships" (Djohari, Pyndiah and Arnone 2018, 354). A safe space, Clark-Parsons notes (2019, 5), "was not a filter intended to close down certain kinds of speech, but a *practice* of opening up new possibilities for expression." In her work on classroom safe spaces, the site "becomes a project in collaboratively establishing, practicing, and, when necessary, revising the rules of engagement with the aim of creating a learning environment open to anyone who wants to participate, regardless of political affiliation or identity." (ibid. 2019, 6) Echoing this, a recurrent debate at

sanctuaries is the centrality of veganism and vegan advocacy, but human involvement at sanctuaries is not premised on identity as a vegan, so much as a desire to participate in the work going on there.

However, saying "safe spaces can be generative" can erase the considerable physical, mental, and emotional human labor that goes into cultivating them (Clark-Parsons 2019; Djohari, Pyndiah, and Arnone 2018). As spaces to flex the imagination, safe spaces can also be sites of nightmares and traumas. As Clark-Parsons (2019, 8, see also Djohari, Pyndiah and Arnone 2018, 354) writes of campus safe space, such "safety requires *work* and that this work can be exhausting." Further, this work is often done by instructors with marginalized identities, and lacks broader institutional support. This project only begins to tackle the enormity of the challenges faced by those working or volunteering at sanctuaries,[10] but, like many nonprofit organizations, this work is frequently undersupported.

A final tendency is a focus on boundary maintenance in and for safe spaces, to include groups with a specific identity (e.g., race) or perspective (e.g., feminist). A debate within this tendency concerns spatial separation. Many safe spaces are tacitly, rather than explicitly, exclusive (e.g., classrooms). Explicitly exclusive or separatist safe spaces, once they draw lines, have to negotiate and struggle with questions of difference and purpose. For instance, lesbian rural separatist communities of the 1970s and 1980s had to determine whether to include non-lesbian women, the male children of lesbians, and male animals (Roestone 2014, Valentine 1997). Many of these separatist communities did not explicitly support people of color, which led in part to

[10] For instance, I discuss some of the challenges of providing care but don't discuss compassion fatigue.

the founding of separatist communities run by and for women of color, in which white women were only welcomed under specific circumstances such as being accompanied by a woman of color (Valentine 1997). In this respect, safe spaces can be said to be sites of drawing lines and seeing where they go – and that they can often reinscribe the exclusionary and/or problematic practices they seek to challenge.

Regardless of whether a safe space is separatist, once an outside is defined, difference within proliferates and the outside itself becomes permeable. This is indeed the case for sanctuaries. By emphasizing species, sanctuaries risk homogenizing humans as a species, and in so doing, reproducing many of the same problematic hierarchies that they (or we, to include myself) seek to challenge. This is indeed a recurrent issue at sanctuaries, as in Pachirat's (2018, 350) critique that "the overwhelming whiteness and North American centrism of the contemporary domesticated animal sanctuary movement allows it to comfortably work within and even intensify a politics of white, global North privilege."

Thus, while the term "safe space" has been variously defined and debated (Roestone, Clark-Parsons 2019), it sheds light on the kinds of debates present: those of inclusion and exclusion, privilege and inequality, and imagination, assimilation, and transformation. In her work on online social media and in-person classroom safe spaces, Clark-Parsons (2019, 7, see also Clark-Parsons 2017), suggests that three questions are especially pertinent to ask about a safe space.

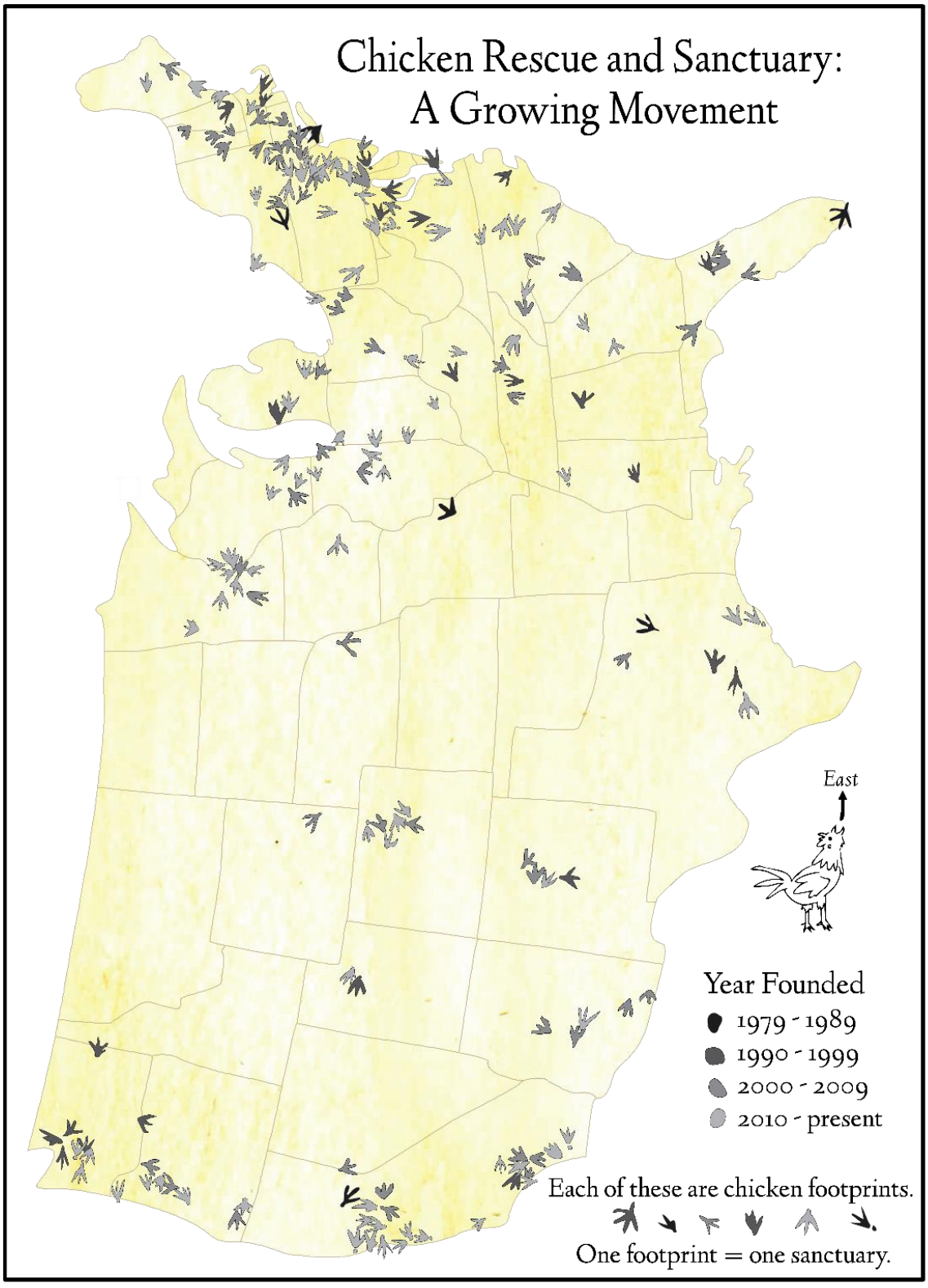
> "1. Who is this space safe for?
> 2. What is this space safe from?
> 3. What is safe to do in this space?"

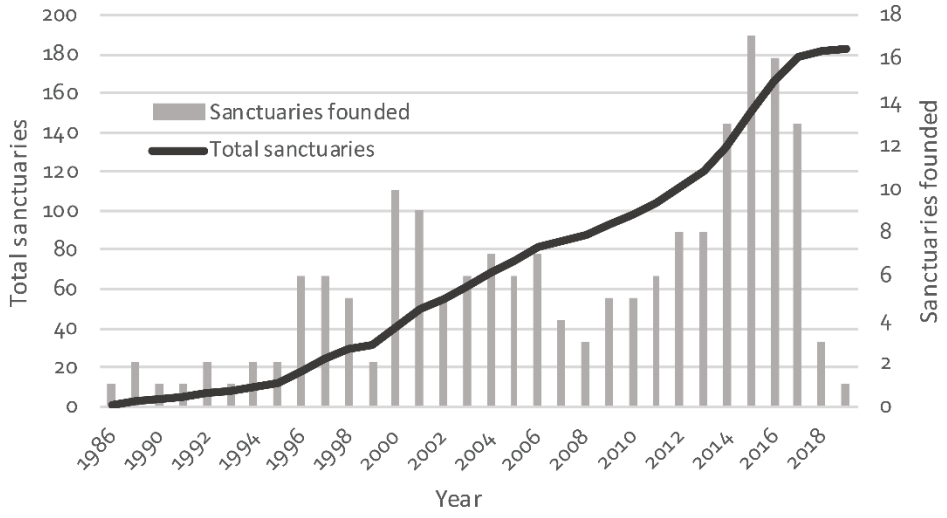
In the following sections, I return to the chicken rescue and sanctuary movement. I identify three threads of the chicken rescue and sanctuary movement. These overlap with, and then diverge somewhat from the farmed animal sanctuary movement overall. I use Clark-Parsons' questions to guide my discussion. Before this, however, I outline how chickens are distinct within and outside of the farmed animal sanctuary movement.

There is also a certain amount of boundary work (Gieryn 1983) in demarking chicken sanctuary. What kind of institution rescues chickens? For the most part these are farmed animal sanctuaries. However, some wildlife rehabilitation facilities and bird-specific rescues also rescue chickens, and these institutions have been influenced by and in turn influenced farmed animal sanctuaries. Thus, this map and the material of this chapter is for the most part a map of farmed animal sanctuaries or chicken-specific sanctuaries, but it also includes other institutions that rescue and provide permanent homes to chickens. The following section maps out the chicken rescue and sanctuary movement, and thus mirrors the focus of this dissertation: though I focus on chickens, there are often explicit or implicit parallels to other farmed birds and farmed animals.

Chicken Sanctuary: Mapping the rise of a movement

The following map and figure illustrate the rise of the chicken rescue and sanctuary movement.


Chicken Rescue and Sanctuary:
A Growing Movement
East
Year Founded
1979 - 1989
1990 - 1999
2000 - 2009
2010 - present
Each of these are chicken footprints.
One footprint = one sanctuary.



As the map and the following figure show, the number of sanctuaries is increasing. While many sanctuaries exist in predominantly liberal areas—North-Central California, the Northeast, and the Pacific Northwest—exceptions abound. Additionally, more sanctuaries were founded in the 1990s and 2010s. The slower increase approaching the present is likely a product of sanctuaries forming but not having an online presence. Many additional sanctuaries seem to be in the works, but not yet open, so I suspect that the trend of the mid-2010s is continuing. These patterns suggest that there are three temporal phases of chicken rescue and sanctuary: an early phase, a period in the 1990s and early 2000s, and a current phase, starting in the 2010s. However, by approaching these patterns with questions about safe spaces, four different but overlapping threads can be identified: early encounter-oriented farmed animal sanctuaries; ecofeminist chicken and farmed bird sanctuaries, starting in the 1990s; microsanctuaries; and contemporary chicken and farmed animal sanctuaries, influenced by the other threads. I discuss these in the following section.

Four threads of the chicken sanctuary movement

Early farmed animal sanctuaries

According to many, the contemporary farmed animal sanctuary movement began with the founding of Farm Sanctuary, in 1987 (e.g., Baur 2008, Abrell 2017).* Co-founders Gene Baur and Lorri Houston had been working as animal activists, and determined to found Farm Sanctuary. "No one had a clear idea of what it was going to be," recalled Baur, "except that somehow it would combat factory farming and do so through some form of education and outreach" (Baur 2008, 19). They began not by rescuing animals, but by producing literature and doing investigative work at slaughterhouses and stockyards, critiquing the conditions animals faced under normal conditions.

Baur and Houston were attempting to get these places to provide better treatment to downed cows, or cows who were unable to stand on their own. Downed animals, they found, were often dumped at stockyards by farmers. During their work, they took a sheep from a stockyard dead pile. With minor veterinary help, she recovered, though they had expected to decide that euthanasia was necessary. They named her Hilda, and she became the first animal at Farm Sanctuary – then a backyard in Delaware.

Much of their direct work with animals, at first, was not providing sanctuary, but enabling euthanasia. As Baur explained:

> If she'd [a downed cow] died without the vet's intervention, insurance probably would have covered her market price; if she'd survived, a local slaughterhouse might have paid something for her meat. Euthanizing her meant a financial loss—it was cheaper to leave the cow alive and suffering. Economic interests were in direct conflict with humane concerns. (ibid, 31)

This early sanctuary work of euthanasia demonstrates precisely the paradoxical nature of safe space: safety in this case is not prolonged life, free from danger, but rather free from suffering, through death. In other words, providing sanctuary (without a physical sanctuary) meant providing safety to die.

Eventually, Farm Sanctuary outgrew its urban backyard setting, and Baur and Houston moved the sanctuary, first to Avondale, Pennsylvania, and then to Watkins Glen, New York, renovating old barns to house rescued animals, separating them by species. The "barn" style has influenced many sanctuaries since. In this way, Farm Sanctuary and others offer safety to farmed animals, in which they can experience non-exploitive conditions in an agricultural setting – it is safe for them to be outside, to be among members of their own species indefinitely, and to not be exploited for meat, dairy, or eggs. They also receive veterinary care and, if deemed necessary, euthanasia.

Advocacy was also a major part of Farm Sanctuary. Farm Sanctuary and other early sanctuaries characterize advocacy as distributing information on animal suffering in industrial agriculture. They advocate for veganism and, sometimes, broader legislative or institutional reform as an alternative. The opportunity for humans to meet farmed animals was key to advocacy. Through offering tours and doing other outreach and education activities, Farm Sanctuary hoped that, "If we stimulated people's curiosity and made it possible for them to meet sheep, cows, pigs, and chickens, their empathy for farmed animals might naturally grow." (ibid., 58). And as another early sanctuary, the Gentle Barn, writes: "everyone in America can hug cows, cuddle turkeys, give pigs tummy rubs, and look into the eyes of these animals and

know for certain that we are all the same, and deserving of the same rights, respects, and freedoms" (The Gentle Barn, n.d.). In this way, it was not simply meeting farmed animals, but recognizing similarities that motivated advocacy. Safety at these early sanctuaries can be seen in terms of human visitors as well farmed animals: it was made (physically) safe for humans to observe and sometimes physically interact with farmed animals.

Also worth noting is that chickens at many of the earlier sanctuaries were free from reproduction – animals would be sterilized, and in the case of chickens, eggs would be removed. Another way of putting this would be that it is not safe to reproduce. However, this did and does not mean that animals are unable to parent: occasionally younger birds will arrive at especially these sanctuaries (e.g., from feed stores), and older birds will adopt them.

Many other sanctuaries, including the Gentle Barn, that have formed since take inspiration from Farm Sanctuary. In addition to their activities opposing factory farming, Farm Sanctuary hosts annual workshops on starting farm sanctuaries. They also have an internship program, where many who wind up working at other farm sanctuaries begin. With Farm Sanctuary as a model, alongside other goals, species-specific sanctuaries have also formed. The following section traces the beginnings of chicken and poultry sanctuaries.

Ecofeminist chicken and farmed bird sanctuaries

The second thread is characterized by sanctuaries focused on chickens, and specifically by three sanctuaries founded between 1990 and 2001. United Poultry Concerns, founded in 1990, is the first chicken and turkey focused sanctuary in the United States. VINE Sanctuary , formerly

Eastern Shore Sanctuary, was founded in the year 2000. Finally, Chicken Run Rescue, founded in 2001, focuses specifically on chickens in the relatively urban context of St Paul, Minnesota, though they recently located to the suburbs of the Twin Cities. All three sanctuaries are not only chicken (or poultry) specific, but also emerge from ecofeminist movements and integrate ecofeminism into their work.

Like Gene Baur and Lorri Houston, United Poultry Concerns founder Karen Davis was also an animal activist before founding a sanctuary. Davis volunteered and subsequently interned at Farm Sanctuary as it was beginning. She says, "I've always had a special affinity for birds, but I just didn't really know chickens and turkeys until I got to Farm Sanctuary... Watching them just dustbathe and sunbathe and just everything about them was enchanting" (personal communication). Yet, it was not all positive: she uses the term "spectral ballerinas" to describe a bedraggled and pale group of hens who had recently been rescued from a battery cage operation. She also credits her interest in birds to her animal advocacy and location: she was living on the Eastern Shore outside of Washington, D.C., and often saw chicken trucks from Purdue going to slaughterhouses.

She articulates sentiments about lack of social concern for nonhuman animals, and especially chickens:

> There were other people in the movement who were more like, you know you're never going to get an organization focusing on chickens to succeed because we can't even get people to care about whales. How are we ever going to get people to care about chickens. And a couple of other people said to me, "Well if you're going to do farm animals you should do pigs, because people care about mammals and they don't care about birds." (personal communication, July 2017)

She saw the lack of interest in chickens as precisely a reason to focus on them. To this day, the physical sanctuary is a significant part of her work, but it is far less publicly visible than the rest of the work of the organization. United Poultry Concerns' sanctuary is only selectively open to the public, contrary to the animal-ambassador-oriented approach of Farm Sanctuary. Chickens and other birds (when I visited, a peacock was there, and she noted that occasionally there will be a few turkeys or ducks, but that the majority of residents are chickens) live in a large forested aviary with separate enclosures inside. She notes that the sanctuary gives her "credibility" as someone who works with animals, and it also enables her to counter stereotypes about chickens being "stupid," "dirty", or "unable to be rehabilitated." In addition to the sanctuary, United Poultry Concerns organizes campaigns, such as one against Kaporos chickens; writes books; and a sends out a seasonal newsletter.

Chicken Run Rescue's story is somewhat similar: founder Mary Britton Clouse was also an activist before starting the sanctuary, and had first founded a low income spay and neuter project for stray dogs and cats. Through working with local animal control organizations, she was introduced to birds from cockfighting rescues, and began to work to find homes for them. Finding, too, that chickens were often at the bottom of the animal control "pecking order," Britton Clouse started a sanctuary. Finally, what is now VINE Sanctuary started as Eastern Shore Chicken Sanctuary, where co-founders pattrice and Miriam Jones rescued, or took in birds who escaped from, the poultry industry. Currently also known for their work with cows, they were the first sanctuary to develop methods for rehabiliting roosters rescued from cockfighting rings.

These three sanctuaries – United Poultry Concerns, Chicken Run Rescue, and VINE – all draw attention to gendered practices in agriculture – how anthropocentric sexism and misogyny is projected onto farmed animals, and specifically chickens. As Britton Clouse notes:

> Understanding and appreciating rooster behavior is an accomplishment and a necessity. The reputation pinned on roosters for being "aggressive" or "mean" is really a failure on the human's part to understand and respect the purpose of that natural behavior. Often, we instead react as if the rooster were human and respond in a way that simply escalates the misunderstanding and makes a bad situation worse.... [G]ender becomes a death sentence for 50 percent of the chickens hatched, and the hens are deprived of 50 percent of the social interaction their instincts were evolved to respond to. When there's no rooster around hens, you miss a huge part of the joy that comes from understanding chickens. You miss watching the rooster look out for his hens, calling them to delicious food, watching the the boys show off for the girls, girls flirt with the boys, look to them out for security, and clever avoidance tactics when they are not "in the mood. (Chicken Run Rescue n.d.)

This page of her website is often referenced by other sanctuaries seeking to better work with roosters. Part of the work it does is indeed working to dispel negative understandings of roosters that parallel negative depictions of masculinity among humans. To this end, Britton Clouse suggests that terms such as "aggressive" and "mean" are misinterpretations on the part of humans, based on a lack of knowledge (I return to the theme of knowledge in later chapters). Her comment about hens missing "50 percent of the social interaction" projects heteronormative standards onto chickens, even though it situates them in an evolutionary context. It simultaneously rejects negative gender stereotypes ("aggressive" and "mean") in favor of more ambivalent ones: hens flirting, accepting or avoiding sex, and roosters showing off and providing security.

On a somewhat similar note, pattrice jones highlights the significance of cockfighting and gender:

> Cockfighting is a feminist issue. Sex role stereotypes hurt both human and non-human animals. In cockfighting, the natural behavior of roosters is perverted in order to force them to act out human ideas about masculinity. The birds are traumatized and then deliberately placed in harm's way so that their handlers can feel like big men. They die in stylized spectacles of masculinity that have nothing to do with natural bird behavior and everything to do with human ideas about gender. (jones 2004, 141)

Like Britton Clouse's understanding of roosters, jones suggests that the more negative characteristics seen in cockfighting roosters are a product of human misunderstanding. In this case, though, misunderstanding is somewhat deliberate: roosters are bred and trained to fight and perform the gendered roles jones describes. In making these points, though, these ecofeminist sanctuaries inadvertently valorize "natural" behaviors. For instance, VINE writes, "it is useful to maintain a hen-to-rooster ratio of at least 3:1 [what they describe as a "healthy gender ratio"] so that the hens are not troubled by the attentions of the roosters and the roosters don't feel that they must compete for hen attention."

As safe spaces, these sanctuaries can be seen as spaces for chickens to be relatively free from anthropocentric gender norms, because they argue for the removal of socialized behaviors in favor of appealing to select "natural" ones. However, they also sometimes reify gender norms that their founders perceive to be less negative (mirroring some of the promise and problems of second wave feminism). In these respects, it might be less safe for chickens and human visitors to act in ways that deviate from these norms (I haven't seen chickens being harmed, although these sanctuaries also seem to favor mixed-gender groups, and human visitors might feel that some of the statements about gendered behavior and "natural" gendered behavior are microaggressions.

Though these sanctuaries share knowledge and do advocacy through writing and legislation, they are less oriented toward the public than sanctuaries like Farm Sanctuary, and don't have regular tours. They also offer an alternative to the animal ambassador model introduced by early farm sanctuaries. In so doing, these sanctuaries can be understood as *safe*, or at least safer, *from encounter* (Haraway 2007, Collard 2012).

These sanctuaries also have different physical layouts and: the aviary, the garden, and the forest, all of which contrast with the farm. Karen Davis has an aviary extending over the trees, thus speaking to both the "safety" and "freedom" priorities. "We built these predator proof places," she said, "but still, a lot of the birds, we would let them out of their predator proof houses and yards and they would be out in the big yard during the day .... But there wasn't an overhead protection. So a concern I had then was I didn't want I didn't want all the trees and bushes to be chopped down." As a result, one of her staff members built a 30+ foot tall aviary that included the trees and foliage. Chicken Run Rescue attempts to make their space like a "garden." Part of it is landscaped with ferns, flowers, trees, and bushes in separate fenced off areas for each flock. "It's not just about a place where you can put the birds, but trying to create space where you can share space with the birds," Britton Clouse says. "I'm looking more to go in the direction of a botanical garden, a place that everyone gets together and enjoys, and that's comfortable for the birds." The back area is 6x12 foot dog runs with hollow logs that humans can sit on and chickens can hide under; Britton Clouse commented that the birds having somewhere to hide if they wanted was important. VINE has a forested landscape, and lets the chickens sleep outside in trees "At the sanctuary, we believe in self-determination and freedom for everybody. So, any bird who demonstrates that she or he can do so safely is welcome to

choose the trees over the coops" (VINE Sanctuary n.d.). Through all of this, encounter with humans is much more limited and relatively more on the birds' terms, and the birds are free to enact behaviors that differ more from those in an agricultural setting.

Microsanctuaries

A third thread comprises sanctuaries that are much smaller in scale and frequently different in terms of habitat and focus. Many of these microsanctuaries are united by The Microsanctuary Movement, which started in 2014.[11] They write:

> Microsanctuaries will strive to be spaces of collective liberation, where beings of all species (including humans) can be safe from violence, oppression, and exploitation.
>
> Absolutely no breeding of residents, and proper precautions are taken to avoid breeding (including spay and neuter when appropriate).
>
> Our goals are to continue promoting high, companion-level care standards for all non-humans; to break down the speciesist divide between "companions" and "others"; to empower activists of all backgrounds to participate in animal rescue; and to help achieve collective liberation for all beings. (Microsanctuary Resource Center n.d.)

With the inclusion of humans, the Microsanctuary Movement puts forth an intersectional model of a multispecies safe space (though again, doesn't specify addressing inequality between humans).

Microsanctuaries are often in urban settings, and include one or more, but often fewer than 20, rescued animals, and they are often for smaller animals – chickens, rats, mice, fish, and others. Microsanctuaries, unlike rooster sanctuaries and the other newer chicken-specific and farmed animal sanctuaries, offer a different environment. Rather than pastoral settings of the first

[11] Most microsanctuaries are not nonprofits, and thus are not included on the map.

thread or the less agricultural settings of the second thread, microsanctuaries are often in apartments, houses, and sometimes backyards.[12] Chickens in this case might be primarily or solely "house chickens." In these cases, chickens are more safe from predators than at any other type of sanctuary. As indoor chickens, they often modify their behaviors – sometimes "dust bathing" on blankets, for instance, though some microsanctuaries will create indoor dust bathing areas. Additionally, these chickens often develop significant bonds with select humans, but only sometimes share space with their own species, as again, some of these microsanctuaries only have one chicken. As (human) residential settings, these sanctuaries are also even less oriented toward the public than those of the second thread. Additionally, though, several of these newer sanctuaries started as microsanctuaries and then grew into (meso?)sanctuaries.

Finally, the Microsanctuary Movement serves as a network for sanctuaries (indeed, they recently renamed themselves the Microsanctuary Resource Center). Digital networks such as these are safe from discussions of animal consumption as ethical, which serves as a common ground from which to share knowledge, stories, and problems. This does not mean that they are vegan in the sense of opposing all animal use. Rather, these spaces become safe for discussions about animal care, including topics such as whether to feed mealworms to birds and what to do about mice and rats at a sanctuary.

[12] Another newer sanctuary, Piedmont Farm Animal Refuge, creates habitats and structures that are unique and specific to what the humans observed to be each species' interest. Because they don't focus especially on chickens, I only mention them here, but they are another example that challenges the "barn" or pastoral aesthetic.

Networked proliferation chicken and farmed animal sanctuaries

A fourth thread coalesced in the last 10 years (so, before and after the founding of The Microsanctuary Movement). Many new sanctuaries started coming into existence, with more variation in their approaches and priorities. These sanctuaries often take inspiration and guidance from the more well-known earlier sanctuaries of the first two threads, though, as aforementioned, some started as microsanctuaries. Geographically, some of the newer chicken-specific sanctuaries have clustered in the upper Midwest, in the vicinity of Chicken Run Rescue.

An increasing number of rooster sanctuaries are part of this thread, building on VINE's work dispelling the notion that fighting roosters are unable to be rehabilitated. These sanctuaries also respond to assumptions about roosters being unable to coexist by forming what they often call "bachelor flocks" to accommodate more roosters. In this way, some of these sanctuaries are especially safe for roosters, and depart to an extent from the relatively heteronormative understandings of chickens of the second thread. On the other hand, it entails a trade-off, in that roosters in bachelor flocks are unable to interact with hens.

Some of these have missions similar to those of Farm Sanctuary, but are more direct about their liberatory goals. Happy Hen Animal Rescue, for instance, focuses on:

> Sanctuaries Not Slaughterhouses. That is our motto, and that is our over-arching goal: to shut down every last slaughterhouse in the world, and replace them with animal sanctuaries. We believe that through the power of rescue, direct action, and storytelling, we can change the way society views animals, and ban all forms of animal exploitation. (Happy Hen Animal Rescue n.d.)

Likewise, Triangle Chicken Rescue aims "to rescue and provide sanctuary to chickens, educate the public about farmed animals in order to end their exploitation, and promote veganism and collective liberation for all beings" (Triangle Chicken Advocates n.d.). This objective is similarly direct about farmed animals, but its statement about liberation for "all beings" tacitly includes humans as well. This could gesture toward being safe for humans, but also fails to recognize inequality among humans (e.g., Wynter 2015).

Several of these sanctuaries alternately emphasize helping homeless and abused animals, as in the following:

> Heartland Farm Sanctuary is "dedicated to helping homeless farm animals in Wisconsin ... Every year, Heartland members provide the "last chance" for dozens of abused, neglected, and abandoned farm animals who have nowhere else to go. heartland (Heartland Farm Sanctuary n.d.)

> Rooster Redemption is a sanctuary devoted to providing a nurturing home to abandoned, exploited, and mistreated roosters. (Rooster Redemption n.d.)

> Our mission at Rooster Haus Rescue is to give neglected and abused farmed animals a safe future, free from harm. (Rooster Haus Rescue n.d.)

> Hen Harbor there is an almost unending need for homes for abused or unwanted hens and roosters. (Hen Harbor n.d.)

This framing, however, weakens the critical edge of sanctuaries. Terms such as "homelessness," "neglect," and "abuse," without additional information, can easily be framed as exceptions rather than the norm of animal agriculture (Gillespie 2018).

As with The Microsanctuary Movement, these contemporary sanctuaries especially are more networked. Sanctuary affiliates can be part of informational groups of mostly non-sanctuary people, but focused on chicken care, such as groups about special needs chickens and groups

for chicken veterinary advice (sometimes provided by veterinarians, sometimes not). They often belong to advocacy groups, such as those opposing cockfighting. Finally, sanctuary affiliates are sometimes part of local chicken groups, often composed of backyard chicken keepers: some of these backyard chicken keepers become adopters of birds at sanctuaries. Some sanctuary affiliates have made twitter, instagram, or facebook pages for particular chicken personalities as a form of advocacy. In some respects, this can entail turning away from direct encounter (I return to this issue in the chapter on representation). Through the safe space lens, that would make some of these sites safe from direct encounter with humans, yet also safe for humans to observe chickens through social media.

Conclusion: Accountability and difficult conversations

The four threads of the sanctuary movement all attempt to provide safety for chickens and encourage safety for chickens who are not yet at sanctuaries, albeit in different ways and through different environments. Chickens and other farmed animals are safe from exploitation for eggs, meat, or other bodily products, but they might not be safe from encounter with humans. Further, it is often safe for them to engage in at least some species-typical behaviors, depending on the setting of the sanctuary.

Additionally, newer sanctuaries especially make reference to promoting human safety and liberation. However, as mentioned in Chapter 1, many sanctuaries are still primarily white spaces (Pachrat 2018), and without explicitly recognizing or tackling inequality between humans, people who are not white, able-bodied, heterosexual, cisgender men might still feel marginalized or excluded from these spaces, and these sanctuaries might likewise

inadvertently promote such oppressions. These difficult and important conversations are indeed happening at sanctuaries, but it remains to be seen how the movement transforms.

Some of these conversations are taking place because newer sanctuaries are more connected through digital social media. Social media as well as accreditation organizations also provide accountability in terms of animal care. Many sanctuary affiliates are part of the Global Coalition of Farm Sanctuaries facebook page, an offshoot of the Global Federation of Animal Sanctuaries, the sanctuary accreditation organization mentioned in the Introduction. The Global Federation of Animal Sanctuaries is one of two organizations in the United States (the other one is the American Sanctuary Organization) working to certify and provide guidance, norms, and accountability to sanctuaries.

This chapter has focused on the rise of the sanctuary movement, and variation therein. Missing from this, though, are sanctuaries that started and then failed, or sanctuaries that don't act as multispecies safe spaces. Social media and sanctuary accreditation organizations have developed in part to support one another, but even so, accreditation organizations have had trouble reaching many farmed animal and/or chicken sanctuaries, relative to other kinds of sanctuaries (personal communication, July 2017). This can lead to what Winders (2017) termed "humane washing," in which groups use labels such as "sanctuary" to give the assumption that what they are doing is helpful to animals. In the following chapter, I turn to more critical issues associated with animal care at sanctuaries, and specifically on animal hoarding.

Value in the hoard: Deviant accumulation at farmed animal sanctuaries

Preface

> Rescuing… is addictive. It feels so good to give somebody a new home, and some people don't think about the cost, or if something happens to them, if they get sick. What happens? –Former sanctuary employee, personal communication, February 2017.
>
> I don't think I hoard, but there are times when I have more birds than should be there, but it's a temporary situation. –Sanctuary manager, personal communication, July 2017.
>
> Knowing your limits is a big deal, a huge deal. Sometimes you get lost and don't realize you're going over. –Former sanctuary employee, personal communication, February 2017.
>
> Rehoming is very difficult. –Sanctuary manager, personal communication, October 2017.

This chapter emerged from trying to make sense of a difficult situation. I was at a well-known farmed animal sanctuary and was astounded at the treatment of the nonhuman and human animals there. Not in a good way. I was hiding out in my car talking about it with a comrade who worked at another sanctuary, and found myself declaring, "I don't even need pretentious words to explain it: it's animal hoarding." The words happened in a surprising way, that way where you know what they are only on the cusp of saying them, and you only know what you mean later. My friend had more to say in that moment: that many sanctuaries became hoarding situations, and that no one talks about it.

This chapter is an attempt to talk about it.

In this chapter, I expand on this initial conversation, taking it in a different direction. Farmed animal sanctuaries rescue, rehabilitate, and care for animals who have been bred, trained, and

drugged to be commodities in a capitalist system. By commodities, I mean that they are valued primarily in terms of how much money can be extracted from them (the introductory chapter discusses this further). Synthesizing and expanding upon literature on hoarding in political economy, geographies of waste, psychology, and cultural studies, I foreground definitions of hoarding that have subtle but important differences from those used in everyday conversation. Using this subtly but significantly different concept, I develop the assertion that *all sanctuaries are hoarding facilities*, and that hoarding is a pivot point[13] in the decommodification process. It is thus not despite, but precisely *through,* hoarding that sanctuaries challenge chickens' status as commodities, and advocate for alternative political economies and systems of value, to various ends. As part of this, sanctuaries can become the more traditionally criticized hoarding situations, but this is far from the whole picture, or the only trajectory sanctuaries create.

In the following sections, I review how economic geographers and other political economists have understood the decommodification process. I introduce what I mean by hoarding, at first suspending its normative connotations. Then, I turn to how hoarding manifests at sanctuaries and the different paths it takes in terms of decommodification. At this point, I add normative elements back in, discussing how these paths can be on the one hand problematic, on the other hand, liberatory, and sometimes both.

[13] This is similar to an obligatory passage point (Callon 1986) insofar as it is a challenge or stage all sanctuaries face in the course of rescuing animals. I avoid this framing because sanctuaries don't see this as a problem they must come together as separate actors to address to advance separate goals. In later chapters, I discuss how sanctuaries do work with one another, as well as how individual sanctuaries operate on a day-to-day basis. Likely one could identify obligatory passage points in this, but it seems that to call hoarding at sanctuaries an OPP would be stretching the term to fit the process at hand rather than contributing analytical understanding.

As many scholars and activists have noted (and as elaborated in the introduction), chickens are among the most modified animals in contemporary capitalist animal agriculture. They are also the most abundant animal in animal agriculture, in terms of the number of individuals passing through the system (Potts 2012). Therefore, this chapter focuses primarily on chicken sanctuary, but throughout I speculate on its applicability to farmed animal sanctuaries in general.

I admit that, in a certain sense, it is rhetorically convenient to generalize hoarding to a process that takes place at all sanctuaries. It creates space for characterizing hoarding as a matter of degree rather than kind. Through this relativizing move, it risks flattening out blame. I acknowledge the convenience of the first part, but I will also suggest that it's incredibly inconvenient to feel compelled to talk in detail about such a controversial and painful topic. As many sanctuary workers and volunteers have stated, they don't want to be too critical of sanctuaries that *do* hoard in the everyday sense, because the alternative to a chicken being at a sanctuary that hoards is often euthanasia (Donaldson and Kymlicka 2015). And while generalizing the practice of hoarding does indeed diffuse blame to an extent, it also allows a more deliberate way of understanding where to place responsibility. Sometimes it remains primarily on specific individuals, while other times it shifts toward capitalist norms, institutions, and legacies. Throughout, it is quite specific: though diffuse, blame and

responsibility are not arbitrary. Because of this, and unlike in most other chapters, in this one, I often use pseudonyms for organizations and individuals.[14,15]

Decommodifying the chicken? Sanctuaries, capitalism, and the problem of value

A common refrain at sanctuaries is that chickens, and other animals, should not be resources, that they should not be commodities.[16] Here I suggest that sanctuaries in fact are challenging the social and material position of chickens as commodities, by arguing that chickens should not be produced and valued for exchange.

Literature on decommodification frequently emphasizes reversing a sort of script of commodification. Castree (2003) describes multiple steps of commodification: abstraction, privatization, alienability, individuation, valuation, and displacement, each of which are destructive and productive in different ways. In much of the literature, decommodification entails rewinding this tape, and then a transformative process in which that which was a commodity attains a different social/physical status.

[14] Exceptions include chickens, and organizations and individuals that have been previously named, such as United Poultry Concerns. I keep their names because they are already named and/or because the especially critical parts of this chapter are not about them.

[15] In a similar vein, this wasn't going to be its own chapter. Even after I learned that I needed to talk about hoarding, it was going to be sectioned off, in a later chapter or a footnote in which I invoked some of the problematic aspects of sanctuaries, the ones I wasn't focusing on: there were going to be sanctuaries and "sanctuaries," the latter of which were a product of something like "humane washing" (Winders 2017). And then I did some more analysis. Drew some more. Made some charts. Looked at more of my notes. Wrote the second of two emails I'd sent to my advisor during a difficult phase of fieldwork. The first: do you think I'm sabotaging the project if I leave [answer: no]? The second: asking about a draft of a paper she had crafted on hoarding, in which she and her coauthors argue that hoarding is a logical extension of capitalism. The paper challenged me to think about how hoarding might not be pathological, or at least not in the ways I had been socialized to think and feel. I began to see hoarding as a political economic process, one that is psychological, social, structural, and thoroughly integrated into sanctuaries, rather than only an unfortunate outcome at a few.

[16] In the sanctuary world, we use the terms somewhat interchangeably.

Anthropologist Appadurai (1986:13) takes perhaps the narrowest view of commodities: they are a "thing in a certain situation." Take the thing out of the capitalist situation in which it is abstracted and alienated and so forth, and it is no longer a commodity. This can certainly be the case for some commodities, and it offers a relatively hopeful lens. Tsing (2015), for example, traces how matsutake mushrooms pass through different social, cultural, and political-economic situations, as they are gathered, bought and sold, and gifted. Only the buying-and-selling portions entail the mushroom being a commodity, and through all of this, the mushroom, for the most part, remains unchanged. Because of the extent for which chickens have been bred, raised, and socialized for capitalist purposes (Striffler 2005, Potts 2012), this was far from the case, Taking a hen out of an egg farm, or adopting a rooster who was abandoned, for example, is only the beginning.

Scholarship on decommodification emphasizes that commodification itself is "an inherently unfinished tendency" (Prudham 2007, Polanyi 1944). Bakker (2003, 31), for instance, argues that water's "biophysical characteristics," for instance, as a "flow resource," make commodification tend to fail. Decommodification as failed commodification indeed applies to chickens, whose their biological characteristics make compete commodification impossible. Despite breeding, they exhibit characteristics that are not profitable – the skittishness bred into the white leghorns, often used for eggs; the mere existence of roosters; the stories of chickens who escaped trucks going to slaughterhouses. Inadvertent decommodification can also occur through death, as in the cases of ecosystem valued for services (Collard and Dempsey 2014) or

animals valued as exotic pets (Collard 2014). Again, this can apply to chickens, particularly those whose value is measured in lively production, such as chickens bred for egg production. Especially relevant to this project though, is decommodification that seeks to be more deliberate and transformative. This transformative process is fairly open-ended and can involve recommodification. Prudham (2009, 136) analyzes the transformation of commodities into ones associated with more progressive values, and the sometimes simultaneous erosion of these values, as in some fair trade and organic products. In the case of organic foods, he notes that, "absent certain prescribed chemicals and farm practices, [these foods] look more and more like conventional, industrialised food circuits every day." This statement prefigures some of what I heard during interviews. One interviewee, for instance, remarked that at the sanctuary she volunteered at, "it sometimes felt, at times, it felt like being on a farm" (personal communication, February 2017).

More radical transformations can also occur, not involving recommodification. One of the most relevant examples is Collard's (2014) work on the decommodification of exotic pets. Rehabilitation workers attempt to get former exotic pets to unlearn "humanized" behaviors, as these behaviors were encouraged when the animals were commodified. Behaviors such as wearing clothing, eating "human" foods, and readily interacting with humans are accordingly discouraged. However, such decommodification is not simply a matter of undoing these behaviors, but encouraging other ones that enable the animals to have a good chance of survival without human support. Decommodification in this case seeks to restore to these former lively commodities a sense of what animal rehabilitation center workers imagine their previous life was like. This is only sometimes successful, and animals that do not adopt appropriately "wild"

behaviors are kept at the rehabilitation center. And yet, it is sometimes successful. This case speaks to the case of farmed animal sanctuaries as an example of transformative decommodification. However, the sanctuaries I worked with argued that chickens could not exist without human support, because of how they had been bred and, often, because of their geographic location. Decommodification at farm sanctuaries must therefore differ from rewilding. I argue that it begins, and sometimes ends, with hoarding. In the following section, I synthesize research on hoarding in psychology, cultural studies, geographies of waste, and political economy, and then go on to analyze how it manifests in chicken rescue and sanctuary.

Hoarding

Psychology

Animal hoarding was given little attention by psychologists until the 2000s, with the formation of the Hoarding of Animals Research Collective at Tufts University. One of the first contemporary articles on animal hoarding notes that only one paper referencing "hoarder," "collector," and "animal" was published before then, in 1981 (Patronek 1999, 81). Collector is a term used by animal control and humane societies (ibid.), and in this context, is synonymous with hoarder. A commonly accepted definition of an animal hoarder is:

> Someone who accumulates a large number of animals; fails to provide minimal standards of nutrition, sanitation, and veterinary care; and fails to act on the deteriorating condition of the animals (including disease, starvation, and even death) or the environment (severe overcrowding, extremely unsanitary conditions) or the negative effect of the collection on their own health and well-being and on that of other household members. (Patronek 1999, 81)

Cats and dogs are most often hoarded, but farmed animals and birds make up 22% of hoarding cases (Patronek 1999, 84). Given the rise of the backyard chicken movement, it is likely that

this number has increased since the 1990s. Reasons cited for keeping the animals included "the hoarder's love for animals, the animals as surrogate children, feelings that no one else would care for the animals, and fear that they would be euthanized if taken to an animal shelter" (Patronek 1999, 84-5). Accumulation of animals by hoarders has been found to be through deliberate and unplanned breeding, purchasing, taking in strays, and through the public (actively seeking animals or passively being given animals) (Patronek 1999, 84, Frost et al 2011). As later sections of this paper will demonstrate, many, if not all, of these feelings and practices are mirrored at sanctuaries.

Psychologists have identified three categories of animal hoarders. First, the **overwhelmed caregiver** is someone who has multiple animals and is able to adequately care for them until something happens that causes them to become overwhelmed. This is often a loss of support, such as human companionship, human labor, or a source of income. These hoarders most often acquire animals passively rather than actively seeking more. Second, **mission-driven animal hoarders** comprise most cases. They seek to rescue animals from suffering and death, sometimes objecting to euthanasia and spaying/neutering. They actively acquire animals believed to be at risk, often beginning with adequate resources, but get overwhelmed. However, unlike the overwhelmed caregiver, they often "actively avoid and resist intervention by authorities. They consider themselves to be the only ones who can provide adequate care for their animals.... Ironically, when their animal counts overwhelm them, they end up causing the very kind of harm they seek to prevent." The third kind of hoarders psychologists have found are the least common: deliberate **exploiters**. These individuals have little emotional

connection to animals, seeking them as a means to an end, be it control or finance.[17] They have identified exploiters who use animals as "props for generating money to run 'rescue' operations," for example. Animal hoarding researchers write: "[t]o other people, exploiters seem articulate and appealing, but in fact they are cunning manipulators, often conning money from others for their 'rescue' efforts." (Frost and Steketee 2010, 130-131). All three of these personae are present in the sanctuary world, but, as I will argue, should be interpreted differently.

The psychopathology of animal hoarding is not defined by the number of animals, but when the number interferes with the provision of "acceptable care" (Patronek 1999, 81). In this way, hoarding or accumulating without circulating is not inherently pathological, but can become so when it impedes on the hoarder's or animals' quality of life. The psychological approach has been criticized for this very reason. Phrases like "acceptable care" and "quality of life" have been demonstrated to be tacit and uncritical references to hegemonic norms of "cleanliness, sanity, and domestic order" (Herring 2014, 16). Furthermore, terms such as "quality of life" can also frequently be ableist, whether describing humans or nonhuman animals (Taylor 2017).

For at least some psychologists, hoarding is not inherently pathological, but the term can still be analytically useful.[18] Moreover, some psychologists argue that hoarding behaviors are not

[17] People who keep animals for fighting, such as cockfighting, might under this definition be considered exploitive hoarders. This characterization, however, invites comparisons to the racialized political economy of hoarding, such as in Herring's (2014) interpretation of the Collyer brothers in the following section.

[18] Herring's critique of the psychology of hoarding runs deeper; he believes that the diagnosis itself is pathological. "Some may sensibly consider HD [hoarding disorder] diagnosis a relief to start recovery," he writes, "but I still believe that it can be a lasting mark of intense shame that entangles one in degrees of social and civic punishment ranging from mortification to incarceration" (Herring 2014, 17). I am sympathetic to his pushback against

restricted to hoarders: "[t]he boundaries between normal and abnormal blur when it comes to hoarding. We all become attached to our possessions and save things other people wouldn't. So we all share some of the hoarding orientation" (Frost and Steketee 2010, 14).[19] A second critique of the psychological approach to hoarding is that it characterizes hoarding as a behavior primarily done by individuals. Inasmuch as it is social, it is when individual hoarders impact those around them. The following approaches to hoarding redress this individualistic approach.

Political economy

This critical, but not entirely negative, understanding of hoarding complements work in cultural studies and the geography of waste. These bodies of literature offer readings of accumulation and hoarding that are not primarily about individual behaviors, but instead emphasize social norms and political economic processes. Scholars of waste have demonstrated that what gets considered waste and how so-called waste is treated can either reinforce or upset existing socio-spatial relations (Kristeva 1982, Popke 2001, Moore 2008, Moore 2009, Gidwani and Reddy 2011, Reno 2014). Moreover, capitalist development hinges upon converting waste into exchange value, rather than finding use value in otherwise 'wasted objects' (Lepawsky and Billah 2011, Lepawsky and Mather 2014). Gidwani and Reddy (2011, 1636) point out that

hoarding diagnoses inasmuch as social stigma can be associated with most psychological diagnoses. However, as this paper sometimes implies and sometimes explicitly states, I also believe that diagnoses, hoarding and otherwise, can be useful, descriptively, analytically, and socio-politically. Thus, my position is closer to that of psychologists who have observed that hoarding doesn't have to be problematic, but can be, and that recognizing it can help hoarders and those around them respond to the practice when it is problematic, and learn from it when it is not.

[19] Frost and Steketee are referring here to object hoarders. I make a similar argument regarding animal hoarding at sanctuaries.

waste in present-day urban India is both "society's excrement" and a "vector of realized and potential value." This can be read as congruent with the psychological literature, in that while 'collectors' curate and care for 'important' objects, object hoarders are distinguished by their inability to distinguish between important and unimportant objects. Instead, they sometimes find use values in objects that most people wouldn't – one psychological report gives the example of a hoarder who saved a pen cap, thinking it could be useful as a board-game piece (Frost and Steketee 2010). In this way, hoarding can also be understood as an inability to distinguish between **waste and value.**

Cultural studies scholar Herring (2014) mobilizes this interpretation of waste and value. He characterizes hoarding as not pathological at all, but instead a symptom of our consumption-oriented society, entangled with racist, classist, and sexist prejudices as it is. He argues that "there is no natural relation to our objects." Thus, hoarders practice "material deviance" – they are unable to properly "differentiate between valuables and the valueless" (Herring 2014, 53). In so doing, by challenging the capitalist tendency to transform waste into monetary value, they are pathologized. In making this argument, Herring offers an alternate interpretation of the Collyer brothers. Homer and Langley Collyer were considered a well-known pair of (object, not animal) hoarders per the psychological definition: their house was full of objects and only navigable to them by tunnels. Many of the tunnels contained traps of their own invention, and it is widely believed that Langley Collyer died of asphyxiation after being caught in one such trap. Herring adds to this story: he notes that the Collyer brothers were from a wealthy white family living in Harlem during the early 20th century, and that continued living there as Black folks began to move into the neighborhood. Herring thus interprets their

description as hoarders as racist: to white people, the Collyer brothers were out of place (Douglas 1966) and should have fled Harlem. By not doing so and by socializing with the new Black residents of the neighborhood, the Collyer brothers didn't distinguish between waste and value in the white supremacist way that was expected of them. This "material deviance" that challenged societal assumptions about waste and value, is, according to Herring, a large part of why they were described as hoarders.

A final point about hoarding is implicit in the psychological and cultural studies literature, but articulated by Marx (1867). Marx claimed that hoarding is a fulcrum of the development and continuation of capitalism. The hoarder **accumulates without exchanging**. Under capitalism, the hoarder can enable capitalism by hoarding the "right" amount of money. However, Marx also acknowledges that "the exclusion of money from circulation would constitute precisely the opposite of its valorization as capital, and the accumulation of commodities in the sense of hoarding them would be sheer foolishness." His comment reads as a jab at capitalism, meaning that it is sheer foolishness to the capitalist. Preventing commodities from circulating, and through that preventing money from being produced and exchanged, is a momentary rejection of capitalism. For Marx, therefore, hoarding can be a direct opposition to the production of capital, or it can be its beginnings. These are the two trajectories that seem to be present at sanctuaries.

Hoarding at farmed animal sanctuaries

So, how are sanctuaries hoarding? In this section I illustrate how all sanctuaries are hoarding facilities, and in the following two subsections I discuss its bifurcation into two trajectories.

Western industrial society has a long and deep history of seeing nonhuman animals as commodities, evident in mundane terms such as "livestock" as well as in the historical equation of "cattle" with "capital" (Franklin 2007, 53). Treating chickens otherwise is therefore highly socially deviant, akin to Herring's description of hoarding as "material deviance." And, indeed, sanctuaries accumulate animals without exchanging them, and moreover, they reject the notion of exchange value. The mission statements of three sanctuaries, for instance, capture how sanctuaries deviate from agriculture:

- Farm Sanctuary: "to protect farm animals from cruelty, to inspire change in the way society views and treats farm animals, and to promote compassionate vegan living."
- Chicken Run Rescue: "fosters an evolution in critical thought about who is food and who is friend through rescue, rehabilitation, sanctuary and education. Help all animals by adopting a vegan diet. Help individual chickens by adopting them as companions."
- Farm Bird Sanctuary: "the care of rescued farm birds."

By emphasizing rescue/adoption, care, and changing societal views and behaviors, they reject the commodification of chickens and other farmed animals. Furthermore, in practice, by refusing to exchange rescued chickens' eggs or flesh, sanctuaries further reject the commodification of these animals. They are precisely *mission-driven hoarders*. They are responding to and attempting to redress harmful societal norms, which calls into question where the pathology is located: at sanctuaries or in the agricultural situations to which they respond.

In so doing, and paraphrasing Herring, sanctuaries also practice *deviant accumulation*. They keep animals in ways unsanctioned and unsupported by contemporary social and legal norms. The law sees agricultural animals as objects, commodities, or waste, the last in cases of "spent" hens

who are past their laying prime, male chicks who won't become laying hens, or grown roosters who are widely considered social nuisances. Many of these become the backstories of chickens at sanctuaries. The widespread social devaluation of roosters is often a focus of sanctuaries, and many chicken sanctuaries, especially newer ones, focus specifically on rooster rescue. As the Rooster Sanctuary at Danzig's Roost, the first rooster-focused sanctuary, notes: "[f]or every hen hatched who is used for her eggs, there is a rooster. 99% of the time that rooster is unwanted, discarded, often mistreated and sometimes despised" (Rooster Sanctuary at Danzig's Roost n.d.). Even when progressive liberal communities encourage the practice of backyard chicken keeping, this rarely includes roosters, who comprise half of all chickens who are born.[20] A sanctuary in Washington state was recently in the news, for example, because of roosters' crowing being considered a nuisance to neighbors (Hanchard 2018). Additionally, most if not all sanctuaries refuse to buy chickens, and condemn the few sanctuaries who do. Thus, by taking in, but refusing to buy, chickens, sanctuaries are socially deviant.

And finally, they are hoarding in the psychological sense: sanctuaries take in many animals, refuse to give them up, and are frequently unable to provide what many, even those of us at sanctuaries, would consider adequate care. The question of what constitutes adequate care among rescued chickens is perhaps among the most pervasive at sanctuaries. As the founder of the United Poultry Concerns, the first farmed bird sanctuary, noted, we "know more about exotic animals than we do about a pig or a cow or a chicken or a turkey" (interview, March 3, 2017). Most sanctuaries are unlike the pathologized hoarders who refuse euthanasia altogether,

[20] This could change. Biocapitalist technologies are being developed to further modify chickens to prevent roosters from being born. This would reduce the "waste" of unwanted roosters, but these are far from being adapted (Bruillard 2016).

but the question of when a bird should be euthanized and when something can and should be done is a frequent one. Further, many euthanasias are accompanied by regret that medical care was not available, when it would be or is for other species. Chapters 6 and 7 discuss how sanctuaries address the issue of medical care in more detail.

Additionally, sanctuaries often have small adoption programs, where they will attempt to re-home birds, for when they are overpopulated, and/or so that they can rescue and shelter others in need of homes. However, as stated in the preface, rehoming chickens is difficult. Sanctuaries have varying policies about adoption (in the sense of letting sanctuary affiliates and/or the public adopt sanctuary animals). There is debate about requiring adopters to be vegan and/or to not eat eggs from rescued hens, but more common requirements are that chickens be provided with a coop, run, medical care, and that caretakers not sell eggs or chickens. These requirements challenge the status quo interpretation of Marxian hoarding: sanctuaries who adopt out birds are not regulating a supply. Instead, they are propagating the practice of not treating chickens as resources. In doing so, chickens getting adopted from a sanctuary becomes a fairly rare occurrence, especially for roosters, who, in addition to being socially devalued, are often forbidden because of zoning.

For now, I want to tentatively add a normative element back in to the issue of hoarding. While it has been called pathological on the individual level when it interferes with the wellbeing of a hoarder or the care of animals, I want to argue that this section shows that hoarding is a product of social pathologies that sanctuaries have to address. The terminological shift thus offers a shift in viewpoint. Challenging the social norm that chickens are commodities or

waste, taking in chickens and refusing to exchange them, and the anomie and lack of knowledge around what constitutes adequate care together redirect blame from individual sanctuaries or individuals at sanctuaries to anthropocentric, late industrial capitalism. Sanctuaries practice deviant accumulation, to various ends.

Beyond these initial steps, hoarding at sanctuaries seems to take two different paths, which can be understood in terms of decommodification. Building on the decommodification literature, both entail first rewinding the commodification process: commodities become a hoard. Then, one alternative entails repeating a sort of capitalist loop, recommodifying the animals, but differently. The second, more radical option, entails rewinding the capitalist script further, propagating other interspecies values. Table 1 introduces the general form of hoarding at sanctuaries and its two branches. Both can be present at any one sanctuary. I elaborate on these in the following sections.

Form of hoarding	Characteristics
All sanctuaries	Rejection of exchange value
	"Deviant" accumulation: inappropriate to society
	Inadequate (medical) care
Repeating/capitalist loop	Valorization of "encounter value"
	Foregrounding of superhero-rescuer
Rewinding capitalist script	Fetish without commodity status
	Creatively negotiating a legacy
	Critically deconstructing species boundaries/critical anthropomorphism
	Reassessment of waste/value dichotomy

Table 1: Hoarding at sanctuaries

Repeating towards encounter: the trap of anthropocentric value and the capitalist loop

It's my first day at a novel chicken rescue project, the only of its kind in the US. It's part of a large sanctuary. Access here has been challenging, but I'm hoping it's worth it. I'm told that

I'll be staying on-site, but that no overnight guests are allowed. My girlfriend has accompanied me on the several-day-drive, so I explain that we'll arrive and unpack and then sleep at a local motel. We get off of the correct highway exit that evening, and drive on a winding road to the highway on-ramp, at the next exit. We turn around. Go back. Arrive at the original on-ramp. Turn around. Go back. Determine that maybe the gravel road that looks private and says "no trespassing" is in fact the road we want. It is.

On the way in, we're confronted by signs declaring the speed limit, that this is private property, and that we should leave.[21] Eventually, I will leave, and a year later, the sanctuary will shut down, in large part for having more animals than zoning there allows. Before then, though, I see the small wooden sign for Hen's Nest Rescue, where I will volunteer for three weeks.

Hen's Nest had a mission unique among sanctuaries: to work with farmers who were "depopulating" hens past their egg-laying prime. The program founder remarked that they lived in a part of the country that had many egg farms, but "we don't use the hens' bodies for anything. I firmly believed," she continued, that "we would be able to offer farmers an alternative to depopulating on their egg farm." This would be unlike other egg-producing states, where the hens' bodies were slaughtered and then used in other products (she referenced soup and pet food). This rejection of waste and attempt to "use the hens' bodies" are attempts to create resources from waste (Gidwani and Reddy 2011). The slippage between the "we" of the state and the "we" of the sanctuary reinforces Hen's Nest's elision between

[21] Eventually, I'll also learn that listening to Nine Inch Nails is the best way to navigate this road.

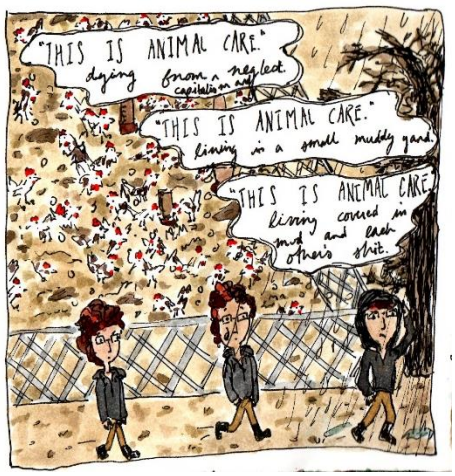
the hens as capitalist waste and as value, a constitutive dimension of hoarding. It also, however, hints at the ambiguity of what value means, in this context.

A former adoption coordinator, Bethany, elaborates this point: "There's several farmers we'll call when we have space," she drawls, "and ask them how much more time until they depopulate again. They can write it off as a donation if they want, 'cause it's property." In this respect, in the case of Hen's Nest, value is partly produced in terms of tax benefits for farmers. Also and in contrast, the facility's actions emerge from a critique of industrial agriculture: that there are so many egg farms, and so many chickens used as "egg-factories." They would take in 1000-2000 hens at a time, usually twice a year, and adopt them out to people who wanted backyard chickens. This is probably more chickens than most sanctuaries in the US take in annually, but it is still only a small percentage of even the hens who are "depopulated" at a single such event, when tens of thousands of hens at a time.

Upon arrival, I'm given a studio apartment to live in, with strict notes to not use the washer/dryer next door. Those belonged to the site manager, and the previous on-site volunteer had used them without her permission. No problem, I say, I can go into town to do laundry. Tomorrow, I'm told, I'll learn all about gates, which are crucial to the rescue. Before then, though, I'll spend the evening, supported by my unflinching and overly generous girlfriend, cleaning mouse and rat feces off of the studio countertops, bookshelves of animal rights philosophy, literature, and movies, and rug. I ask about this in the morning, concerned that there's a mouse problem, and am told that there couldn't have been the feces that I saw,

that they weren't there. I'm baffled, but go on up to the main barn, where we meet to get assigned the day's chores.

There are about 1200 birds distributed over four barns, short of the 2000 that would be there when it is at capacity. It still seems crowded, and many birds are caked with mud and feces. I start to wonder...



Staff and volunteers often describe it as a sanctuary, but sometimes, in discussions about care, emphasize that it "a rescue center," and "not a permanent sanctuary," that the permanent sanctuary was an hour away. The manager of the main sanctuary, Susan, notes this contrast and what it entails:

> Since it's temporary we'll keep them in more crowded conditions than we would if that was their permanent residence. Taking in animals when we have a go ahead from a farmer. It's the farmer that really dictates when we rescue and how many we rescue. And we can only rescue as many as Mariana [the new adoption coordinator] can find homes for, so having an adoption person is crucial. If we could pace it ourselves, we'd take 100-200 at a time, but we don't have that luxury. Ok we can save 1500 birds, but we already have 500. What do we do? Knowing we're maxing out the staff, the barns for a few months, but we're able to save those 1500 lives, we're all working with that degree of awareness. It's life and death. And it works just because people kinda go the extra mile at this place. (personal communication, February 2017)

This tension between saving lives by the numbers and feeling the pressure of their imminent death centers the tension faced by this not-quite-sanctuary.[22] However, it also is a particular framing: about numbers of individual lives, which emerges from being overwhelmed by the immensity of animal agriculture. Bethany contrasted the number they could save with the 60,000 chickens that farmers they worked with normally "depopulated" at a time. The effect, though, includes internalizing the capitalist norm of not wasting, in terms of maximizing intake at the sanctuary.

The other effect is difficulty staffing, which managers at the main sanctuary admit. Though Susan noted that "people kinda go the extra mile," Hen's Nest faced higher turnover rates than at other sanctuaries, and volunteers such as myself who stayed for shorter than the planned length of time (I learned that the on-site volunteer before me left out of outrage at the manager, and that the one after me left after a day of being overwhelmed by mouse excrement. I had planned to stay for two months, but left after three weeks.). "The major challenge has been staffing," Susan confesses. Another challenge, though, was providing adequate care. Susan offers the comparative, that it's "maybe not what we would provide at a permanent sanctuary, it's still above and beyond what backyard chicken people provide." This trope is echoed by the on-site manager, who comments that it is better than a factory farm.

I am skeptical that the care is in fact better than that provided to many backyard chickens, in terms of space, flock dynamics, and habitat. It certainly is better than a factory farm. What is

[22] There is an Agamben-inspired reference that could be made to "bare life" or a Foucault-inspired reference that could be made to biopolitics, but it's unnecessary here.

notable here is the reference again: relative to the farm, relative to the backyard chicken, which seem to indicate being stuck within capitalist norms of chicken care.

After taking in the 1000-2000 hens at a time, Hen's Nest sought to adopt them out to people who wanted backyard chickens for eggs. As a manager stated, the chickens' job was to facilitate encounter: "[i]t's their biggest job," she said. "We want people to fall in love with them and not eat them, go plant-based, go vegan" (personal communication, January 2017). In this case, the representation of animals as encounterable by humans is placed above understanding and trying to meet their needs. Hen's Nest thus places a high emphasis, implicitly or explicitly, on encounter. This is consonant with Haraway's use of "encounter value" (2007, 47). Johnson (2015, 302) observes that "encounters are said to upset hierarchies, promote more harmonious ethnic, racial, and environmental relations, redistribute power, and reconfigure the way that we see ourselves in relation to others (human and nonhuman), to the environment, to the world." Encounter value is a driving factor in, for example, the production of purebred dogs and other commodities associated with them (fashion, furniture magazines, etc.) (ibid., 52-3). Encounter value considers face-to-face interaction and the development of interspecies companionship important, but can, on the other hand, erase the uneven power relations therein. And indeed, most new adopters and returning adopters were simply interested in backyard hens for eggs.

This turn to encounter value can be associated with sanctuaries who are "mission-driven" or "exploitive" hoarders. In such cases, the representation of animals as encounterable by humans is placed above understanding and trying to meet the needs of the birds. Though they were

indeed overwhelmed caregivers, being overwhelmed was systemic and planned for every time a rescue event took place; it was built into their mission and into expectations that people would "go the extra mile." This manifested in differences in care for the chickens as well. "I really envy certain people in Vegans with Chickens," a former staff member said, referring to a facebook group on chicken care and chicken sanctuaries. "We just don't have enough time at Hen's Nest, because there's not enough people. It's just too hard to keep up with everybody because there's so many chickens at Hen's Nest and so many other animals that need all the help" (personal communication, February 2017). Or, as an employee commented more bluntly, "they're all doomed" (personal communication, January 2017). In this case, the sanctuary hoarded in the sense of regulating a supply. They re-created a commodity, while emphasizing encounter value. And by valorizing encounter, they failed to challenge the anthropocentrism of the power relations therein.

Such sanctuaries seem to valorize the figure of the rescuer-superhero. As Graeber (2015) points out, most superheros tend to reproduce the status quo, instead of offering a dramatically different vision of how society can be. Such spectacular stories of rescue emphasize the spectacle of taking an animal out of a bad situation, to the neglect of the animal's new circumstances. Hen's Nest describes the importance of volunteers and staff who "save" animals from farm situations, emphasizing the number of lives saved above all. They then encourage potential adopters to be heroes: "We may save the hens from death, but our adopters are the real heroes - they give each hen a life of love and compassion" ([anonymous 2017]). While these components of the narrative and practice are benevolent in themselves, they erase the liminal condition of the hens who have been rescued but not adopted. Many birds are there

for months to over a year before having the opportunity to be adopted, with living conditions worse than at least some backyard situations and even some small farms. Many more die before having the opportunity to be adopted.

This supports Marx' thesis of hoarding as a precursor to capitalist accumulation–interpretable here in cases when sanctuaries simply repeat a capitalist script, but in a slightly different way. Instead of valuing chickens as producers of eggs, flesh, and entertainment, these sanctuaries valorize "encounter" and the figure of the rescuer-superhero. To be sure, this is a different kind of production and reproduction than that of factory farming, but it is still capitalist and reinforces the capitalism of factory farming.

However it merits admitting that valorizing encounter is more nuanced and does not always lead to recommodification. Donaldson and Kymlicka write of sanctuaries acting as "rescue and education" facilities, hoping that by giving tours and enabling the public to encounter farmed animals, they will influence broader social change. As Abrell (2016, 32), writes, "[m]any sanctuaries also offer tours to educate the public about the treatment of animals and to generate fundraising revenue, but in the process they risk reinscribing animals as objects of exhibitionary consumption even as they seek to treat them as subjects."

This comment reiterates the centrality of encounter to the work of many sanctuaries – and a tension within it. In the case of Hen's Nest, relying on encounter failed both in that it recommodified them and didn't challenge their status as property. However, encounter can be facilitated in different ways that doesn't render chickens primarily as "objects of exhibitionary

consumption." Indeed, one sanctuary founder, known for her social media presence, stated, "[W]e want to feature the ones that have good stories. But sometimes they don't like being photographed, and we have to respect that, too" (personal communication, February 2017) This offers a more nuanced understanding of encounter: it is a significant part of the work of some sanctuaries, but sometimes not face to face, and, moreover, sometimes refused by nonhuman animals, and that refusal is (sometimes) respected. I return to the issue of encounter in Chapter 5.

Scrambled eggs and values: in and beyond the hoard

This second path hoarding at sanctuaries takes is more akin to rewinding a capitalist script, where the hoard is the last step of decommodification. On this path are different sorts of hoards, with different emergent values.

Much scholarship and activism is devoted to "removing the veil" of commodity fetishism, to show the labor relations that went into producing the commodity. In a more multispecies sense with lively commodities, scholars and activists seek to show conditions of production: not only that human labor is exploited, but also that animals are suffering, and that this exploitation and suffering are structural, built into the workings of animal agriculture. Indeed, this is core to much animal rights activism (e.g., Bohanec 2013, Gillespie and Collard 2015).

Sanctuaries who rewind the capitalist script take a different path. Engaging with the products of one's labor (in this case, living products of breeding for exploitation), is a way to create new social responsibilities and values (I return to this more specifically in the following chapter's

discussion of monsters). This is congruent with Marx. As Stallybrass (1998, 187) notes, reflecting on fetishism and value-production:

> The problem for Marx was thus not with fetishism as such but rather with a specific *form* of fetishism that took as its object not the animized object of human labor and love but the evacuated nonobject that was the site of exchange. In the place of a coat, there was a transcendental value that erased both the making and the wearing of the coat. *Capital* was Marx's attempt to give back the coat to its owner.

Commodity fetishism, therefore, can be understood as fetishizing exchange over use or other material value: "*fetishism* is not the problem; the problem is the fetishism of *commodities*" (ibid, 184, see also Page 2005). This goes part of the way to explain the work done at and by sanctuaries, by removing birds from exchange. As many have pointed out (e.g., Haraway 2007), however, Marx's political project was anthropocentric, seeking, in Stallybrass' words, to return the coats to their owners, to show the human labor in objects. In contrast to the adoption/superhero/advocacy rescue present at Hen's Nest, sanctuaries on the second path challenge anthropocentrism more deeply by asserting chickens' value as subjects, and not in terms of use or exchange value, production, or reproduction. For chickens fortunate enough to be at these kinds of sanctuaries, the commodity fetish becomes a legacy to negotiate: the characteristics that have been bred to give them value-through-exchange become points of attention at sanctuaries, not to be controlled or exploited but recognized. This contrasts with "removing the veil" narratives. As the founder of the first farmed bird sanctuary stated:

> "I was determined that United Poultry Concerns was not only going to investigate factory farming issues... but to educate people about who chickens and turkeys actually are when they're not being abused by our species...who are these birds really ... what do they do, what do they like, what do they know." (personal communication, March 2017)

Indeed, a common refrain in interviews was that they should simply be able to "be chickens," regardless of whether they were friendly or agreeable or enjoyed or even tolerated human

interaction. What "they do," "they like," and "they know" was a point of disagreement, as was what "being chickens" entailed. One way of "being chickens" that emerged was the creation of so-called "bachelor flocks." Because roosters commonly wound up at sanctuaries, workers and volunteers would try grouping them, as groups including hens often caused more fighting. The "bachelor flock" with only roosters enables many roosters to coexist.

Finally, these sanctuaries, especially, destabilize hegemonic waste/value dichotomies, literally scrambling (or hard-boiling, etc.) eggs and values. This is both in terms of ascribing value to chickens, and challenging what gets considered waste by virtue of it being "disgusting" or "unnatural." An example here is the practice of feeding eggs back to chickens, as in the third field comic. This has been critiqued as unnatural or as cannibalism, but sanctuaries answer that it is a way to offer them nutrients lost through laying, and that chickens' ancestors would sometimes eat their own eggs (I return to this in Chapter 7). Eggs are neither waste nor value, precisely, though they share characteristics of both: they are produced by chickens, but are not considered good for chickens to produce, nor are they exchanged. However, given that they are produced, sanctuaries have determined that it is good for the chickens to have access to them as food. Sanctuaries have developed these practices independently and through conferring with one another, and have different methods and recipes, as the comic illustrates. Frequently they are "prepared" by sanctuary workers rather than simply being left for the chickens because hens from the egg industry have been debeaked, which makes opening the eggs themselves difficult to impossible.[23]

[23] Hen's Nest did this as well – sort of. One of the daily chores was collecting the eggs from nest boxes, and, if there was time, we would take a few dozen of them, crush and microwave them, and feed them to the birds as treats. Well over 90% of them were put into the "compost pile" – a field of feces-laden straw and wood

This example of eggs is similar to object hoarding, in which hoarders are seen as unable to distinguish between important and unimportant objects, but in so doing, think of novel features and uses (Frost and Skeketee 2010, 28). Hoarders don't replace people with possessions, as is a common stereotype, but can instead use "possessions to make connections between people and to the world at large" (ibid., 20). The hoard, in this case, enables a multispecies community.

This, finally, serves as a rejoinder to some of the psychological literature, which speculates that animal hoarding as a form of attachment disorder "in which already frayed bonds are easily broken and replaced by bonds with animals, which serve as surrogates for family." Hoarders are accused of caring about animals more than people, a point that reifies a human/animal difference. In this case, animals are able to facilitate connections between other animals and between people. A final component of this form of hoarding is thus the deconstruction of this binary.

Conclusion

This chapter contributes to geographic work on decommodification and alternative economies, studies of accumulation and hoarding, and sanctuaries themselves. Concerning the first, it adds hoarding as a missing piece of the puzzle in the process of decommodification as the beginnings of an alternative political economy. Concerning the second, studies have noted that possibly 5% of the US population are hoarders, which means an even greater percentage of friends,

shavings. The manager often remarked that there was no waste, that we fed all of the eggs back to the hens, which, again, is in keeping with the denial of waste.

family, and acquaintances (let alone local institutions who are often called in to do repeat and often futile cleanups) are affected by hoarding (Frost and Skeketee 2010). And though there has been considerable progress in the psychological understanding of hoarding over the last 20 years, animal hoarding is still considered one of its least understood and most difficult to address forms (ibid., 133). Finally, but perhaps most importantly, drawing on these trajectories, sanctuaries and other animal advocacy organizations might learn from one another to identify and work against the more negative tendencies of hoarding.

To conclude, I want to make two points. First, I want to reiterate that hoarding as a perspective is useful because it allows us to put blame where it should be: on late industrial capitalist society. Sanctuaries are a response to a specific social context, a liminal space. Many of the problems they face are not the fault of sanctuaries, but of a society in which chickens have been bred, trained, and drugged to be commodities, and in which the sheer number of chickens living and dying for capitalist accumulation is historically unprecedented. The psychological categories of animal hoarders fall short of characterizing hoarding at animal sanctuaries, but are somewhat helpful. Sanctuaries *are* mission-driven, and can often be overwhelmed by caregiving, and structurally, this is because of the plight of chickens in society. Sanctuaries who face these situations should be able to be open about it, and we should support each other. Exploitive hoarding, though, particularly exploitive hoarding that emphasizes encounter value above other values of human and nonhuman animals, should be critiqued.

Moreover, hoarding is a vital part of the decommodification process. Here I have made the case for its significance at sanctuaries that work with chickens, but I suspect it has relevance

to and resonance with farmed animal sanctuary work more broadly, and likely to the decommodification of other lively and less lively commodities. Just as Castree (2003) described certain steps in the commodification process, and some would likely be more prominent than others for a given object or living creature, I suggest that hoarding is a step in the decommodification process, but will speak more loudly and clearly to certain once-commodities over others. Key features of hoarding lively commodities as decommodification include the rejection of exchange value in favor of socially deviant accumulation. Deviance begins with a refusal. Sanctuaries refuse to trade in chickens. Value production begins with the details of deviant accumulation.

Second, I want to re-emphasize the slipperiness of the distinction between the two paths I've traced. Exploring how sanctuaries hoard sheds light on how they/we move from anthropocentric, late industrial capitalist value systems to alternatives. These alternatives can nonetheless manifest other problems, capitalist and otherwise. While I've painted two paths, the distinction between them is often slippery in practice: both trajectories are often present at individual sanctuaries. Recognizing this slipperiness, in combination with understanding sanctuaries as a particular, situated response to a social pathology, offers a way to start a conversation about the scrambled eggs and values as well as the problematic practices at sanctuaries. Thus, I hope this work can be useful to sanctuaries as a way of breaking the silence and having difficult conversations.

One way to navigate this slipperiness might be reflecting on points of reference. Many of Hen's Nest's comparisons in terms of animal care were to farms or backyard chickens. In

taking those as points of reference, they inadvertently focus on them rather than on opening up other possibilities. This contrasts with the bachelor flocks (largely without a point of reference) and the variously justified use of eggs (which references the situation at hand and chickens' heritage). However, these points of reference are not deterministic, but rather can be useful to see how sanctuaries are enacting and/or departing from their missions. To give an example that is less clear, many sanctuaries attempt to develop "enrichment" activities or toys for residents. "Enrichment" often involves food, such as a ball of cabbage or head of lettuce, suspended from a branch or beam for chickens to peck at, but doesn't have to – at one sanctuary, a few of the chickens would play on makeshift swings. Enrichment, however, is a practice more associated with animals in confinement (e.g., animal testing). At sanctuaries, it can be a practice for enhancing animals' quality of life in the presence of significant barriers (e.g., the winter in the Upper Midwest often prevents chickens from going outside), and/or for justifying not doing so more significantly.[24] Thus, enrichment especially, but also bachelor flocks, feeding eggs, and references to farms and backyard flocks have some normative ambiguity in them. Even so, reflecting on these might be useful to identify patterns – if all of

[24] Another slippery example is references to the "Five Freedoms" (Wilkie 2010, 118, qtd Farm Animal Welfare Council 2007:3). Developed in the 1960s by animal welfare and agricultural reform organizations, the five freedoms are:

> "*Freedom from hunger and thirst,* by ready access to fresh water and diet to maintain health and vigour;
> *Freedom from discomfort,* by providing an appropriate environment, including shelter and a comfortable resting area;
> *Freedom from pain, injury and disease,* by prevention or rapid diagnosis and treatment;
> *Freedom to express normal behavior*, by providing sufficient space, proper facilities and company of the animal's own kind;
> *Freedom from fear and distress,* by ensuring conditions and treatment which avoid mental suffering." (ibid.)

Some sanctuaries post and attempt to adapt the "five freedoms" into their practices, even though they were developed with the aim of continued animal agriculture.

a sanctuary's norms are relative to being only marginally better than industrial agriculture, for instance, it would likely be worth reconsidering or (for outsiders) critiquing their practices.

The following chapters build on this one. Next, I explore the ways sanctuaries enact noncapitalist values. Building on the decommodified fetish that are chickens at sanctuaries, I explore what human-chicken relations are present. Later, I explore and map out in more detail how sanctuaries figure out how to provide medical care for rescued chickens, and how this knowledge circulates.

Chapter 5. Rehabilitating animality through conceptualizing sanctuary chickens

"There's really no such thing as the 'voiceless.' There are only the deliberately silenced, or the preferably unheard." (Arundhati Roy, qtd in Taylor 2017, 62)

Human-animal relations in society and at sanctuaries

There is widespread disagreement about how humans should and do relate to chickens. Much of society agrees that the way industrial agriculture treats chickens is problematic. As the previous chapter has demonstrated, chickens at sanctuaries are not commodities or resources, at least not in the traditional sense. But neither are they wild animals, and because of their long history with domestication, sanctuary affiliates often argue that "rewilding" is less of an option than it is with other species, such as exotic birds and other pets (Collard 2014) or heritage bovines (Lorimer and Driessen 2013). What characterizes a sanctuary chicken? How do sanctuary affiliates relate to them? What kinds of agency are present? This chapter seeks to answer these questions, building on conflicting ideas in society and the critical animal studies literature, as well as in the limited literature on animal sanctuaries, introduced below.

Donaldson and Kymlicka (2015, 50-51) find that most farmed animal sanctuaries publicly present a "refuge and advocacy model," in which "rescued animals live out their lives in safety and comfort, and also serve as ambassadors to the visiting public for all of the animals who remain trapped in the animal-industrial complex." Refuge includes enabling residents to engage in "behaviors and activities considered natural for members of their species" (ibid., 51), recognizing different needs between individual animals, non-exploitation in terms of challenging norms around farmed animals being used to support human needs, and preventing breeding. Advocacy includes education and outreach about animal sentience and animal

agriculture, through the use of rescued animals as ambassadors. This model can indeed be found at chicken sanctuaries, or among chickens at farm sanctuaries.

However, the nonexploitation principle and the aspect of advocacy that entails using animals as ambassadors are potentially conflicting in principle and often conflicting in practice. As mentioned in previous chapters, animals can be used for "encounter value," and put into situations to satisfy human emotional needs and desires for affection and spectacle, if not food (see also Abrell 2016). And indeed, Donaldson and Kymlicka are critical of the rescue and advocacy model overall.[25] They suggest that following a refuge and advocacy model can highly circumscribe the wellbeing and agency of rescued animals, precisely because of having to negotiate these conflicting priorities.

Abrell, in his study of animal sanctuary and shelter writ broadly, identifies tensions between safety and freedom at sanctuaries, observing that farm sanctuaries, with some exceptions, often privilege the animals' safety over their freedom (2016, 313). He writes, "within those captive spaces, the rights-bearing dimension of animals' subjectivity is drastically curtailed from what many animal rights philosophers have envisioned" (314). He also finds tensions between animals as property and animals as subjects, the latter of whom have "needs and interests worthy of consideration" (2014:28). This is mirrored by Fox's (2006) discussion of human-animal relations in pet-keeping, in which she writes that humans must negotiate the

[25] Donaldson and Kymlicka also suggest that instead of "rescue and advocacy," an "interspecies intentional community" model would be more productive. I believe that, outside of tours and the public face of sanctuaries, many more of the hours of sanctuary labor and sanctuary life are spent in interspecies community. What does this look like? Regardless of whether they are promoting it, they are producing it.

pet's "dual status as both a 'person' and possession" (528-9).

An additional tension exists between sanctuaries affiliates and street activists. The argument according to street activists is that, if the goal of sanctuaries is to stop animal agriculture and/or factory farming, it would be more effective to devote the money and human labor that goes into sanctuaries toward printing and distributing leaflets, protesting, or promoting veganism (e.g., through advocating for individual consumption changes or bans on specific products or processes). Thus, street animal activists often see sanctuaries as "money and resource pits," in that animal care is expensive and draws donations away from non-sanctuary animal advocacy nonprofits (interview February 2017, see also Animal Charity Evaluators 2017). Sanctuaries, on the other hand, sometimes see street activists as disconnected from the everyday work of helping nonhuman animals, promoting "animal liberation" or "animal rights" without having a sense of what that might mean, in practice, for agricultural animals (interview October 2017). Likewise, sanctuary affiliates see their work as important in terms of directly caring for rescued animals.[26]

This chapter attempts to shed light on tensions such as these. I inquire into the conceptual work of sanctuaries, exploring how sanctuaries negotiate conflicting principles in practice. Moreover, as Donaldson and Kymlicka admit, the principles of their study represent the "public face" of sanctuaries: that put forth in education, outreach, and tours. This chapter goes

[26] This tension, while still very real, has weakened even in the course of doing this project. Street activists have become more involved with the sanctuary movement, through the open rescue activities described in the Introduction, as volunteers, and in association with microsanctuaries. At least one street activist has turned their attentions specifically toward sanctuaries, focusing on helping them develop outreach and education activities.

beyond the public face of sanctuaries to emphasize the work that takes place internally and externally, and how it can be understood in terms of interspecies relations. Rather than asking sanctuaries what they or we should do, I inquire into what sanctuaries actually do, with the aim of generating practice-based concepts. Building on the previous chapter, where sanctuaries begin with a refusal to value chickens in terms of exchange, I suggest that sanctuaries contribute to the crucial work of rehabilitating animality. Returning to the Ko sisters, sanctuaries challenge the notion that "'[a]nimal' is a category that we shove bodies into when we want to justify doing violence against them" (Ko and Ko 2017 131).

If not commodities, then what?

It merits admitting that, concerning some of the aforementioned debates, I bring my own agenda. I accept the activist critique of farmed animal sanctuaries, to an extent. If effectiveness is defined in terms of numbers of animals at sanctuaries versus animals in agriculture or other commodified situations, farmed animal sanctuaries are probably less effective at changing the system than the Kyoto Protocol is at solving climate change. However, participant observation has convinced me that the "numbers" argument is limited, and that the everyday work of sanctuaries is culturally, materially, and conceptually important. I allege that farmed animal sanctuaries put into practice alternative ways of interacting with nonhuman animals. In so doing, they answer the question tacitly posed at the end of the previous chapter: "if not commodities, then what?"

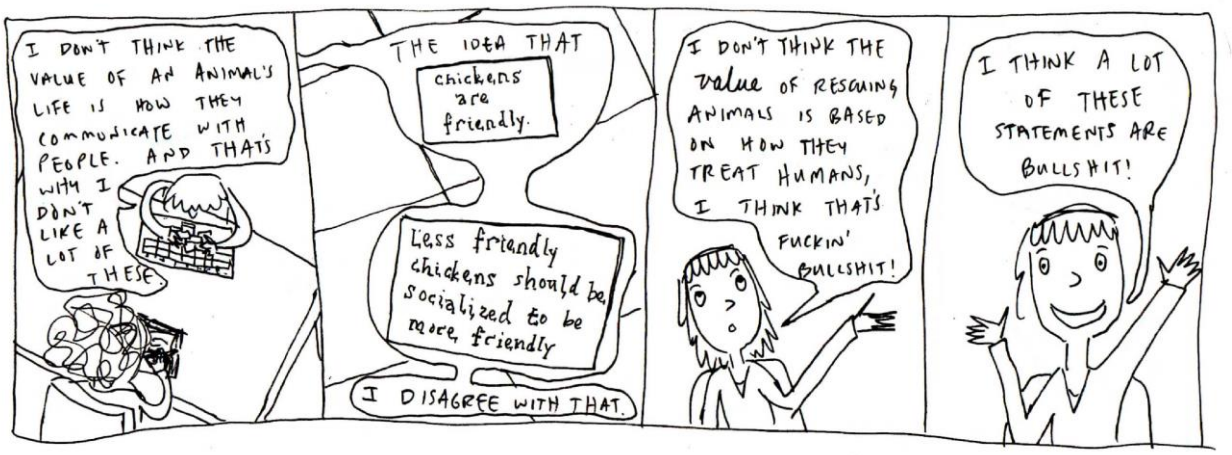
Some alternatives are already present in the animal studies literature. Critical animal studies and animal geography scholarship suggests and analyzes concepts to describe myriad

alternative human-nonhuman animal relations, as pets (Nast 2006a and 2006b, Tuan 2004); reflections of patriarchal human culture (Adams 1990, Donovan and Adams 1996, Twine 2010, Gillespie 2014, Gruen and Adams 2014); subjects to be encountered (Haraway 2007), grieved (Butler 2004, Butler 2009, Dave 2014, Gillespie 2016), or cared for (Gruen 2015); model organisms (Ankeny and Leonelli 2011, Nelson 2015); wild life/ wildlife (Lorimer 2015, Friese 2013, Collard 2014); monsters (Lorimer and Driessen 2013), and commodities (Collard 2014).

Even so, this chapter does not, for the most part, seek to identify a singular, central concept as something sanctuaries put forward in contrast with all existing ones. As scholars point out, there are debates between safety and freedom (Abrell 2016), subjectivity and property (ibid., Donaldson and Kymlicka 2015), care and oppression (ibid., see also Giraud and Hollin 2016). There is no unity on the question, "if not commodities, then what?" Rather, there is a galaxy of alternative interspecies relations, which can contribute to rehabilitating animality.

To elucidate these alternatives, I use a combination of ethnography, Q methodology, and grounded theory (I describe Q methodology in more detail in the Methods section, and more technical details on subject selection and the analysis itself are in the Appendix). To summarize, I generated a series of statements about relating to sanctuary chickens based on participant observation and a first round of interviews. After gathering these statements, I identified members of the sanctuary community who were, in Q terminology, "opinion leaders" – people who had well-formed opinions based on their practice (Eden, Donaldson, and Walker 2005). Opinion leaders were not necessarily people with the loudest personalities (though there was a small amount of overlap!), but simply people who had been involved with

sanctuaries and seemed to have a clear sense of what they did and why. Q methodology also allowed me to create analytical distance, especially valuable given how invested I was/am in the alternatives sanctuaries put forth.



Then, I conducted in-person Q-sorts, asking subjects to sort the statements on a Likert scale, based on how much they agreed or disagreed with them in practice, rather than in theory. From this, statistical analyses are used to identify patterns within and between sorts, to generate one or more "factors," or idealized sort. The reflective, conversational sorting process made it a sort of game, as participants played with how to fit statements and brought up stories that guided their decisions. Q is a game with a complicated vocabulary, however, so I summarize its terminology below.

Term	Description	Person?
Sort	A concourse that has been placed on the Q sort table	No
Sorter	A person conducting the sort	Yes
Factor	An idealized sort based on statistically analyzing each completed sort and identifying patterns within and between sorts	No
Perspective	A set of views associated with one factor based on interpreting and comparing factors	No

Using the statistical analysis and qualitative interpretation of the analysis, I identified three factors, which translate back to three perspectives about human-chicken relations at sanctuaries. I use these, in turn, to speculate on concepts that contribute to rehabilitating animality: to seeing chickens as something other than commodities. To interpret each factor and generate social perspectives, I synthesized several sources of information:

- Statements that (statistically) distinguish each factor from the others.
- Statements for each factor that received more extreme scores (+/-2 and +/-3).
- Statements that varied relatively little between factors (but possibly for differing reasons).
- Interviews done in conjunction with the sorts.
- My own experience doing participant observation and the first round of interviews. Another version of this chapter might have drawn primarily on participant observation. While statements are drawn from participant observation and associated semi-structured interviews, this chapter attempts to stick fairly close to the Q sort and use participant observation as a sort of "check."

These concepts will likely not be completely unfamiliar. As Wilkie (2010, 3) notes, "domesticated animals are usually categorized as either livestock or pets. However, this clear-cut dichotomy is messier in practice because many of my contacts [farmers] perceived some of the livestock they worked with as pets, friends, or even work colleagues." These messy relationships are present in pets (Tuan 2004, Haraway 2008, Jones 2003), as well as among laboratory animals (Nelson 2015), wild animals (Collard 2014), and animals in other situations. However, underpinning this chapter is the position that interspecies relations at sanctuaries

are significantly *different* from those of much of society, and thus that sanctuaries might have much to offer in terms of ways to think about our (humans') relationships to nonhuman animals. As illustrated, this difference is a major point of unity for sanctuaries: rescue begins with taking nonhuman animals out of production regimes.

At the same time, these concepts are afield from those of mainstream society, where chickens are primarily agricultural commodities or producers of commodities. I discuss three different emergent perspectives. I elaborate the differences in these perspectives in terms of knowledge and agency, and then identify concepts emergent from the perspectives: anti-farm animals and pets, birds and dear monsters, and direct and indirect ambassadors. I conclude with salient points of agreement among sanctuary affiliates, explaining how they differ in reasoning and process but nonetheless agree in notable ways.

Conceptualizing sanctuary chickens

As aforementioned, Q sorts will often reveal distinguishing statements, or statements that are can be used to identify how factors differ from one another. This sort revealed one such statement: "there's nothing natural about chickens." This statement was a direct quote from participant observation (part of a rant against egg consumption and capitalist domestication). This statement had the most divergent distribution: two participants ranked it as "-3", two as "-2", two as "0 [neutral]", 1 as "+1", two as "+2", and 1 as "+3." It was also interpreted differently by each perspective, and I use these different interpretations as a lens through which to understand the differences between perspectives. The following tables introduce each

perspective, which I elaborate in the next subsections.[27] In each of the following sections, I introduce perspectives, held by humans, and build on these to identify concepts describing interspecies relations.

Perspectives and concepts

Statement	Perspective 1	Perspective 2	Perspective 3:
There's nothing natural about chickens.	Disagree, because society sees natural as good.	Agree, because society modified them.	Irrelevant.
Chickens are intelligent.	Agree, because it's important to compensate for society seeing them as stupid.	Agree, because of knowledge about them acquired through multiple avenues.	Irrelevant.
I communicate with chickens through establishing dominance. / Chickens should be able to establish a pecking order, including fighting.	No, because fighting and dominance are bad.	Agree, and stereotypes misunderstand behavior: fighting is temporary.	
Veganism	Weak disagree: rescuing chickens is not going to make people vegan, but we should talk about it.	Neutral: it's important and a reason to promote rescue, but rescuing chickens is more important.	Medium agree, because it is an indirect benefit

	Perspective 1	Perspective 2	Perspective 3
Knowledge	Counteracting how society understands them is most important.	Understanding them as they are is most important.	Knowledge that results in good stories about them is most important.
Agency	Counteracting how society treats them. Emphasis on individual-level interaction and species-level change.	Treating them based on knowledge and interpretive labor. Emphasis on species, breed, flock, and individual.	Choosing who to rescue based on storytelling potential, those who do not want to be ambassadors don't have to be. Emphasis on individual-level interaction and species level change.

[27] The structure and organization of the tables draws inspiration from Clarke's (2005) "project maps."

1. Anti-farm animals and pets

This perspective can be characterized as acting primarily *in opposition to* what they understand to be the treatment of and culture around farmed animals. They seek to challenge societal beliefs about chickens, often through appealing to existing social norms and assimilating chickens into society. "Everything else is a nice bonus," one sorter commented, "but it's about getting chickens out of those horrible places" (personal communication, August 2017). The horrible places referred to are factory and other farms, and the oppositional character of this statement encapsulates this perspective.

This perspective was defined by disagreement with the statement, "there's nothing natural about chickens." One sorter stated, "Natural, I get where that statement is coming from, but I mean they evolved from the dinosaur and I don't know how that wouldn't be natural" (personal communication, August 2017). Another sorter explained: "What's natural is what exists right now. Or what's important is what exists right now. And it doesn't matter to me how those attributes came about, or whether they make those attributes worthy or not worthy" (personal communication, August 2017). This latter statement captures the semantic transition from the natural to the good, poignantly evoked by the equalizing parallelism between "what's natural" and "what's important." The societal norm that gives "natural" a positive connotation drew sorters to defend chickens as natural creatures.

As with all of the perspectives and the missions of most sanctuaries, this one, too, valued challenging chickens' social status. Similar to the slippage between the "natural" and the "important," they do this through appealing to existing social norms and characterizing

chickens positively within those norms. For instance, several sorters prioritized the statement "chickens are intelligent," saying that they wanted to compensate for stereotypes of chickens being considered stupid. Likewise, one sorter emphasized that chickens are friendly, saying: "I feel like I wanted to put it that high as like a defensive thing. 'Cause people always think that chickens are mean" (personal communication, August 2017). This statement builds on the argument that chickens are natural: because social norms often place value on "naturalness" and "intelligence," this group seeks to attribute these characteristics to chickens.

This perspective is explicitly anti-hierarchical, but in a way that modifies and expands the inclusivity of liberal society to assimilate chickens more favorably into it. They appealed to existing norms about knowledge production, but called for knowledge to better support chickens. One sorter, for example, called for randomized controlled trials on chicken health treatments, something that would be deemed questionable and likely unethical by the next perspective (although in a later chapter I discuss how sanctuaries use randomized controlled trials done by others).

In response to a statement about sanctuaries promoting alternatives to chicken exploitation, a sorter commented, "It's not so much to promote alternatives to chicken exploitation. It's to say their exploitation is wrong. Even if there are no alternatives to chicken exploitation, we have to deny ourselves the benefits of chicken exploitation. I don't think the alternatives are relevant" (personal communication, August 2017). Statements such as this affirm the oppositional perspective. Where subsequent perspectives interpreted the statement to be about promoting different social relations, this group took a more defensive pose. In focusing on the

ways chickens are exploited (e.g., for eggs and meat), and opposing those, they neglect the work Donaldson and Kymlicka deems especially important at sanctuaries: that of creating different ways to relate.

The first, and, I suggest, most central concept this perspective offers with which to understand sanctuary chickens, is that of the *anti-farm animal*. Anti-farm animals are characterized by their opposition and negation of agricultural practices and status-quo, but assimilation into liberal-anthropomorphic norms.

Additional concepts emerge, however, when considering intimacy and desire in interspecies relations. The opposition put forth by the group is that chickens should be treated as pets. They sorted both the chickens as family members and chickens as pets statements highly: in the ideal sort, chickens as family members was also rated a +3, but the high rating of chickens as pets distinguished this from other perspectives. "I believe we should treat any pet or any animal with the respect we have for a family member" (personal communication, August 2017). As one sorter stated, "I felt like yeah, they were always my children they were taking care of, I felt like a motherly role. And at a sanctuary where I volunteer a lot, they're like my babies" (personal communication, August 2017). What this perspective seems to offer is an expanded definition of pet as family, where caretakers act as parents (Fox 2006).

They also emphasize that promoting certain chicken behaviors is important, but part of this is due to human desire and pleasure: "I love watching chickens do that [preen, dust-bathe], especially dust bathe, when you take them outside and they spread their wings and dust-bathe, they just look so happy. I think, just the natural happiness of that is awesome" (personal

communication, August 2017). However, they disagree with other behaviors, such as the creation of a pecking order and fighting to do so. "I think they will establish a pecking order including fighting, but I don't like the norm "should," one sorter contested. "I think if there's a way for us to not have dominance-based relationships, that'd be nice" (personal communication, August 2017). In this case, the sorter selectively criticized the use of "should," not in the sense of being opposed to normativity, but in the sense of disliking domination. Thus, these sorters projected their own ideas of good and bad behaviors onto chickens.

Human desires for intimacy were important, visually, in terms of physical contact, and ideationally. Sorters described enjoying watching chickens, and one described their partial awareness of chickens' desires and how they tried to respect such desires, but sometimes failed:

> I like holding chickens, giving them little pets and stuff but I also know that they don't love that, they don't love to be held. I mean, some do, some don't and I'm somewhat aware of that. Marsha [pseudonym] I'll still force some cuddles on, 'cause I cannot help myself. I guess it's just the awareness of like, they don't need to be cuddled in the same way that cats need to be cuddled. Chickens can live happy lives without having a lot of human contact. (personal communication, August 2017)

This sorter presented a tension between their desires and that of chickens. Their desires included affection and holding chickens, and they were aware that while some chickens seemed also to enjoy that, many didn't. They also admit that their desires overrode those of Marsha, the hen, at times, which reinforces the priority in this perspective of forcing social norms that sorters like onto chickens. In this way, the pet concept presented here is relatively anthropocentric and assimilationist. It expands the definition of pets in liberal society to include chickens and emphasizes that such pets are family, but keeps many of its defining characteristics (see, e.g., Nast 2006a and 2006b, Tuan 2004, Fox 2006).

2. Birds and dear monsters

This perspective sees chickens as *unnatural*, but, unlike the first perspective, is not primarily oppositional. Distinguished by agreement with the statement "there's nothing natural about chickens," this perspective placed a major emphasis on human modifications to chickens, trying to understand this legacy and its ramifications for sanctuary chickens, and treating chickens based on this knowledge. One sorter (and nearby bantam rooster) stated:

The statement about how sanctuaries should work to remedy or counteract how chickens have been bred and raised is somewhat similar to the first perspective, in that they also seek to challenge commonly held beliefs about chickens. However, where the first perspective considered the commodified chicken a social norm to be opposed, this perspective treats the commodified chicken as a practical past to be responded to through self-education. Rather than

attempting to counteract societal ideas about chickens being stupid, for instance, this group would be more apt to discuss the ways chickens are intelligent (e.g., facial recognition) and variation in chicken personalities. This perspective thus places high importance on learning about and understanding chickens, and developing imaginative responses to the situations at hand.

A statement that was placed in the "most agree" category of the idealized factor 2 sort was "I bring chickens to the veterinarian as often as I would a dog or cat." However, as one commented this shouldn't be understood in terms of pets, but rather as a comparative in terms of health:

This has ramifications in terms of agency attributed to rescued birds. Sorts associated with this perspective placed high importance on chickens being given the opportunity to preen, dustbathe, forage, and perch – but this is accompanied by the recognition that they might not

need to be able to do these depending on the individual, and that alternatives are available. For example:

> I definitely think "there's nothing natural about chickens" is a thing I've said many times, I think that's important. For people to recognize, you know how big I am on predator proofing [creating enclosures for chickens so they can't be attacked or eaten by dogs, foxes, birds of prey, snakes, racoons, etc.]. I know activists come to my house and see places where people free range and think that's the most natural, where nothing about chickens in WI is natural. They're jungle birds, and the closest are these guys [gestures toward two birds with more Southeast Asian heritage]. They lay too many eggs, they can't fly and protect themselves. And I think it's a big excuse for people not to build enclosures and protections and to not treat chickens as individuals. And people will outweigh the risks of this many chickens will be killed by predators and don't realize that once a predator knows. And I also know people who will be like I'm gonna kill that fuckin fox. But you're introducing a prey animal.
>
> And when they do free range [range outside of a fenced-in or otherwise protected area, such as in an open field], they generally go to the same spot each day. I like the model of Triangle Chicken Rescue and Chicken Run, with more like jungle landscapes, lots of trees and plants they can forage under, but in my mind protection is the number one, utmost responsibility of someone that's rescuing animals. So if that means they can't wander as far, so be it. We have indoor cats, every other animal we keep we don't let them wander around in the wild, and chickens are no exception. And if you're living a life where you have a legitimate fear of being killed by a predator, in no way is that freedom to me, where you're living in fear of being killed. (personal communication, October 2017).

This perspective could be understood as circumscribing the agency of rescued chickens, through building enclosures. However, the statement "they generally go to the same spot each day," is an observation about chicken behavior, and the sorter is acting in part on that basis. Building on this, this group placed higher importance on another behavior, one which was critiqued in the first perspective: enabling chickens to establish a pecking order, including fighting. A sorter stated about fighting, "that's just what they do" (personal communication, October 2017).

As with the other perspectives, they strongly disagreed with communicating through establishing dominance, but for a different reason. A sorter stated:

> Communicating through dominance misunderstands chickens' social behavior. I mean, chickens definitely have dominance over one another, but once it's settled into the roles you don't have to enforce it all the time. It's not a constant struggle. Dominance is a way for them to live together socially without conflict" (personal communication, October 2017).

This perspective, again, is premised on understanding chicken behavior and learning about chickens, at the level of the species (prey animals), the breed (e.g., chickens bred for egg-laying), the flock (a certain amount of fighting periodically, the pecking order), and the individual. Concerning the last, this perspective foregrounds that chickens have different abilities and desires. For example, some crossbeak birds and limited mobility birds lived at the sanctuaries these sorters were affiliated with. As crossbeak birds, the sorters pointed out that they couldn't eat out of the same food container, and instead needed a deeper dish so they could scoop up food rather than pecking. Likewise, crossbeak birds had trouble preening themselves, and the sorters placed them with other chickens who they thought would help preen, which was often the case – and when it wasn't, I and others would occasionally give them a bath. Again, this was not to help the chicken "look nice," but to remove parasites, remove feather matting that prevented their feathers from keeping them warm, or for some other reason based on understanding them as individuals, in a flock.

This perspective also prioritized what David Graeber (2015), drawing on feminist standpoint theory and critical race theory, called interpretive labor. Interpretive laborcontains two elements. First, it entails "imaginative identification as a form of knowledge," given that "within relations of domination, it is generally the subordinates who are effectively relegated

the work of understanding how the social relations in question really work" (ibid.:71) Second is a "resultant pattern of sympathetic identification" (ibid.:72). As Graeber points out, it is most often conducted by those in a subordinate social position for those in power: he gives the example of a team of servers trying to placate a disgruntled customer before their boss appears. At sanctuaries, caretakers and chickens toggle into and out of structurally and interpersonally subordinate social positions. Sanctuary affiliates put this into practice by trying to learn about and respond to the behaviors displayed and issues faced by their birds. This was often on an individual basis, but knowledge about individuals was extrapolated to other birds. Interpretive labor in this case destabilizes the hierarchy between humans and chickens. Not simply attempting to create a flat plane, this perspective recognizes and works with power asymmetries.

By practicing interpretive labor, this perspective arguably is the least anthropocentric and gives chickens the most agency, in that sanctuary workers try to understand chickens' needs, behaviors, and desires, in their current situations and support or accommodate them. Care, in this case, is driven by knowledge and an attempt to understand individual chickens as well as population dynamics. As a sorter stated:

> Communication is like a two way thing. So I learn different sounds, and learn to understand what they're saying, but that doesn't mean they understand what I'm saying. So I dunno where to place that one [footnote the statement]. I think they learn your actions, when you repeat them, they learn what you're trying to do. So it used to be more difficult to get Pepper and Chicklet to go into their run, but now you just open the door and they run in there. So they kinda learn about what you want and what you're trying to tell them. I do think like some chickens like Reuben will, you can call him and he'll actually come. But I think that's pretty rare, most don't respond to human voices like that. (personal communication, September 2017).

Also characteristic of the factor was strong (-3) disagreement with the statement "It's important that humans and chickens benefit from the relationship." One sorter distinguished between the *visibility* of chicken rescue and the *act* of chicken rescue, and prioritized the act over its visibility:

> These other [statements], where you use chickens for things, benefitting from good stories or using them as ambassadors. I think those things are useful, but they're not useful to the chickens, and I guess I have a sort of 'chicken first' view of it, rather than using chickens as tools to influence people. (personal communication, October 2017)

In keeping with this, sanctuary affiliates with this perspective gave tours less regularly than other sanctuaries. They would do outreach and education, but in other ways, more specific to individual chickens. For instance, Reuben, the chicken mentioned above, is extremely personable and unflappable, so to speak, by human social life, and would often go with sanctuary affiliates to schools and stores.

Concepts that can be associated with this perspective are, firstm, birds. Sorters associated with this perspective most frequently categorizes chickens as birds. While this might seem so mundane as to be not worth mentioning, this categorical work is in fact crucial: there is considerable knowledge about birds that this group works to translate to chickens. However, "bird" is only used as a quasi-normative category: these sorters will learn about chickens through learning about birds, and will bring chickens to avian veterinarians, but they do not advocate that chickens ultimately be treated as birds, so much as attempting to recognize the particulars of sanctuary chickens' situations.

Second, work in cultural geography and science and technology studies have turned to the "monstrous" as a way of thinking about human responsibility to domesticated animals and technology, respectively (Law 1990, Latour 1996, Haraway 1997, Latour 2011, Lorimer and Driessen 2013,).[28] In their work on rewilding Dutch cattle, Lorimer and Driessen (2013, 250) suggest that the term "monster" is "deployed as both a noun and a verb; it refers to both the abhorrent outsider and the process by which these become such." This description mirrors this perspective's understanding and critical interrogation of chickens as modified. However, unlike rewilding, these sorters (and sanctuaries in general) maintain a level of closeness to sanctuary chickens, caring for them as modified (c.f. Latour 2011). For this reason I suggest that they might be conceptualized as "dear monsters," alluding to their modification through breeding, their exploitation under capitalism, and their care at sanctuaries – all of which this perspective emphasizes.

3. Direct and indirect ambassadors

This perspective is neutral on issues of "naturalness," sorting "there's nothing natural about chickens as a 0. As a sorter commented, "They derive from jungle fowl, so there's *something* natural about them. I'm also skeptical of the meaning of the word "natural." Naturalness is still a distinguishing statement for the sort, inasmuch as its placement was significantly different than the agreement or disagreement of the other two. But its neutrality reinforces how instrumentalist this perspective is.

[28] This differs from but resonates with Gibson-Graham's (1996, 21) suggestion that capitalism be conceptually deconstructed into forces and relations that are "friendly monsters."

It also sets groundwork for this perspective's outlook on chickens in terms of animal care. As a sorter stated: "I think they should do whatever makes them happy. I think happiness is what's important and not what's natural. If it's natural to have a pecking order but it doesn't make them happy then I would ?? the pecking order." They express a similar idealistic view of dominance, but are more self-critical than the first perspective: "We're very paternalistic, a sorter said. "We make decisions on behalf of animals. But I think all of that needs to be guided by consent and by their best interests. So we should be guided by a narrative of not establishing dominance, but just helping them to achieve their true will. So establishing dominance to me is like, very weird." (personal communication, August 2017).

This perspective affirms and elaborates the already explicit sanctuary animal as ambassador approach. Its characteristic statements are "The most important job of rescued chickens is to be ambassadors," "the value of chicken rescue is to promote alternatives to chicken exploitation," and "chickens with good stories are important." Because this perspective is so explicit in seeing chickens as ambassadors, I describe the perspective and the concepts together.

This perspective opposes chicken rescue as one oriented towards saving individual lives, and in this respect, contrasts strongly with the second perspective. As one sorter stated, "I think the goal should be… really trying to tell as many stories as possible" (personal communication, 2017).

However, this perspective reveals subtle but significant differences with common understandings of sanctuary animals as ambassadors. Donaldson and Kymlicka (2015) portray

ambassadors in a way resonant with "encounter value." Through directly encountering rescued animals at a sanctuary and learning more about the plight of much of their species in agriculture, visitors or volunteers will develop sympathy or empathy for chickens and other farmed animals. Sanctuaries thus, in a sense, demand that animals become ambassadors for their species. In this perspective, a concern might be that chickens who are uninterested in or dislike socializing with humans would still be forced to become ambassadors. A sorter admits this. "I think if we need less friendly chickens to be ambassadors then they should," they note, but then goes on to say that that is unlikely to be the case in practice: "I think there are enough friendly chickens so it's better to not force socializing on them" (personal communication, 2017). This perspective thus recognizes differences between individual chickens

In addition to this component, though, this perspective introduces a contrast between direct and indirect ambassador animals. Where direct ambassadors are those who are encountered through a visit to a sanctuary, indirect ambassadors are represented through the media. Indirect ambassadors thus enable a nonreciprocal connection, where humans engage with the represented animal but not vice versa. Additionally, a sorter notes that indirect ambassadors are at least as important as direct ambassadors. They said: "[we] release an investigation, it gets published in the NYT, and people go vegan. And that dwarfs anything we can do directly" (personal communication, August 2017).

Because of the importance of indirect ambassadors to this perspective, they emphasize choosing which chickens to rescue based on which stories can be told: "[h]onestly I think the best thing would be to … pick [animals to rescue] based on the stories you can tell, the

ambassadors you'd have. The goal is not to save all of the hurting animals. The goal is to save all the animals you reasonably have capacity for and focus on those stories" (personal communication, August 2017). This point, while explicit that animal care is important, selects chickens for and therefore constructs sanctuary chickens in terms of storytelling potential. This can be associated with charisma (Lorimer 2015) and aesthetics, which, in terms of chicken advocacy, is especially challenging (see Chapters 1 and 3 on how chickens are perhaps the least charismatic of sanctuary animals). By charisma and aesthetics here, I mean in terms of stories, but stories are also tied to physical norms about beauty. Advocates of the ambassador perspective have complained about how white leghorns, for example, are less desirable, because they are more skittish, less friendly toward humans, and less pretty. One sanctuary worker, who cared for flocks of mostly leghorns, but had a personal flock of mostly fancier breeds. In its emphasis on aesthetics, this perspective perhaps especially contrasts with the dear monster concept.[29]

Conclusion

Though this chapter discussed three perspectives and six different concepts, and though, statistically, the perspectives are relatively distinct, it merits recognizing that there is overlap between them in practice. A factor one sorter, for example, remarked that "I think the most important job is to take care of your chickens," a characteristic statement of that perspective, but then they added, "but I think being ambassadors is really important as well" (personal communication, October 2017). Likewise, while conducting participant observation, many

[29] As Latour (2011) observed, a major reason why Dr. Frankenstein abandoned Frankenstein-monster is that the doctor thought Frankenstein ugly.

sorters referenced chickens as descending from wild jungle fowl and also being heavily modified by humans. To conclude, I discuss salient themes that were common to all perspectives, albeit often for different reasons.

First, there was relative consensus around the importance of chickens having the opportunity to **express certain behaviors** at sanctuaries. The most significant statement on the side of "most like how I think" was "chickens should be able to preen, dustbathe, forage, and perch." 6 subjects placed this in the highest category (+3), and 2 in the second highest (+2). This is somewhat in keeping with the "refuge" aspect of the "refuge and advocacy" model (Donaldson and Kymlicka 2015). In addition to offering shelter, though, the agreement on this statement characterized what could be meant by chickens being offered the opportunity to have a good "quality of life," the contentious term of the previous chapter. However, it did not include all behaviors, as evident in the statement "[c]hickens should be able to establish a pecking order, including fighting." Furthermore, several respondents emphasized variation in these behaviors: that certain chickens wouldn't perch, that some had trouble preening and would instead get preened by others, and so forth.

The statement that people opposed the most was "I communicate with chickens by **establishing dominance**." Eight out of ten subjects sorted it as a -3. In interviews, people often reacted with disgust to this statement, adding that no one should be treated that way, and expressing surprise that anyone had said it (I asked them to interpret it in their own context,

and offered to provide the context in which I had encountered it after the sort).[30] Again, stated reasons for this varied by perspective, but there was general agreement with the sentiment.

There was further agreement about the importance of **challenging gender stereotypes** at sanctuaries, evinced in the placement of the statement "roosters and hens need each other." As one sorter joked…

> [looking at the statement "Roosters and hens need each other"] [laughs] That's wayyyy off! Roosters and hens don't need each other. [crowing] I don't think any animal needs the opposite gender of any animal. I think many of my hens would be happy without rooster around. Sweet Pea loves her rooster. Fonzie loves his roosters. [crow] Wait, Fonzie's not a hen. (personal communication, October 2017)

Fonzie was a rooster who seemed to always want to be around other roosters, and lived with one or two other roosters at a time.[31]

Decentering veganism. Finally, it is worth noting that veganism, frequently considered central to the work of sanctuaries (e.g., Baur 2008) was de-centered by all sorters and in all perspectives (receiving factor scores of 0, -1, and 2 respectively). Humans becoming vegan was considered "a nice side effect," but not central to their work (personal communication, August 2017). Volunteers and staff at Heartland often brought up a desire for more of a place for mentioning and encouraging veganism, but not for centering it. [as referenced in mapping] Again, this was for different reasons. As a sorter who characterized perspective one said, "in the end, I think the value of chicken rescue is to help chickens. And that's helped by people becoming vegan,

[30] It came from the website of Chicken Run Rescue, one of the most well-known chicken-focused sanctuaries in the United States: many sanctuaries turn to the advice for chicken care presented on the Chicken Run Rescue website or to Mary Britton Clouse, its founder.

[31] Another example would be the "lesbihens," a pair of hens who were paired with a rooster. Accordingly to this sorter and everyone else who saw the trio, the hens were primarily interested in one another.

but I don't, the chickens to me are more important than the people" (personal communication, October 2017). This contrasts to a sorter associated with perspective 2: "Rescuing chickens is not going to make people vegan ever, they have to be somewhere on that continuum of learning and all that. And yeah, it would be great, we can talk more about it, we should be talking more about it ... [but] you don't need to say it in a judgmental way, or say that word a lot of the time." (personal communication, August 2017)

The perspectives developed in this chapter add foundation to some of the disagreements at sanctuaries. For instance, there is known disagreement between issues of freedom and protection at sanctuaries (Abrell 2016, Donaldson and Kymlicka 2015), but knowing that they are in part undergirded by differences in valuing *knowledge* versus valuing *opposition to the status quo* can help sanctuaries negotiate these issues. Additionally, given the overlap in practice between the concepts, and the likely continuation of animal ambassadors, it could be useful for proponents of the direct/indirect ambassador animals to consider incorporating other concepts into it. Likewise, the concepts contribute to the project of rehabilitating animality, and creating both new vocabularies and different ways of valuing and interacting with domesticated species.

Chapter 6. Interlude

The following sequence braids together three types of material.

First, Margaret Atwood's poem, *Cell* discusses cancer in terms of ambiguous aesthetics and as a metaphor for the unseeing brutality of human desires. One line of the poem is presented per page.

Second, one of the sanctuaries I worked with collected over two years of necropsy reports. The 8-cell-per-page layout is such that most of these necropsies are displayed. Cancer- and reproduction-related causes of death are highlighted, to show the prevalence of death due to being bred for egg production. The sanctuary was able to receive these necropsy reports because the University of California Extension has a program designed to monitor disease among a food supply – chickens. The UC-Extension program performed necropsies for free, originally, and now, for a small fee (they made this change made after being overwhelmed with dead birds, due to the rise of backyard chickens). Several sanctuaries took them up on this, less for the purpose of monitoring food safety and more for the purposes of learning why the birds in their care died and getting closure, as well as being aware of major issues that could merit habitat changes or awareness for early treatment. In the case of the sanctuary whose "data" are here, they also did necropsies as a speculative act of hope, that having data would be helpful to sanctuaries and chickens in general, somehow.

Finally, hand-drawn illustrations from my ethnographic research introduce some of the mundane challenges of rescuing hens bred to lay eggs, as well as elaborating on the chickens'

plight. These include material adapted from interviews with sanctuary workers, veterinarians, and participant observation in person and on social media. They also include excerpts of journal articles used by sanctuaries, one of which I was asked to use my privilege as a university student to procure for people who are friends, comrades, and research subjects. Themes are differentiated by color hue: a switch from green to orange, for example, indicates a turn to a different interview or story.

I attempt to braid together these three narratives to evoke the cacophonous challenge of medical care at sanctuaries, which I interrogate more analytically in the next chapter.

Note: The following pages were originally crafted on 11"x17" paper in landscape orientation. They have been reformatted into 8.5"x11" portrait orientation to fit a standard dissertation book. They are thus meant to be read across in pairs of pages, starting with the first two pages, and so on. I have attempted to format them as such for printing, but if ProQuest changes how the beginning of the book is formatted, this might change. For reading electronically, they should, again, be read across in pairs.

Now look objectively. You have to

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Rosemary
Date Collected:
Date Received: 02/10/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 2/19/2016 4:54:18PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Rosemary	Name	Leghorn Chicken	Female	3.00 Years

Laboratory Findings/Diagnosis

1. Severe salpingitis, bacterial etiology.
2. Moderate peritonitis/airsacculitis, bacterial etiology.

Case Summary

02/12/16: Salpingitis (inflammation of the oviduct) is a common condition in backyard chickens most commonly caused due to an ascending infection by bacteria from cloaca/vagina.
There are more tests and tissues for histopathology review are pending. In the meantime if you have any questions please give me a call.

02/19/16: The bird is negative for AI, salmonella and lead. This completes all the tests on this case.

Clinical History

Rosemary is a 3 year old White Leghorn hen. She was found in her coop, unable to stand. On the morning of 2/8/16 her crop was moderately full of soft, doughy material, not fluid. Blood was aspirated from her abdomen using a 25g needle. She was given 75ml of fluids subcutaneously and papaya enzyme orally. Euthanized on the evening of 2/8/16 due to worsening condition.

Gross Observations

GENERAL APPEARANCE: A 3-year-old male White Leghorn hen is presented dead for necropsy. The bird is in fair postmortem condition severely emaciated and weighs 1.54 kg.
SKIN: : Comb, most of it is crusty.
NASAL PASSAGES/LARYNX AND TRACHEA: : Unremarkable.
' 'JNG AND AIR SACS: Abdominal air sacs and peritoneum are cloudy.
ARDIOVASCULAR: has serous atrophy of fat
DIGESTIVE TRACT/INTESTINE:
Crop: has moderate amount of feed.

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Rosemary
Date Collected:
Date Received: 02/10/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 2/19/2016 4:54:18PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF
Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Rosemary	Name	Leghorn Chicken	Female	3.00 Years

Laboratory Findings/Diagnosis

1. Severe salpingitis, bacterial etiology.
2. Moderate peritonitis/airsacculitis, bacterial etiology.

Case Summary

02/12/16: Salpingitis (inflammation of the oviduct) is a common condition in backyard chickens most commonly caused due to an ascending infection by bacteria from cloaca/vagina.
There are more tests and tissues for histopathology review are pending. In the meantime if you have any questions please give me a call.

02/19/16: The bird is negative for AI, salmonella and lead. This completes all the tests on this case.

Clinical History

Rosemary is a 3 year old White Leghorn hen. She was found in her coop, unable to stand. On the morning of 2/8/16 her crop was moderately full of soft, doughy material, not fluid. Blood was aspirated from her abdomen using a 25g needle. She was given 75ml of fluids subcutaneously and papaya enzyme orally. Euthanized on the evening of 2/8/16 due to worsening condition.

Gross Observations

GENERAL APPEARANCE: A 3-year-old male White Leghorn hen is presented dead for necropsy. The bird is in fair postmortem condition severely emaciated and weighs 1.54 kg.
SKIN: : Comb, most of it is crusty.
NASAL PASSAGES/LARYNX AND TRACHEA: : Unremarkable.
LUNG AND AIR SACS: Abdominal air sacs and peritoneum are cloudy.
CARDIOVASCULAR: has serous atrophy of fat
DIGESTIVE TRACT/INTESTINE:
Crop: has moderate amount of feed.

Report 4.26-CAHFS Standard Report - 02/18/2016 Page 1 of 3

admit the cancer cell is beautiful.

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Rosemary	Rosemary	Pharyngeal Swab - VTM	Not Detected

Histology

Brain, spinal cord, nerves, air sac, sinus/turbinates, larynx, trachea, lung, liver, spleen, kidney, heart, esophagus, proventriculus, gizzard, intestine, pancreas, ovary, oviduct, skin/comb, eye lids, bone and bone marrow are examined.

Oviduct, air sacs/peritoneum: has moderate to severe fibrinosuppurative inflammation associated with bacteria.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
Rosemary	decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

The detected liver iron concentration is above our reference range for this species. A high liver iron concentration is a non-specific finding that can occur as a result of congestion, hemolysis, excessive iron exposure, iron storage diseases or starvation/fasting. The other detected liver mineral results are within acceptable or non-diagnostic ranges for this species.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Rosemary	Rosemary	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Lavender
Date Collected: 03/10/2016
Date Received: 03/10/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 3/18/2016 1:10:46PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF
Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
lavender	Unknown	Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

1. Ovarian carcinoma with metastasis to serosal surfaces of the liver, proventriculus, pancreas, intestine, oviduct and peritoneum.

2. Moderate myocardial degeneration, heart. Etiology undetermined.

Case Summary

03/10/16: Histopathology will help confirm this. Ovarian carcinoma's are very common in adult hens. Other tests such as serology, bacteriology, test for AI and toxicology on the liver are pending. In the meantime if you have any questions please give me a call.

03/18/16: Histopahtology confirms carcinoma. The chicken is negative for AI, salmonella and lead. This completes all the tests on this case.

Clinical History

Lavender was found underneath her coop, unable to stand on 3/8/16. She is a white leghorn hen, about 3 1/2 years old. There was a foul smelling white/brown liquid coating her vent feathers. This morning just before she died, her mouth was full of liquid and she struggled to breathe. Aspirated yellow fluid from abdomen postmortem. Suspect: possible egg yolk peritonitis.

Report 4.27-CAHFS Standard Report - 02/22/2016 Page 1 of 3

CAHFS Final Version 1 Accession # March 18, 2016

Bacteriology

GENERAL APPEARANCE: A 3 1/2-year-old White Leghorn hen is presented dead for necropsy. The bird is emaciated and weighs 1.32.Kg.
The abdomen is severely swollen and contains 100 to 200 ml of viscous yellow-colored fluid.
SKIN: Unremarkable.
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: Unremarkable.
CARDIOVASCULAR: has serous atrophy of fat around the base.
DIGESTIVE TRACT/INTESTINE:
Intestine: have adhesions between the loops and there are numerous miliary pale firm nodules, 3 to 5mm in diameter scattered all over the serosa.
Crop, proventriculus and gizzard have minimal feed; There are similar nodules on the serosa of the proventriculus and gizzard..
LIVER AND PANCREAS: Liver is brownish.
SPLEEN, BURSA AND THYMUS: Unremarkable.
KIDNEYS/REPRODUCTIVE TRACT:
Ovary: is severe enlarged with numerous pale yellow firm nodules or cysts scattered throughout. There are also well developed follicles within the ovary.
Similar small nodules are present throughout the serosa of the abdominal cavity, serosa of the left oviduct and the right oviduct.
The proximal 5 cm of the magnum wall is diffusely thickened.
MUSCCULOSKELETAL: Pectoral muscles are atrophied.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
lavender	Lavender	Liver Tissue	No growth after 48 hours

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
lavender	Lavender	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
lavender	Lavender	Pharyngeal Swab - VTM	Not Detected

Histology

Brain, spinal cord, nerves, sinus/turbinates, larynx/trachea, lung, liver, spleen, kidney, heart, esophagus, crop, proventriculus, gizzard, intestine, pancreas, ovary, oviduct, thyroid, adrenal, tongue, skin, bone and bone marrow, eye, ears are examined.

Ovary, serosa of the abdominal cavity, oviduct, intestine, pancreas, proventriculus, liver have neoplastic proliferation of cuboidal epithelial cells forming glands of various sizes some contain eosinophilic material in their lumens.
Heart has moderate myocardial degeneration.
Lung has mild accumulation of silica in the cytoplasm of macrophages.

Report 4.27-CAHFS Standard Report - 02/23/2016 Page 2 of 3

CAHFS Final Version 1 Accession # [redacted] February 19, 2016

Manganese	1.4	ppm	0.10	ppm	2.0-4.0
Iron	680	ppm	1.0	ppm	60-300
Mercury	Not Detected	ppm	1.0	ppm	<1.0
Arsenic	Not Detected	ppm	1.0	ppm	<1.0
Molybdenum	1.5	ppm	0.40	ppm	
Zinc	120	ppm	0.30	ppm	25-40
Copper	2.9	ppm	0.30	ppm	3.0-15.0
Cadmium	1.7	ppm	0.30	ppm	<5.0

Report 4.26-CAHFS Standard Report - 02/18/2016 Page 3 of 3

04/19/2004 12:55 15594858097 CAHFS FRESNO PAGE 02/02

California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only
Accn. # ____
Rec'd by ____
Case coordinator ____
Accn. type ____
Samples ____
Date rec'd ____
Section ____
Bill to (circle): Vet, Clinic, Owner, Other
Carrier ____

Veterinarian's Name [redacted]
Clinic Name [redacted]
Address [redacted]
City [redacted] State ____ Zip [redacted]
Phone [redacted] FAX ____
Your reference # ____
Date sample(s) taken 3/9/16 Date shipped 3/9/16
☐ Fax or ☒ Email results to: [redacted]

Owner's Name [redacted]
Ranch [redacted]
Address [redacted]
City [redacted] State ____ Zip
Phone [redacted]
☐ Export Sample ____ (specify test methods below) Destination (country)
☐ Copy to ____

☐ Cattle ☐ Turkey
☐ Horse ☒ Chicken
☐ Swine ☐ Psittacine ____
☐ Sheep ☐ Ratite ____
☐ Goat ☐ Plant or Feed
☐ Rabbit ☐ Other ____

Location of Animal(s) [redacted] (county, state)
Animal/Group ID(s) ____
Production Class ____ (i.e. beef, dairy, calf ranch, etc.)
Duration of Illness Unknown

# in herd	# in group	#sick	#died

Date died 3/9/16 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?
Lavender was found underneath her coop, unable to stand on 3/8/16. She is a white leghorn hen, about 3 1/2 years old. There was a foul smelling white/brown liquid coating her vent feathers. This morning just before she died, her mouth was full of liquid and she struggled to breathe. (continue on reverse if necessary)
Treatments: Aspirated yellow fluid from abdomen post-mortem.

Disease(s) or condition(s) suspected: Possible egg yolk peritonitis

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis, University of California, Davis, W. Health Sciences Dr., Davis, CA 95616, General Info (530) 752-8700, FAX (530) 752-5253
CAHFS, Turlock, University of California, Davis, 1550 N. Soderquist, Turlock, CA 95381, General Info (209) 634-5837, FAX [redacted]
CAHFS, Fresno, University of California, Davis, 2789 South Orange Avenue, Fresno, CA 93725, General Info (559) 498-7740
CAHFS, Tulare, University of California, Davis, 18830 Road 112, Tulare, CA 93274, General Info (559) 688-7543, [redacted] 686-4231
CAHFS, San Bernardino, University of California, Davis, 105 West Central Avenue, San Bernardino, CA 92408, General Info (909) 383-4287, FAX (909) 884-5980

Signature of Submitter [redacted] Date: 3/9/16
9/21/00

CAHFS Final Version 1 Accession # [redacted] March 18, 2016

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
lavender	Lavender	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.27-CAHFS Standard Report - 02/22/2016 Page 3 of 3

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #: [redacted]
Referral #:
Date Collected: 03/29/2016
Date Received: 03/30/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 4/15/2016 3:06:24PM

Email To: ROSENBERG, SHERSTIN

Collection Site: HAPPY HEN CHICKEN RESCUE

Specimens Received: 1 Carcass;

Comments: Carrier: UPS Ground

Case Contacts

Submitter	ROSENBERG, SHERSTIN	805-458-6102	2375 CORBELT CANYON RD San Luis Obispo, CA 93401
Report To			

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
no id	Unknown	Chicken	Female	3.00 Years

Laboratory Findings/Diagnosis

1. Carcinomatosis, probably of ovarian origin; serosa of the intestine, pancreas, peritoneum and oviduct and ovary.
2. Moderate to severe sinusitis and tracheitis, probably due to mycoplasma sp.
3. Acute multifocal severe nephrosis, kidneys. Probably due to dehydration.
4. Mild to moderate interstitial mineralization, proventricular glands. Secondary to renal failure.
5. Locally extensive gastritis with mucosal base mineralization, gizzard. Secondary to renal failure.
6. Ceca: Tetratrichomonads present.
7. Liver negative for amyloid.

Case Summary

04/07/16: Carcinoma of ovarian origin is most common in adult hens. The chciken is negative for AI, salmonella and lead. There are a few more tissues and tests pending. In the meantime if you have any questions please give me a call.

Note: Sorry I am a little bit late on sending this report.

04/15/16: Rest of the tissues are unremarkable. This completes all the tests on this case.

Clinical History

Three year old white leghorn hen was found dead in her coop with no obvious cause of death.

Gross Observations

^^ENERAL APPEARANCE: An adult WLH hen is presented dead for necropsy. The bird is in fair postmortem condition, .hydrated, emaciated and weighs 1.53 Kg.
SKIN: Unremarkable.
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.

Gross Observations

GENERAL APPEARANCE: A 3 year-old (plastic green leg band # 50, bird A) and a 2 1/2 year-old (plastic blue leg band # 82, d B) WLH hens are presented dead for necropsy. The birds are in fair postmortem condition, bird A is dehydrated, and weighs 2. 06 kg and bird B weighs 1. 57 kg.
SKIN: Unremarkable.
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: Air sacs are cloudy in bird B.
CARDIOVASCULAR: Unremarkable.
DIGESTIVE TRACT/INTESTINE:
Crop: has feed in both birds.
Gizzard: has small amount of feed
Bird A: Abdominal cavity is severely distended with a few large yolks covered with fibrinous exudate.
Serosa of the proventriculus, gizzard and intestine: are covered with large amount of fibrinous exudate.
Bird B: serosa of the abdominal cavity and organs have mild fibrinous exudate.
LIVER AND PANCREAS: Unremarkable.
SPLEEN, BURSA AND THYMUS: Unremarkable.
KIDNEYS/REPRODUCTIVE TRACT:
Kidneys are pale and atrophied in bird A.
Birds A and B. Ovary: has a few large follicles and a few attretic follicles Bird A: Oviduct in bird A is severely distend with large numbers of yolk and semi-formed eggs without shell mixed with exudate . Bird B has mild exudate in the oviduct. ew developing follicles.
Oviduct: active.
MUSCCULOSKELETAL: Bird A:Keel is crooked and the pectorals are mildly atrophied.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.
Brain, nerves/artery, sinus/turbinates, larynx/trachea, lung, air sac, liver, spleen, kidney, heart, esophagus, crop, proventriculus, ·izzard, intestine, pancreas, ovary, oviduct, thymus, thyroids, skin, are examined.

Bird A has severe fibrinosuppurative inflammation associated with bacteria in the ovary, oviduct, peritoneum/serosa of the intestine, etc.
Bird B has mild similar inflammation in air sac, ovary, oviduct, peritoneum, etc.
Trachea has moderate to severe lymphoplasmacytic inflammation of the mucosa.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A-Ava	A	Liver Tissue	No growth after 48 hours
A-Ava	A	Peritoneal Swab	Gallibacterium anatis biovar haemolytica Mod#
A-Ava	A	Oviduct Swab-Avian	Gallibacterium anatis biovar haemolytica Lg#
B-Swan	B	Liver Tissue	No growth after 48 hours
B-Swan	B	Oviduct Swab-Avian	Escherichia coli Sm#
			Mixed flora Rare#
			Gallibacterium anatis biovar haemolytica Sm#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
` Ava	A& B pool	Cecal Contents Pool	No Salmonella sp. detected

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be atected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
no id	no id	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Biotechnology

Avian Influenza matrix gene qRT-PCR

imal/Source	Specimen	Specimen Type	Results
A-Ava	A&B Pool	Pharyngeal Swab Pool - VTM	Not Detected

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

The detected liver mineral results are within acceptable or non-diagnostic ranges for this species.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
A-Ava	A	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0
Manganese	1.2	ppm	0.10	ppm	2.0-4.0
Iron	200	ppm	1.0	ppm	60-300
Mercury	Not Detected	ppm	1.0	ppm	<1.0
Arsenic	Not Detected	ppm	1.0	ppm	<1.0
Molybdenum	Not Detected	ppm	0.40	ppm	
Zinc	74	ppm	0.30	ppm	25-40
Copper	1.7	ppm	0.30	ppm	3.0-15.0
Cadmium	Not Detected	ppm	0.30	ppm	<5.0

B-Swan	B	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0
Manganese	2.4	ppm	0.10	ppm	2.0-4.0
Iron	190	ppm	1.0	ppm	60-300
Mercury	Not Detected	ppm	1.0	ppm	<1.0
Arsenic	Not Detected	ppm	1.0	ppm	<1.0
Molybdenum	0.55	ppm	0.40	ppm	
Zinc	47	ppm	0.30	ppm	25-40
Copper	2.6	ppm	0.30	ppm	3.0-15.0
Cadmium	Not Detected	ppm	0.30	ppm	<5.0

If it were a flower, you'd say,
How Pretty,

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Ava and Swan
Date Collected: 04/03/2016
Date Received: 04/05/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 4/15/2016 3:56:20PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: carrier: UPS

Case Contacts

Submitter
Report To , BYF — Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-Ava	Name	Leghorn Chicken	Female	2.50 Years
B-Swan	Name	Leghorn Chicken	Female	3.00 Years

Laboratory Findings/Diagnosis

1. Severe salpingitis and peritonitis, Bird A (Green 50), mild, bird B (Blue 82). Gallibacterium anatis isolated from bird A
2. Severe tracheitis and mild airsacculitis, bird B (Blue 82). Probably due to mycoplasma.
3. Mild salpingitis and peritonitis, bird B (Blue 82).
4. Mild amyloidosis; spleen and liver, bird A. Probably secondary to chronic inflammation.

Case Summary

04/07/16: Salpingitis is a common diseases in adult hens most likely due to an ascending infection from the cloaca. Peritonitis is probably secondary to salpingitis. Gallibacterium anatis was isolated from bird A.
Tracheitis most probably due to mycoplasma sp. is also common in backyard chickens.

The birds are negative for AI and lead. There are a few more tests pending. In the meantime if you have any questions please give me a call.

04/15/16: The chickens are negative for salmonella and amyloid was confirmed in bird A. This completes all the tests on this case.

Clinical History

Ava (blue 82) was a 2 1/2 year old white leghorn hen. She appeared extremely healthy up until being found dead in her nest box on the morning of 4/31/16. Another hen in the coop had probably pecked at one of her feet after she died. No obvious cause of death.

Swan (green 50) was a 3 year old white leghorn hen found on the floor of her coop, unable to move. She a chronic case of vent gleet, and was treated for a URI in September 2015. Otherwise, she had been fairly healthy. She died a few minutes after being found on the coop floor.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
no id	no id	Liver Tissue	Mixed flora Rare#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
no id	no id	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
no id	no id	Pharyngeal Swab - VTM	Not Detected

Histology

Brain, nerves/artery, sinus/turbinates, larynx/trachea, lung, liver, spleen, kidney, heart, esophagus, crop, proventriculus, gizzard, intestine, pancreas, ovary, oviduct, thymus, thyroids, skin, are examined.

Ovary and serosal surfaces of the intestine, pancreas, mesentery/fat have proliferation of cuboidal neoplastic epithelial cells forming glands which are arranged as nodules of various sizes.

Kidneys have acute necrosis of tubular epithelial cells with accumulation of eosinophilic material and urates accompanied by inflammation randomly scattered throughout. Tubules also have moderate multifocal mineralization.
Some of the arteries in the kidneys and heart have increased eosinophilia in the tunica media.
Heart: has mild multifocal degeneration of myofibers randomly scattered throughout.
Proventriculus has mild to moderate multifocal mineralization of the interstitium in the glandular parts.
Lung have moderate accumulation of silica in the cytoplasm of macrophages.
Intestine: has focal necrosis of the mucosa and ulceration. Ceca have a few tetratrichomonads.
Gizzard has locally extensive basal mineralization of the mucosa with inflammation in the lamina propria.
Trachea: have moderate to severe infiltration of lymphocytes in the mucosa.

California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only
Accn. #
Rec'd by
Case coordinator
Accn. type
Samples
Date rec'd
Section
Bill to (circle): Vet, Clinic, Owner, Other
Carrier

Veterinarian's Name
Clinic Name
Address
City
Phone _ FAX
Your reference #
Date sample(s) taken: 4/22/16
☐ Fax or ☒ Email results to:

Owner's Name
Ranch
Address
City _ State _ Zip
Phone
☐ Export Sample
(poorly fast metabolic species) Destination (country)
☐ Copy to

☐ Cattle ☐ Turkey
☐ Horse ☒ Chicken
☐ Swine ☐ Psittacine
☐ Sheep ☐ Ratite
☐ Goat ☐ Plant or Feed
☐ Rabbit ☐ Other

Location of Animal(s) (county, state)
Animal/Group ID(s)
Production Class (i.e. layer, dairy, calf ranch, etc.)
Duration of Illness: unknown

# in herd	# in group	#sick	#died

Date died: 4/31/16 Euth? Yes No

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?
Bille (Blue 93) was a 3 year old white leghorn hen who was found dead in her nest box on 4/22/16. There is no apparent cause of death. She had been treated for a URI in September 2015, but has otherwise been healthy. She looked fine yesterday when coop was cleaned.
Treatments: None (continue on reverse if necessary)

Disease(s) or condition(s) suspected: unknown

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis
University of California, Davis
W. Health Sciences Dr
Davis, CA 95616
General Info (530) 752-8700
FAX (530) 752-8353

CAHFS, Turlock
University of California, Davis
1550 N. Soderquist
Turlock, CA 95361
General Info (209) 934-5837
FAX (2[illegible]

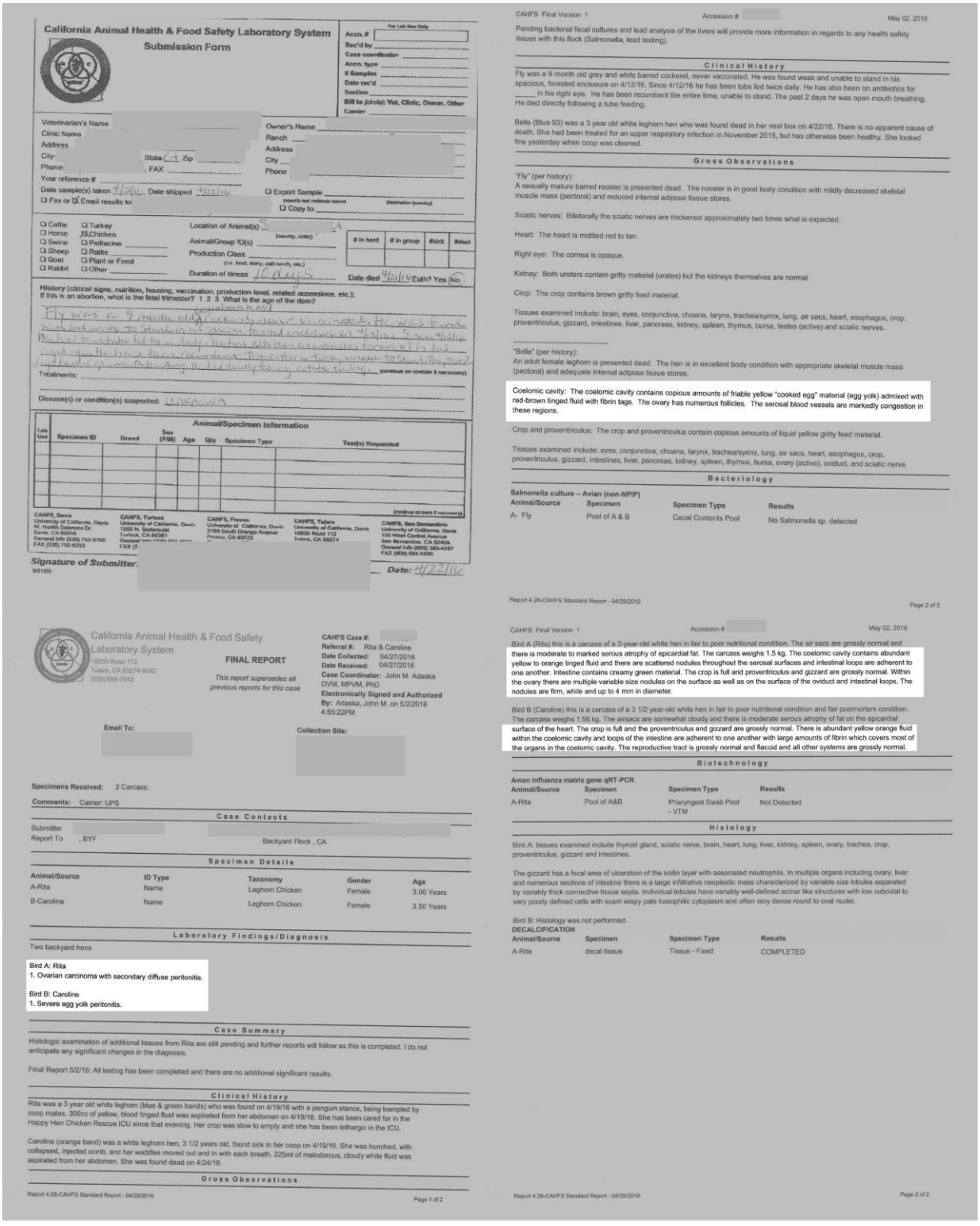
CAHFS, Fresno
University of California, Davis
2789 South Orange Avenue
Fresno, CA 93725
General Info (559) 498-7740

CAHFS, Tulare
University of California, Davis
18830 Road 112
Tulare, CA 93274
(General Info [illegible])

CAHFS, San Bernardino
University of California, Davis
105 West Central Avenue
San Bernardino, CA 92408
General Info (909) 383-4287
FAX (909) 884-0980

Signature of Submitter
6/21/05

Date: 4/22/16



California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only
Accn. #
Rec'd by
Case coordinator
Accn. type
Samples
Date rec'd
Section
Bill to (circle): Vet, Clinic, Owner, Other
Carrier

Veterinarian's Name
Clinic Name
Address
City: State CA Zip
Phone: FAX
Your reference #
Date sample(s) taken 4/21/16 Date shipped 4/22/16
☐ Fax or ☑ Email results to
☐ Export Sample (specify test methods below) Distribution (specify)
☐ Copy to

Owner's Name
Ranch
Address
City
Phone

☐ Cattle ☐ Turkey
☐ Horse ☑ Chicken
☐ Swine ☐ Psittacine
☐ Sheep ☐ Ratite
☐ Goat ☐ Plant or Feed
☐ Rabbit ☐ Other

Location of Animal(s) (county, state)
Animal/Group ID(s)
Production Class (i.e. bird, dairy, calf ranch, etc.)
Duration of illness 10 days

# in herd	# in group	#sick	#died

Date died 4/21/16 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?

Fly was a 9 month old grey and white barred cockerel, never vaccinated. He was found weak and unable to stand in his spacious, forested enclosure on 4/12/16. Since 4/12/16 he has been tube fed twice daily. He has also been on antibiotics for ____ in his right eye. He has been recumbent the entire time, unable to stand. The past 2 days he was open mouth breathing. He died directly following a tube feeding.

Belle (Blue 93) was a 3 year old white leghorn hen who was found dead in her nest box on 4/22/16. There is no apparent cause of death. She had been treated for an upper respiratory infection in November 2015, but has otherwise been healthy. She looked fine yesterday when coop was cleaned.

Treatments:

Disease(s) or condition(s) suspected: UNKNOWN

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis
University of California, Davis
W. Health Sciences Dr.
Davis, CA 95616
General Info (530) 752-8700
FAX (530) 752-8733

CAHFS, Turlock
University of California, Davis
1550 N. Soderquist
Turlock, CA 95381
General Info (209) 634-9940
FAX ( )

CAHFS, Fresno
University of California, Davis
2789 South Orange Avenue
Fresno, CA 93725

CAHFS, Tulare
University of California, Davis
18830 Road 112
Tulare, CA 93274

CAHFS, San Bernardino
University of California, Davis
105 West Cardeal Avenue
San Bernardino, CA 92408
General Info (909) 383-4287
FAX (909) 884-5980

Signature of Submitter: Date: 4/22/16

9/21/09

CAHFS Final Version 1 Accession # May 02, 2016

Pending bacterial fecal cultures and lead analysis of the livers will provide more information in regards to any health safety issues with this flock (Salmonella, lead testing).

Clinical History

Fly was a 9 month old grey and white barred cockerel, never vaccinated. He was found weak and unable to stand in his spacious, forested enclosure on 4/12/16. Since 4/12/16 he has been tube fed twice daily. He has also been on antibiotics for ____ in his right eye. He has been recumbent the entire time, unable to stand. The past 2 days he was open mouth breathing. He died directly following a tube feeding.

Belle (Blue 93) was a 3 year old white leghorn hen who was found dead in her nest box on 4/22/16. There is no apparent cause of death. She had been treated for an upper respiratory infection in November 2015, but has otherwise been healthy. She looked fine yesterday when coop was cleaned.

Gross Observations

"Fly" (per history):
A sexually mature barred rooster is presented dead. The rooster is in good body condition with mildly decreased skeletal muscle mass (pectoral) and reduced internal adipose tissue stores.

Sciatic nerves: Bilaterally the sciatic nerves are thickened approximately two times what is expected.

Heart: The heart is mottled red to tan.

Right eye: The cornea is opaque.

Kidney: Both ureters contain gritty material (urates) but the kidneys themselves are normal.

Crop: The crop contains brown gritty feed material.

Tissues examined include: brain, eyes, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, bursa, testes (active) and sciatic nerves.

"Belle" (per history):
An adult female leghorn is presented dead. The hen is in excellent body condition with appropriate skeletal muscle mass (pectoral) and adequate internal adipose tissue stores.

Coelomic cavity: The coelomic cavity contains copious amounts of friable yellow "cooked egg" material (egg yolk) admixed with red-brown tinged fluid with fibrin tags. The ovary has numerous follicles. The serosal blood vessels are markedly congestion in these regions.

Crop and proventriculus: The crop and proventriculus contain copious amounts of liquid yellow gritty feed material.

Tissues examined include: eyes, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, bursa, ovary (active), oviduct, and sciatic nerve.

Bacteriology

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A- Fly	Pool of A & B	Cecal Contents Pool	No Salmonella sp. detected

---

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Rita & Caroline
Date Collected: 04/27/2016
Date Received: 04/27/2016
Case Coordinator: John M. Adaska DVM, MPVM, PhD
Electronically Signed and Authorized By: Adaska, John M. on 5/2/2016 4:55:22PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF
Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-Rita	Name	Leghorn Chicken	Female	3.00 Years
B-Caroline	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Two backyard hens

Bird A: Rita
1. Ovarian carcinoma with secondary diffuse peritonitis.

Bird B: Caroline
1. Severe egg yolk peritonitis.

Case Summary

Histologic examination of additional tissues from Rita are still pending and further reports will follow as this is completed. I do not anticipate any significant changes in the diagnosis.

Final Report 5/2/16: All testing has been completed and there are no additional significant results.

Clinical History

Rita was a 3 year old white leghorn (blue & green bands) who was found on 4/19/16 with a penguin stance, being trampled by coop mates. 300cc of yellow, blood tinged fluid was aspirated from her abdomen on 4/19/16. She has been cared for in the Happy Hen Chicken Rescue ICU since that evening. Her crop was slow to empty and she has been lethargic in the ICU.

Caroline (orange band) was a white leghorn hen, 3 1/2 years old, found sick in her coop on 4/19/16. She was hunched, with collapsed, injected comb, and her waddles moved out and in with each breath. 225ml of malodorous, cloudy white fluid was aspirated from her abdomen. She was found dead on 4/24/16.

Gross Observations

Bird A (Rita) this is a carcass of a 3-year-old white hen in fair to poor nutritional condition. The air sacs are grossly normal and there is moderate to marked serous atrophy of epicardial fat. The carcass weighs 1.5 kg. The coelomic cavity contains abundant yellow to orange tinged fluid and there are scattered nodules throughout the serosal surfaces and intestinal loops are adherent to one another. Intestine contains creamy green material. The crop is full and proventriculus and gizzard are grossly normal. Within the ovary there are multiple variable size nodules on the surface as well as on the surface of the oviduct and intestinal loops. The nodules are firm, white and up to 4 mm in diameter.

Bird B (Caroline) this is a carcass of a 3 1/2 year-old white hen in fair to poor nutritional condition and fair postmortem condition. The carcass weighs 1.56 kg. The airsacs are somewhat cloudy and there is moderate serous atrophy of fat on the epicardial surface of the heart. The crop is full and the proventriculus and gizzard are grossly normal. There is abundant yellow orange fluid within the coelomic cavity and loops of the intestine are adherent to one another with large amounts of fibrin which covers most of the organs in the coelomic cavity. The reproductive tract is grossly normal and flaccid and all other systems are grossly normal.

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A-Rita	Pool of A&B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Bird A: tissues examined include thyroid gland, sciatic nerve, brain, heart, lung, liver, kidney, spleen, ovary, trachea, crop, proventriculus, gizzard and intestines.

The gizzard has a focal area of ulceration of the koilin layer with associated neutrophils. In multiple organs including ovary, liver and numerous sections of intestine there is a large infiltrative neoplastic mass characterized by variable size lobules separated by variably thick connective tissue septa. Individual lobules have variably well-defined acinar like structures with low cuboidal to very poorly defined cells with scant wispy pale basophilic cytoplasm and often very dense round to oval nuclei.

Bird B: Histology was not performed.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
A-Rita	decal tissue	Tissue - Fixed	COMPLETED

Histology

Fly histology 4/28/2016:
Sciatic nerve: Expanding and separating sciatic nerve fibers are infiltrates of pleocellular lymphocytes.

Spleen, testes, and right eye: Similar pleocellular lymphocytes infiltrate and replace the normal tissue architecture.

Tissues examined include: eye, sinuses, trachea, lung, air sacs, heart, esophagus, crop, proventriculus, ventriculus, intestine, liver, pancreas, kidneys, cloaca, spleen, testes, brain, spinal cord, and sciatic nerve.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
A- Fly	decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
A- Fly	A- Fly	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Animal/Source	Specimen	Specimen Type
B- Belle(Blue 93)	B	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

with its mauve centre and pink petals.

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A- Fly	Name	Chicken	Male	9.00 Months
B- Belle(Blue 93)	Name	Chicken	Female	3.00 Years

Laboratory Findings/Diagnosis

Two adult chickens submitted for backyard flock program

Final report 5/2/2016:
Fly: Marek's disease: Lymphoma in the sciatic nerve, spleen, and iris
Belle: Egg yolk coelomitis

Preliminary report 4/25/2016:
Fly (barred rooster)
1. Presumptive Marek's disease

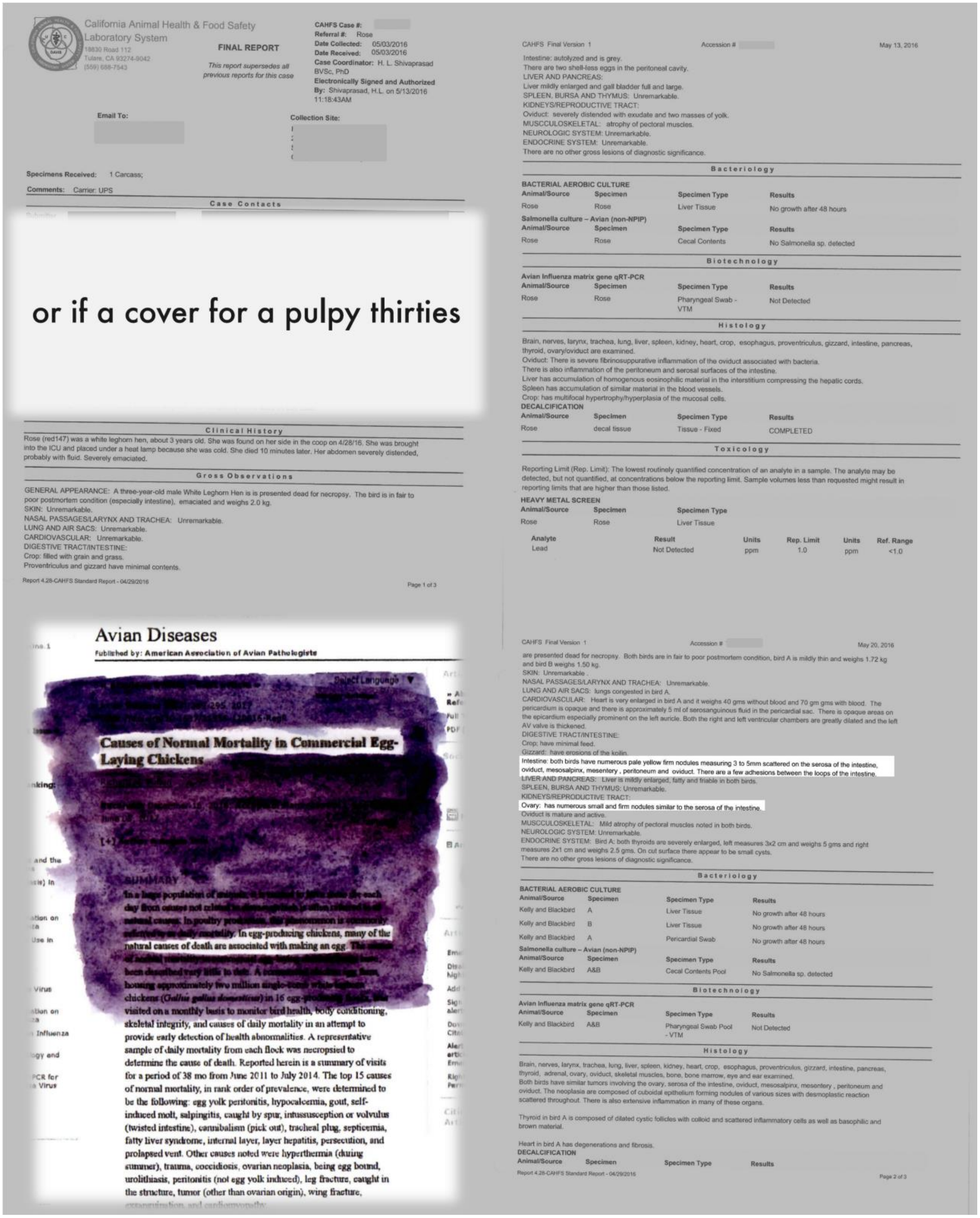
Belle (Leghorn):
1. Egg yolk coelomitis

Case Summary

Final report 5/2/2016:
Histopathology confirms the necropsy suspicion of Marek's disease in the rooster, which causes cancer of the white blood cells, lymphoma. It can be prevented or controlled to a great extent by obtaining chicks vaccinated for the disease at one day of age. Salmonella was not isolated, nor was lead detected in the liver.

Preliminary report 4/25/2016:
Rooster: A cause of death is not definitely determined by gross examination, but the bilaterally enlarged sciatic nerves are suggestive of Marek's disease. Pending histopathology will provide more information.

Leghorn hen: The cause of death is due to egg yolk peritonitis, a condition often seen in backyard flocks with prolific layers.



California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Rose
Date Collected: 05/03/2016
Date Received: 05/03/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 5/13/2016 11:18:43AM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

or if a cover for a pulpy thirties

Clinical History

Rose (red147) was a white leghorn hen, about 3 years old. She was found on her side in the coop on 4/28/16. She was brought into the ICU and placed under a heat lamp because she was cold. She died 10 minutes later. Her abdomen severely distended, probably with fluid. Severely emaciated.

Gross Observations

GENERAL APPEARANCE: A three-year-old male White Leghorn Hen is is presented dead for necropsy. The bird is in fair to poor postmortem condition (especially intestine), emaciated and weighs 2.0 kg.
SKIN: Unremarkable.
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: Unremarkable.
CARDIOVASCULAR: Unremarkable.
DIGESTIVE TRACT/INTESTINE:
Crop: filled with grain and grass.
Proventriculus and gizzard have minimal contents.

Report 4.28-CAHFS Standard Report - 04/29/2016 Page 1 of 3

Avian Diseases

Published by: American Association of Avian Pathologists

[redacted]

Causes of Normal Mortality in Commercial Egg-Laying Chickens

[redacted] In egg-producing chickens, many of the natural causes of death are associated with making an egg. [redacted] visited on a monthly basis to monitor bird health, body conditioning, skeletal integrity, and causes of daily mortality in an attempt to provide early detection of health abnormalities. A representative sample of daily mortality from each flock was necropsied to determine the cause of death. Reported herein is a summary of visits for a period of 38 mo from June 2011 to July 2014. The top 15 causes of normal mortality, in rank order of prevalence, were determined to be the following: egg yolk peritonitis, hypocalcemia, gout, self-induced molt, salpingitis, caught by spur, intussusception or volvulus (twisted intestine), cannibalism (pick out), tracheal plug, septicemia, fatty liver syndrome, internal layer, layer hepatitis, persecution, and prolapsed vent. Other causes noted were hyperthermia (during summer), trauma, coccidiosis, ovarian neoplasia, being egg bound, urolithiasis, peritonitis (not egg yolk induced), leg fracture, caught in the structure, tumor (other than ovarian origin), wing fracture,

CAHFS Final Version 1 Accession # May 13, 2016

Intestine: autolyzed and is grey.
There are two shell-less eggs in the peritoneal cavity.
LIVER AND PANCREAS:
Liver mildly enlarged and gall bladder full and large.
SPLEEN, BURSA AND THYMUS: Unremarkable.
KIDNEYS/REPRODUCTIVE TRACT:
Oviduct: severely distended with exudate and two masses of yolk.
MUSCCULOSKELETAL: atrophy of pectoral muscles.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Rose	Rose	Liver Tissue	No growth after 48 hours

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Rose	Rose	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Rose	Rose	Pharyngeal Swab - VTM	Not Detected

Histology

Brain, nerves, larynx, trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, gizzard, intestine, pancreas, thyroid, ovary/oviduct are examined.
Oviduct: There is severe fibrinosuppurative inflammation of the oviduct associated with bacteria.
There is also inflammation of the peritoneum and serosal surfaces of the intestine.
Liver has accumulation of homogenous eosinophilic material in the interstitium compressing the hepatic cords.
Spleen has accumulation of similar material in the blood vessels.
Crop: has multifocal hypertrophy/hyperplasia of the mucosal cells.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
Rose	decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Rose	Rose	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

CAHFS Final Version 1 Accession # May 20, 2016

are presented dead for necropsy. Both birds are in fair to poor postmortem condition, bird A is mildly thin and weighs 1.72 kg and bird B weighs 1.50 kg.
SKIN: Unremarkable .
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: lungs congested in bird A.
CARDIOVASCULAR: Heart is very enlarged in bird A and it weighs 40 gms without blood and 70 gm gms with blood. The pericardium is opaque and there is approximately 5 ml of serosanguinous fluid in the pericardial sac. There is opaque areas on the epicardium especially prominent on the left auricle. Both the right and left ventricular chambers are greatly dilated and the left AV valve is thickened.
DIGESTIVE TRACT/INTESTINE:
Crop: have minimal feed.
Gizzard: have erosions of the koilin.
Intestine: both birds have numerous pale yellow firm nodules measuring 3 to 5mm scattered on the serosa of the intestine, oviduct, mesosalpinx, mesentery , peritoneum and oviduct. There are a few adhesions between the loops of the intestine.
LIVER AND PANCREAS: Liver is mildly enlarged, fatty and friable in both birds.
SPLEEN, BURSA AND THYMUS: Unremarkable.
KIDNEYS/REPRODUCTIVE TRACT:
Ovary: has numerous small and firm nodules similar to the serosa of the intestine.
Oviduct is mature and active.
MUSCCULOSKELETAL: Mild atrophy of pectoral muscles noted in both birds.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Bird A: both thyroids are severely enlarged, left measures 3x2 cm and weighs 5 gms and right measures 2x1 cm and weighs 2.5 gms. On cut surface there appear to be small cysts.
There are no other gross lesions of diagnostic significance.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Kelly and Blackbird	A	Liver Tissue	No growth after 48 hours
Kelly and Blackbird	B	Liver Tissue	No growth after 48 hours
Kelly and Blackbird	A	Pericardial Swab	No growth after 48 hours

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Kelly and Blackbird	A&B	Cecal Contents Pool	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Kelly and Blackbird	A&B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Brain, nerves, larynx, trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, gizzard, intestine, pancreas, thyroid, adrenal, ovary, oviduct, skeletal muscles, bone, bone marrow, eye and ear examined.
Both birds have similar tumors involving the ovary, serosa of the intestine, oviduct, mesosalpinx, mesentery , peritoneum and oviduct. The neoplasia are composed of cuboidal epithelium forming nodules of various sizes with desmoplastic reaction scattered throughout. There is also extensive inflammation in many of these organs.

Thyroid in bird A is composed of dilated cystic follicles with colloid and scattered inflammatory cells as well as basophilic and brown material.

Heart in bird A has degenerations and fibrosis.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results

Report 4.28-CAHFS Standard Report - 04/29/2016 Page 2 of 3

04/19/2004 12:55 15594858097 CAHFS FRESNO PAGE 02/02

California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only
Accn. # ____
Rec'd by ____
Case coordinator ____
Accn. type ____
Samples ____
Date rec'd ____
Section ____
Bill to (circle): Vet, Clinic, Owner, Other
Carrier ____

Veterinarian's Name [redacted]
Clinic Name
Address
City
State Zip
Phone
FAX ____
Your reference # ____
Date sample(s) taken 5/9/16 Date shipped

☐ Fax or ☒ Email results to: [redacted]

Owner's Name [redacted]
Ranch
Address
City State Zip
Phone

☐ Export Sample ____ (specify test methods below) Destination (country)
☐ Copy to ____

☐ Cattle ☐ Horse ☐ Swine ☐ Sheep ☐ Goat ☐ Rabbit
☐ Turkey ☒ Chicken ☐ Psittacine ☐ Ratite ☐ Plant or Feed ☐ Other ____

Location of Animal(s) [redacted] CA (county, state)
Animal/Group ID(s) ____
Production Class ____ (i.e. beef, dairy, calf ranch, etc.)
Duration of Illness unknown

# in herd	# in group	#sick	#died

Date died 5/9/16 Euth? Yes / (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?

Kelly was a 3year old white leghorn hen found underneath her coop, unable to stand yesterday evening. 500 cc of pale yellow fluid was drained from her abdomen and she was placed on antibiotics. 75ml LRS were administered SQ this morning. She was found dead in her cage in the ICU this afternoon.

Treatments: ____ (continue on reverse if necessary)

Disease(s) or condition(s) suspected: Egg yolk peritonitis

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis, University of California, Davis, W. Health Sciences Dr., Davis, CA 95616, General Info (530) 752-8700, FAX (530) 752-6253
CAHFS, Turlock, University of California, Davis, 1550 N. Soderquist, Turlock, CA 95381, General Info (209) 634-5837, FAX (209) 667-4261
CAHFS, Fresno, University of California, Davis, 2789 South Orange Avenue, Fresno, CA 93725, General Info (559) 498-7740, FAX (559) 485-8097
CAHFS, Tulare, University of California, Davis, 18830 Road 112, Tulare, CA 93274, General Info (559) 688-7543, FAX (559) 686-4231
CAHFS, San Bernardino, University of California, Davis, 105 West Central Avenue, San Bernardino, CA 92408, General Info (909) 383-4287, FAX (909) 884-5980

CAHFS Final Version 1 Accession # [redacted] May 20, 2016

Kelly and Blackbird decal tissue Tissue - Fixed COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Kelly and Blackbird	A	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Animal/Source	Specimen	Specimen Type
Kelly and Blackbird	B	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.28-CAHFS Standard Report - 04/29/2016 Page 3 of 3

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #: [redacted]
Referral #: Kelly & Blackbird
Date Collected: 05/11/2016
Date Received: 05/13/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 5/20/2016 4:05:11PM

Email To: [redacted]
Collection Site: [redacted]

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter [redacted]
Report To , BYF Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Kelly and Blackbird	Name	Chicken	Female	Adult

Laboratory Findings/Diagnosis

1. Ovarian carcinoma, serosa of the intestine, oviduct, mesosalpinx, mesentery , peritoneum, and oviduct and ovary. Both birds.
2. Colloid goiter, thyroid glands, bird A (Black chicken).
3. Dilated and large heart, bird A.

Case Summary

05/16/16: Histopathology will help confirm diganostic findings. Test for AI, bacteriology, liver for lead analysis and histopathology are pending. In the meantime if you have any questions please give me a call.

05/20/16: Histopathology confirms ovarian carcinoma. Finding goiter is interesting in chicken.A. It is not hyperplastic goiter like one sees due to iodine deficiency. It could be due to genetics or due to feeding some goiterogenic compounds or plants like kale, rape, etc. The chickens are negative for AI, lead and salmonella. This completes all the tests on this case. If you have any questions please

Clinical History

Kelly was a 3 year old white leghorn hen found underneath her coop, unable to stand yesterday evening. 500 cc of pale yellow fluid was drained from her abdomen and she was placed on antibiotics. 75ml LRS were administered SQ this morning. She was found dead in her cage in the ICU this afternoon.

Blackbird was an 8 year old hen who was found outside her coop on the morning of 5/5/16, having been inadvertently left outside all night. She was weak and unable to stand, and brought into ICU where she was put on antibiotics. Two days later she began open mouth breathing. Her crop was not empty and she was no longer eating. Euthanized 5/9/16.

Gross Observations

GENERAL APPEARANCE: An 3-year-old WLH (bird B) and an 8-year-old black chicken most likely an Australorp (bird A) hens

rt 4.28-CAHFS Standard Report - 04/29/2016 Page 1 of 3

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #: [redacted]
Referral #: TILLY
Date Collected:
Date Received: 05/19/2016
Case Coordinator: Guillermo Rimoldi, DVM, DACVP
Electronically Signed and Authorized By: Rimoldi, Guillermo on 5/26/2016 12:04:37PM

Email To: [redacted]
Collection Site: [redacted]

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter [redacted]
Report To , BYF Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Tilly	Name	Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Three and a half-year-old, Red Star, female chicken.
1. Salpingitis, chronic, severe, Staphylococcus spp. coagulase negative and Enterococcus faecalis isolated.
2. No Salmonella sp. isolated from cecal contents.
3. Negative for AI by PCR.

Case Summary

5/26/2016 – Final report - Staphylococcus spp. coagulase negative and Enterococcus faecalis were isolated from the oviduct.

5/23/2015 - Preliminary report - A severe and chronic salpingitis, probably due to an ascending bacterial infection was detected on gross examination of this bird. Infections like this are common in adult layer hens. Samples from the bird were negative for Salmonella and avian influenza. No lead was detected in liver. Bacteriology and histology tests are pending.

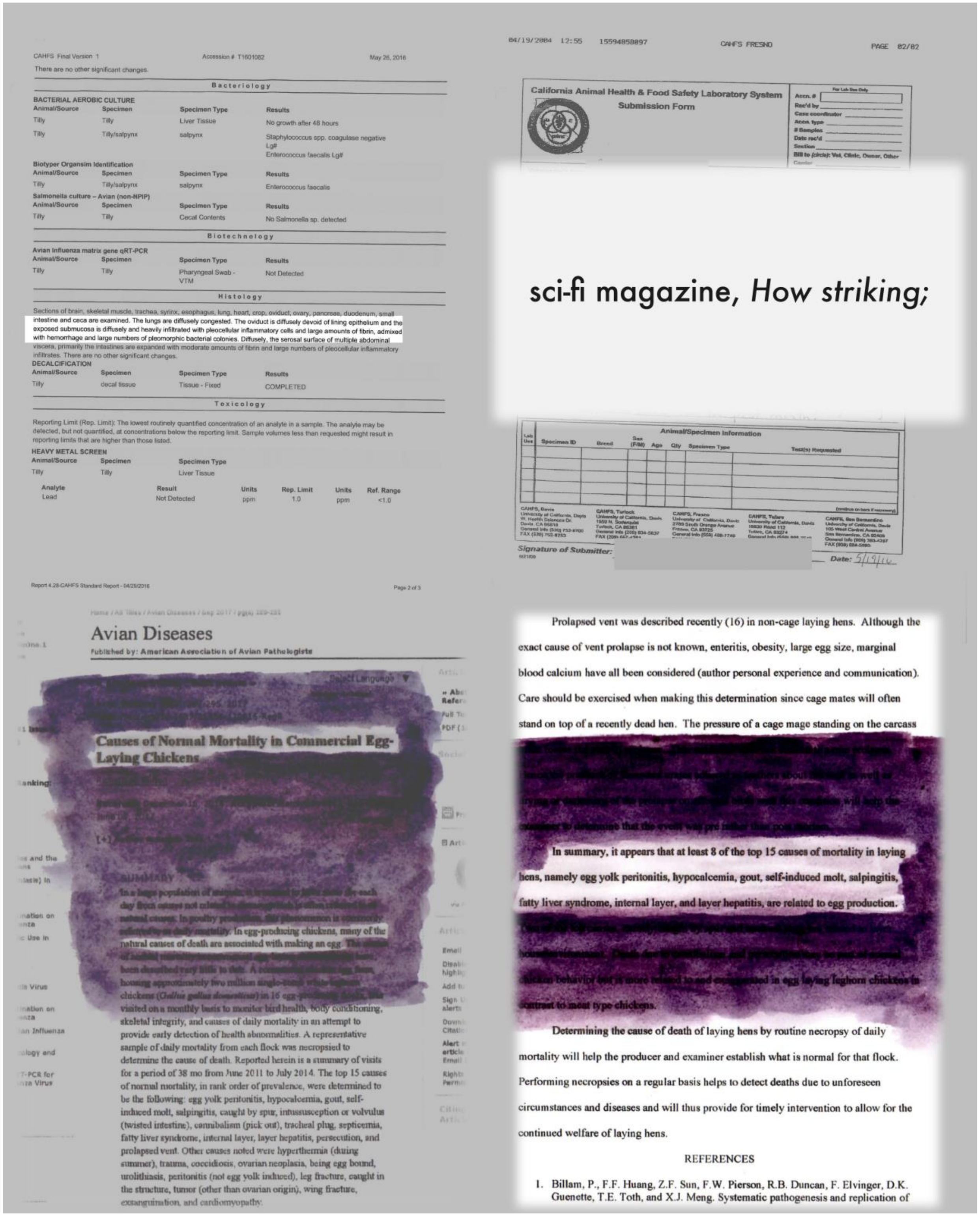
Clinical History

Tilly was a 3 1/2 year old red star hen who was diagnosed with an abdominal mass almost 2 years ago. The mass continued to grow since diagnosis. Tilly lived normally in a coop with other chickens until 6 months ago when she was brought into the ICU where life is a little easier - temperature extremes, etc. Tilly was found dead this morning in the ICU near a food dish. She had seemed fine up until death, interested in treats, etc.

Gross Observations

A 3 ½-year-old, Red Star, female chicken is received for necropsy. The bird is in fair postmortem condition and poor nutritional status, with moderate to severe atrophy of pectoral musculature and severe depletion of body fat stores. The carcass weighs 2.7 kg and has a markedly distended ventral abdomen. Within the ventral aspect of the coelomic cavity, the oviduct is severely distended with a large, compacted mass of yellow, caseous material. Diffusely the oviduct mucosa is markedly reddened. The whole oviduct with its cases content weights 1.26 kg (46 % of total body weight). The lever and the G.I. tract are currently displaced by the mass, otherwise they are with the normal limits. The ovary is inactive, the kidneys are within normal limits.

Report 4.28-CAHFS Standard Report - 04/29/2016 Page 1 of 3



CAHFS Final Version 1 Accession # T1601082 May 26, 2016

There are no other significant changes.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Tilly	Tilly	Liver Tissue	No growth after 48 hours
Tilly	Tilly/salpynx	salpynx	Staphylococcus spp. coagulase negative Lg# Enterococcus faecalis Lg#

Biotyper Organsim Identification

Animal/Source	Specimen	Specimen Type	Results
Tilly	Tilly/salpynx	salpynx	Enterococcus faecalis

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Tilly	Tilly	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Tilly	Tilly	Pharyngeal Swab - VTM	Not Detected

Histology

Sections of brain, skeletal muscle, trachea, syrinx, esophagus, lung, heart, crop, oviduct, ovary, pancreas, duodenum, small intestine and ceca are examined. The lungs are diffusely congested. The oviduct is diffusely devoid of lining epithelium and the exposed submucosa is diffusely and heavily infiltrated with pleocellular inflammatory cells and large amounts of fibrin, admixed with hemorrhage and large numbers of pleomorphic bacterial colonies. Diffusely, the serosal surface of multiple abdominal viscera, primarily the intestines are expanded with moderate amounts of fibrin and large numbers of pleocellular inflammatory infiltrates. There are no other significant changes.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
Tilly	decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Tilly	Tilly	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.28-CAHFS Standard Report - 04/29/2016 Page 2 of 3

04/19/2004 12:55 15594058097 CAHFS FRESNO PAGE 02/02

California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only
Accn. #
Rec'd by
Case coordinator
Accn. type
Samples
Date rec'd
Section
Bill to (circle): Vet, Clinic, Owner, Other

sci-fi magazine, *How striking;*

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

Signature of Submitter: [redacted] Date: 5/19/16

Avian Diseases

Published by: American Association of Avian Pathologists

[redacted]

Causes of Normal Mortality in Commercial Egg-Laying Chickens

[redacted] In egg-producing chickens, many of the natural causes of death are associated with making an egg. [redacted] visited on a monthly basis to monitor bird health, body conditioning, skeletal integrity, and causes of daily mortality in an attempt to provide early detection of health abnormalities. A representative sample of daily mortality from each flock was necropsied to determine the cause of death. Reported herein is a summary of visits for a period of 38 mo from June 2011 to July 2014. The top 15 causes of normal mortality, in rank order of prevalence, were determined to be the following: egg yolk peritonitis, hypocalcemia, gout, self-induced molt, salpingitis, caught by spur, intussusception or volvulus (twisted intestine), cannibalism (pick out), tracheal plug, septicemia, fatty liver syndrome, internal layer, layer hepatitis, persecution, and prolapsed vent. Other causes noted were hyperthermia (during summer), trauma, coccidiosis, ovarian neoplasia, being egg bound, urolithiasis, peritonitis (not egg yolk induced), leg fracture, caught in the structure, tumor (other than ovarian origin), wing fracture, exsanguination, and cardiomyopathy.

Prolapsed vent was described recently (16) in non-cage laying hens. Although the exact cause of vent prolapse is not known, enteritis, obesity, large egg size, marginal blood calcium have all been considered (author personal experience and communication). Care should be exercised when making this determination since cage mates will often stand on top of a recently dead hen. The pressure of a cage mage standing on the carcass [redacted]

In summary, it appears that at least 8 of the top 15 causes of mortality in laying hens, namely egg yolk peritonitis, hypocalcemia, gout, self-induced molt, salpingitis, fatty liver syndrome, internal layer, and layer hepatitis, are related to egg production. [redacted]

Determining the cause of death of laying hens by routine necropsy of daily mortality will help the producer and examiner establish what is normal for that flock. Performing necropsies on a regular basis helps to detect deaths due to unforeseen circumstances and diseases and will thus provide for timely intervention to allow for the continued welfare of laying hens.

REFERENCES

1. Billam, P., F.F. Huang, Z.F. Sun, F.W. Pierson, R.B. Duncan, F. Elvinger, D.K. Guenette, T.E. Toth, and X.J. Meng. Systematic pathogenesis and replication of

04/19/2004 12:55 15594858097 CAHFS FRESNO PAGE 02/02

California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only
Accn. #
Rec'd by
Case coordinator
Accn. type
Samples
Date rec'd
Section
Bill to (circle): Vet, Clinic, Owner, Other
Carrier

Veterinarian's Name [redacted]
Clinic Name [redacted]
Address [redacted]
City [redacted]
Phone [redacted] FAX
Your reference #
Date sample(s) taken 5/19/16 Date shipped 5/19/16
☐ Fax or ☒ Email results [redacted]

Owner's Name [redacted]
Ranch [redacted]
Address [redacted]
City [redacted] State Zip [redacted]
Phone [redacted]
☐ Export Sample (specify test methods below) Destination (country)
☐ Copy to

☐ Cattle ☐ Turkey
☐ Horse ☒ Chicken
☐ Swine ☐ Psittacine
☐ Sheep ☐ Ratite
☐ Goat ☐ Plant or Feed
☐ Rabbit ☐ Other

Location of Animal(s) [redacted], CA (county, state)
Animal/Group ID(s)
Production Class (i.e. beef, dairy, calf ranch, etc.)
Duration of Illness (unknown)

# in herd	# in group	#sick	#died

Date died 5/19/16 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?
Wendy was a 2½ year old white leghorn hen found depressed, with collapsed, injected comb and closed eyes 3 days ago. Her crop has been full and doughy for the past 3 days, not eating much. She has been in the ICU on antibiotics for the past 3 days and was found dead this morning.

Treatments: (continue on reverse if necessary)

Disease(s) or condition(s) suspected: [illegible], egg yolk peritonitis

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis
University of California, Davis
W. Health Sciences Dr.
Davis, CA 95616
General Info (530) 752-8700
FAX (530) 752-6253

CAHFS, Turlock
University of California, Davis
1550 N. Soderquist
Turlock, CA 95381
General Info (209) 634-5837
FAX (209) 667-4261

CAHFS, Fresno
University of California, Davis
2789 South Orange Avenue
Fresno, CA 93725
General Info (559) 498-7740

CAHFS, Tulare
University of California, Davis
18830 Road 112
Tulare, CA 93274
General Info (559) 688-7543

CAHFS, San Bernardino
University of California, Davis
105 West Central Avenue
San Bernardino, CA 92408
General Info (909) 383-4287
FAX (909) 884-5980

Signature of Submitter: [redacted] **Date:** 5/19/16

9/21/09

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #: [redacted]
Referral #: Wendy & Fluffy
Date Collected: 05/20/2016
Date Received: 05/20/2016
Case Coordinator: John M. Adaska DVM, MPVM, PhD
Electronically Signed and Authorized By: Adaska, John M. on 5/30/2016 9:58:02AM

Email To: [redacted]

Collection Site: [redacted]

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter [redacted]
Report To , BYF Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A- Wendy	Name	Chicken	Female	2.50 Years
B- Fluffy	Name	Chicken	Male	2.00 Years

Laboratory Findings/Diagnosis

Backyard flock birds

Animal A [Wendy]: severe diffuse egg yolk peritonitis.

Animal B [Fluffy]
1. Bacterial septicemia [coagulase negative Staphylococcus] with secondary splenic lymphoid depletion and amyloid deposition.
2. Multifocal erosive dermatitis of the comb, probable bacterial.

Case Summary

In Wendy there was severe egg yolk peritonitis. In Fluffy the spleen and liver were enlarged at postmortem examination and these are both consistent with bacterial septicemia. We isolated coagulase negative Staphylococcus from both of these organs in pure culture thus confirming the suspected diagnosis. Additional testing is pending and further reports will follow.

Final Report 5/30/16: All testing has been completed and there are no additional significant results.

Clinical History

A-Wendy was a 2 1/2 year old white leghorn hen found depressed, with collapsed injected comb and closed eyes 3 days ago. Her crop has been full and doughy for the past 3 days, not eating much. She has been in the ICU on antibiotics for the past 3 days and was found dead this morning.

B-Fluffy was a 2 year old Rhode Island red rooster. About 6 months ago he developed a 1cm scab on his comb which never healed, even with antibiotics (systemic). Otherwise he seemed fine. Yesterday he was found depressed and unable to stand. He was brought into the ICU and placed on antibiotics. He could not stand in cage - collapsed. Died on morning of 5/19/2016 less

CAHFS Final Version 1 Accession # [redacted] May 30, 2016

than 24 hours after he was found. Note: The lesions on his comb had been getting progressively worse over the past month.

Gross Observations

Bird A (Wendy):
White female chicken in poor body condition and modertae post-mortem condition. Severe diffuse peritonitis in coelomic cavity with moderate amounts dry yellowish material. Markedly enlarged liver with a mottled appearance. Severe atrophy of pectoral (breast) muscles.

Bird B (Fluffy)
Brown rooster in good body condition and moderate post-mortem condition. Multiple crusty and erosive lesions of variable size on the comb. Severe dehydration. Small amounts of clear yellow fluid in the pericardial sac. Markedly enlarged, firm liver. Markedly enlarged spleen.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A- Wendy	A	Liver Tissue	No growth after 48 hours
A- Wendy	A	Oviduct Swab-Avian	Staphylococcus spp. coagulase negative Rare#
B- Fluffy	B	Liver Tissue	Staphylococcus spp. coagulase negative Mod#
B- Fluffy	B	Spleen Tissue	Staphylococcus spp. coagulase negative Mod#
B- Fluffy	B	Pericardial Swab	Mixed flora Rare#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A- Wendy	Pool of A&B	Cecal Contents Pool	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A- Wendy	Pool of A&B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Tissues examined in both birds include lung, liver, trachea, heart, spleen, kidney, crop, proventriculus, gizzard, small intestine and colon. In animal A [Wendy] ovary, oviduct and sinuses are examined and in animal B [Fluffy] brain, comb, pancreas, skeletal muscle, thyroid gland and sciatic nerve are examined.

Animal A: the liver has multifocal and coalescing areas in which hepatocytes are hypereosinophilic and have somewhat hyalinized cytoplasm but there is minimal associated inflammation. In addition there are scattered small aggregates of lymphocytes usually within portal areas. Multiple tissues and mesentery have surfaces with abundant debris bacteria and patchy heterophilic aggregates. Within the mesentery there also aggregates of heterophils around blood vessels within the parenchyma. The ovary has occasional small foci of dense heterophil aggregates.

Animal B: the spleen has severe lymphoid depletion and congestion with small amounts of hyalinized eosinophilic material [probable amyloid] within follicles. The comb has patchy epithelial necrosis with large numbers of associated heterophils.. There are occasional foci of necrosis within the deeper tissues as well and these have associated bacterial cocci. Occasional blood vessels in the mesentery and associated with the pancreas have luminal bacterial cocci.

Report 4.28-CAHFS Standard Report - 04/29/2016 Page 2 of 3

CAHFS Final Version 1 Accession # [redacted] May 30, 2016

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
A- Wendy	A	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Animal/Source	Specimen	Specimen Type
B- Fluffy	B	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.28-CAHFS Standard Report - 04/29/2016 Page 3 of 3

04/19/2004 12:55 15594058897 CAHFS FRESNO PAGE 02/02

California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only: Accn. # / Rec'd by / Case coordinator / Accn. type / # Samples / Date rec'd / Section / Bill to (circle): Vet, Clinic, Owner, Other / Carrier

Veterinarian's Name [redacted]
Clinic Name [redacted]
Address [redacted]
City [redacted] State CA Zip
Phone [redacted] FAX
Your reference #
Date sample(s) taken 5/25/16 Date shipped 5/31/16
☐ Fax or ☒ Email results to: [redacted]

Owner's Name [redacted]
Ranch
Address
City State Zip
Phone
☐ Export Sample (specify test methods below) Destination (country)
☐ Copy to

☐ Cattle ☐ Horse ☐ Swine ☐ Sheep ☐ Goat ☐ Rabbit
☐ Turkey ☒ Chicken ☐ Psittacine ☐ Ratite ☐ Plant or Feed ☐ Other

Location of Animal(s) [redacted] (county, state)
Animal/Group ID(s)
Production Class (i.e. beef, dairy, calf ranch, etc.)
Duration of illness Unknown

# in herd	# in group	#sick	#died

Date died 5/25/16 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?

Ranger was a 2½ year old rooster who appeared healthy until the day before he died. He was found on his back, legs up, in front of the coop with both eyes pecked out. He was weak but could stand. His condition worsened rapidly over the next 18 hours. He could no longer stand and eventually his breathing became difficult. A thick piece of yellow mucous came from his mouth at one point. He was found dead the following morning.

Treatments: (continue on reverse if necessary)

Disease(s) or condition(s) suspected: Unknown

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis, University of California, Davis, W. Health Sciences Dr., Davis, CA 95616, General Info (530) 752-8700, FAX (530) 752-6253
CAHFS, Turlock, University of California, Davis, 1550 N. Soderquist, Turlock, CA 95381, General Info (209) 634-5837, FAX (209) 667-4261
CAHFS, Fresno, University of California, Davis, 2789 South Orange Avenue, Fresno, CA 93725, General Info (559) 498-7740
CAHFS, Tulare, University of California, Davis, 18830 Road 112, Tulare, CA 93274, General Info (559) 688-7543
CAHFS, San Bernardino, University of California, Davis, 105 West Central Avenue, San Bernardino, CA 92408, General Info (909) 383-4287, FAX (909) 884-5980

Signature of Submitter: [redacted] *Date:* 5/31/16

04/19/2004 12:55 15594058897 CAHFS FRESNO PAGE 02/02

California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only: Accn. # / Rec'd by / Case coordinator / Accn. type / # Samples / Date rec'd / Section / Bill to (circle): Vet, Clinic, Owner, Other / Carrier

Veterinarian's Name [redacted]
Clinic Name [redacted]
Address [redacted]
City [redacted] State CA Zip
Phone [redacted] FAX
Your reference #
Date sample(s) taken 5/29/16 Date shipped 5/31/16
☐ Fax or ☒ Email results to: [redacted]

Owner's Name [redacted]
Ranch
Address
City State Zip
Phone
☐ Export Sample (specify test methods below) Destination (country)
☐ Copy to

☐ Cattle ☐ Horse ☐ Swine ☐ Sheep ☐ Goat ☐ Rabbit
☐ Turkey ☒ Chicken ☐ Psittacine ☐ Ratite ☐ Plant or Feed ☐ Other

Location of Animal(s) [redacted] (county, state)
Animal/Group ID(s)
Production Class (i.e. beef, dairy, calf ranch, etc.)
Duration of illness Unknown

# in herd	# in group	#sick	#died

Date died 5/29/16 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?

Jane was a 3 year old white leghorn hen who seemed healthy until the evening of 5/28/16. She was found severely dyspneic [illegible] was brought into the [illegible], placed on antibiotics. She died the following morning, 5/29/16.

Treatments: (continue on reverse if necessary)

Disease(s) or condition(s) suspected: Unknown

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

Signature of Submitter: [redacted] *Date:* 5/31/16

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #: T1601172
Referral #: Jane/Ranger
Date Collected:
Date Received: 06/01/2016
Case Coordinator: Jennine N. Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 6/8/2016 2:43:30PM

Email To: [redacted]
Collection Site: [redacted]

Specimens Received: 2 Carcass;
Comments: carrier: UPS

Case Contacts

Submitter [redacted]
Report To , BYF Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-Jane	Name	Leghorn Chicken	Mixed	Adult
B-Ranger	Name	Chicken		

Laboratory Findings/Diagnosis

Two backyard chickens submitted via the backyard chicken surveillance program

Final report 6/8/2016:
Jane: Egg yolk coelomitis
Ranger: Septicemia (hepatitis, myocarditis)

Preliminary report 6/2/2016:
Jane (Leghorn):
1. Egg yolk coelomitis/Salpingitis

Ranger (Rooster):
1. Open

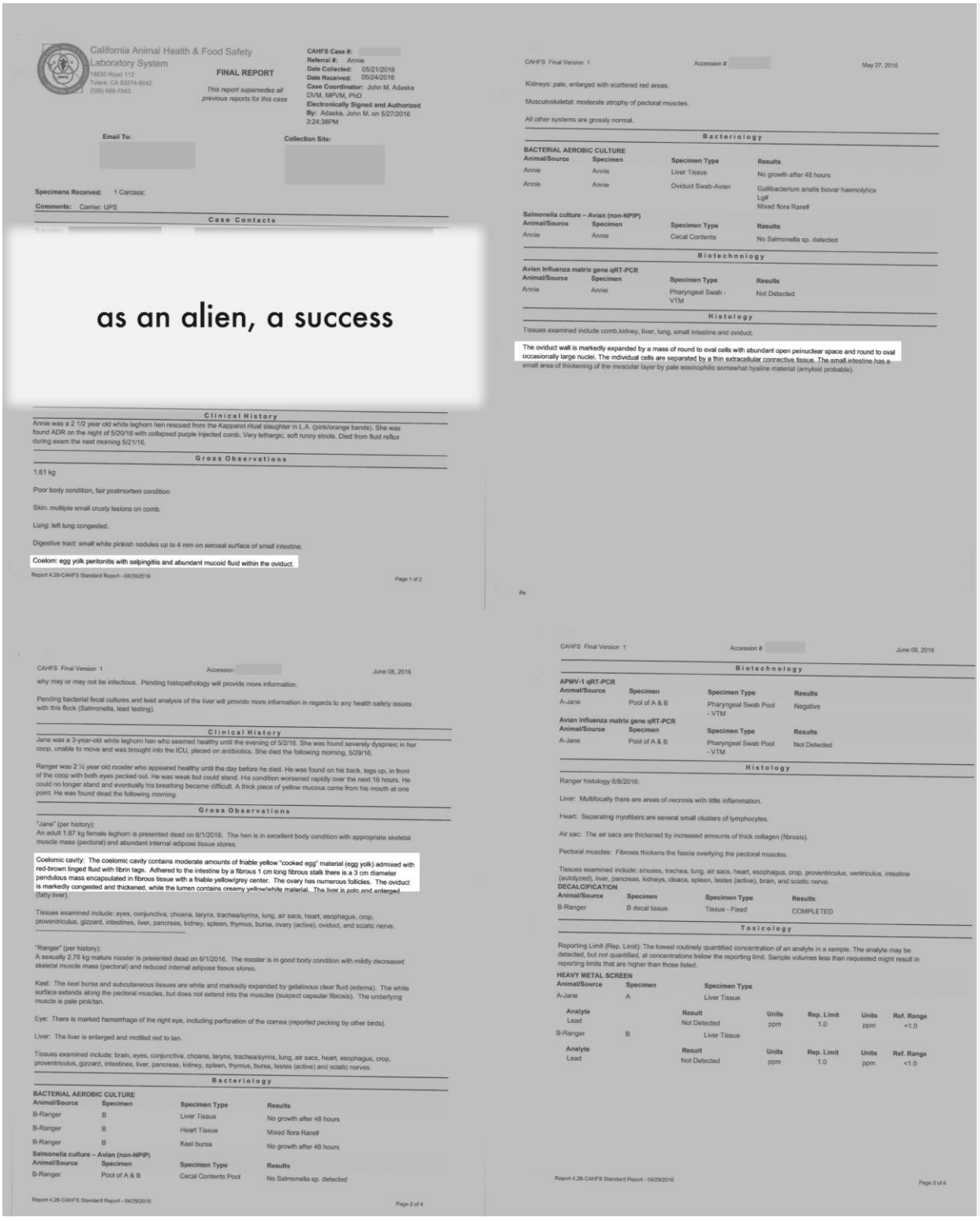
Case Summary

Final report 6/8/2016:
Ranger died from septicemia, although a specific bacteria was not isolated from the liver. In addition the route of initial bacterial entry is not determined, although the intestine cannot be ruled out given autolysis/rot may mask lesions. The thickening over the pectoral muscles seen grossly was fibrous tissue and the edema may have been secondary to septicemia, which can result in blood vessel leakage. Salmonella was not isolated, nor was lead detected in the liver.

Preliminary report 6/2/2016:
Jane/Leghorn hen: The cause of death is due to chronic egg yolk peritonitis/salpingitis, a condition often seen in backyard flocks with prolific layers. She had evidence of a previous event that her immune system had walled off.

Ranger/Rooster: A cause of death is not determined by gross examination. There was significant edema around the keel bursa,

Report 4.28-CAHFS Standard Report - 04/29/2016 Page 1 of 4



California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Annie
Date Collected: 05/21/2016
Date Received: 05/24/2016
Case Coordinator: John M. Adaska DVM, MPVM, PhD
Electronically Signed and Authorized By: Adaska, John M. on 5/27/2016 3:24:38PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

as an alien, a success

Clinical History

Annie was a 2 1/2 year old white leghorn hen rescued from the Kapparot ritual slaughter in L.A. (pink/orange bands). She was found ADR on the night of 5/20/16 with collapsed purple injected comb. Very lethargic, soft runny stools. Died from fluid reflux during exam the next morning 5/21/16.

Gross Observations

1.61 kg

Poor body condition, fair postmortem condition

Skin: multiple small crusty lesions on comb.

Lung: left lung congested.

Digestive tract: small white pinkish nodules up to 4 mm on serosal surface of small intestine.

Coelom: egg yolk peritonitis with salpingitiis and abundant mucoid fluid within the oviduct.

Report 4.28-CAHFS Standard Report - 04/29/2016

Page 1 of 2

CAHFS Final Version 1 Accession # May 27, 2016

Kidneys: pale, enlarged with scattered red areas.

Musculoskeletal: moderate atrophy of pectoral muscles.

All other systems are grossly normal.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Annie	Annie	Liver Tissue	No growth after 48 hours
Annie	Annie	Oviduct Swab-Avian	Gallibacterium anatis biovar haemolytica Lg# Mixed flora Rare#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Annie	Annie	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Annie	Annie	Pharyngeal Swab - VTM	Not Detected

Histology

Tissues examined include comb,kidney, liver, lung, small intestine and oviduct.

The oviduct wall is markedly expanded by a mass of round to oval cells with abundant open peinuclear space and round to oval occasionally large nuclei. The individual cells are separated by a thin extracellular connective tissue. The small intestine has a small area of thickening of the muscular layer by pale eosinophilic somewhat hyaline material (amyloid probable).

Re

CAHFS Final Version 1 Accession June 08, 2016

why may or may not be infectious. Pending histopathology will provide more information.

Pending bacterial fecal cultures and lead analysis of the liver will provide more information in regards to any health safety issues with this flock (Salmonella, lead testing).

Clinical History

Jane was a 3-year-old white leghorn hen who seemed healthy until the evening of 5/2/16. She was found severely dyspneic in her coop, unable to move and was brought into the ICU, placed on antibiotics. She died the following morning, 5/29/16.

Ranger was 2 ½ year old rooster who appeared healthy until the day before he died. He was found on his back, legs up, in front of the coop with both eyes pecked out. He was weak but could stand. His condition worsened rapidly over the next 18 hours. He could no longer stand and eventually his breathing became difficult. A thick piece of yellow mucous came from his mouth at one point. He was found dead the following morning.

Gross Observations

"Jane" (per history):
An adult 1.87 kg female leghorn is presented dead on 6/1/2016. The hen is in excellent body condition with appropriate skeletal muscle mass (pectoral) and abundant internal adipose tissue stores.

Coelomic cavity: The coelomic cavity contains moderate amounts of friable yellow "cooked egg" material (egg yolk) admixed with red-brown tinged fluid with fibrin tags. Adhered to the intestine by a fibrous 1 cm long fibrous stalk there is a 3 cm diameter pendulous mass encapsulated in fibrous tissue with a friable yellow/grey center. The ovary has numerous follicles. The oviduct is markedly congested and thickened, while the lumen contains creamy yellow/white material. The liver is pale and enlarged (fatty liver).

Tissues examined include: eyes, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, bursa, ovary (active), oviduct, and sciatic nerve.

"Ranger" (per history):
A sexually 2.76 kg mature rooster is presented dead on 6/1/2016. The rooster is in good body condition with mildly decreased skeletal muscle mass (pectoral) and reduced internal adipose tissue stores.

Keel: The keel bursa and subcutaneous tissues are white and markedly expanded by gelatinous clear fluid (edema). The white surface extends along the pectoral muscles, but does not extend into the muscles (suspect capsular fibrosis). The underlying muscle is pale pink/tan.

Eye: There is marked hemorrhage of the right eye, including perforation of the cornea (reported pecking by other birds).

Liver: The liver is enlarged and mottled red to tan.

Tissues examined include: brain, eyes, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, bursa, testes (active) and sciatic nerves.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
B-Ranger	B	Liver Tissue	No growth after 48 hours
B-Ranger	B	Heart Tissue	Mixed flora Rare#
B-Ranger	B	Keel bursa	No growth after 48 hours

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
B-Ranger	Pool of A & B	Cecal Contents Pool	No Salmonella sp. detected

Report 4.28-CAHFS Standard Report - 04/29/2016

Page 2 of 4

CAHFS Final Version 1 Accession # June 08, 2016

Biotechnology

APMV-1 qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A-Jane	Pool of A & B	Pharyngeal Swab Pool - VTM	Negative

Avian influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A-Jane	Pool of A & B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Ranger histology 6/8/2016:

Liver: Multifocally there are areas of necrosis with little inflammation.

Heart: Separating myofibers are several small clusters of lymphocytes.

Air sac: The air sacs are thickened by increased amounts of thick collagen (fibrosis).

Pectoral muscles: Fibrosis thickens the fascia overlying the pectoral muscles.

Tissues examined include: sinuses, trachea, lung, air sacs, heart, esophagus, crop, proventriculus, ventriculus, intestine (autolyzed), liver, pancreas, kidneys, cloaca, spleen, testes (active), brain, and sciatic nerve.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
B-Ranger	B decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
A-Jane	A	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Animal/Source	Specimen	Specimen Type
B-Ranger	B	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.28-CAHFS Standard Report - 04/29/2016

Page 3 of 4

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Edith
Date Collected: 06/08/2016
Date Received: 06/08/2016
Case Coordinator: Guillermo Rimoldi, DVM, DACVP
Electronically Signed and Authorized By: Rimoldi, Guillermo on 6/15/2016 1:36:12PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF — Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Edith	Name	Chicken	Female	

Laboratory Findings/Diagnosis

Adult, female chicken.
1. Multifocal, random, necrotizing hepatitis, cause undetermined.
2. Trachea, submucosa, segmental, mild amyloidosis, cause undetermined.
3. Nematodiasis, mild, sp. Heterakis sp. detected in the cecal lumina.
4. Negative for AI by PCR.
5. No lead detected in liver tissue.
6. No Salmonella isolated from cecal contents.

Case Summary

6/15/2016 – Final report - An oropharyngeal swab was negative for MG and yielded indeterminate results for MS. No Salmonella was isolated from cecal contents. The material expanding the tracheal submucosa stained positively for amyloid. Amyloidosis in birds is usually associated with a chronic infection, although the reason for these at midnight expanded triggers mucosa remains uncertain.

6/10/2016 - Preliminary report - the only significant changes detected grossly was a mild presence of nematodes (roundworms) consistant with Heterakis sp. in the ceca. Heterakis sp. is relatively harmless to chickens unless in very high numbers. Histologically, lesions consistant with a necrolizing hepatitis were detected. The cause of this remains uncertain. No bacteria was recovered from the liver in aerobic culture. Additionally, in the trachea, expansion of the submucosa was detected. I will run some additional stains on trachea sections together with MG and MS PCR. The bird was negative for AI by PCR and no lead was detected in liver tissue. Salmonella cultures are also pending. Final report will follow.

Clinical History

Edith (yellow 58) was found collapsed in her nest box on 6/5/16. She was brought into the ICU, given 75 ml LSR SQ and placed on antibiotics. She was found dead the following morning, 6/6/16. There was no obvious cause of death and her physical exam has been within normal limits other than weakness and dehydration.

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Blueberry & Prim
Date Collected: 06/15/2016
Date Received: 06/15/2016
Case Coordinator: Jennine N. Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 6/20/2016 9:05:35AM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF — Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A- Blueberry	Name	Leghorn Chicken	Female	3.00 Years
B- Prim	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Two hens submitted via the backyard chicken surveillance program

Final report 6/20/2016:
Blueberry and Prim: Ovarian adenocarcinoma

Preliminary report 6/16/2016:
Blueberry and Prim
1. Ovarian adenocarcinoma
2. Secondary egg yolk coelomitis and ascites

Case Summary

Final report 6/20/2016:
All testing is complete. No pathogenic bacteria were isolated from either hen indicating the egg yolk coelomitis was secondary to the invasiveness of the cancer in both hens.

Preliminary report 6/16/2016:
Both hens had carcinomatosis of the coelomic cavity with secondary egg yolk coelomitis, which can happen as the cancer infiltrates organ walls resulting in organ dysfunction.

Pending bacterial fecal cultures and lead analysis of the liver will provide more information in regards to any health safety issues with this flock (Salmonella, lead testing).

Clinical History

Blueberry (yellow 51) was a 3 year old white leghorn hen initially found weak and unable to stand on 4/11/16. At that time she

was brought into the ICU where 580g of clear yellow fluid was drained from her abdomen and she was placed on antibiotics. 10 days later she was doing well and returned outside to her flock. She came back into the ICU on 5/24/16, and on 5/31/16 600 more cc of fluid was drained from her abdomen. She was placed on antibiotics again and on 6/8/16 600 more cc of light brown/yellow fluid was drained from her abdomen. She was found dead this morning 6/9/16.

Prim (orange band) was a 31/2 year old white leghorn hen found weak and depressed on 5/30/16. Her comb was purple and collapsed, and her abdomen was slightly distended with fluid. An attempt at draining the fluid was unsuccessful. She was treated with antibiotics but was found dead on the morning of 6/10/16.

Gross Observations

"Blueberry" Yellow band 51 (per history):

An adult 1.4 kg female leghorn is presented dead on 6/15/2016. There is a yellow plastic leg band inscribed "51". The hen is in fair to poor body condition with moderately decreased skeletal muscle mass (pectoral) and scant internal adipose tissue stores. Within the caudal pectoral muscles there are multifocal areas of hemorrhage (reported abdominocentesis).

Coelomic cavity: The coelomic cavity contains small amounts of friable yellow "cooked egg" material (egg yolk) admixed with approximately 200 mL of red-brown tinged fluid with fibrin tags. The air sacs are markedly thickened, opaque, and there are many congested blood vessels. The serosa of all organs is markedly thickened and congested. The ovary is enlarged, 5 x 2 x 2 cm, with an irregular surface and is mottled tan to brown on section. Adjacent organs have numerous pinpoint to 8 mm diameter nodules along the serosa, which a few being umbilicated. The duodenum is markedly thickened and firm.

Tissues examined include: eyes, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, bursa, ovary, oviduct, and sciatic nerve.

"Prim" (orange band, per history):
A mature 1.6 kg hen is presented dead on 6/15/2016. The hen is in poor body condition with markedly decreased skeletal muscle mass (pectoral) and rare internal adipose tissue stores.

Coelomic cavity: The coelomic cavity contains moderate amounts of friable yellow "cooked egg" material (egg yolk) admixed with approximately 800 mL of red-brown fluid. The serosal surfaces and air sacs are thickened, opaque, with many congested blood vessels. The ovary is markedly enlarged, 7 x 2 x 2 cm, with an irregular surface and is mottled tan to brown on section. Disseminated throughout the coelomic cavity are numerous pinpoint to 10 mm diameter nodules along the serosa of numerous organs.

Tissues examined include: brain, eyes, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, bursa, ovary, and sciatic nerves.

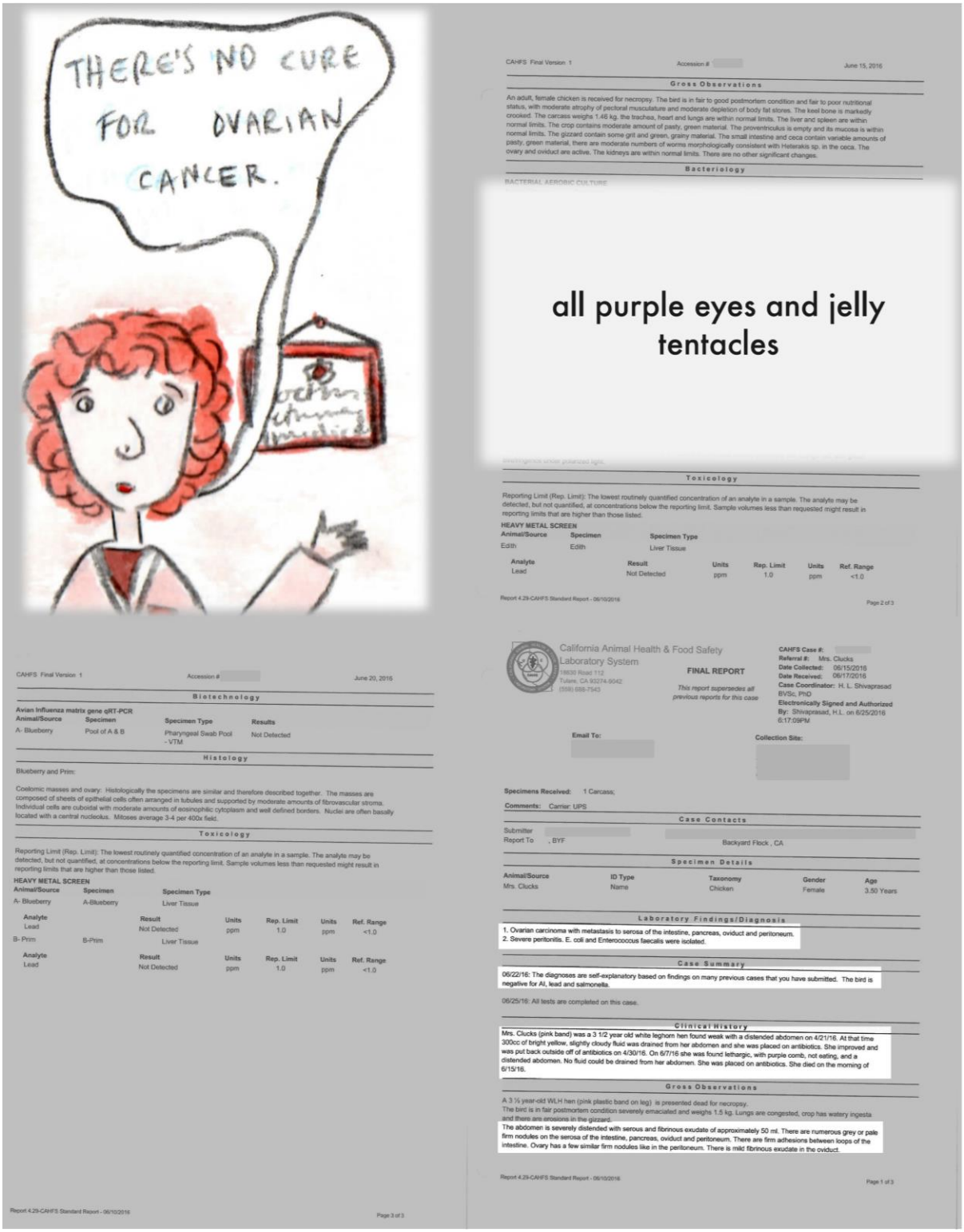
Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A- Blueberry	A-Blueberry	Liver Tissue	No growth after 48 hours
A- Blueberry	A	Coelomic Cavity Swab	Mixed flora Rare#
B- Prim	B-Prim	Liver Tissue	No growth after 48 hours

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A- Blueberry	Pool of A & B	Cecal Contents Pool	No Salmonella sp. detected



CAHFS Final Version: 1 Accession # June 20, 2016

Bietechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A- Blueberry	Pool of A & B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Blueberry and Prim:

Coelomic masses and ovary: Histologically the specimens are similar and therefore described together. The masses are composed of sheets of epithelial cells often arranged in tubules and supported by moderate amounts of fibrovascular stroma. Individual cells are cuboidal with moderate amounts of eosinophilic cytoplasm and well defined borders. Nuclei are often basally located with a central nucleolus. Mitoses average 3-4 per 400x field.

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
A- Blueberry	A-Blueberry	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Animal/Source	Specimen	Specimen Type
B- Prim	B-Prim	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.29-CAHFS Standard Report - 06/10/2016 Page 3 of 3

CAHFS Final Version: 1 Accession # June 15, 2016

Gross Observations

An adult, female chicken is received for necropsy. The bird is in fair to good postmortem condition and fair to poor nutritional status, with moderate atrophy of pectoral musculature and moderate depletion of body fat stores. The keel bone is markedly crooked. The carcass weighs 1.46 kg. the trachea, heart and lungs are within normal limits. The liver and spleen are within normal limits. The crop contains moderate amount of pasty, green material. The proventriculus is empty and its mucosa is within normal limits. The gizzard contain some grit and green, grainy material. The small intestine and ceca contain variable amounts of pasty, green material, there are moderate numbers of worms morphologically consistent with Heterakis sp. in the ceca. The ovary and oviduct are active. The kidneys are within normal limits. There are no other significant changes.

Bacteriology

BACTERIAL AEROBIC CULTURE

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Edith	Edith	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.29-CAHFS Standard Report - 06/10/2016 Page 2 of 3

California Animal Health & Food Safety Laboratory System
18630 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Mrs. Clucks
Date Collected: 06/15/2016
Date Received: 06/17/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 6/25/2016 6:17:09PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Mrs. Clucks	Name	Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

1. Ovarian carcinoma with metastasis to serosa of the intestine, pancreas, oviduct and peritoneum.
2. Severe peritonitis. E. coli and Enterococcus faecalis were isolated.

Case Summary

06/22/16: The diagnoses are self-explanatory based on findings on many previous cases that you have submitted. The bird is negative for AI, lead and salmonella.

06/25/16: All tests are completed on this case.

Clinical History

Mrs. Clucks (pink band) was a 3 1/2 year old white leghorn hen found weak with a distended abdomen on 4/21/16. At that time 300cc of bright yellow, slightly cloudy fluid was drained from her abdomen and she was placed on antibiotics. She improved and was put back outside off of antibiotics on 4/30/16. On 6/7/16 she was found lethargic, with purple comb, not eating, and a distended abdomen. No fluid could be drained from her abdomen. She was placed on antibiotics. She died on the morning of 6/15/16.

Gross Observations

A 3 ½ year-old WLH hen (pink plastic band on leg) is presented dead for necropsy.
The bird is in fair postmortem condition severely emaciated and weighs 1.5 kg. Lungs are congested, crop has watery ingesta and there are erosions in the gizzard.
The abdomen is severely distended with serous and fibrinous exudate of approximately 50 ml. There are numerous grey or pale firm nodules on the serosa of the intestine, pancreas, oviduct and peritoneum. There are firm adhesions between loops of the intestine. Ovary has a few similar firm nodules like in the peritoneum. There is mild fibrinous exudate in the oviduct.

Report 4.29-CAHFS Standard Report - 06/10/2016 Page 1 of 3

CAHFS Final Version 1 Accession # June 25, 2016

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Mrs. Clucks	1	Liver Tissue	No growth after 48 hours
Mrs. Clucks	1	Oviduct Tissue	Enterococcus faecalis Lg# Escherichia coli Mod#
Mrs. Clucks	1	Peritoneal Swab	Enterococcus faecalis Lg# Escherichia coli Sm#

Biotyper Organsim Identification

Animal/Source	Specimen	Specimen Type	Results
Mrs. Clucks	1	Peritoneal Swab	Enterococcus faecalis

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Mrs. Clucks	1	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Mrs. Clucks	1	Pharyngeal Swab - VTM	Not Detected

Histology

Brain, nerves, trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, thyroids, adrenals, gizzard, intestine, pancreas, ovary, oviduct, bone, bone marrow and skeletal muscles are examined.
The nodules seen grossly in the peritoneum, serosa of the pancreas and intestine are composed of neoplastic cuboidal epithelium forming glands of various sizes associated with desmoplastic reaction.
There is fibrinous and giant cell granulomatous reaction in the peritoneum.
There are eosinophilic concretions in the mucosal glands of the oviduct.

Toxicology

and spines, or are they gills,

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Rosanna & Nanna
Date Collected: 06/21/2016
Date Received: 06/28/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 7/7/2016 1:33:57PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-- Rosanna	Name	Chicken	Female	3.50 Years
B- Nanna	Name	Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

1. Ovarian carcinoma with metastasis to serosa of the intestine, pancreas and oviduct, Bird A (Red Star, Rosanna).
2. Salpingitis, Bird B (Isa Brown, Nanna), E. coli isolated.
3. Presumptive amyloidosis, liver and spleen, bird B.. Congo Red stain pending.
4. Peritonitis, birds A and B.

Case Summary

06/30/16: The diagnoses are self-explanatory based on findings in previous cases that you have submitted. There are a few more tests pending..

07/07/16: The birds are negative for AI, salmonella and lead. This completes all the tests on this case.

Clinical History

Rosanna (yellow 55) was a red star hen, 3 1/2 years old. She first came into the ICU in February 2016 because her behavior was different (hiding, not eating). 200-400cc of clear yellow fluid was drained from her abdomen 2 occasions and a third time on 6/21/16. She was treated with antibiotics for 10-14 days several times since February. On the morning of 6/21/16 she couldn't stand. Her abdomen was drained, and was found dead later that day.

Nanna was a 3 1/2 year old Isa brown hen. She appeared healthy until she was found dead in her coop on the morning of 6/26/16. The weather had been extremely hot for over a week. No obvious cause of death.

Gross Observations

Two hens, 3 ½ year-old each Red Star Hen (bird A, Rosanna, Yellow leg band #55) and ISA Brown hen (Nanna, No ID #) are presented dead for necropsy.

CAHFS Final Version 1 Accession July 07, 2016

The birds are in fair postmortem condition, severely emaciated with keel deviation in and bird A ahe she weighs 1.14 kg and bird B weighs 1.90 kg (bird B)..
Bird B has generalized congestion (dark) of visceral organs in the thoracix and abdominal cavities
ght lung in bird A has congestion and edema.
op have fluid ingesta and proventriculus and gizzards are empty, birds A and B

Bird A: the abdomen is severely distended with serous and dark fibrinous exudate of approximately 100 ml. There are numerous grey or pale firm nodules on the serosa of the intestine, pancreas, oviduct and peritoneum. There are firm adhesions between loops of the intestine. Ovary has many similar firm nodules like in the peritoneum. The persistent right oviduct is cystic (7x7cm) and has yellow serous fluid.

Bird B: There is severe fibrinous nodular friable exudate in the oviduct and fibrinous exudate in the peritoneal cavity.

There are no other gross lesions of diagnostic significance.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A-- Rosanna	A	Liver Tissue	No growth after 48 hours
B- Nanna	B	Liver Tissue	No growth after 48 hours
B- Nanna	B	Oviduct Swab-Avian	Escherichia coli Lg#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A-- Rosanna	Pool of A & B	Cecal Contents Pool	No Salmonella sp. detected

Biotechnology

ian Influenza matrix gene qRT-PCR

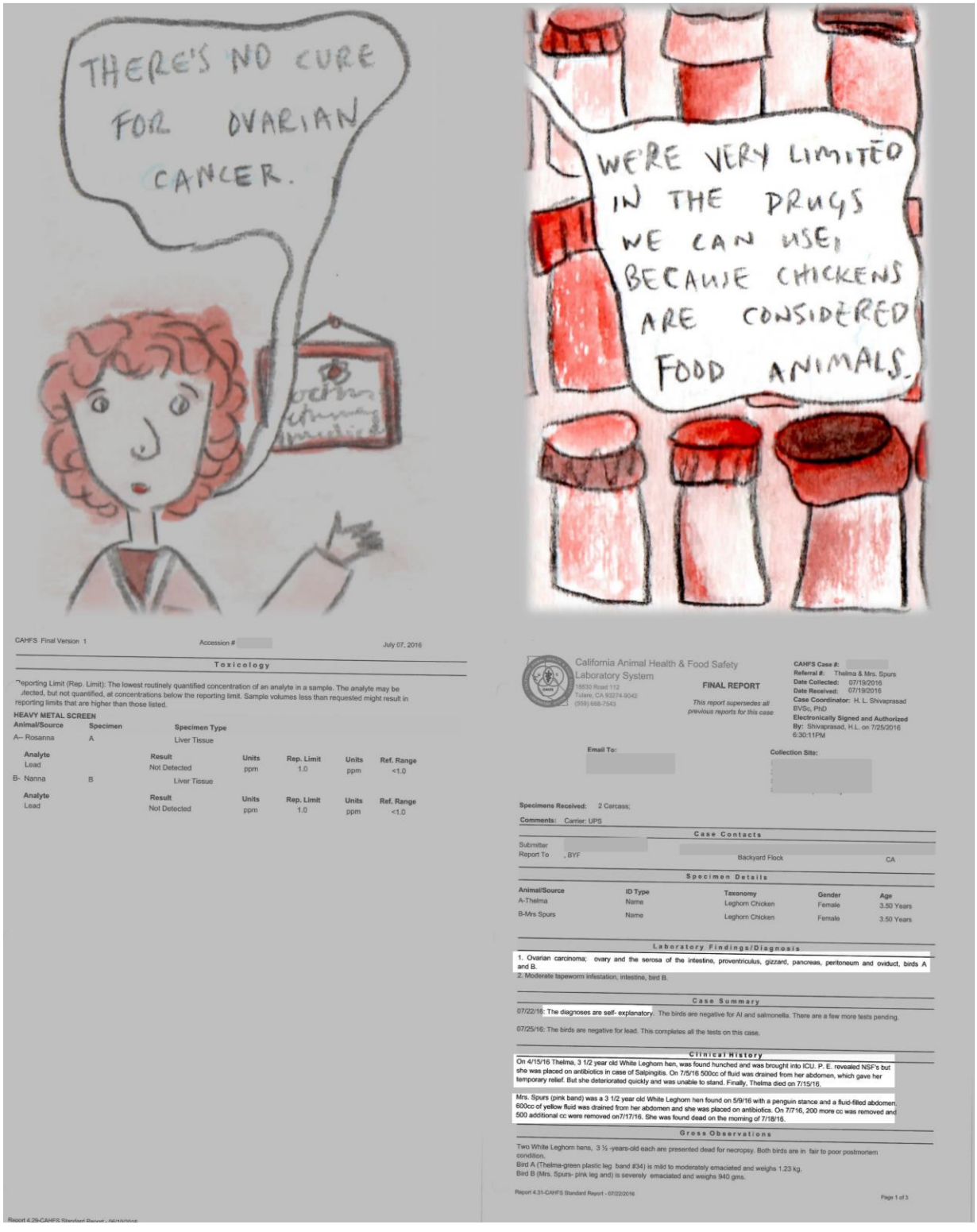
Animal/Source	Specimen	Specimen Type	Results
A-- Rosanna	Pool of A & B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Brain, nerves, trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, thyroids, adrenals, gizzard, intestine, pancreas, ovary, oviduct, bone, bone marrow and skeletal muscles are examined.

Bird A: The nodules seen grossly on serosa of the pancreas, intestine, oviduct and ovary are composed of neoplastic cuboidal epithelial cells forming glands of various sizes. Desmoplastic reaction is minimal.
Bird B has fibrinous inflammation in the oviduct.
Liver in the sinusoids and spleen in the vascular sinuses and around vessels has accumulation of homogenous eosinophilic material accumulation.

There is inflammation in the peritoneum in both birds..



CAHFS Final Version 1 Accession # July 07, 2016

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type	Analyte	Result	Units	Rep. Limit	Units	Ref. Range
A-- Rosanna	A	Liver Tissue	Lead	Not Detected	ppm	1.0	ppm	<1.0
B- Nanna	B	Liver Tissue	Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.29-CAHFS Standard Report - 07/21/2016

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9342
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Thelma & Mrs. Spurs
Date Collected: 07/15/2016
Date Received: 07/19/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 7/25/2016 6:30:11PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-Thelma	Name	Leghorn Chicken	Female	3.50 Years
B-Mrs Spurs	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

1. Ovarian carcinoma; ovary and the serosa of the intestine, proventriculus, gizzard, pancreas, peritoneum and oviduct, birds A and B.
2. Moderate tapeworm infestation, intestine, bird B.

Case Summary

07/22/16: The diagnoses are self- explanatory. The birds are negative for AI and salmonella. There are a few more tests pending.

07/25/16: The birds are negative for lead. This completes all the tests on this case.

Clinical History

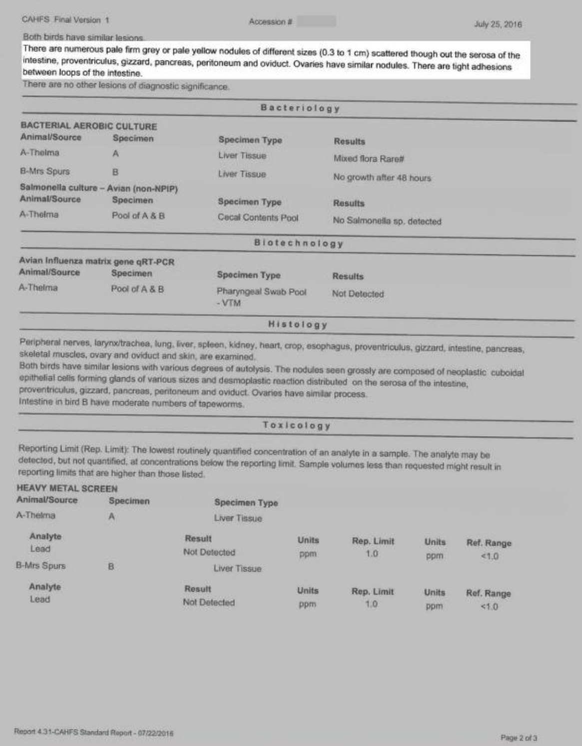
On 4/15/16 Thelma, 3 1/2 year old White Leghorn hen, was found hunched and was brought into ICU. P. E. revealed NSF's but she was placed on antibiotics in case of Salpingitis. On 7/5/16 500cc of fluid was drained from her abdomen, which gave her temporary relief. But she deteriorated quickly and was unable to stand. Finally, Thelma died on 7/15/16.

Mrs. Spurs (pink band) was a 3 1/2 year old White Leghorn hen found on 5/9/16 with a penguin stance and a fluid-filled abdomen. 600cc of yellow fluid was drained from her abdomen and she was placed on antibiotics. On 7/7/16, 200 more cc was removed and 500 additional cc were removed on7/17/16. She was found dead on the morning of 7/18/16.

Gross Observations

Two White Leghorn hens, 3 ½ -years-old each are presented dead for necropsy. Both birds are in fair to poor postmortem condition.
Bird A (Thelma-green plastic leg band #34) is mild to moderately emaciated and weighs 1.23 kg.
Bird B (Mrs. Spurs- pink leg and) is severely emaciated and weighs 940 gms.

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 1 of 3



CAHFS Final Version 1 Accession # July 25, 2016

Both birds have similar lesions.
There are numerous pale firm grey or pale yellow nodules of different sizes (0.3 to 1 cm) scattered though out the serosa of the intestine, proventriculus, gizzard, pancreas, peritoneum and oviduct. Ovaries have similar nodules. There are tight adhesions between loops of the intestine.
There are no other lesions of diagnostic significance.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A-Thelma	A	Liver Tissue	Mixed flora Rare#
B-Mrs Spurs	B	Liver Tissue	No growth after 48 hours

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A-Thelma	Pool of A & B	Cecal Contents Pool	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A-Thelma	Pool of A & B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Peripheral nerves, larynx/trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, gizzard, intestine, pancreas, skeletal muscles, ovary and oviduct and skin, are examined.
Both birds have similar lesions with various degrees of autolysis. The nodules seen grossly are composed of neoplastic cuboidal epithelial cells forming glands of various sizes and desmoplastic reaction distributed on the serosa of the intestine, proventriculus, gizzard, pancreas, peritoneum and oviduct. Ovaries have similar process.
Intestine in bird B have moderate numbers of tapeworms.

Toxicology

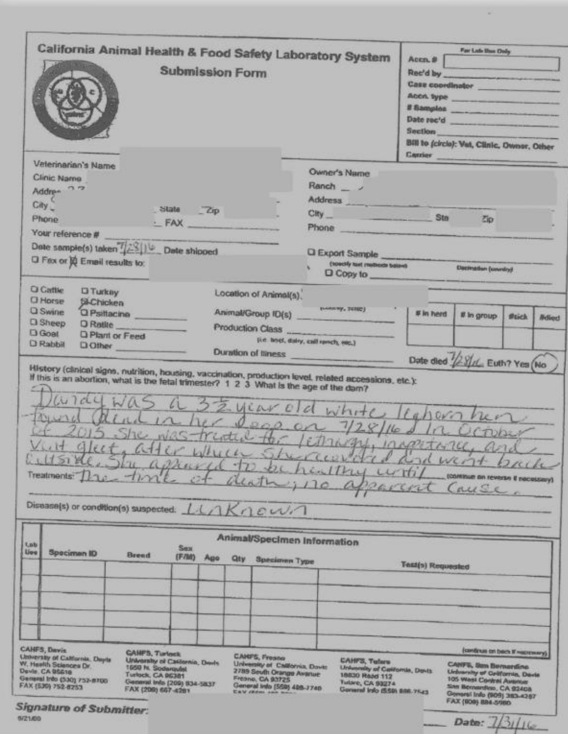
Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type				
A-Thelma	A	Liver Tissue				
Analyte		Result	Units	Rep. Limit	Units	Ref. Range
Lead		Not Detected	ppm	1.0	ppm	<1.0
B-Mrs Spurs	B	Liver Tissue				
Analyte		Result	Units	Rep. Limit	Units	Ref. Range
Lead		Not Detected	ppm	1.0	ppm	<1.0

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 2 of 3

creeping around on granular Martian



California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only
Accn. #
Rec'd by
Case coordinator
Accn. type
Samples
Date rec'd
Section
Bill to (circle): Vet, Clinic, Owner, Other
Carrier

Veterinarian's Name
Clinic Name
Address
City State Zip
Phone FAX
Your reference #
Date sample(s) taken 7/28/16 Date shipped
☐ Fax or ☒ Email results to:

Owner's Name
Ranch
Address
City Sta Zip
Phone
☐ Export Sample
☐ Copy to

☐ Cattle ☐ Turkey
☐ Horse ☒ Chicken
☐ Swine ☐ Psittacine
☐ Sheep ☐ Ratite
☐ Goat ☐ Plant or Feed
☐ Rabbit ☐ Other

Location of Animal(s)
Animal/Group ID(s)
Production Class (i.e. beef, dairy, calf ranch, etc.)
Duration of Illness

# in herd	# in group	#sick	#died

Date died 7/28/16 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?
Dandy was a 3½ year old white leghorn hen found dead in her coop on 7/28/16. In October of 2015 she was treated for lethargy, inappetance, and vent gleet, after which she recovered and went back outside. She appeared to be healthy until
Treatments: the time of death; no apparent cause. (continue on reverse if necessary)

Disease(s) or condition(s) suspected: Unknown

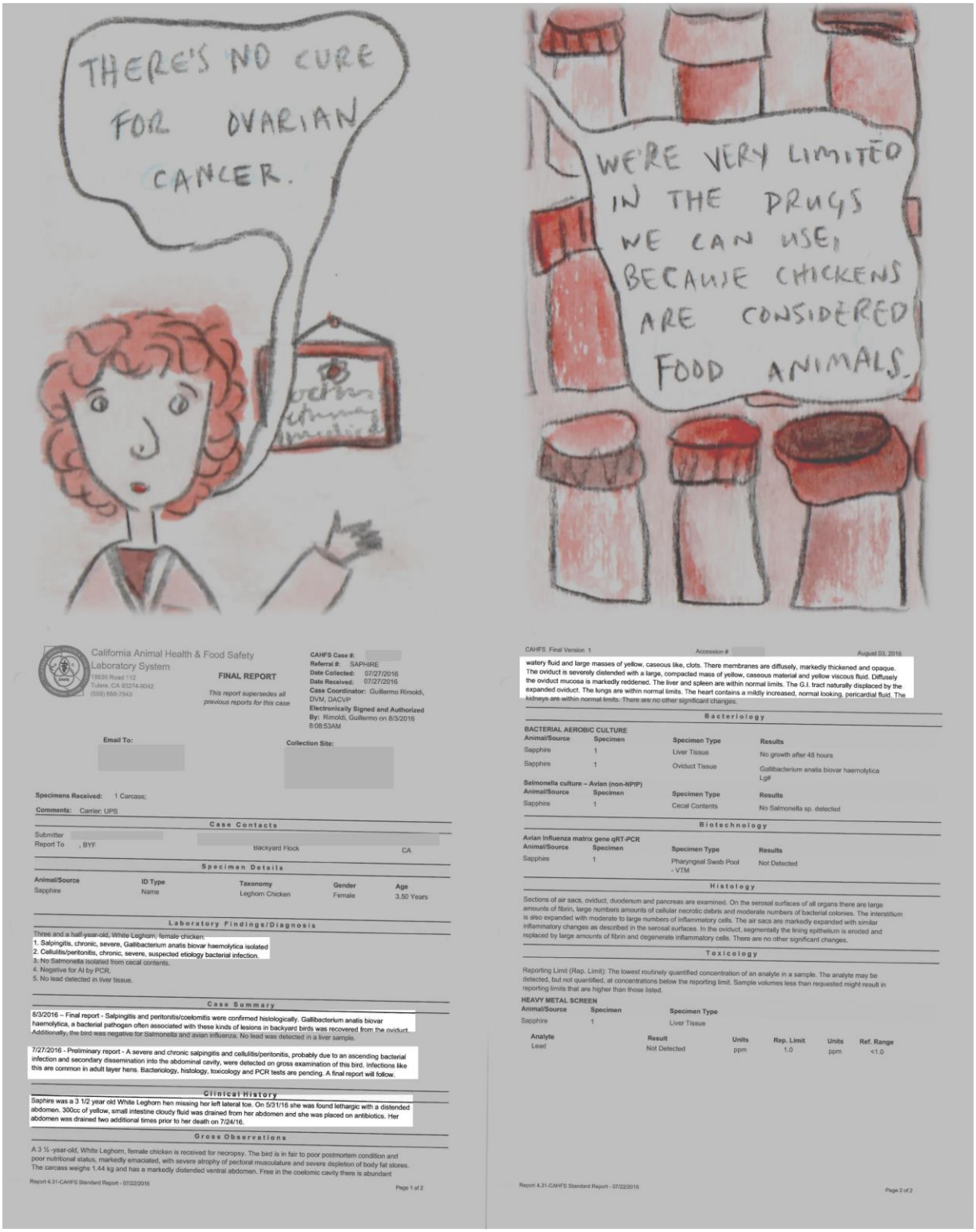
Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis, University of California, Davis, W. Health Sciences Dr., Davis, CA 95616, General Info (530) 752-8700, FAX (530) 752-6253
CAHFS, Turlock, University of California, Davis, 1550 N. Soderquist, Turlock, CA 95381, General Info (209) 634-5837, FAX (209) 667-4261
CAHFS, Fresno, University of California, Davis, 2789 South Orange Avenue, Fresno, CA 93725, General Info (559) 498-7740
CAHFS, Tulare, University of California, Davis, 18830 Road 112, Tulare, CA 93274, General Info (559) 688-7543
CAHFS, San Bernardino, University of California, Davis, 105 West Central Avenue, San Bernardino, CA 92408, General Info (909) 383-4287, FAX (909) 884-5980

Signature of Submitter: *Date:* 7/31/16
6/21/00



California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: SAPHIRE
Date Collected: 07/27/2016
Date Received: 07/27/2016
Case Coordinator: Guillermo Rimoldi, DVM, DACVP
Electronically Signed and Authorized By: Rimoldi, Guillermo on 8/3/2016 8:08:53AM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF
Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Sapphire	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Three and a half-year-old, White Leghorn, female chicken.
1. Salpingitis, chronic, severe, Gallibacterium anatis biovar haemolytica isolated
2. Cellulitis/peritonitis, chronic, severe, suspected etiology bacterial infection.
3. No Salmonella isolated from cecal contents.
4. Negative for AI by PCR.
5. No lead detected in liver tissue.

Case Summary

8/3/2016 – Final report - Salpingitis and peritonitis/coelomitis were confirmed histologically. Gallibacterium anatis biovar haemolytica, a bacterial pathogen often associated with these kinds of lesions in backyard birds was recovered from the oviduct. Additionally, the bird was negative for Salmonella and avian influenza. No lead was detected in a liver sample.

7/27/2016 - Preliminary report - A severe and chronic salpingitis and cellulitis/peritonitis, probably due to an ascending bacterial infection and secondary dissemination into the abdominal cavity, were detected on gross examination of this bird. Infections like this are common in adult layer hens. Bacteriology, histology, toxicology and PCR tests are pending. A final report will follow.

Clinical History

Saphire was a 3 1/2 year old White Leghorn hen missing her left lateral toe. On 5/31/16 she was found lethargic with a distended abdomen. 300cc of yellow, small intestine cloudy fluid was drained from her abdomen and she was placed on antibiotics. Her abdomen was drained two additional times prior to her death on 7/24/16.

Gross Observations

A 3 ½ -year-old, White Leghorn, female chicken is received for necropsy. The bird is in fair to poor postmortem condition and poor nutritional status, markedly emaciated, with severe atrophy of pectoral musculature and severe depletion of body fat stores. The carcass weighs 1.44 kg and has a markedly distended ventral abdomen. Free in the coelomic cavity there is abundant

watery fluid and large masses of yellow, caseous like, clots. There membranes are diffusely, markedly thickened and opaque. The oviduct is severely distended with a large, compacted mass of yellow, caseous material and yellow viscous fluid. Diffusely the oviduct mucosa is markedly reddened. The liver and spleen are within normal limits. The G.I. tract naturally displaced by the expanded oviduct. The lungs are within normal limits. The heart contains a mildly increased, normal looking, pericardial fluid. The kidneys are within normal limits. There are no other significant changes.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Sapphire	1	Liver Tissue	No growth after 48 hours
Sapphire	1	Oviduct Tissue	Gallibacterium anatis biovar haemolytica Lg#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Sapphire	1	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Sapphire	1	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Sections of air sacs, oviduct, duodenum and pancreas are examined. On the serosal surfaces of all organs there are large amounts of fibrin, large numbers amounts of cellular necrotic debris and moderate numbers of bacterial colonies. The interstitium is also expanded with moderate to large numbers of inflammatory cells. The air sacs are markedly expanded with similar inflammatory changes as described in the serosal surfaces. In the oviduct, segmentally the lining epithelium is eroded and replaced by large amounts of fibrin and degenerate inflammatory cells. There are no other significant changes.

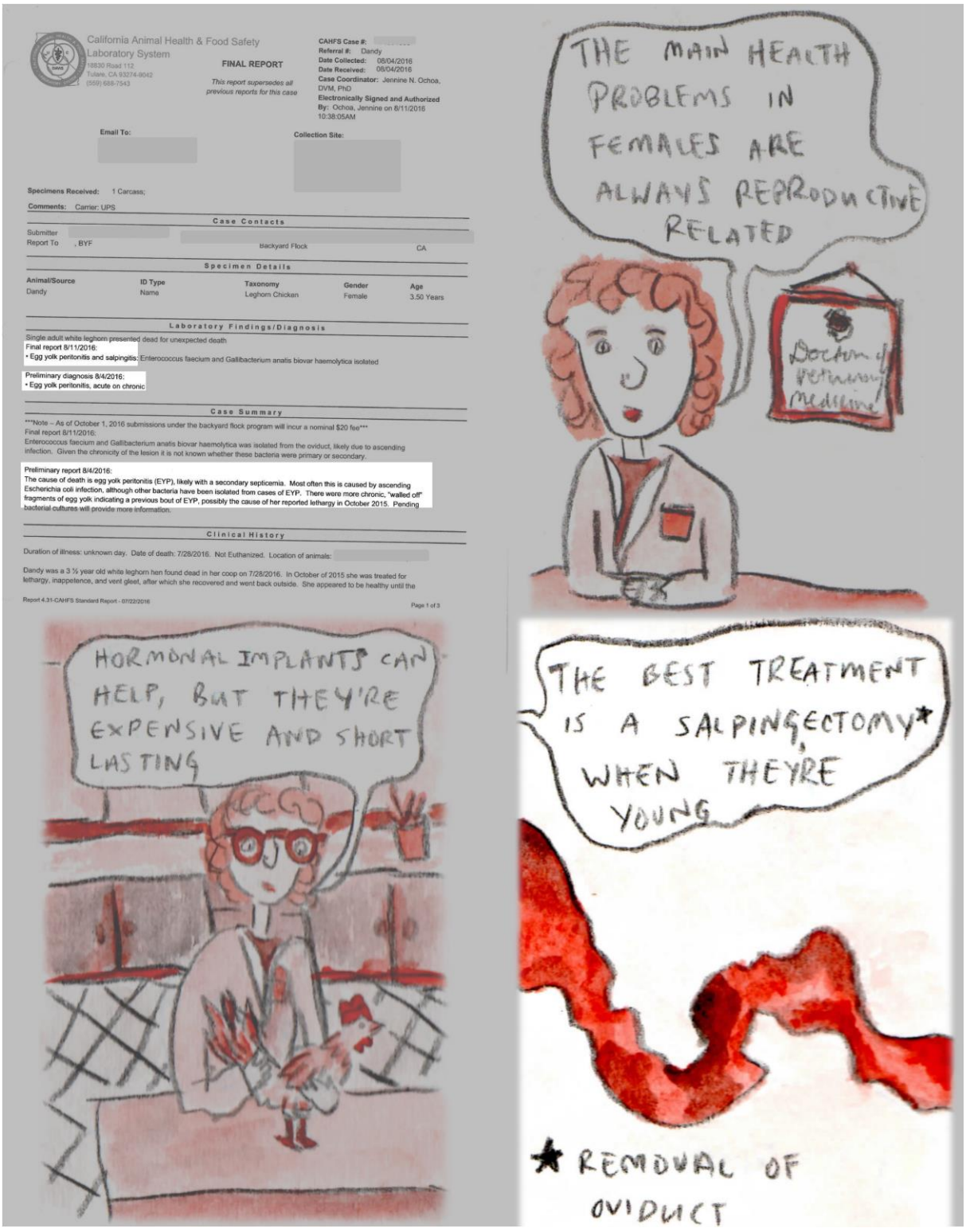
Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Sapphire	1	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0



California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-8042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Dandy
Date Collected: 08/04/2016
Date Received: 08/04/2016
Case Coordinator: Jennine N. Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 8/11/2016 10:38:05AM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF — Backyard Flock — CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Dandy	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Single adult white leghorn presented dead for unexpected death

Final report 8/11/2016:
• Egg yolk peritonitis and salpingitis: Enterococcus faecium and Gallibacterium anatis biovar haemolytica isolated

Preliminary diagnosis 8/4/2016:
• Egg yolk peritonitis, acute on chronic

Case Summary

Note – As of October 1, 2016 submissions under the backyard flock program will incur a nominal $20 fee
Final report 8/11/2016:
Enterococcus faecium and Gallibacterium anatis biovar haemolytica was isolated from the oviduct, likely due to ascending infection. Given the chronicity of the lesion it is not known whether these bacteria were primary or secondary.

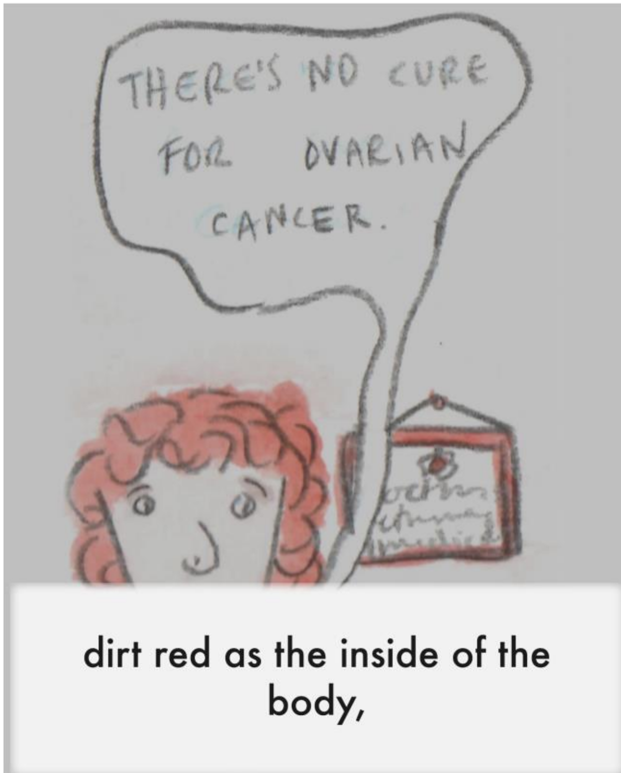
Preliminary report 8/4/2016:
The cause of death is egg yolk peritonitis (EYP), likely with a secondary septicemia. Most often this is caused by ascending Escherichia coli infection, although other bacteria have been isolated from cases of EYP. There were more chronic, "walled off" fragments of egg yolk indicating a previous bout of EYP, possibly the cause of her reported lethargy in October 2015. Pending bacterial cultures will provide more information.

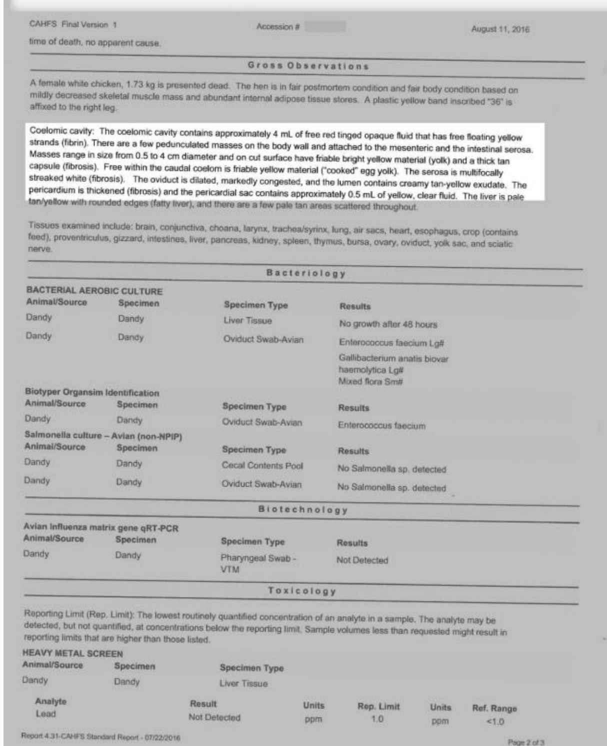
Clinical History

Duration of illness: unknown day. Date of death: 7/28/2016. Not Euthanized. Location of animals:

Dandy was a 3 ½ year old white leghorn hen found dead in her coop on 7/28/2016. In October of 2015 she was treated for lethargy, inappetence, and vent gleet, after which she recovered and went back outside. She appeared to be healthy until the

Report 4.31-CAHFS Standard Report - 07/22/2016 — Page 1 of 3





CAHFS Final Version 1 Accession # [redacted] August 11, 2016

time of death, no apparent cause.

Gross Observations

A female white chicken, 1.73 kg is presented dead. The hen is in fair postmortem condition and fair body condition based on mildly decreased skeletal muscle mass and abundant internal adipose tissue stores. A plastic yellow band inscribed "36" is affixed to the right leg.

Coelomic cavity: The coelomic cavity contains approximately 4 mL of free red tinged opaque fluid that has free floating yellow strands (fibrin). There are a few pedunculated masses on the body wall and attached to the mesenteric and the intestinal serosa. Masses range in size from 0.5 to 4 cm diameter and on cut surface have friable bright yellow material (yolk) and a thick tan capsule (fibrosis). Free within the caudal coelom is friable yellow material ("cooked" egg yolk). The serosa is multifocally streaked white (fibrosis). The oviduct is dilated, markedly congested, and the lumen contains creamy tan-yellow exudate. The pericardium is thickened (fibrosis) and the pericardial sac contains approximately 0.5 mL of yellow, clear fluid. The liver is pale tan/yellow with rounded edges (fatty liver), and there are a few pale tan areas scattered throughout.

Tissues examined include: brain, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop (contains feed), proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, bursa, ovary, oviduct, yolk sac, and sciatic nerve.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Dandy	Dandy	Liver Tissue	No growth after 48 hours
Dandy	Dandy	Oviduct Swab-Avian	Enterococcus faecium Lg# Gallibacterium anatis biovar haemolytica Lg# Mixed flora Sm#

Biotyper Organsim Identification

Animal/Source	Specimen	Specimen Type	Results
Dandy	Dandy	Oviduct Swab-Avian	Enterococcus faecium

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Dandy	Dandy	Cecal Contents Pool	No Salmonella sp. detected
Dandy	Dandy	Oviduct Swab-Avian	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Dandy	Dandy	Pharyngeal Swab - VTM	Not Detected

Toxicology

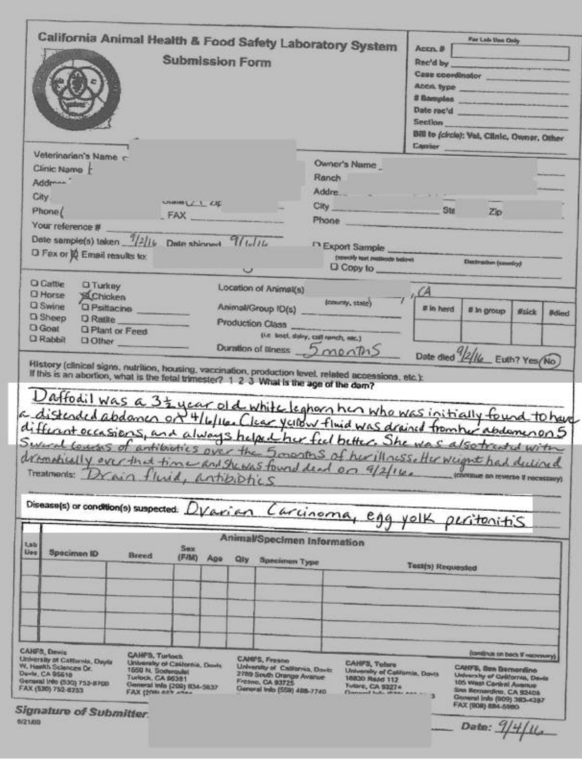
Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Dandy	Dandy	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 2 of 3



California Animal Health & Food Safety Laboratory System

Submission Form

For Lab Use Only
Accn. #
Rec'd by
Case coordinator
Accn. type
Samples
Date rec'd
Section
Bill to (circle): Vet, Clinic, Owner, Other
Carrier

Veterinarian's Name [redacted]
Clinic Name [redacted]
Address [redacted]
City [redacted] State CA Zip [redacted]
Phone [redacted] FAX
Your reference #
Date sample(s) taken 9/2/16 Date shipped 9/6/16
☐ Fax or ☒ Email results to: [redacted]

Owner's Name [redacted]
Ranch [redacted]
Address [redacted]
City [redacted] State [redacted] Zip [redacted]
Phone
☐ Export Sample (specify test methods below) Destination (country)
☐ Copy to

☐ Cattle ☐ Horse ☐ Swine ☐ Sheep ☐ Goat ☐ Rabbit
☐ Turkey ☒ Chicken ☐ Psittacine ☐ Ratite ☐ Plant or Feed ☐ Other

Location of Animal(s) [redacted], CA (county, state)
Animal/Group ID(s)
Production Class (i.e. beef, dairy, calf ranch, etc.)
Duration of illness 5 months

# in herd	# in group	#sick	#died

Date died 9/2/16 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?
Daffodil was a 3½ year old white leghorn hen who was initially found to have
a distended abdomen on 4/6/16. Clear yellow fluid was drained from her abdomen on 5
different occasions, and always helped her feel better. She was also treated with
Several courses of antibiotics over the 5 months of her illness. Her weight had declined
dramatically over that time and she was found dead on 9/2/16.
Treatments: Drain fluid, antibiotics (continue on reverse if necessary)

Disease(s) or condition(s) suspected: Ovarian Carcinoma, egg yolk peritonitis

Animal/Specimen Information

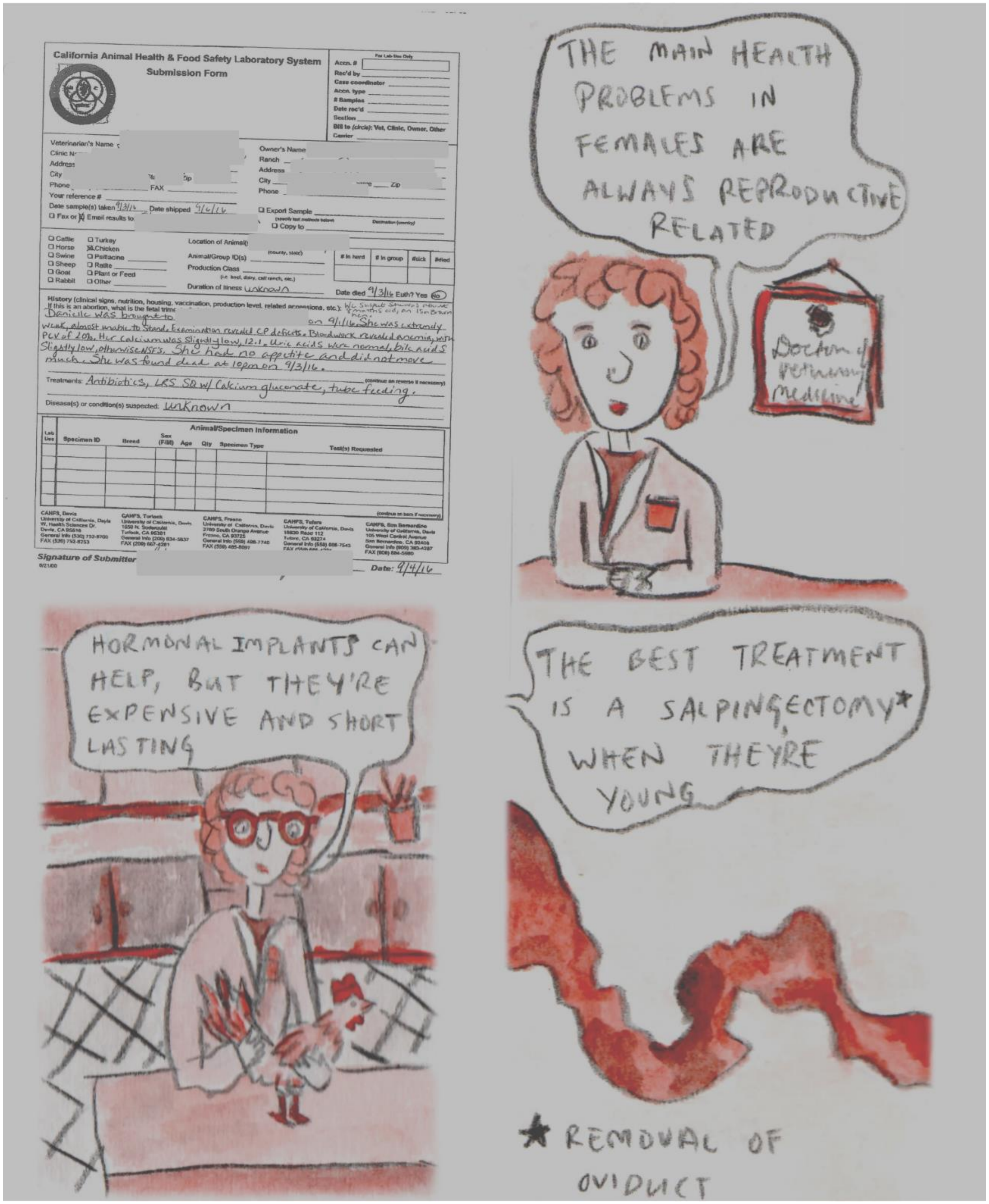
Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

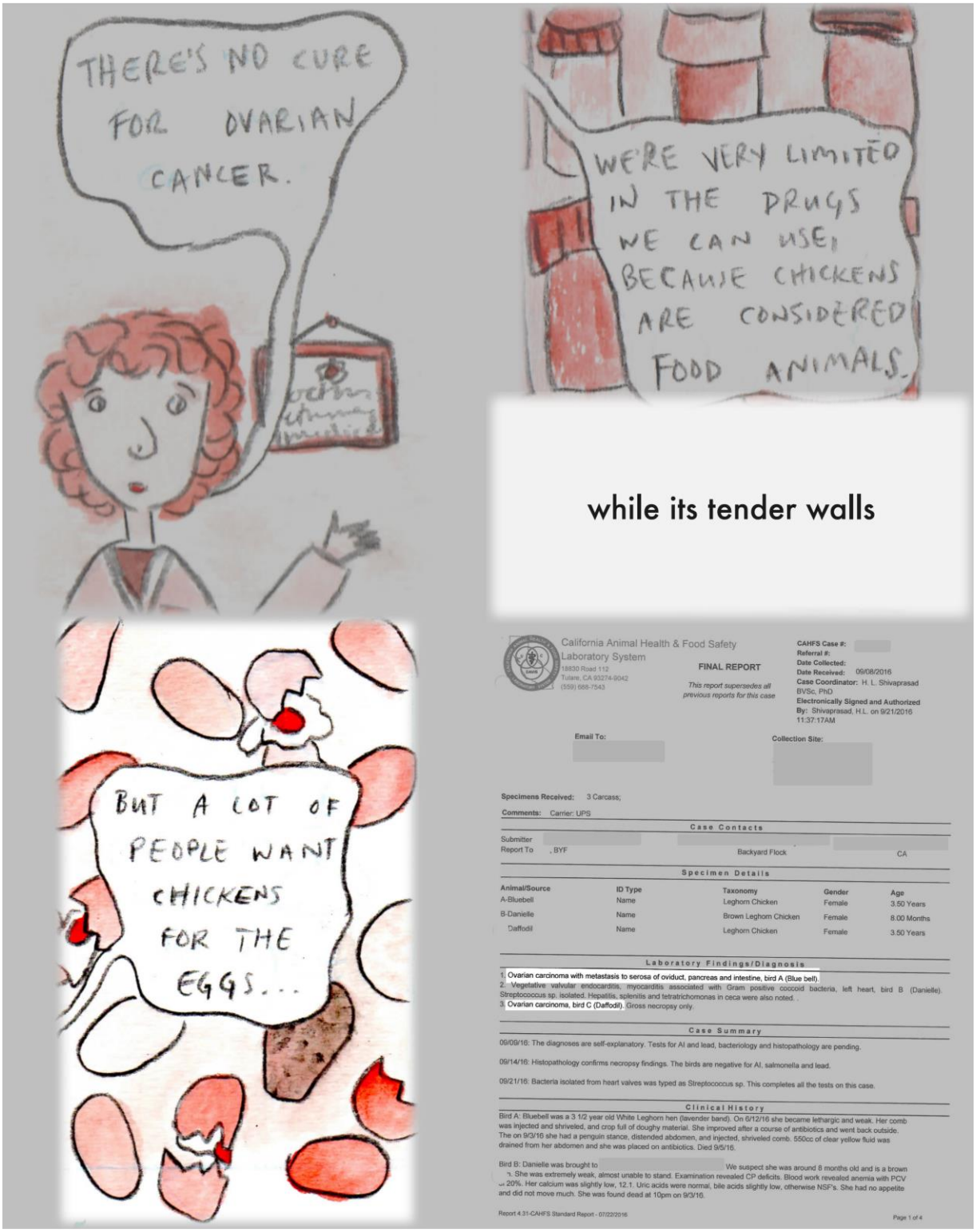
(continue on back if necessary)

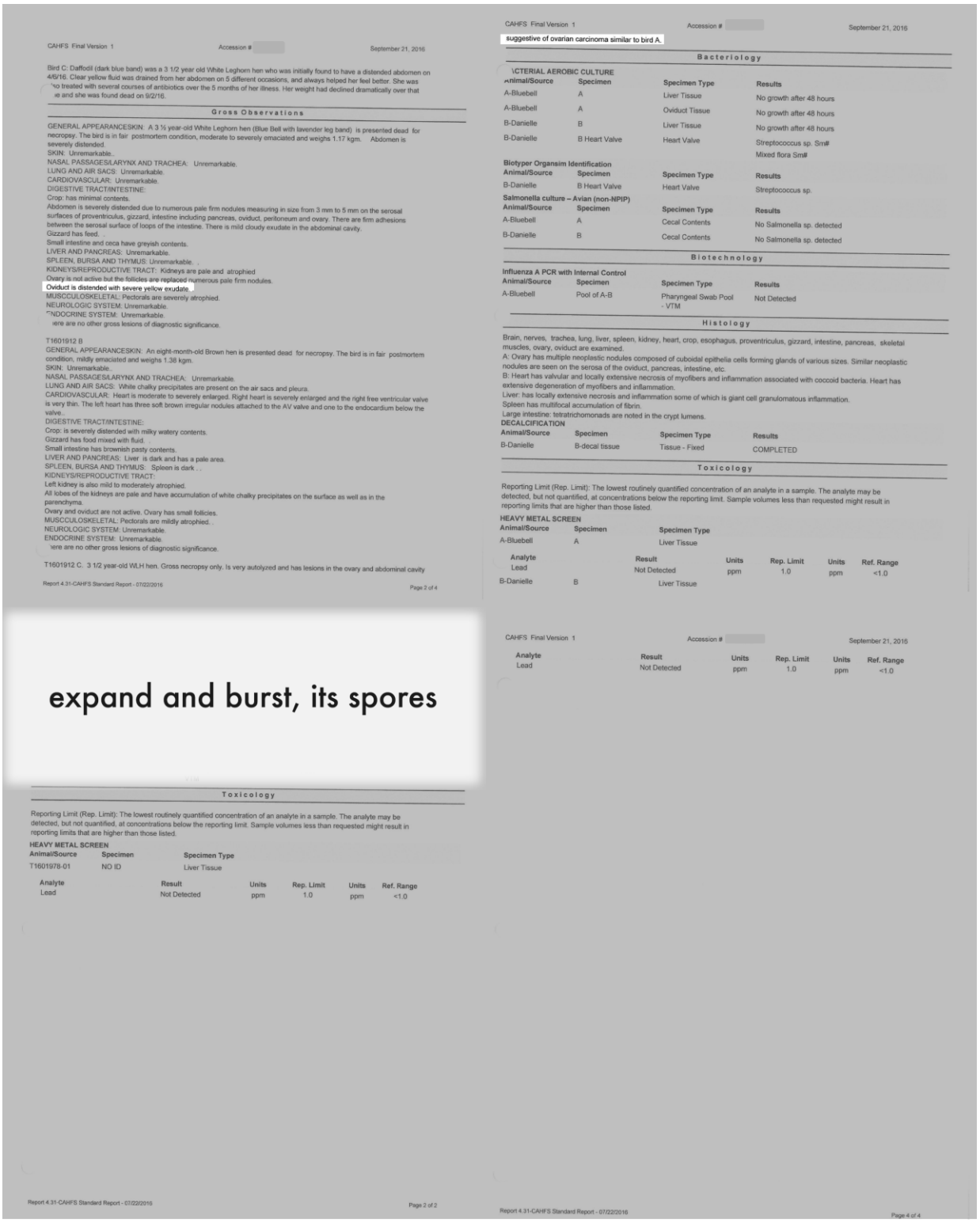
CAHFS, Davis, University of California, Davis, W. Health Sciences Dr., Davis, CA 95616, General Info (530) 752-8700, FAX (530) 752-6253
CAHFS, Turlock, University of California, Davis, 1550 N. Soderquist, Turlock, CA 95381, General Info (209) 634-5837
CAHFS, Fresno, University of California, Davis, 2789 South Orange Avenue, Fresno, CA 93725, General Info (559) 498-7740
CAHFS, Tulare, University of California, Davis, 18830 Road 112, Tulare, CA 93274
CAHFS, San Bernardino, University of California, Davis, 105 West Central Avenue, San Bernardino, CA 92408, General Info (909) 383-4287, FAX (909) 884-5980

Signature of Submitter [redacted] Date: 9/4/16

6/21/00


California Animal Health & Food Safety Laboratory System
Submission Form
For Lab Use Only
Accn. #
Rec'd by
Case coordinator
Accn. type
Samples
Date rec'd
Section
Bill to (circle): Vet, Clinic, Owner, Other
Carrier
Veterinarian's Name
Clinic Name
Address
City
Phone
FAX
Your reference #
Date sample(s) taken 9/3/16 Date shipped 9/6/16
Fax or Email results to
Owner's Name
Ranch
Address
City
Zip
Phone
Export Sample
(specify test methods below)
Destination (country)
Copy to
Cattle
Horse
Swine
Sheep
Goat
Rabbit
Turkey
Chicken
Psittacine
Ratite
Plant or Feed
Other
Location of Animal(s)
(county, state)
Animal/Group ID(s)
Production Class
(i.e. beef, dairy, calf ranch, etc.)
Duration of Illness unknown
In herd
in group
#sick
#died
Date died 9/3/16 Euth? Yes No
History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester
We suspect she was about 8 months old, an ISA Brown hen.
Danielle was brought to
on 9/1/16. She was extremely weak, almost unable to stand. Examination revealed CP deficits. Bloodwork revealed anemia, with PCV of 20%. Her calcium was slightly low, 12.1. Uric acids were normal, bile acids slightly low, otherwise NSF's. She had no appetite and did not move much. She was found dead at 10pm on 9/3/16.
Treatments: Antibiotics, LRS SQ w/ Calcium gluconate, tube feeding.
(continue on reverse if necessary)
Disease(s) or condition(s) suspected: unknown
Animal/Specimen Information
Lab Use
Specimen ID
Breed
Sex (F/M)
Age
Qty
Specimen Type
Test(s) Requested
(continue on back if necessary)
CAHFS, Davis
University of California, Davis
W. Health Sciences Dr.
Davis, CA 95616
General Info (530) 752-8700
FAX (530) 752-6253
CAHFS, Turlock
University of California, Davis
1550 N. Soderquist
Turlock, CA 95381
General Info (209) 634-5837
FAX (209) 667-4261
CAHFS, Fresno
University of California, Davis
2789 South Orange Avenue
Fresno, CA 93725
General Info (559) 498-7740
FAX (559) 485-8097
CAHFS, Tulare
University of California, Davis
18830 Road 112
Tulare, CA 93274
General Info (559) 688-7543
CAHFS, San Bernardino
University of California, Davis
105 West Central Avenue
San Bernardino, CA 92408
General Info (909) 383-4287
FAX (909) 884-5980
Signature of Submitter
Date: 9/4/16
THE MAIN HEALTH PROBLEMS IN FEMALES ARE ALWAYS REPRODUCTIVE RELATED
Doctor of Veterinary Medicine
HORMONAL IMPLANTS CAN HELP, BUT THEY'RE EXPENSIVE AND SHORT LASTING
THE BEST TREATMENT IS A SALPINGECTOMY* WHEN THEYRE YOUNG
* REMOVAL OF OVIDUCT


THERE'S NO CURE FOR OVARIAN CANCER.
WE'RE VERY LIMITED IN THE DRUGS WE CAN USE, BECAUSE CHICKENS ARE CONSIDERED FOOD ANIMALS.
while its tender walls
BUT A LOT OF PEOPLE WANT CHICKENS FOR THE EGGS...
California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 685-7543
FINAL REPORT
This report supersedes all previous reports for this case
CAHFS Case #:
Referral #:
Date Collected:
Date Received: 09/08/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 9/21/2016 11:37:17AM
Email To:
Collection Site:
Specimens Received: 3 Carcass;
Comments: Carrier: UPS
Case Contacts
Submitter
Report To , BYF
Backyard Flock
CA
Specimen Details
Animal/Source | ID Type | Taxonomy | Gender | Age
A-Bluebell | Name | Leghorn Chicken | Female | 3.50 Years
B-Danielle | Name | Brown Leghorn Chicken | Female | 8.00 Months
Daffodil | Name | Leghorn Chicken | Female | 3.50 Years
Laboratory Findings/Diagnosis
1. Ovarian carcinoma with metastasis to serosa of oviduct, pancreas and intestine, bird A (Blue bell).
2. Vegetative valvular endocarditis, myocarditis associated with Gram positive coccoid bacteria, left heart, bird B (Danielle). Streptococcus sp. isolated. Hepatitis, splenitis and tetratrichomonas in ceca were also noted.
3. Ovarian carcinoma, bird C (Daffodil). Gross necropsy only.
Case Summary
09/09/16: The diagnoses are self-explanatory. Tests for AI and lead, bacteriology and histopathology are pending.
09/14/16: Histopathology confirms necropsy findings. The birds are negative for AI, salmonella and lead.
09/21/16: Bacteria isolated from heart valves was typed as Streptococcus sp. This completes all the tests on this case.
Clinical History
Bird A: Bluebell was a 3 1/2 year old White Leghorn hen (lavender band). On 6/12/16 she became lethargic and weak. Her comb was injected and shriveled, and crop full of doughy material. She improved after a course of antibiotics and went back outside. The on 9/3/16 she had a penguin stance, distended abdomen, and injected, shriveled comb. 550cc of clear yellow fluid was drained from her abdomen and she was placed on antibiotics. Died 9/5/16.
Bird B: Danielle was brought to . We suspect she was around 8 months old and is a brown . She was extremely weak, almost unable to stand. Examination revealed CP deficits. Blood work revealed anemia with PCV 20%. Her calcium was slightly low, 12.1. Uric acids were normal, bile acids slightly low, otherwise NSF's. She had no appetite and did not move much. She was found dead at 10pm on 9/3/16.
Report 4.31-CAHFS Standard Report - 07/22/2016
Page 1 of 4



CAHFS Final Version 1 Accession # September 21, 2016

Bird C: Daffodil (dark blue band) was a 3 1/2 year old White Leghorn hen who was initially found to have a distended abdomen on 4/6/16. Clear yellow fluid was drained from her abdomen on 5 different occasions, and always helped her feel better. She was treated with several courses of antibiotics over the 5 months of her illness. Her weight had declined dramatically over that time and she was found dead on 9/2/16.

Gross Observations

GENERAL APPEARANCE/SKIN: A 3 ½ year-old White Leghorn hen (Blue Bell with lavender leg band) is presented dead for necropsy. The bird is in fair postmortem condition, moderate to severely emaciated and weighs 1.17 kgm. Abdomen is severely distended.
SKIN: Unremarkable..
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: Unremarkable.
CARDIOVASCULAR: Unremarkable.
DIGESTIVE TRACT/INTESTINE:
Crop: has minimal contents.
Abdomen is severely distended due to numerous pale firm nodules measuring in size from 3 mm to 5 mm on the serosal surfaces of proventriculus, gizzard, intestine including pancreas, oviduct, peritoneum and ovary. There are firm adhesions between the serosal surface of loops of the intestine. There is mild cloudy exudate in the abdominal cavity.
Gizzard has feed. .
Small intestine and ceca have greyish contents.
LIVER AND PANCREAS: Unremarkable.
SPLEEN, BURSA AND THYMUS: Unremarkable. .
KIDNEYS/REPRODUCTIVE TRACT: Kidneys are pale and atrophied
Ovary is not active but the follicles are replaced numerous pale firm nodules.
Oviduct is distended with severe yellow exudate.
MUSCCULOSKELETAL: Pectorals are severely atrophied.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

T1601912 B
GENERAL APPEARANCE/SKIN: An eight-month-old Brown hen is presented dead for necropsy. The bird is in fair postmortem condition, mildly emaciated and weighs 1.38 kgm.
SKIN: Unremarkable..
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: White chalky precipitates are present on the air sacs and pleura.
CARDIOVASCULAR: Heart is moderate to severely enlarged. Right heart is severely enlarged and the right free ventricular valve is very thin. The left heart has three soft brown irregular nodules attached to the AV valve and one to the endocardium below the valve..
DIGESTIVE TRACT/INTESTINE:
Crop: is severely distended with milky watery contents.
Gizzard has food mixed with fluid. .
Small intestine has brownish pasty contents.
LIVER AND PANCREAS: Liver is dark and has a pale area.
SPLEEN, BURSA AND THYMUS: Spleen is dark . .
KIDNEYS/REPRODUCTIVE TRACT:
Left kidney is also mild to moderately atrophied.
All lobes of the kidneys are pale and have accumulation of white chalky precipitates on the surface as well as in the parenchyma.
Ovary and oviduct are not active. Ovary has small follicles.
MUSCCULOSKELETAL: Pectorals are mildly atrophied. .
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

T1601912 C. 3 1/2 year-old WLH hen. Gross necropsy only. Is very autolyzed and has lesions in the ovary and abdominal cavity

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 2 of 4

CAHFS Final Version 1 Accession # September 21, 2016

suggestive of ovarian carcinoma similar to bird A.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A-Bluebell	A	Liver Tissue	No growth after 48 hours
A-Bluebell	A	Oviduct Tissue	No growth after 48 hours
B-Danielle	B	Liver Tissue	No growth after 48 hours
B-Danielle	B Heart Valve	Heart Valve	Streptococcus sp. Sm# Mixed flora Sm#

Biotyper Organsim Identification

Animal/Source	Specimen	Specimen Type	Results
B-Danielle	B Heart Valve	Heart Valve	Streptococcus sp.

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A-Bluebell	A	Cecal Contents	No Salmonella sp. detected
B-Danielle	B	Cecal Contents	No Salmonella sp. detected

Biotechnology

Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
A-Bluebell	Pool of A-B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Brain, nerves, trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, gizzard, intestine, pancreas, skeletal muscles, ovary, oviduct are examined.
A: Ovary has multiple neoplastic nodules composed of cuboidal epithelia cells forming glands of various sizes. Similar neoplastic nodules are seen on the serosa of the oviduct, pancreas, intestine, etc.
B: Heart has valvular and locally extensive necrosis of myofibers and inflammation associated with coccoid bacteria. Heart has extensive degeneration of myofibers and inflammation.
Liver: has locally extensive necrosis and inflammation some of which is giant cell granulomatous inflammation.
Spleen has multifocal accumulation of fibrin.
Large intestine: tetratrichomonads are noted in the crypt lumens.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
B-Danielle	B-decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
A-Bluebell	A	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

B-Danielle B Liver Tissue

CAHFS Final Version 1 Accession # September 21, 2016

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

expand and burst, its spores

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

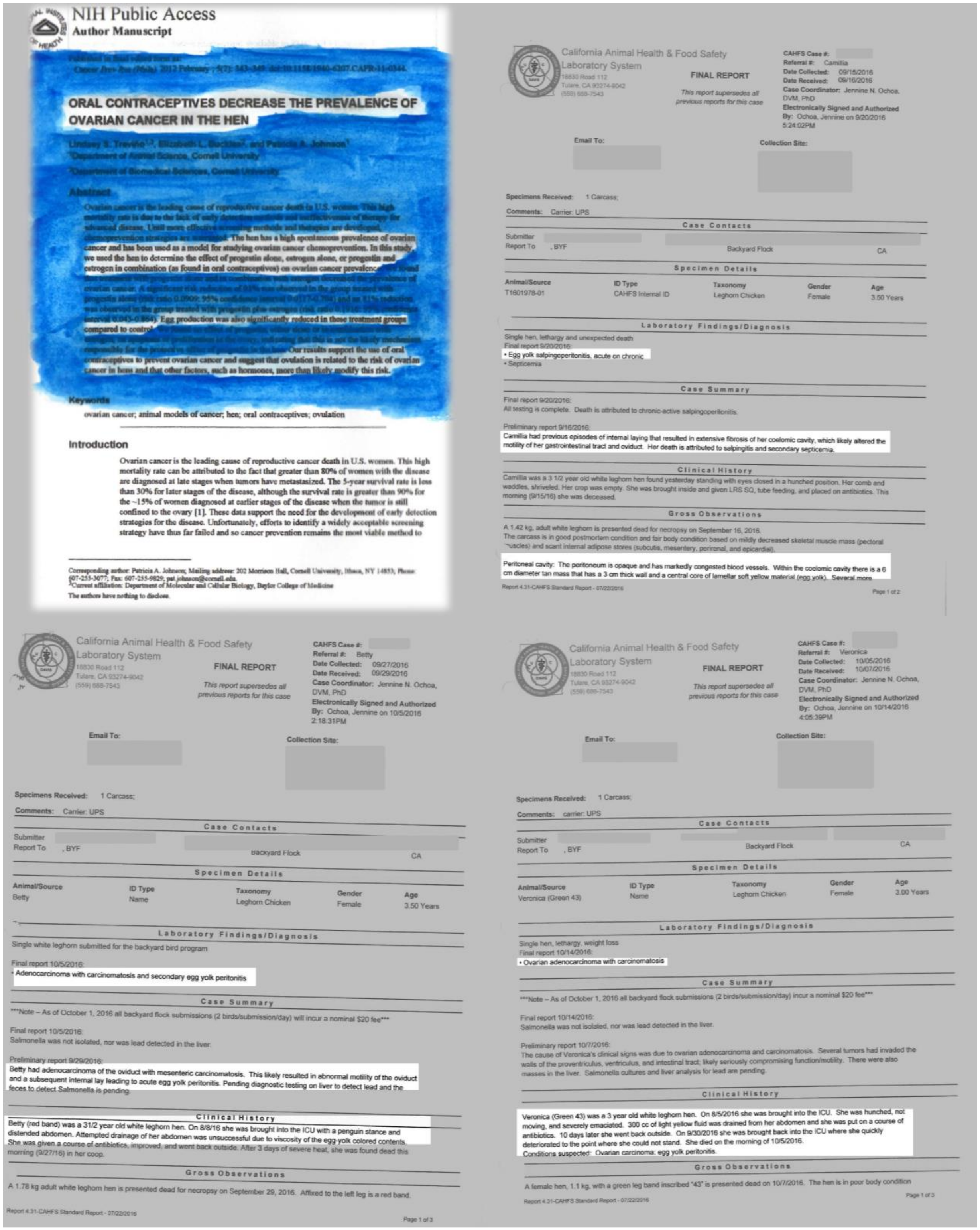
HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
T1601978-01	NO ID	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 2 of 2

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 4 of 4



NIH Public Access
Author Manuscript

[illegible]
Cancer Prev Res (Phila). 2012 February ; 5(2): 343–349. doi:10.1158/1940-6207.CAPR-11-0344.

ORAL CONTRACEPTIVES DECREASE THE PREVALENCE OF OVARIAN CANCER IN THE HEN

[illegible]

Abstract

[illegible] The hen has a high spontaneous prevalence of ovarian cancer and has been used as a model for studying ovarian cancer chemoprevention. In this study, we used the hen to determine the effect of progestin alone, estrogen alone, or progestin and estrogen in combination (as found in oral contraceptives) on ovarian cancer prevalence [illegible] Egg production was also significantly reduced in those treatment groups compared to control [illegible] Our results support the use of oral contraceptives to prevent ovarian cancer and suggest that ovulation is related to the risk of ovarian cancer in hens and that other factors, such as hormones, more than likely modify this risk.

Keywords

ovarian cancer; animal models of cancer; hen; oral contraceptives; ovulation

Introduction

Ovarian cancer is the leading cause of reproductive cancer death in U.S. women. This high mortality rate can be attributed to the fact that greater than 80% of women with the disease are diagnosed at late stages when tumors have metastasized. The 5-year survival rate is less than 30% for later stages of the disease, although the survival rate is greater than 90% for the ~15% of women diagnosed at earlier stages of the disease when the tumor is still confined to the ovary [1]. These data support the need for the development of early detection strategies for the disease. Unfortunately, efforts to identify a widely acceptable screening strategy have thus far failed and so cancer prevention remains the most viable method to

Corresponding author: Patricia A. Johnson; Mailing address: 202 Morrison Hall, Cornell University, Ithaca, NY 14853; Phone: 607-255-3077; Fax: 607-255-9829; pat.johnson@cornell.edu.
[2]Current affiliation: Department of Molecular and Cellular Biology, Baylor College of Medicine
The authors have nothing to disclose.

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT
This report supersedes all previous reports for this case

CAHFS Case #: [redacted]
Referral #: Camillia
Date Collected: 09/15/2016
Date Received: 09/16/2016
Case Coordinator: Jennine N. Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 9/20/2016 5:24:02PM

Email To: [redacted]
Collection Site: [redacted]

Specimens Received: 1 Carcass;
Comments: Carrier: UPS

Case Contacts

Submitter [redacted]
Report To , BYF Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
T1601978-01	CAHFS Internal ID	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Single hen, lethargy and unexpected death
Final report 9/20/2016:
• Egg yolk salpingoperitonitis, acute on chronic
• Septicemia

Case Summary

Final report 9/20/2016:
All testing is complete. Death is attributed to chronic-active salpingoperitonitis.

Preliminary report 9/16/2016:
Camillia had previous episodes of internal laying that resulted in extensive fibrosis of her coelomic cavity, which likely altered the motility of her gastrointestinal tract and oviduct. Her death is attributed to salpingitis and secondary septicemia.

Clinical History

Camillia was a 3 1/2 year old white leghorn hen found yesterday standing with eyes closed in a hunched position. Her comb and waddles, shriveled. Her crop was empty. She was brought inside and given LRS SQ, tube feeding, and placed on antibiotics. This morning (9/15/16) she was deceased.

Gross Observations

A 1.42 kg, adult white leghorn is presented dead for necropsy on September 16, 2016.
The carcass is in good postmortem condition and fair body condition based on mildly decreased skeletal muscle mass (pectoral muscles) and scant internal adipose stores (subcutis, mesentery, perirenal, and epicardial).

Peritoneal cavity: The peritoneum is opaque and has markedly congested blood vessels. Within the coelomic cavity there is a 6 cm diameter tan mass that has a 3 cm thick wall and a central core of lamellar soft yellow material (egg yolk). Several more

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 1 of 2

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT
This report supersedes all previous reports for this case

CAHFS Case #: [redacted]
Referral #: Betty
Date Collected: 09/27/2016
Date Received: 09/29/2016
Case Coordinator: Jennine N. Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 10/5/2016 2:18:31PM

Email To: [redacted]
Collection Site: [redacted]

Specimens Received: 1 Carcass;
Comments: Carrier: UPS

Case Contacts

Submitter [redacted]
Report To , BYF Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Betty	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Single white leghorn submitted for the backyard bird program

Final report 10/5/2016:
• Adenocarcinoma with carcinomatosis and secondary egg yolk peritonitis

Case Summary

Note – As of October 1, 2016 all backyard flock submissions (2 birds/submission/day) will incur a nominal $20 fee

Final report 10/5/2016:
Salmonella was not isolated, nor was lead detected in the liver.

Preliminary report 9/29/2016:
Betty had adenocarcinoma of the oviduct with mesenteric carcinomatosis. This likely resulted in abnormal motility of the oviduct and a subsequent internal lay leading to acute egg yolk peritonitis. Pending diagnostic testing on liver to detect lead and the feces to detect Salmonella is pending.

Clinical History

Betty (red band) was a 31/2 year old white leghorn hen. On 8/8/16 she was brought into the ICU with a penguin stance and distended abdomen. Attempted drainage of her abdomen was unsuccessful due to viscosity of the egg-yolk colored contents. She was given a course of antibiotics, improved, and went back outside. After 3 days of severe heat, she was found dead this morning (9/27/16) in her coop.

Gross Observations

A 1.78 kg adult white leghorn hen is presented dead for necropsy on September 29, 2016. Affixed to the left leg is a red band.

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 1 of 3

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT
This report supersedes all previous reports for this case

CAHFS Case #: [redacted]
Referral #: Veronica
Date Collected: 10/05/2016
Date Received: 10/07/2016
Case Coordinator: Jennine N. Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 10/14/2016 4:05:39PM

Email To: [redacted]
Collection Site: [redacted]

Specimens Received: 1 Carcass;
Comments: carrier: UPS

Case Contacts

Submitter [redacted]
Report To , BYF Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Veronica (Green 43)	Name	Leghorn Chicken	Female	3.00 Years

Laboratory Findings/Diagnosis

Single hen, lethargy, weight loss
Final report 10/14/2016:
• Ovarian adenocarcinoma with carcinomatosis

Case Summary

Note – As of October 1, 2016 all backyard flock submissions (2 birds/submission/day) incur a nominal $20 fee

Final report 10/14/2016:
Salmonella was not isolated, nor was lead detected in the liver.

Preliminary report 10/7/2016:
The cause of Veronica's clinical signs was due to ovarian adenocarcinoma and carcinomatosis. Several tumors had invaded the walls of the proventriculus, ventriculus, and intestinal tract; likely seriously compromising function/motility. There were also masses in the liver. Salmonella cultures and liver analysis for lead are pending.

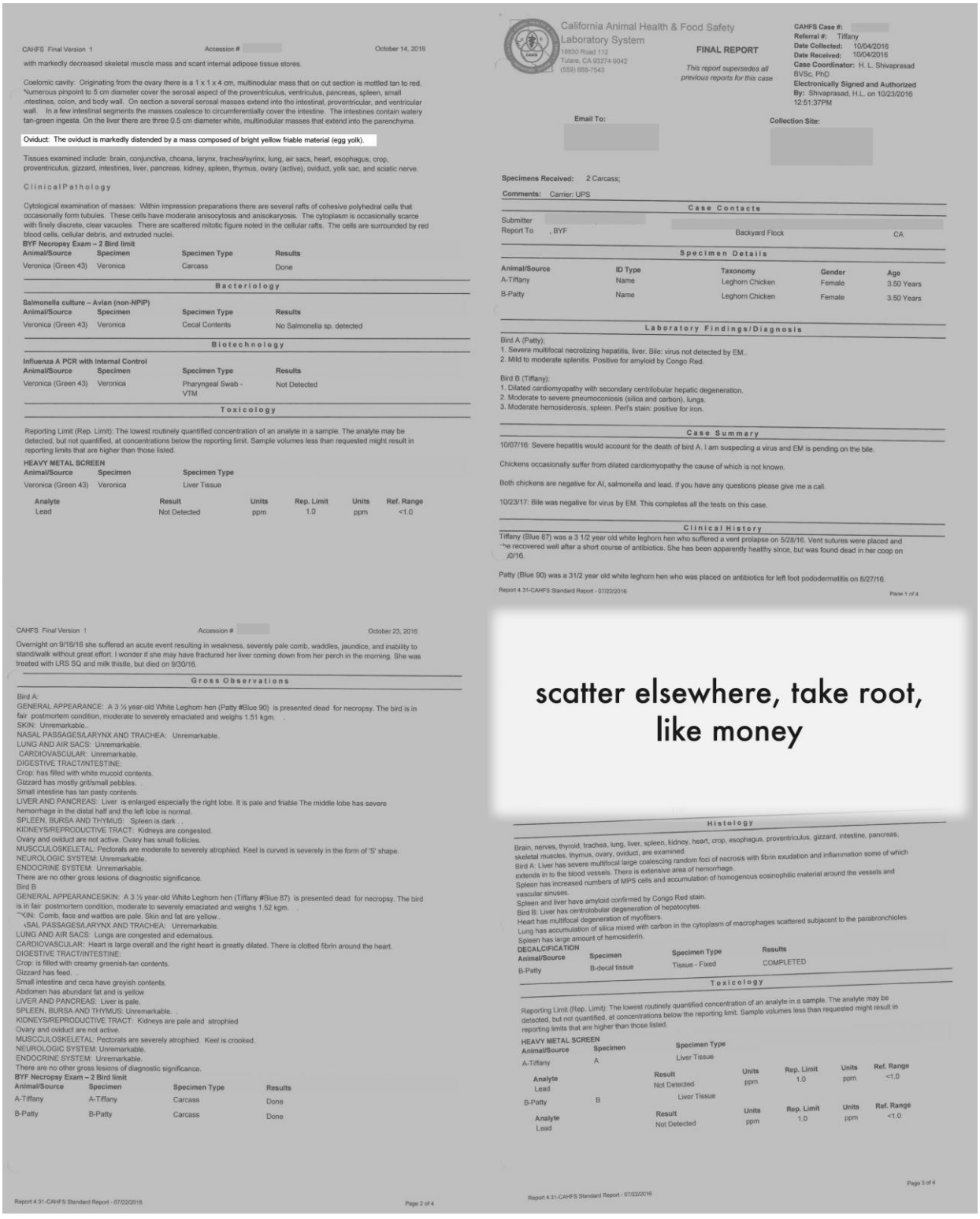
Clinical History

Veronica (Green 43) was a 3 year old white leghorn hen. On 8/5/2016 she was brought into the ICU. She was hunched, not moving, and severely emaciated. 300 cc of light yellow fluid was drained from her abdomen and she was put on a course of antibiotics. 10 days later she went back outside. On 9/30/2016 she was brought back into the ICU where she quickly deteriorated to the point where she could not stand. She died on the morning of 10/5/2016.
Conditions suspected: Ovarian carcinoma; egg yolk peritonitis.

Gross Observations

A female hen, 1.1 kg, with a green leg band inscribed "43" is presented dead on 10/7/2016. The hen is in poor body condition

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 1 of 3



CAHFS Final Version 1 Accession # October 14, 2016

with markedly decreased skeletal muscle mass and scant internal adipose tissue stores.

Coelomic cavity: Originating from the ovary there is a 1 x 1 x 4 cm, multinodular mass that on cut section is mottled tan to red. Numerous pinpoint to 5 cm diameter cover the serosal aspect of the proventriculus, ventriculus, pancreas, spleen, small intestines, colon, and body wall. On section a several serosal masses extend into the intestinal, proventricular, and ventricular wall. In a few intestinal segments the masses coalesce to circumferentially cover the intestine. The intestines contain watery tan-green ingesta. On the liver there are three 0.5 cm diameter white, multinodular masses that extend into the parenchyma.

Oviduct: The oviduct is markedly distended by a mass composed of bright yellow friable material (egg yolk).

Tissues examined include: brain, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, ovary (active), oviduct, yolk sac, and sciatic nerve.

Clinical Pathology

Cytological examination of masses: Within impression preparations there are several rafts of cohesive polyhedral cells that occasionally form tubules. These cells have moderate anisocytosis and anisokaryosis. The cytoplasm is occasionally scarce with finely discrete, clear vacuoles. There are scattered mitotic figure noted in the cellular rafts. The cells are surrounded by red blood cells, cellular debris, and extruded nuclei.

BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
Veronica (Green 43)	Veronica	Carcass	Done

Bacteriology

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Veronica (Green 43)	Veronica	Cecal Contents	No Salmonella sp. detected

Biotechnology

Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
Veronica (Green 43)	Veronica	Pharyngeal Swab - VTM	Not Detected

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Veronica (Green 43)	Veronica	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

CAHFS Final Version 1 Accession # October 23, 2016

Overnight on 9/15/16 she suffered an acute event resulting in weakness, severely pale comb, waddles, jaundice, and inability to stand/walk without great effort. I wonder if she may have fractured her liver coming down from her perch in the morning. She was treated with LRS SQ and milk thistle, but died on 9/30/16.

Gross Observations

Bird A:
GENERAL APPEARANCE: A 3 ½ year-old White Leghorn hen (Patty #Blue 90) is presented dead for necropsy. The bird is in fair postmortem condition, moderate to severely emaciated and weighs 1.51 kgm.
SKIN: Unremarkable..
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: Unremarkable.
CARDIOVASCULAR: Unremarkable.
DIGESTIVE TRACT/INTESTINE:
Crop: has filled with white mucoid contents.
Gizzard has mostly grit/small pebbles. .
Small intestine has tan pasty contents.
LIVER AND PANCREAS: Liver is enlarged especially the right lobe. It is pale and friable The middle lobe has severe hemorrhage in the distal half and the left lobe is normal.
SPLEEN, BURSA AND THYMUS: Spleen is dark . .
KIDNEYS/REPRODUCTIVE TRACT: Kidneys are congested.
Ovary and oviduct are not active. Ovary has small follicles.
MUSCCULOSKELETAL: Pectorals are moderate to severely atrophied. Keel is curved is severely in the form of 'S' shape.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.
Bird B
GENERAL APPEARANCESKIN: A 3 ½ year-old White Leghorn hen (Tiffany #Blue 87) is presented dead for necropsy. The bird is in fair postmortem condition, moderate to severely emaciated and weighs 1.52 kgm.
SKIN: Comb, face and wattles are pale. Skin and fat are yellow..
RESPIRATORY PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: Lungs are congested and edematous.
CARDIOVASCULAR: Heart is large overall and the right heart is greatly dilated. There is clotted fibrin around the heart.
DIGESTIVE TRACT/INTESTINE:
Crop: is filled with creamy greenish-tan contents.
Gizzard has feed. .
Small intestine and ceca have greyish contents.
Abdomen has abundant fat and is yellow
LIVER AND PANCREAS: Liver is pale.
SPLEEN, BURSA AND THYMUS: Unremarkable.
KIDNEYS/REPRODUCTIVE TRACT: Kidneys are pale and atrophied
Ovary and oviduct are not active.
MUSCCULOSKELETAL: Pectorals are severely atrophied. Keel is crooked.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
A-Tiffany	A-Tiffany	Carcass	Done
B-Patty	B-Patty	Carcass	Done

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 2 of 4

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Tiffany
Date Collected: 10/04/2016
Date Received: 10/04/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 10/23/2016 12:51:37PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter			
Report To	, BYF	Backyard Flock	CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-Tiffany	Name	Leghorn Chicken	Female	3.50 Years
B-Patty	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Bird A (Patty):
1. Severe multifocal necrotizing hepatitis, liver. Bile: virus not detected by EM..
2. Mild to moderate splenitis. Positive for amyloid by Congo Red.

Bird B (Tiffany):
1. Dilated cardiomyopathy with secondary centrilobular hepatic degeneration.
2. Moderate to severe pneumoconiosis (silica and carbon), lungs.
3. Moderate hemosiderosis, spleen. Perl's stain: positive for iron.

Case Summary

10/07/16: Severe hepatitis would account for the death of bird A. I am suspecting a virus and EM is pending on the bile.

Chickens occasionally suffer from dilated cardiomyopathy the cause of which is not known.

Both chickens are negative for AI, salmonella and lead. If you have any questions please give me a call.

10/23/17: Bile was negative for virus by EM. This completes all the tests on this case.

Clinical History

Tiffany (Blue 87) was a 3 1/2 year old white leghorn hen who suffered a vent prolapse on 5/28/16. Vent sutures were placed and she recovered well after a short course of antibiotics. She has been apparently healthy since, but was found dead in her coop on 10/0/16.

Patty (Blue 90) was a 31/2 year old white leghorn hen who was placed on antibiotics for left foot pododermatitis on 8/27/16.

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 1 of 4

scatter elsewhere, take root, like money

Histology

Brain, nerves, thyroid, trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, gizzard, intestine, pancreas, skeletal muscles, thymus, ovary, oviduct, are examined.
Bird A: Liver has severe multifocal large coalescing random foci of necrosis with fibrin exudation and inflammation some of which extends in to the blood vessels. There is extensive area of hemorrhage.
Spleen has increased numbers of MPS cells and accumulation of homogenous eosinophilic material around the vessels and vascular sinuses.
Spleen and liver have amyloid confirmed by Congo Red stain.
Bird B: Liver has centrolobular degeneration of hepatocytes.
Heart has multifocal degeneration of myofibers.
Lung has accumulation of silica mixed with carbon in the cytoplasm of macrophages scattered subjacent to the parabronchioles.
Spleen has large amount of hemosiderin.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
B-Patty	B-decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
A-Tiffany	A	Liver Tissue

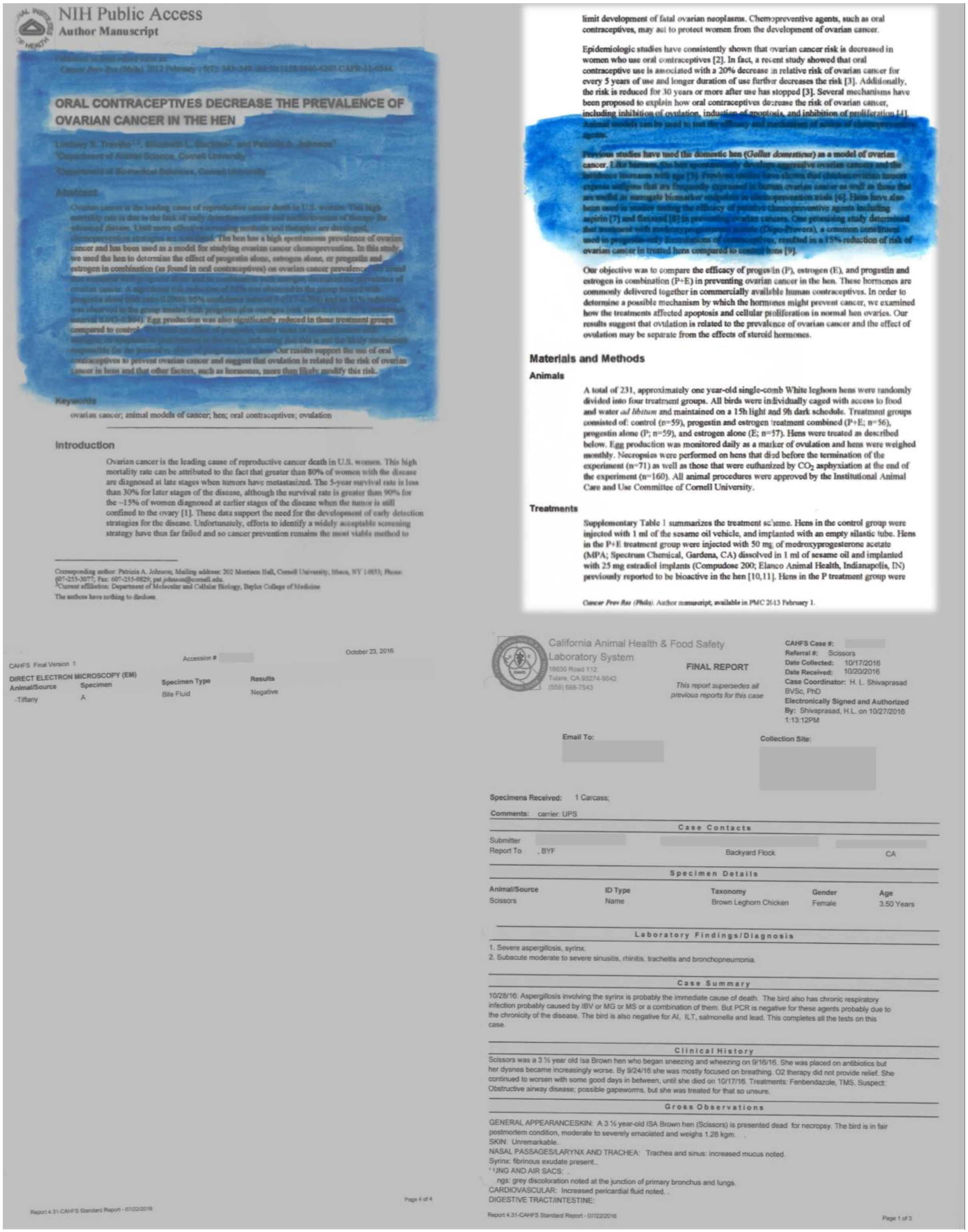
Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Animal/Source	Specimen	Specimen Type
B-Patty	B	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Page 3 of 4

Report 4.31-CAHFS Standard Report - 07/22/2016



NIH Public Access
Author Manuscript

ORAL CONTRACEPTIVES DECREASE THE PREVALENCE OF OVARIAN CANCER IN THE HEN

[illegible]

Abstract

[illegible] Egg production was also significantly reduced in those treatment groups compared to control. [illegible] Our results support the use of oral contraceptives to prevent ovarian cancer and suggest that ovulation is related to the risk of ovarian cancer in hens and that other factors, such as hormones, more than likely modify this risk.

Keywords

ovarian cancer; animal models of cancer; hen; oral contraceptives; ovulation

Introduction

Ovarian cancer is the leading cause of reproductive cancer death in U.S. women. This high mortality rate can be attributed to the fact that greater than 80% of women with the disease are diagnosed at late stages when tumors have metastasized. The 5-year survival rate is less than 30% for later stages of the disease, although the survival rate is greater than 90% for the ~15% of women diagnosed at earlier stages of the disease when the tumor is still confined to the ovary [1]. These data support the need for the development of early detection strategies for the disease. Unfortunately, efforts to identify a widely acceptable screening strategy have thus far failed and so cancer prevention remains the most viable method to

Corresponding author: Patricia A. Johnson; Mailing address: 202 Morrison Hall, Cornell University, Ithaca, NY 14853; Phone 607-255-3077; Fax: 607-255-9829; pat.johnson@cornell.edu.
Current affiliation: Department of Molecular and Cellular Biology, Baylor College of Medicine

The authors have nothing to disclose.

limit development of fatal ovarian neoplasms. Chemopreventive agents, such as oral contraceptives, may act to protect women from the development of ovarian cancer.

Epidemiologic studies have consistently shown that ovarian cancer risk is decreased in women who use oral contraceptives [2]. In fact, a recent study showed that oral contraceptive use is associated with a 20% decrease in relative risk of ovarian cancer for every 5 years of use and longer duration of use further decreases the risk [3]. Additionally, the risk is reduced for 30 years or more after use has stopped [3]. Several mechanisms have been proposed to explain how oral contraceptives decrease the risk of ovarian cancer, including inhibition of ovulation, induction of apoptosis, and inhibition of proliferation [4]. [illegible]

Previous studies have used the domestic hen (*Gallus domesticus*) as a model of ovarian cancer. [illegible] ovarian cancer in treated hens compared to control hens [9].

Our objective was to compare the efficacy of progestin (P), estrogen (E), and progestin and estrogen in combination (P+E) in preventing ovarian cancer in the hen. These hormones are commonly delivered together in commercially available human contraceptives. In order to determine a possible mechanism by which the hormones might prevent cancer, we examined how the treatments affected apoptosis and cellular proliferation in normal hen ovaries. Our results suggest that ovulation is related to the prevalence of ovarian cancer and the effect of ovulation may be separate from the effects of steroid hormones.

Materials and Methods

Animals

A total of 231, approximately one year-old single-comb White leghorn hens were randomly divided into four treatment groups. All birds were individually caged with access to food and water *ad libitum* and maintained on a 15h light and 9h dark schedule. Treatment groups consisted of: control (n=59), progestin and estrogen treatment combined (P+E; n=56), progestin alone (P; n=59), and estrogen alone (E; n=57). Hens were treated as described below. Egg production was monitored daily as a marker of ovulation and hens were weighed monthly. Necropsies were performed on hens that died before the termination of the experiment (n=71) as well as those that were euthanized by CO_2 asphyxiation at the end of the experiment (n=160). All animal procedures were approved by the Institutional Animal Care and Use Committee of Cornell University.

Treatments

Supplementary Table 1 summarizes the treatment scheme. Hens in the control group were injected with 1 ml of the sesame oil vehicle, and implanted with an empty silastic tube. Hens in the P+E treatment group were injected with 50 mg of medroxyprogesterone acetate (MPA; Spectrum Chemical, Gardena, CA) dissolved in 1 ml of sesame oil and implanted with 25 mg estradiol implants (Compudose 200; Elanco Animal Health, Indianapolis, IN) previously reported to be bioactive in the hen [10,11]. Hens in the P treatment group were

Cancer Prev Res (Phila). Author manuscript; available in PMC 2013 February 1.

CAHFS Final Version 1 — Accession # — October 23, 2016

DIRECT ELECTRON MICROSCOPY (EM)

Animal/Source	Specimen	Specimen Type	Results
-Tiffany	A	Bile Fluid	Negative

Report 4.31-CAHFS Standard Report - 07/22/2016 — Page 4 of 4

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Scissors
Date Collected: 10/17/2016
Date Received: 10/20/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 10/27/2016 1:13:12PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: carrier: UPS

Case Contacts

Submitter
Report To , BYF — Backyard Flock — CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Scissors	Name	Brown Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

1. Severe aspergillosis, syrinx.
2. Subacute moderate to severe sinusitis, rhinitis, tracheitis and bronchopneumonia.

Case Summary

10/28/16: Aspergillosis involving the syrinx is probably the immediate cause of death. The bird also has chronic respiratory infection probably caused by IBV or MG or MS or a combination of them. But PCR is negative for these agents probably due to the chronicity of the disease. The bird is also negative for AI, ILT, salmonella and lead. This completes all the tests on this case.

Clinical History

Scissors was a 3 ½ year old Isa Brown hen who began sneezing and wheezing on 9/16/16. She was placed on antibiotics but her dysnea became increasingly worse. By 9/24/16 she was mostly focused on breathing. O2 therapy did not provide relief. She continued to worsen with some good days in between, until she died on 10/17/16. Treatments: Fenbendazole, TMS. Suspect: Obstructive airway disease; possible gapeworms, but she was treated for that so unsure.

Gross Observations

GENERAL APPEARANCESKIN: A 3 ½ year-old ISA Brown hen (Scissors) is presented dead for necropsy. The bird is in fair postmortem condition, moderate to severely emaciated and weighs 1.28 kgm.
SKIN: Unremarkable..
NASAL PASSAGES/LARYNX AND TRACHEA: Trachea and sinus: increased mucus noted.
Syrinx: fibrinous exudate present..
LUNG AND AIR SACS: .
Lungs: grey discoloration noted at the junction of primary bronchus and lungs.
CARDIOVASCULAR: Increased pericardial fluid noted..
DIGESTIVE TRACT/INTESTINE:

Report 4.31-CAHFS Standard Report - 07/22/2016 — Page 1 of 3

CAHFS Final Version 1 Accession # October 27, 2016

Crop: has grain mixed with watery contents.
Gizzard has grain and mild koilin erosion.
Small intestine pale serosa with watery brownish contents.
There is semi-formed egg in the retroperitoneum covered with brown yellow exudate.
LIVER AND PANCREAS: Liver is congested.
SPLEEN, BURSA AND THYMUS: Spleen is dark . .
KIDNEYS/REPRODUCTIVE TRACT: Kidneys are congested.
Ovary is not active and oviduct is small. Distal oviduct wall feels firm.
MUSCULOSKELETAL: Pectorals are moderate to severely atrophied. . Keel is mildly crooked.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
Scissors	Scissors	Carcass	Done

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Scissors	Scissors	Liver Tissue	No growth after 48 hours
Scissors	Scissors	Tracheal Tissue	Mixed flora Rare#
Scissors	Scissors	Pericardial Swab	Mixed flora Rare#
Scissors	Scissors	Peritoneal Swab	Mixed flora Sm#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Scissors	Scissors	Cecal Contents	No Salmonella sp. detected

Biotechnology

Infectious Bronchitis virus RNA qRT PCR

Animal/Source	Specimen	Specimen Type	Results
Scissors	Scissors	Tracheal Swab - VTM	Not detected

Infectious Laryngotracheitis Virus, DNA, PCR Fluids

Animal/Source	Specimen	Specimen Type	Results
Scissors	Scissors	Tracheal Swab - VTM	Not detected

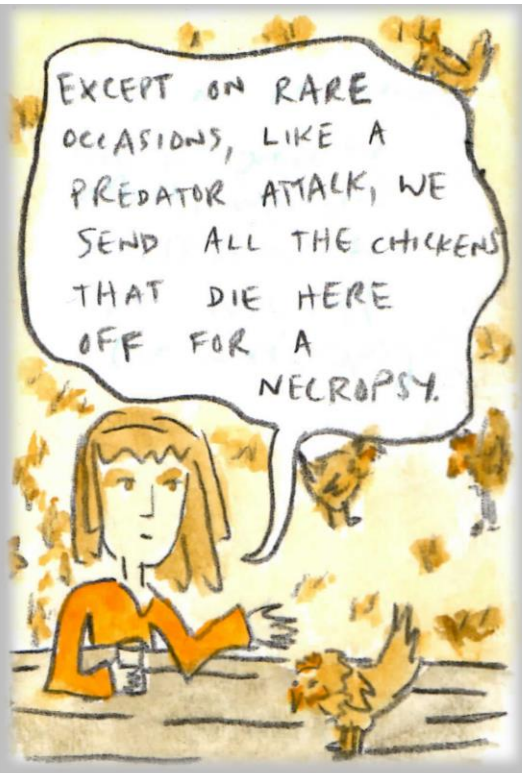
Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
Scissors	Scissors	Pharyngeal Swab - VTM	Not Detected

Mycoplasma Gallisepticum and Mycoplasma Synoviae

Animal/Source	Specimen	Specimen Type
Scissors	Scissors	Tracheal Swab - VTM

Analyte	Result	Units
MG	Not detected	Ct
MS	Not detected	Ct



CAHFS Final Version 1 Accession # November 08, 2016

condition is good. Nutritional condition is fair. Animal is moderately dehydrated. The pectoral muscles are markedly decreased in size and appear to be atrophied, keel bone is prominent. Scant fat stores are present. The lungs are somewhat firm in consistency and have some foam present; lungs float in formalin. The heart has a creamy exudate in the pericardial sac. All the intestines are adhered to one another inside the coelomic cavity and appear to be surrounded by a thickened white fibrous capsule. Abundant creamy fluid is present; scattered white firm material lie free in coelomic cavity and is adhered to some serosal surfaces of the intestines. A small ruminant of the yolk sac is adhered to the coelomic cavity wall. The liver is decreased in size and pale. The kidneys are pale. The ovary appears to be inactive and pale; multiple small nodules with caseous exudate are observed adhered to the oviduct. All other tissues are essentially normal.

BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
Claire	Claire	Carcass	Done

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Claire	1	Liver Tissue	Mixed flora Mod#
Claire	1	Peritoneal Swab	Mixed flora Sm#

Biotechnology

Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
Claire	1	Pharyngeal Swab - VTM	Not Detected

Clinical Pathology

Cytology, Basic – Diff Quik stain

Animal/Source	Specimen	Specimen Type	Results
Claire	1	Abdominal Fluid	See discipline summary

Histology

The following tissues were examined histologically: sciatic nerve, thyroid, parathyroids, brain, trachea, air sacs, heart, lung, liver, kidney, spleen, esophagus, crop, nares, and intestines.

Over the serosal surfaces of the coelomic (abdominal) cavity, there is fibrin, debris and heterophils admixed with a few macrophages noted (coelomitis/peritonitis). In the associated serosal connective tissue and infiltrating the liver and intestinal muscular tunic, there are lobules of neoplastic cells surrounded by prominent fibrovascular stroma and smooth muscle. These lobules consist of nest, packets, and cords of neoplastic cells surrounded by a thin fibrovascular stroma. In many areas, these neoplastic cells are necrotic with only scant detail present. In a few areas, the neoplastic cells within these cords and nest are cuboidal to polyhedral in shape and fill the cords or form glandular like structures with eosinophilic central material. Cells are basophilic to amphophilic, contain a moderate amount of cytoplasm and contain a single oval to round nucleus with one nucleoli. Minimal inflammation other than that associated with the peritonitis is noted.
In the trachea, there is a segmental area of amphophilic homogeneous material present in the superficial submucosa adjacent to the epithelium (amyloid or mineral).
All other tissues are essentially normal.

CAHFS Final Version 1 Accession # November 08, 2016

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Claire	1	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

CAHFS Final Version 1 Accession # October 27, 2016

Histology

Brain, peripheral nerves, conjunctiva, thyroids, adrenal, sinus/turbinates, trachea, syrinx, lung, liver, spleen, kidney, heart, crop, ophagus, proventriculus, gizzard, intestine, pancreas, cloaca, skin, skeletal muscles, bone, bone marrow, ovary, oviduct, eye, ears are examined.

Sinus/turbinates, trachea, lungs have moderate to severe lymphoplasmacytic inflammation of the mucosa. In the lungs the inflammation extends from the bronchus in to the adjacent parenchyma.

Syrinx: has fibrinoheterophilic exudate associated with fungi of Aspergillus sp.

Oviduct: uterine part has severe mineralization of the mucosa. Part of the vagina has severe dilation of glands and lymphoplasmacytic inflammation of the mucosa.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
Scissors	decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Scissors	Scissors	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Happy Hen Chicken Rescue
Date Collected:
Date Received: 10/26/2016
Case Coordinator: Robert Moeller Jr., DVM, Dipl. ACVP, ABT
Electronically Signed and Authorized By: Moeller, Robert B. on 11/8/2016 9:28:06AM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: carrier: UPS

Case Contacts

Submitter
Report To , BYF Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Claire	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

3.5-year-old female chicken (Claire) with history of continue deterioration of health:

a. Ovarian/uterine carcinoma, with dissemination over and into serosal surfaces
b. Peritonitis/coelomitis, diffuse, severe
c. Trachea: amyloid deposits, multifocal, mild, (incidental finding)

Case Summary

The most likely cause of death this animal was the neoplasm identified in the coelomic cavity. Ovarian/uterine carcinomas are common neoplastic disorders in older laying hens. This most likely led to the peritonitis and prominent adhesions in the intestine. This too may have contributed to the recurrent ascites observed clinically. Bacterial cultures failed to detect any pathogens. Lead was not detected in liver. I am currently waiting to examined the nasal cavity of this bird, these results are pending.

11/08/2016

Examination of the nasal cavity failed to detect any other significant findings. Amyloid was identified in the trachea. This is an incidental fiding. All testing is completed.

Clinical History

Claire was a 3 ½ -year-old white Leghorn hen (blue 80) who was first noticed to be emaciated a year ago. In April 2016, 450 cc of clear yellow fluid was drained from her abdominal cavity. Icterus was noted at that time. Her abdominal was drained twice over the subsequent months she was treated with two courses of antibiotics. Three weeks ago, she dramatically deteriorated, weak, and unable to walk. Yesterday her crop felt hard and impacted with birdseed; lactated ringer solution was placed in her crop twice today. She died this evening. Submitted is a 3 ½ -year-old female white linen chicken for necropsy.

Gross Observations

Submitted for necropsy is a 3 ½-year-old white Leghorn hen (910 g) with the right leg blue band labeled "# 80". Postmortem

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 1 of 3

drifting like a fiction or

☐ Cattle ☐ Turkey
☐ Horse ☑ Chicken
☐ Swine ☐ Psittacine
☐ Sheep ☐ Ratite
☐ Goat ☐ Plant or Feed
☐ Rabbit ☐ Other

Location of Animal (county, state)
Animal/Group ID(s)
Production Class (i.e. beef, dairy, calf ranch, etc.)
Duration of Illness unknown

# in herd	# in group	#sick	#died

Date died 10/31/16 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?

Casey was an 18 month old white leghorn hen. She was brought to us on 10/27/16 with no prior history. She was extremely weak and unable to stand. Her stool was green and runny, and became increasingly scant. Despite SQ LRS and antibiotics she continued to worsen, until on 10/28/16 she was completely recumbent and slept all day. She (continue on reverse if necessary)

Treatments: became aware when touched or spoken to, but otherwise she slept. We were never able to get her to eat, though she was

Disease(s) or condition(s) suspected: tube fed on 10/27/16. The food in her crop never passed and she was found deceased on 10/30/16.

Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis — University of California, Davis, W. Health Sciences Dr., Davis, CA 95616, General Info (530) 752-8700, FAX (530) 752-6253
CAHFS, Turlock — University of California, Davis, 1550 N. Soderquist, Turlock, CA 95381, General Info (209) 634-5837, FAX (209 ...
CAHFS, Fresno — University of California, Davis, 2789 South Orange Avenue, Fresno, CA 93725, General Info (559) 498-7740
CAHFS, Tulare — University of California, Davis, 18830 Road 112, Tulare, CA 93274, General Info (559) 688-7543
CAHFS, San Bernardino — University of California, Davis, 105 West Central Avenue, San Bernardino, CA 92408, General Info (909) 383-4287, FAX (909) 884-5980

Signature of Submitter Date: 10/31/16
9/21/00

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

Preliminary Version 1

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Casey and Erika
Date Collected: 11/01/2016
Date Received: 11/02/2016
Case Coordinator: H. L. Shivaprasad, DVM, PhD, Dipl. ACPV
Preliminary Report Sent By: Shivaprasad, H.L. on 11/8/2016 4:45:12PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A Casey	Name	Leghorn Chicken	Female	18.00 Months
B Erika (Yellow 64)	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Bird A (Casey): Septicemia from heart valve vegetative endocarditis

1. Severe necrotizing hepatitis, splenitis, nephritis, myocarditis with mineralization and endocarditis. Liver: Streptococcus sp. isolated.
2. Proventricular mineralization, probably secondary to renal failure — probably due to dehydration & septicemia

Bird B (Erika):

1. Marek's disease; lymphoma in abdominal cavity, liver, spleen, kidneys, ovary, and around nerves.

Case Summary

11/08/16: The diagnoses are self-explanatory. Both birds are negative for AI, lead, salmonella. In addition bird B is negative for IBV, ILT, MG and MS by PCR. There are a fwe more tissues and tests pending.

Clinical History

A-Casey was an 18 month old white leghorn hen. She was brought to us on 10/27/16 with no prior history. He was extremely weak and unable to stand. Her stool was green and runny, and became increasingly scant. Despite SQ LRS and antibiotics. She continued to worsen, until on 10/28/16 she was completely recumbent and slept all day. She became aware when touched or spoken to, but otherwise she slept. We were never able to get her to eat, though she was tube fed on 10/27/16. The food in her crop never passed and she was found deceased on 10/30/16. Fecal exam negative for parasites, culture still pending.

B-Erika (yellow 64) was a 3 1/2 year old white leghorn hen. On 10/25/16 she was bought into the ICU due to a wobbly gait and bilateral weakness in legs. She was placed on a course of antibiotics and calcium but did not improve. Her appetite was fairly good, but she was found dead on her side in her crate on 11/1/16. There was blood/serum in front of her mouth.

Gross Observations

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 1 of 4

CAHFS Preliminary Version 1 Accession # November 08, 2016

Two adult hens; 18-month-old WLH (Casey, Bird A) and a 31/2 year-old WLH (Erika, yellow leg band 64, Bird B) are presented dead for necropsy. Both birds are very autolyzed.

Bird A: is moderately autolyzed, mildly emaciated and weighs 1.58 kg.
Vent and feathers around are soiled.
Lungs congested and edematous.
Heart has fibrinous exudate in the pericardial sac and pale areas on the epicardium. There is a small soft nodule in the left AV valve.
Crop is filled with creamy gray contents.
Gizzard has similar contents like the crop but also a few grains and seed and grit. .
The intestine autolyzed. A few pale nodules attached to the colon.
Liver enlarged and mottle pale/red.
Spleen has a pale area.
There is fibrinous exudate in the peritoneum.
Kidneys: hemorrhage noted on the left anterior pole, others mottle white.
Ovary and oviduct are not active.
Edema in subcutis of pectorals and thighs noted.

Bird B is very autolyzed and emaciated and weighs 1.43 Kg.
Oral cavity and larynx/trachea have increased mucus which is blood tinged.
Lungs right lung has mild congestion and edema.
Heart: pale area on epicardium extending in to myocardium.
Crop is filled with grain and green hay-like contents.
Gizzard has similar contents like the crop but also a few pebbles.
The intestine is autolyzed.
There is a large solid cystic soft mass (7x7 cm)with with red tinged in the dorsal abdomen.
There is small amount of clotted blood free in the abdominal cavity.
Liver is severely enlarged and pale.
Spleen is severely enlarged and pale.
Ovary is not active but has numerous follicles.
Oviduct: is enlarged and is filled with creamy brown material
There are no other gross lesions of diagnostic significance.

T
BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
A Casey	A Casay	Carcass	Done
B Erika (Yellow 64)	B Erika (Yellow 64)	Carcass	Done

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A Casey	A	Spleen Tissue	No growth after 48 hours
A Casey	A	Heart Sac Tissue	Mixed flora Rare#
A Casey	A	Liver Tissue	Pending
B Erika (Yellow 64)	B	Spleen Tissue	No growth after 48 hours
B Erika (Yellow 64)	B	Heart Sac Tissue	Mixed flora Rare#
Erika (Yellow 64)	B	Liver Tissue	Mixed flora Rare#

California Animal Health & Food Safety Laboratory System
16530 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Casey and Erika
Date Collected: 11/01/2016
Date Received: 11/02/2016
Case Coordinator: H. L. Shivaprasad, DVM, PhD, Dipl. ACPV
Electronically Signed and Authorized By: Shivaprasad, H.L. on 11/14/2016 10:27:21AM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF
CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A Casey	Name	Leghorn Chicken	Female	18.00 Months
B Erika (Yellow 64)	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Bird A (Casey):
1. Severe necrotizing hepatitis, splenitis, nephritis, myocarditis with mineralization and endocarditis. Liver: Streptococcus sp. isolated.
2. Proventricular mineralization, probably secondary to renal failure.

Bird B (Erika):
1. Marek's disease; lymphoma in abdominal cavity, liver, spleen, kidneys, ovary, and around nerves.

Case Summary

11/08/16: The diagnoses are self-explanatory. Both birds are negative for AI, lead, salmonella. In addition bird B is negative for IBV, ILT, MG and MS by PCR. There are a fwe more tissues and tests pending.

11/14/16: Rest of the tissues and tests are unremarkable. This completes all the tests on this case.

Clinical History

A-Casey was an 18 month old white leghorn hen. She was brought to us on 10/27/16 with no prior history. He was extremely weak and unable to stand. Her stool was green and runny, and became increasingly scant. Despite SQ LRS and antibiotics. She continued to worsen, until on 10/28/16 she was completely recumbent and slept all day. She became aware when touched or spoken to, but otherwise she slept. We were never able to get her to eat, though she was tube fed on 10/27/16. The food in her crop never passed and she was found deceased on 10/30/16. Fecal exam negative for parasites, culture still pending.

Erika (yellow 64) was a 3 1/2 year old white leghorn hen. On 10/25/16 she was bought into the ICU due to a wobbly gait and bilateral weakness in legs. She was placed on a course of antibiotics and calcium but did not improve. Her appetite was fairly good, but she was found dead on her side in her crate on 11/1/16. There was blood/serum in front of her mouth.

California Animal Health & Food Safety Laboratory System
16530 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: TILLY
Date Collected:
Date Received: 05/19/2016
Case Coordinator: Guillermo Rimoldi, DVM, DACVP
Electronically Signed and Authorized By: Rimoldi, Guillermo on 5/26/2016 12:04:37PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF
Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Tilly	Name	Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Three and a half-year-old, Red Star, female chicken.
1. Salpingitis, chronic, severe, Staphylococcus spp. coagulase negative and Enterococcus faecalis isolated.
2. No Salmonella sp. isolated from cecal contents.
3. Negative for AI by PCR.

Case Summary

5/26/2016 – Final report - Staphylococcus spp. coagulase negative and Enterococcus faecalis were isolated from the oviduct.

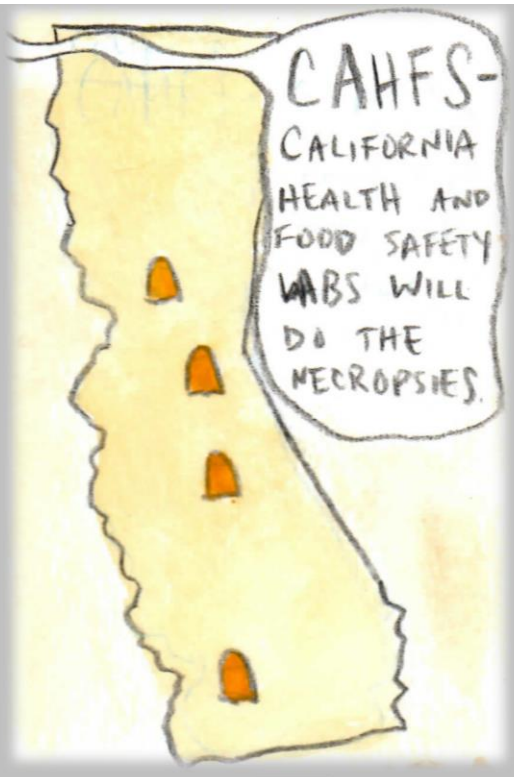
5/23/2015 - Preliminary report - A severe and chronic salpingitis, probably due to an ascending bacterial infection was detected on gross examination of this bird. Infections like this are common in adult layer hens. Samples from the bird were negative for Salmonella and avian influenza. No lead was detected in liver. Bacteriology and histology tests are pending.

Clinical History

Tilly was a 3 1/2 year old red star hen who was diagnosed with an abdominal mass almost 2 years ago. The mass continued to grow since diagnosis. Tilly lived normally in a coop with other chickens until 6 months ago when she was brought into the ICU where life is a little easier - temperature extremes, etc. Tilly was found dead this morning in the ICU near a food dish. She had seemed fine up until death, interested in treats, etc.

Gross Observations

A 3 ½-year-old, Red Star, female chicken is received for necropsy. The bird is in fair postmortem condition and poor nutritional status, with moderate to severe atrophy of pectoral musculature and severe depletion of body fat stores. The carcass weighs 2.7 kg and has a markedly distended ventral abdomen. Within the ventral aspect of the coelomic cavity, the oviduct is severely distended with a large, compacted mass of yellow, caseous material. Diffusely the oviduct mucosa is markedly reddened. The whole oviduct with its cases content weights 1.26 kg (46 % of total body weight). The liver and the G.I. tract are currently displaced by the mass; otherwise they are with the normal limits. The ovary is inactive, the kidneys are within normal limits.



CAHFS Final Version: 1 Accession # May 26, 2016

There are no other significant changes.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Tilly	Tilly	Liver Tissue	No growth after 48 hours
Tilly	Tilly/salpynx	salpynx	Staphylococcus spp. coagulase negative Lg# Enterococcus faecalis Lg#

Biotyper Organsim Identification

Animal/Source	Specimen	Specimen Type	Results
Tilly	Tilly/salpynx	salpynx	Enterococcus faecalis

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Tilly	Tilly	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
Tilly	Tilly	Pharyngeal Swab - VTM	Not Detected

Histology

Sections of brain, skeletal muscle, trachea, syrinx, esophagus, lung, heart, crop, oviduct, ovary, pancreas, duodenum, small intestine and ceca are examined. The lungs are diffusely congested. The oviduct is diffusely devoid of lining epithelium and the exposed submucosa is diffusely and heavily infiltrated with pleocellular inflammatory cells and large amounts of fibrin, admixed with hemorrhage and large numbers of pleomorphic bacterial colonies. Diffusely, the serosal surface of multiple abdominal viscera, primarily the intestines are expanded with moderate amounts of fibrin and large numbers of pleocellular inflammatory infiltrates. There are no other significant changes.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
Tilly	decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Tilly	Tilly	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

CAHFS Preliminary Version: 1 Accession # November 08, 2016

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
A Casey	A	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

Animal/Source	Specimen	Specimen Type
B Erika (Yellow 64)	B	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

miasma in and out of people's

Biotechnology

APMV-1 qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A Casey	Pool A&B	Pharyngeal Swab Pool - VTM	Negative

Infectious Bronchitis virus RNA qRT PCR

Animal/Source	Specimen	Specimen Type	Results
B Erika (Yellow 64)	B	Tracheal Swab - VTM	Not detected

Infectious Laryngotracheitis Virus, DNA, PCR Fluids

Animal/Source	Specimen	Specimen Type	Results
B Erika (Yellow 64)	B	Tracheal Swab - VTM	Not detected

Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
* Casey	Pool A&B	Pharyngeal Swab Pool - VTM	Not Detected

Mycoplasma Gallisepticum and Mycoplasma Synoviae

Animal/Source	Specimen	Specimen Type
B Erika (Yellow 64)	B	Tracheal Swab - VTM

Analyte	Result	Units
MG	Not detected	Ct
MS	Not detected	Ct

Histology

Brain, conjunctiva, nerves, larynx/trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, gizzard, intestine, pancreas, thyroids, adrenals, ovary, oviduct, skeletal muscles, skin, are examined.
Bird A: liver has severe multifocal necrosis of hepatocytes and fibrinoid necrosis of vessel walls, inflammation and bacterial colonization.. Spleen and kidneys have similar lesions. Hear has multifocal degeneration and necrosis of myofibers, inflammation and mineralization randomly scattered throughout. Glandular part of proventriculus has mineralization.
Bird B: The mass in the abdominal cavity is composed of discrete neoplastic lymphocytes.
The architectures of the liver is distorted due to the infiltration of similar neoplastic cells
Similar neoplastic cells have invaded spleen, kidneys, ovary and around the nerves.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
A Casey	decal tissue	Tissue - Fixed	COMPLETED
B Erika (Yellow 64)	decal tissue	Tissue - Fixed	COMPLETED

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #: T1602462
Referral #: ADDIE
Date Collected:
Date Received: 11/11/2016
Case Coordinator: Jennine Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 11/15/2016 5:06:42PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter			
Report To	, BYF	Backyard Flock	CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Addie	Name	Chicken	Female	5.00 Years

Laboratory Findings/Diagnosis

Single hen with a two month history of lethargy and ascites

Final report 11/15/2016:
- Ovarian adenocarcinoma with carcinomatosis and secondary egg yolk peritonitis

Case Summary

Final report 11/15/2016:
Salmonella was not isolated, nor was lead detected in the liver.

Preliminary report 11/11/2016:
As suspected, this hen had adenocarcinoma with carcinomatosis and secondary egg yolk peritonitis, which can happen as the cancer infiltrates organ walls resulting in organ dysfunction. Pending bacterial fecal cultures and lead analysis of the liver will provide more information in regards to any health safety issues with this flock (Salmonella, lead testing).

Clinical History

Duration of illness: greater than 2 months. Date of death: 11/9/2016. Not Euthanized. Location of animals: San Luis Obispo County, CA
Addie was a mixed breed black and brown 5 ½ year old hen. On 9/5/2016 she was noticed to be slightly lethargic with closing eyes. 400cc of clear yellow fluid was drained from her abdomen and she was placed on a course of antibiotics. She seemed to improve but was then found deceased in her coop on 11/9/2016.

Gross Observations

A mature 1.81 kg black and brown hen is presented dead on 11/11/2016. The hen is in fair body condition with mildly decreased skeletal muscle mass (pectoral) and adequate internal adipose tissue stores.

Coelomic cavity: The ovary is markedly enlarged, 10 x 4 x 4 cm, firm, nodular, and on section is mottled white to tan. Disseminated throughout the coelomic cavity are numerous pinpoint to 10 mm diameter nodules along the serosa of numerous organs including the intestines and gizzard. The intestines are firmly adhered to one another and cannot be linearized. The coelomic cavity contains small amounts of friable yellow "cooked egg" material (egg yolk) admixed with approximately 5 mL of red-brown fluid. The intestines contain watery green ingesta. The liver has disseminated tan spots, 1-4 mm diameter, that extend into the parenchyma. Within the oviduct there are a few yolks.

Tissues examined include: brain, eyes, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, thymus, bursa, ovary, and sciatic nerves.

BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
Addie	Addie	Carcass	Done

Bacteriology

brains, digging themselves

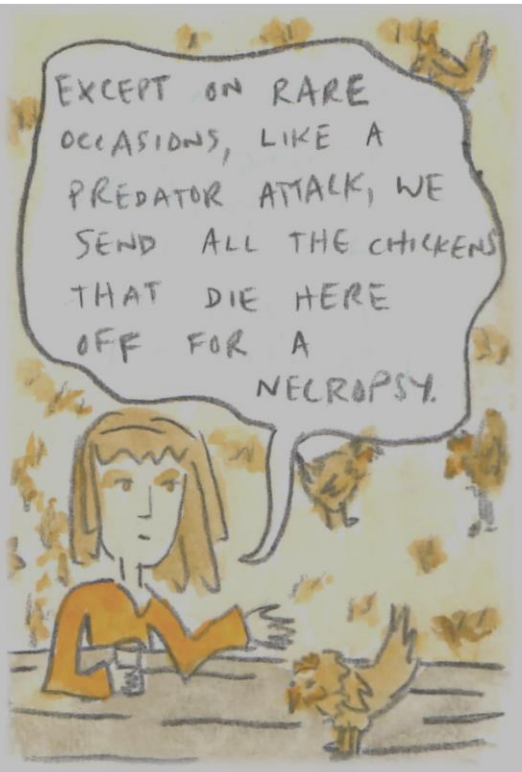
Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Addie	Addie	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0



California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Helen
Date Collected: 11/13/2016
Date Received: 11/17/2016
Case Coordinator: H. L. Shivaprasad, DVM, PhD, Dipl. ACPV
Electronically Signed and Authorized By: Shivaprasad, H.L. on 11/25/2016 10:40:11AM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Case Contacts

Submitter			
Report To	, BYF	Backyard Flock	CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Helen	Name	Leghorn Chicken	Female	4.00 Years

Laboratory Findings/Diagnosis

1. Severe diffuse chronic salpingitis and peritonitis. Oviduct: Gallibacterium anatis isolated.
2. Chronic severe interstitial fibrosis and glomerulosclerosis, kidneys.
3. Amyloidosis; spleen. Congo Red positive. Liver and kidney negative.

Case Summary

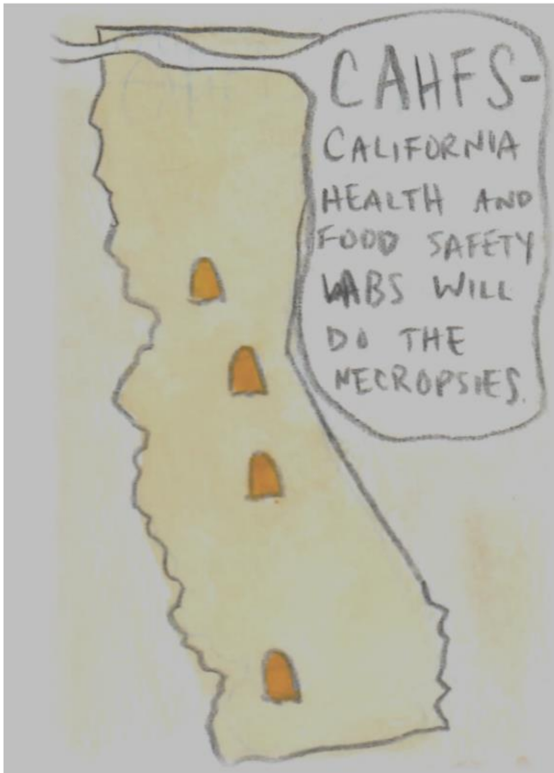
11/24/16: The diagnosis is self-explanatory. The bird is negative for AI, salmonella and lead. This completes all the tests on this case.

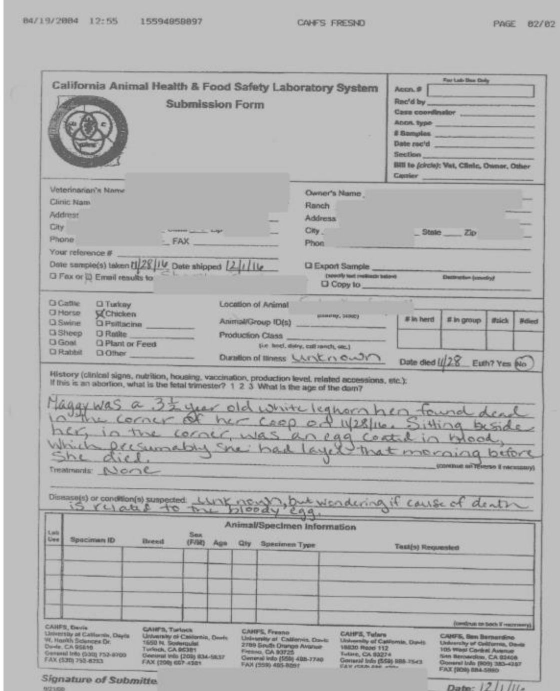
Clinical History

Duration of illness ~1 month. Helen was a 4 year old white leghorn hen (white band) found hunched and lethargic on 10/10/16. She was observed on PE to be severely emaciated with heavy, distended abdomen, fluid in crop, and red injected comb. Attempts to drain abdomen were unsuccessful. She received a course of antibiotics but died on 11/13/16. Suspect ovarian carcinoma, egg yolk peritonitis.

Gross Observations

A year-old WLH (Helen with white band on right leg) is presented dead for necropsy.
The bird B is mildly autolyzed and severely emaciated and weighs 1.21 Kg.
Crop is empty.
Gizzard has a few grains mixed with grit.
The intestine is autolyzed.
Peritoneum has fibrinous exudate.
Ovary is not active but has numerous small follicles.
Oviduct: is diffusely and severely enlarged with caseous exudate.
Kidneys are pale.
There are no other gross lesions of diagnostic significance.





04/19/2004 12:55 15594058097 CAHFS FRESNO PAGE 02/02

California Animal Health & Food Safety Laboratory System
Submission Form

For Lab Use Only
Accn. #
Rec'd by
Case coordinator
Accn. type
Samples
Date rec'd
Section
Bill to (circle): Vet, Clinic, Owner, Other
Carrier

Veterinarian's Name
Clinic Name
Address
City
Phone FAX
Your reference #
Date sample(s) taken 11/28/16 Date shipped 12/1/16
☐ Fax or ☐ Email results to

Owner's Name
Ranch
Address
City State Zip
Phone
☐ Export Sample (specify test methods below) Destination (country)
☐ Copy to

☐ Cattle ☐ Turkey
☐ Horse ☒ Chicken
☐ Swine ☐ Psittacine
☐ Sheep ☐ Ratite
☐ Goat ☐ Plant or Feed
☐ Rabbit ☐ Other

Location of Animal (county, state)
Animal/Group ID(s)
Production Class (i.e. beef, dairy, calf ranch, etc.)
Duration of Illness Unknown

# in herd	# in group	#sick	#died

Date died 11/28 Euth? Yes (No)

History (clinical signs, nutrition, housing, vaccination, production level, related accessions, etc.):
If this is an abortion, what is the fetal trimester? 1 2 3 What is the age of the dam?
Maggy was a 3½ year old white leghorn hen found dead in the corner of her coop on 11/28/16. Sitting beside her, in the corner, was an egg coated in blood, which presumably she had layed that morning before she died.
(continue on reverse if necessary)
Treatments: None

Disease(s) or condition(s) suspected: Unknown, but wondering if cause of death is related to the bloody egg.

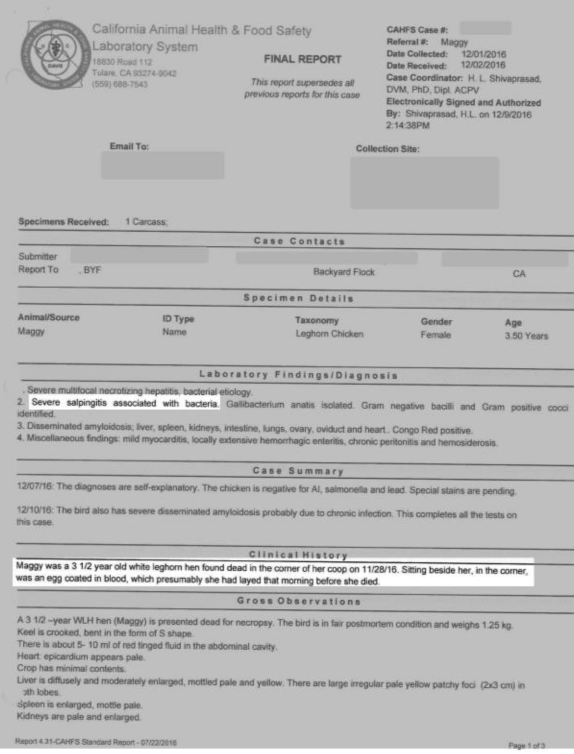
Animal/Specimen Information

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

(continue on back if necessary)

CAHFS, Davis, University of California, Davis, W. Health Sciences Dr., Davis, CA 95616, General Info (530) 752-8700, FAX (530) 752-6253
CAHFS, Turlock, University of California, Davis, 1550 N. Soderquist, Turlock, CA 95381, General Info (209) 634-5837, FAX (209) 667-4381
CAHFS, Fresno, University of California, Davis, 2789 South Orange Avenue, Fresno, CA 93725, General Info (559) 498-7740, FAX (559) 485-8097
CAHFS, Tulare, University of California, Davis, 18830 Road 112, Tulare, CA 93274, General Info (559) 688-7543
CAHFS, San Bernardino, University of California, Davis, 105 West Central Avenue, San Bernardino, CA 92408, General Info (909) 383-4287, FAX (909) 884-5980

Signature of Submitter Date: 12/1/16



California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Maggy
Date Collected: 12/01/2016
Date Received: 12/02/2016
Case Coordinator: H. L. Shivaprasad, DVM, PhD, Dipl. ACPV
Electronically Signed and Authorized By: Shivaprasad, H.L. on 12/9/2016 2:14:38PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Case Contacts

Submitter
Report To , BYF Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Maggy	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

. Severe multifocal necrotizing hepatitis, bacterial etiology.
2. Severe salpingitis associated with bacteria. Gallibacterium anatis isolated. Gram negative bacilli and Gram positive cocci identified.
3. Disseminated amyloidosis; liver, spleen, kidneys, intestine, lungs, ovary, oviduct and heart.. Congo Red positive.
4. Miscellaneous findings: mild myocarditis, locally extensive hemorrhagic enteritis, chronic peritonitis and hemosiderosis.

Case Summary

12/07/16: The diagnoses are self-explanatory. The chicken is negative for AI, salmonella and lead. Special stains are pending.

12/10/16: The bird also has severe disseminated amyloidosis probably due to chronic infection. This completes all the tests on this case.

Clinical History

Maggy was a 3 1/2 year old white leghorn hen found dead in the corner of her coop on 11/28/16. Sitting beside her, in the corner, was an egg coated in blood, which presumably she had layed that morning before she died.

Gross Observations

A 3 1/2 –year WLH hen (Maggy) is presented dead for necropsy. The bird is in fair postmortem condition and weighs 1.25 kg.
Keel is crooked, bent in the form of S shape.
There is about 5- 10 ml of red tinged fluid in the abdominal cavity.
Heart: epicardium appears pale.
Crop has minimal contents.
Liver is diffusely and moderately enlarged, mottled pale and yellow. There are large irregular pale yellow patchy foci (2x3 cm) in oth lobes.
Spleen is enlarged, mottle pale.
Kidneys are pale and enlarged.

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 1 of 3

CAHFS Final Version 1 Accession # December 09, 2016

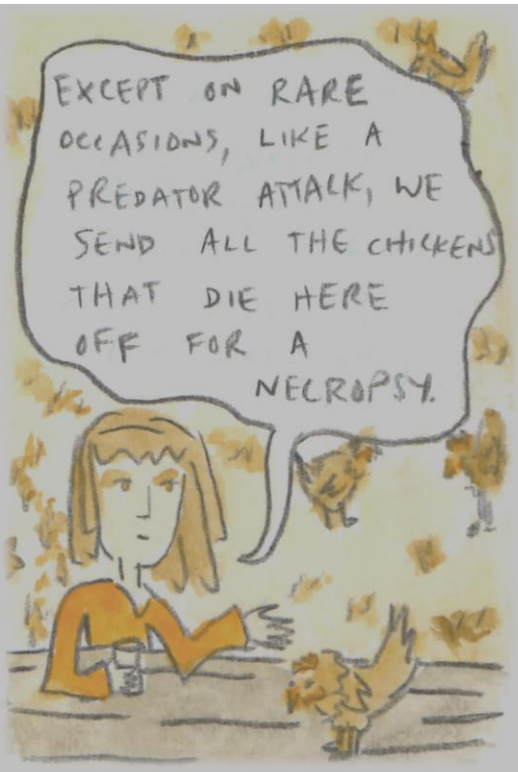
Toxicology

"Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Maggy	Maggy	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0



Report 4.31-CAHFS Standard Report - 07/22/2016 Page 3 of 3

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #:
Date Collected: 02/01/2017
Date Received: 02/03/2017
Case Coordinator: Jennine Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 2/8/2017 1:28:44PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter

industriously in. The lab technician

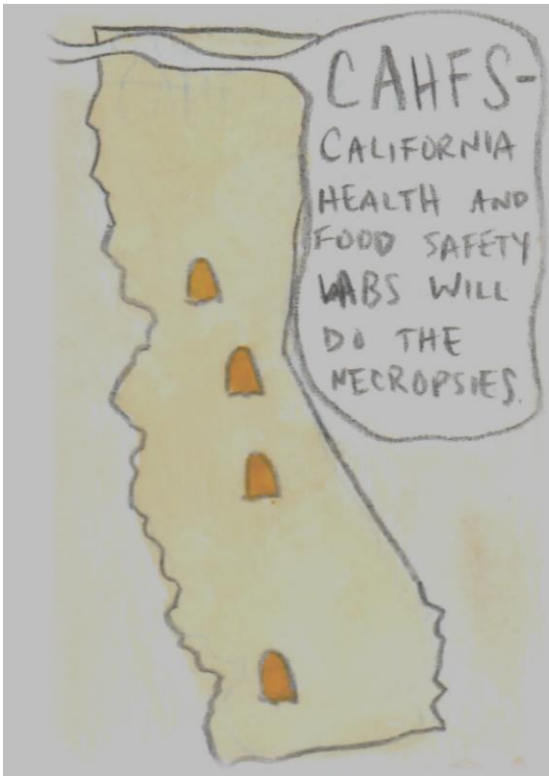
Case Summary

Note – As of October 1, 2016 all backyard flock submissions (limited to 2 birds/submission/day) incur a nominal $20 fee

Final report 2/8/2017:
Sparkles had a tumor along her gizzard and proventriculus, which likely affected the functions of these organs as there were significant ulcers in the gizzard. It's not clear if she was weak due to being unable to properly process nutrition or there was a microscopic extension of the tumor that affected nerves that was not seen in microscopic sections. Tumors of the proventriculus and gizzard have been reported in aged chickens. The pale kidneys were due to fibrosis and glomerulonephritis, which is chronic and the inciting cause is likely no longer present. The E.coli isolated is attributed to postmortem overgrowth.

Preliminary report 2/3/2017:
As suspected Rubyif had ovarian carcinoma with dissemination throughout the body cavity, which invaded through many organs, including a majority of the intestines.

Sparkles had pale kidneys, thickened proventriculus, and gizzard ulcerations, which can be seen with lymphoma. Pending histopathology will provide more information.



CAHFS Final Version 1 Accession # February 08, 2017

Clinical History

Rubyn was a 4 year old red star hen who first began showing signs of illness 8 months ago. Her abdomen was distended and 500cc of clear yellow fluid was drained at that time. She was treated with antibiotics and seemed relatively happy until a month ago. Over the past month she became progressively more lethargic. Another 500cc of fluid was drained 3 weeks ago but show did not clinically improve. She was found deceased on 2/1/17.

Sparkles was a 5 year black laced Wyandotte hen surrendered to . She had been unable to ambulate for 4 months and her owners were unable to care for her any longer. When Sparkles was held, her legs were limp and hung straight down. The toes on both feet were permanently in a flexed, curled position. Her appetite was small. She often used her head to help balance, "pushing" off from the ground.

Gross Observations

Rubyn
A 1.13 kg, adult hen (green band 55) is presented dead for necropsy on February 3, 2017.
The carcass is in fair postmortem condition and poor body condition based on markedly decreased skeletal muscle mass (pectoral muscles) and scant internal adipose stores (subcutis, mesentery, perirenal, and epicardial).

The coelomic cavity contains approximately 60 mL of green-tinged flocculent fluid. The ovary is markedly enlarged, pale tan, irregular, and firm (approximately 7 x 7 x 8 cm). Disseminated throughout the entire body cavity there are coalescing tan-white nodules that invade into the intestines, extending to the mucosa. Similar nodules disrupt the ventriculus and proventriculus.

Cytology of the ovary and mesenteric masses: There is a background of many red blood cells, round cells, and heterophils. The round cells are often in rafts and have round nuclei with abundant cytoplasm. Anisokaryosis and anisocytosis are moderate. There are a few mitotic figures.

Tissues examined include: brain, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, and sciatic nerve.

Sparkles
A 1.88 kg, adult hen is presented dead for necropsy on February 3, 2017. The carcass is in fair postmortem condition and fair body condition based on moderately decreased skeletal muscle mass (pectoral muscles) and scant internal adipose stores (subcutis, mesentery, perirenal, and epicardial).

Bilaterally the kidneys are diffusely pale tan, friable, and swollen.

The proventricular wall is moderately thickened and pale tan with multifocal areas of hemorrhage.

There are coalescing ulcers along the ventriculus mucosa/koilin. Along the serosal surface there are several petechiae.

The lung parenchyma near the dorsal pleural surface is brown (possible postmortem artifact).

Tissues examined include: brain, conjunctiva, choana, larynx, trachea/syrinx, lung, air sacs, heart, esophagus, crop, proventriculus, gizzard, intestines, liver, pancreas, kidney, spleen, and sciatic nerve.

BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
A- Rubyn	A- Rubyn	Carcass	Done
B- Sparkles	B- Sparkles	Carcass	Done

CAHFS Final Version 1 Accession # February 08, 2017

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
B- Sparkles	B- Sparkles	Liver Swab	Escherichia coli Lg#
B- Sparkles	B	Lung Swab	Escherichia coli Lg#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A- Rubyn	Pool Of A&B	Cecal Contents Pool	No Salmonella sp. detected

Biotechnology

Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
A- Rubyn	Pool of A&B	Pharyngeal Swab Pool - VTM	Not Detected

Clinical Pathology

(A) Cytology of the ovary and mesenteric masses: There is a background of many red blood cells, round cells, and heterophils. The round cells are often in rafts and have round nuclei with abundant cytoplasm. Anisokaryosis and anisocytosis are moderate. There are a few mitotic figures.

(B) Cytology of the kidney: There are tubules and round cells on a background of debris and autolyzed cells.

Cytology, Basic – Diff Quik stain

Animal/Source	Specimen	Specimen Type	Results
A- Rubyn	A	Ovary Tissue	See discipline summary
B- Sparkles	B	Kidney impression smear	See discipline summary

Histology

Sparkles

Gizzard: Along the serosal surface of the ventricular wall there is non-capsulated, poorly demarcated, moderately cellular mass that infiltrates the ventricular wall and extends out into the adjacent mesentery wrapping around blood vessels. Cells of the mass are arranged in bundles and streams and are supported by moderate amounts of collagenous matrix. Individual cells are spindloid to polygonal, with moderate amounts of eosinophilic cytoplasm and poorly defined cellular margins. Nuclei are ovoid, with coarsely stippled chromatin and one to three nucleoli. Mitoses average 1-2 per 400x field. In some regions neoplastic cells are necrotic.

Kidney: The renal tubular interstitium is expanded by fibrous tissue and edema. Multifocal glomeruli have global thickening of the mesangium with hypercellularity and synechiae. A few glomeruli are shrunken and the mesangium is replaced by thick collagen (senescence)

Intestine: There is a single ascarid within the intestines.

Tissues examined include: eye, sinuses, trachea/syrinx, lung, air sacs, heart, great vessels, esophagus, crop, proventriculus, ventriculus, intestine, liver, pancreas, adrenal glands, kidneys, cloaca, spleen, thymus, ovary, oviduct, brain, and sciatic nerve.

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #: [redacted]
Referral #:
Date Collected: 01/31/2017
Date Received: 02/03/2017
Case Coordinator: Jennine Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 2/9/2017 3:56:27PM

Email To: [redacted]
Collection Site: [redacted]

Specimens Received: 1 Carcass;

Case Contacts

Submitter
Report To , BYF — Backyard Flock — CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Blackberry	Name	Chicken	Female	2.00 Years

Laboratory Findings/Diagnosis

Single hen with a three week history of left leg weakness and lethargy

Final report 2/9/2017:
• Salpingitis, moderate to marked, subacute – Escherichia coli isolated (see comment)
• Hepatitis, necrotic, multifocal, random, acute, mild

Case Summary

Note – As of October 1, 2016 all backyard flock submissions (limited to 2 birds/submission/day) incur a nominal $20 fee

Final report 2/9/2017:
There is salpingitis and septic lesions in the liver. E. coli was isolated from the oviduct in large numbers and is likely the cause (caveat being E. coli can grow postmortem, outgrowing a primary pathogen, but large numbers suggest it was there at the time of death). It is still speculated given how large the oviduct was and how it was adhered to the left body wall, that it might have been affecting the left leg.

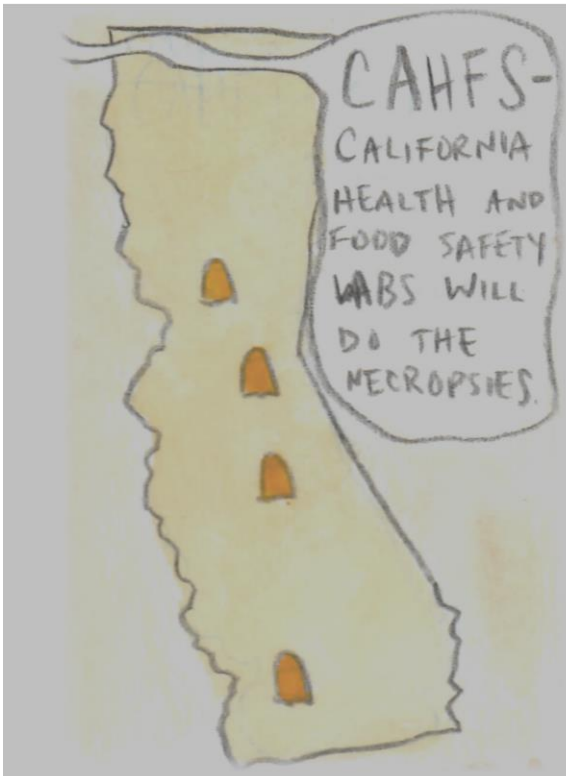
Preliminary report 2/6/2017:
A specific cause of Blackberry's lameness and rapid decline is not definitively determined but she did have salpingitis, with the oviduct adhered to the left body wall, which may have caused pain and discomfort. Marek's cannot be ruled out at this time. Pending microscopic examination of the tissues and bacterial cultures will provide more information.

Clinical History

Duration of illness: 3 ½ weeks. Date of death: 1/31/2017. Not Euthanized. Location of animals: San Luis Obispo County
Blackberry was a 2 year old black Australorp Cross who began having trouble putting weight on her left leg on 1/5/17. She was brought in and deteriorated quickly over the past 3 weeks. For the past 2 weeks her left leg has been extended caudally and she was been unable to ambulate. Not eating very much.

Gross Observations

Report 4.31-CAHFS Standard Report - 07/22/2016 — Page 1 of 2



CAHFS Final Version 1 Accession # February 09, 2017

A 1.05 kg adult black hen is presented dead for necropsy on February 3, 2017. Affixed to the left leg is a yellow band "86".

The carcass is in fair postmortem condition and fair body condition based on moderately decreased skeletal muscle mass (pectoral muscles) and scant internal adipose stores (subcutis, mesentery, perirenal, and epicardial).
The distal oviduct is dark red with prominent vasculature. Within the proximal oviduct there is a 7 x 4 x 3 cm coagulum that is pale yellow. Caseous yellow material fills the distal oviduct. The distal oviduct is adhered to the body wall.

Tissues examined include: eyes, brain, oral cavity, trachea, lung, heart, thyroid glands, esophagus, crop, proventriculus, ventriculus, intestines, ceca, liver, pancreas, adrenal glands, kidneys, ovary (inactive), oviduct, thymus, spleen, and sciatic nerve.
BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
Blackberry	Blackberry	Carcass	Done

Bacteriology

says, *It has forgotten*

Histology

Oviduct: There are multifocal areas in which the mucosa is hypereosinophilic admixed with lytic cellular debris and abundant degenerate heterophils. In one section there is a large coagulum of degenerate heterophils, fibrin, and lytic cellular debris.

Liver: Multifocally and randomly there are areas of necrosis and fibrin thrombi.

Tissues examined include: trachea/syrinx, lung, air sacs, heart, great vessels, esophagus, crop, proventriculus, ventriculus, intestine, liver, pancreas, adrenal glands, kidneys, cloaca, spleen, thymus, ovary, oviduct, brain, spinal cord, vertebral body, and sciatic nerve.

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

Addendum
Version 1
This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Scribbles
Date Collected: 02/10/2017
Date Received: 02/10/2017
Case Coordinator: H. L. Shivaprasad, DVM, PhD, Dipl. ACPV
Electronically Signed and Authorized By: Shivaprasad, H.L. on 2/18/2017 4:42:45PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: carrier: UPS

Case Contacts

Submitter
Report To , BYF Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Scribble	Name	Chicken	Male	2.50 Years

Laboratory Findings/Diagnosis

1. Septicemia; splenitis, pericarditis and hepatic necrosis associated with bacteria. E .coli was isolated. Gram negative bacilli present.
2. Acute multifocal moderate to severe ulcerative dermatitis, skin on the face, comb and wattles.
3. Amyloidosis; trachea and bronchus; Congo Red positive. Spleen, liver, kidney, heart pancreas and intestine. Congo Red negative.
4. Cecal worms present, mild.
5. Focal hemorrhage in iris, both eyes.
6. Chronic focal iriditis, one eye.

Case Summary

02/17//17: Septicemia due to E. coli most likely spread from the infection in the face, comb and wattles. The bird is negative for AI, salmonella and lead. This completes all tests on this case.

02/18/17: Sorry I forgot to comment on on the eyes. Both eyes have focal hemorrhage in the iris. In addtion one eye has chronic focal inflammation of the iris. These lesions are suggestive of trauma.

Clinical History

Scribble was a 2 ½ year old rooster, apparently healthy up until 2 weeks ago when he got stuck in the mud. Physical exam revealed an asymmetric pupil OD (medial canthus). I suspect he may have has Marek's and subclinical diagnosis could have led to getting stuck in the mud. 2 weeks after the mud incident he was put back outside and began fighting for territory with another rooster. Later that day he was found looking bent up, multiple wounds on comb and wattles. He could not stand and was brought back inside. The following day he was still weak but able to walk. He was found dead the next morning.

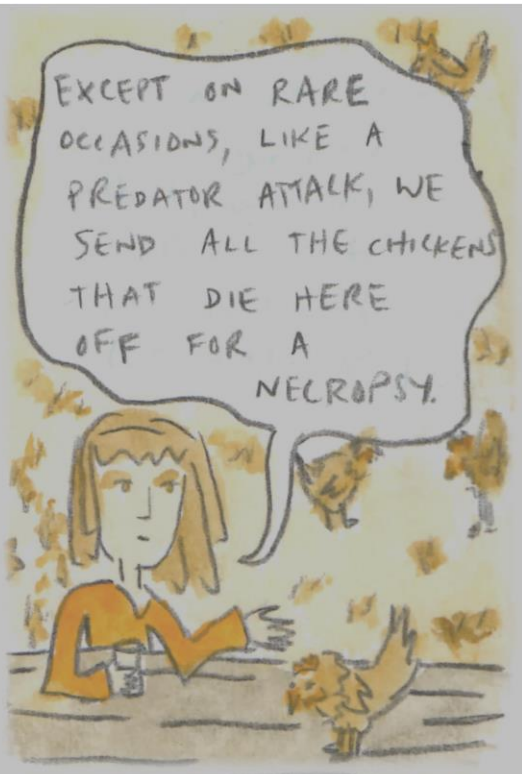
Gross Observations

A 2 1/2-year-old Game Chicken, most likely Grey breed rooster is presented dead for necropsy. The bird is in fair to poor

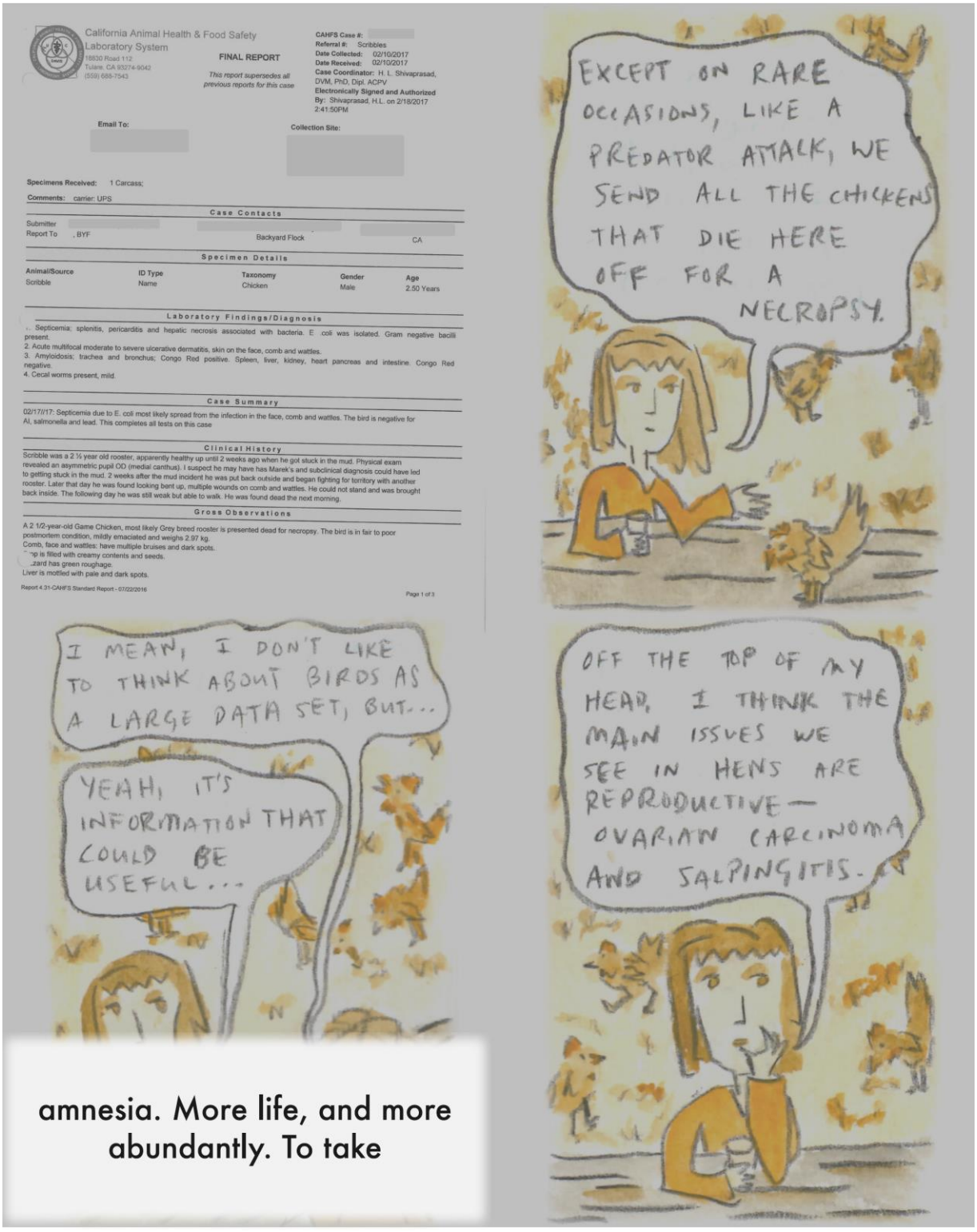
CAHFS Addendum Version 1 Accession # February 18, 2017

Lead	Not Detected	ppm	1.0	ppm	<1.0
Manganese	1.5	ppm	0.10	ppm	2.0-4.0
Iron	610	ppm	1.0	ppm	60-300
Mercury	Not Detected	ppm	1.0	ppm	<1.0
Arsenic	Not Detected	ppm	1.0	ppm	<1.0
Molybdenum	Not Detected	ppm	0.40	ppm	
Zinc	44	ppm	0.30	ppm	25-40
Copper	1.5	ppm	0.30	ppm	3.0-15.0
Cadmium	0.98	ppm	0.30	ppm	<5.0

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 3 of 3




CAHFS- CALIFORNIA HEALTH AND FOOD SAFETY LABS WILL DO THE NECROPSIES.
I SHIP THEM IN A REFRIGERATED BAG, LIKE YOU GET FROM TRADER JOE'S OR WHEREVER, AND THEY EMAIL ME THE RESULTS
WE OFTEN TREAT HENS WHO HAVE HUGELY DISTENDED ABDOMENS - REALLY THEIR COELEMIC CAVITY. IT GETS FULL OF FLUID FROM EGG-LAYING.
CAHFS Addendum Version 1
Accession #
February 18, 2017
postmortem condition, mildly emaciated and weighs 2.97 kg.
Comb, face and wattles: have multiple bruises and dark spots.
Crop is filled with creamy contents and seeds.
Gizzard has green roughage.
Liver is mottled with pale and dark spots.
Spleen is pale.
Testes well developed.
There are no other gross lesions of diagnostic significance.
BYF Necropsy Exam – 2 Bird limit
Animal/Source Specimen Specimen Type Results
Scribble Scribble Carcass Done
Bacteriology
how to die. But why remember?
All it wants is more
Histology
Brain, nerves, conjunctiva, sinus/turbinates, larynx/trachea, syrinx, lung, liver, spleen, kidney, heart, esophagus, thyroids, adrenals, thymus, proventriculus, gizzard, intestine, pancreas, skeletal muscles, testes, bone, bone marrow, are examined.
Skin: there are extensive foci of epithelial necrosis, inflammation, hemorrhages with scab formation and ulceration and , inflammation in the subcutis.
Spleen: has large amount of fibrin and bacterial colonies. There is also accumulation of homogenous eosinophilic material in the vessels.
Liver has large numbers of bacterial colonies associated with mild necrosis of hepatocytes.
Kidneys, lungs and to an extent heart have large numbers of bacterial colonies.
DECALCIFICATION
Animal/Source Specimen Specimen Type Results
Scribble decal tissue Tissue - Fixed COMPLETED
Toxicology
Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.
The detected liver mineral results are within acceptable or non-diagnostic ranges for this species.
HEAVY METAL SCREEN
Animal/Source Specimen Specimen Type
ibble Scribble Liver Tissue
Analyte Result Units Rep. Limit Units Ref. Range
Report 4.31-CAHFS Standard Report - 07/22/2016
Page 2 of 3



California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Scribbles
Date Collected: 02/10/2017
Date Received: 02/10/2017
Case Coordinator: H. L. Shivaprasad, DVM, PhD, Dipl. ACPV
Electronically Signed and Authorized By: Shivaprasad, H.L. on 2/18/2017 2:41:50PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: carrier: UPS

Case Contacts

Submitter
Report To , BYF
Backyard Flock CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
Scribble	Name	Chicken	Male	2.50 Years

Laboratory Findings/Diagnosis

1. Septicemia; splenitis, pericarditis and hepatic necrosis associated with bacteria. E. coli was isolated. Gram negative bacilli present.
2. Acute multifocal moderate to severe ulcerative dermatitis, skin on the face, comb and wattles.
3. Amyloidosis; trachea and bronchus; Congo Red positive. Spleen, liver, kidney, heart pancreas and intestine. Congo Red negative.
4. Cecal worms present, mild.

Case Summary

02/17//17: Septicemia due to E. coli most likely spread from the infection in the face, comb and wattles. The bird is negative for AI, salmonella and lead. This completes all tests on this case

Clinical History

Scribble was a 2 ½ year old rooster, apparently healthy up until 2 weeks ago when he got stuck in the mud. Physical exam revealed an asymmetric pupil OD (medial canthus). I suspect he may have has Marek's and subclinical diagnosis could have led to getting stuck in the mud. 2 weeks after the mud incident he was put back outside and began fighting for territory with another rooster. Later that day he was found looking bent up, multiple wounds on comb and wattles. He could not stand and was brought back inside. The following day he was still weak but able to walk. He was found dead the next morning.

Gross Observations

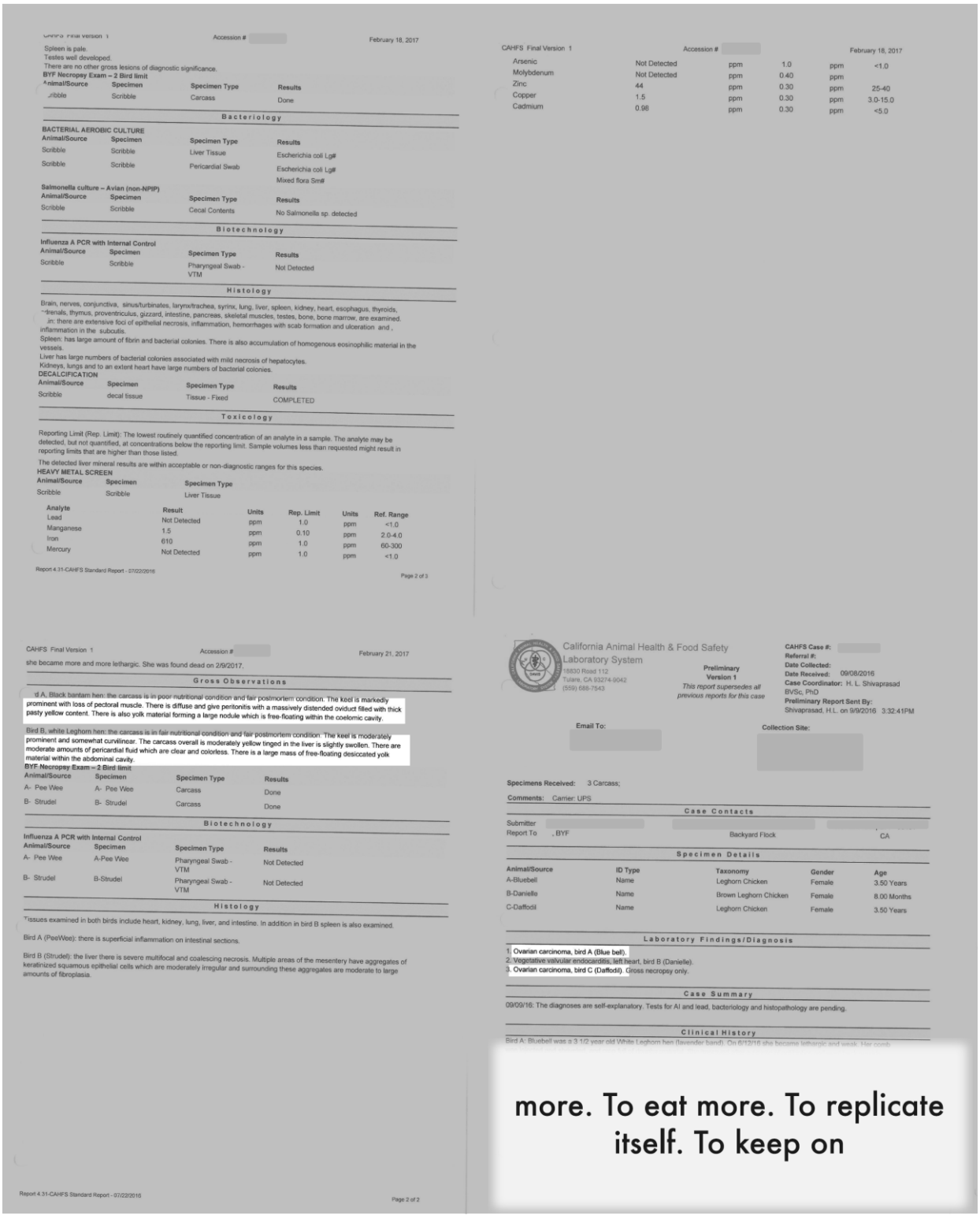
A 2 1/2-year-old Game Chicken, most likely Grey breed rooster is presented dead for necropsy. The bird is in fair to poor postmortem condition, mildly emaciated and weighs 2.97 kg.
Comb, face and wattles: have multiple bruises and dark spots.
...op is filled with creamy contents and seeds.
...zard has green roughage.
Liver is mottled with pale and dark spots.

Report 4.31-CAHFS Standard Report - 07/22/2016

Page 1 of 3

amnesia. More life, and more abundantly. To take


CAHFS- CALIFORNIA HEALTH AND FOOD SAFETY LABS WILL DO THE NECROPSIES.
I SHIP THEM IN A REFRIGERATED BAG, LIKE YOU GET FROM TRADER JOE'S OR WHEREVER, AND THEY EMAIL ME THE RESULTS
WE OFTEN TREAT HENS WHO HAVE HUGELY DISTENDED ABDOMENS - REALLY THEIR COELEMIC CAVITY. IT GETS FULL OF FLUID FROM EGG-LAYING.
I DRAIN THE FLUID AND HAVE VARIABLE RESULTS. SOMETIMES THEY HAVE IMMEDIATE RELIEF AND GO ON AND DO REALLY WELL. SOMETIMES THEY LIVE FOR ANOTHER SIX MONTHS AND HAVE A PRETTY GOOD LIFE
SOMETIMES THEY DIE THE NEXT DAY.



CAHFS Final Version 1 Accession # February 18, 2017

Spleen is pale.
Testes well developed.
There are no other gross lesions of diagnostic significance.

BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
Scribble	Scribble	Carcass	Done

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
Scribble	Scribble	Liver Tissue	Escherichia coli Lg#
Scribble	Scribble	Pericardial Swab	Escherichia coli Lg#
			Mixed flora Sm#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
Scribble	Scribble	Cecal Contents	No Salmonella sp. detected

Biotechnology

Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
Scribble	Scribble	Pharyngeal Swab - VTM	Not Detected

Histology

Brain, nerves, conjunctiva, sinus/turbinates, larynx/trachea, syrinx, lung, liver, spleen, kidney, heart, esophagus, thyroids, ~drenals, thymus, proventriculus, gizzard, intestine, pancreas, skeletal muscles, testes, bone, bone marrow, are examined.
in: there are extensive foci of epithelial necrosis, inflammation, hemorrhages with scab formation and ulceration and ,
inflammation in the subcutis.
Spleen: has large amount of fibrin and bacterial colonies. There is also accumulation of homogenous eosinophilic material in the vessels.
Liver has large numbers of bacterial colonies associated with mild necrosis of hepatocytes.
Kidneys, lungs and to an extent heart have large numbers of bacterial colonies.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
Scribble	decal tissue	Tissue - Fixed	COMPLETED

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

The detected liver mineral results are within acceptable or non-diagnostic ranges for this species.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
Scribble	Scribble	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0
Manganese	1.5	ppm	0.10	ppm	2.0-4.0
Iron	610	ppm	1.0	ppm	60-300
Mercury	Not Detected	ppm	1.0	ppm	<1.0

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 2 of 3

CAHFS Final Version 1 Accession # February 18, 2017

Arsenic	Not Detected	ppm	1.0	ppm	<1.0
Molybdenum	Not Detected	ppm	0.40	ppm	
Zinc	44	ppm	0.30	ppm	25-40
Copper	1.5	ppm	0.30	ppm	3.0-15.0
Cadmium	0.98	ppm	0.30	ppm	<5.0

CAHFS Final Version 1 Accession # February 21, 2017

she became more and more lethargic. She was found dead on 2/9/2017.

Gross Observations

d A. Black bantam hen: the carcass is in poor nutritional condition and fair postmortem condition. The keel is markedly prominent with loss of pectoral muscle. There is diffuse and give peritonitis with a massively distended oviduct filled with thick pasty yellow content. There is also yolk material forming a large nodule which is free-floating within the coelomic cavity.

Bird B, white Leghorn hen: the carcass is in fair nutritional condition and fair postmortem condition. The keel is moderately prominent and somewhat curvilinear. The carcass overall is moderately yellow tinged in the liver is slightly swollen. There are moderate amounts of pericardial fluid which are clear and colorless. There is a large mass of free-floating desiccated yolk material within the abdominal cavity.

BYF Necropsy Exam – 2 Bird limit

Animal/Source	Specimen	Specimen Type	Results
A- Pee Wee	A- Pee Wee	Carcass	Done
B- Strudel	B- Strudel	Carcass	Done

Biotechnology

Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
A- Pee Wee	A-Pee Wee	Pharyngeal Swab - VTM	Not Detected
B- Strudel	B-Strudel	Pharyngeal Swab - VTM	Not Detected

Histology

Tissues examined in both birds include heart, kidney, lung, liver, and intestine. In addition in bird B spleen is also examined.

Bird A (PeeWee): there is superficial inflammation on intestinal sections.

Bird B (Strudel): the liver there is severe multifocal and coalescing necrosis. Multiple areas of the mesentery have aggregates of keratinized squamous epithelial cells which are moderately irregular and surrounding these aggregates are moderate to large amounts of fibroplasia.

Report 4.31-CAHFS Standard Report - 07/22/2016 Page 2 of 2

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

Preliminary
Version 1
This report supersedes all previous reports for this case

CAHFS Case #:
Referral #:
Date Collected:
Date Received: 09/08/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Preliminary Report Sent By:
Shivaprasad, H.L. on 9/9/2016 3:32:41PM

Email To:

Collection Site:

Specimens Received: 3 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter			
Report To	, BYF	Backyard Flock	CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-Bluebell	Name	Leghorn Chicken	Female	3.50 Years
B-Danielle	Name	Brown Leghorn Chicken	Female	8.00 Months
C-Daffodil	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

1. Ovarian carcinoma, bird A (Blue bell).
2. Vegetative valvular endocarditis, left heart, bird B (Danielle).
3. Ovarian carcinoma, bird C (Daffodil). Gross necropsy only.

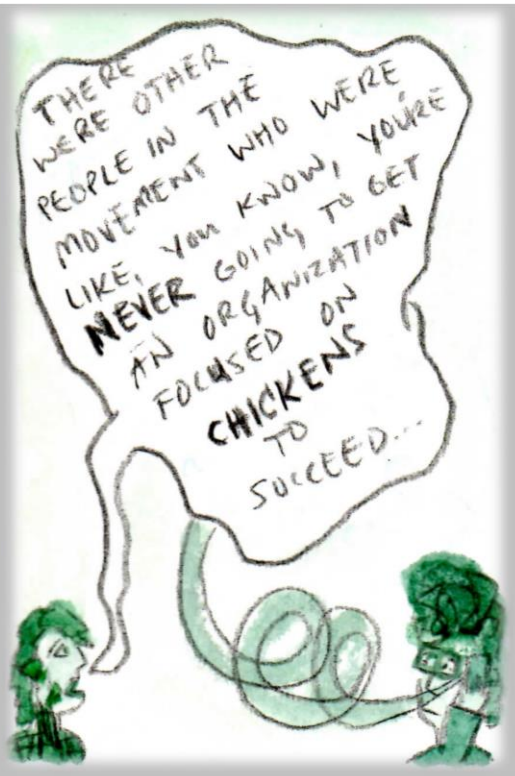
Case Summary

09/09/16: The diagnoses are self-explanatory. Tests for AI and lead, bacteriology and histopathology are pending.

Clinical History

Bird A: Bluebell was a 3 1/2 year old White Leghorn hen (lavender band). On 6/12/16 she became lethargic and weak. Her comb

more. To eat more. To replicate itself. To keep on



California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Pee Wee
Date Collected: 02/13/2017
Date Received: 02/15/2017
Case Coordinator: John Adaska DVM, MPVM, PhD, Dipl. ACVP
Electronically Signed and Authorized By: Adaska, John M. on 2/21/2017 9:27:31AM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF — Backyard Flock — CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A- Pee Wee	Name	Orpington Chicken	Female	10.50 Years
B- Strudel	Name	Leghorn Chicken	Female	4.00 Years

Laboratory Findings/Diagnosis

Bird A (PeeWee)
1. Severe diffuse egg yolk peritonitis.

Bird B (Strudel)
1. Moderate multifocal abdominal squamous cell carcinoma.
2. Severe multifocal and coalescing hepatic necrosis, probable bacterial.
3. Severe diffuse egg yolk peritonitis.

Case Summary

The findings in PeeWee are fairly straightforward with diffuse peritonitis secondary to egg yolk in the coelomic cavity. In Strudel the postmortem examination also showed egg yolk peritonitis but on histologic exam there was also squamous cell carcinoma scattered within the mesentery as well as hepatic necrosis. I suspect that the squamous cell carcinoma was the primary problem and resulted in abnormal motility of muscular abdominal organs to yield the peritonitis as well as potentially the hepatitis.

Clinical History

Pee Wee was a 10 1/2 year old black Bantam hen. She was brought inside on 1/23/17 because she was hunched, lethargic, and sitting by herself. On physical exam she was found to have pain on palpation of her right caudal colonic cavity. She had lost weight and the weight loss continued steadily until she was found dead on 2/13/17.

**rudel was a 4 year old (yellow 69) white leghorn hen who suffered a left femoral fracture on 6/23/16. At that time it was noticed ..t she had a distended abdomen/colonic cavity. Light yellow fluid removed and she was placed on antibiotics. Strudel never regained full mobility, as her fracture was not surgically repaired and her leg was in an extended forward position permanently. She was kept comfortable and had a zest for life until she began to deteriorating about a month ago. Her appetite decreased and

CAHFS Preliminary Version 1 — Accession # — September 09, 2016

Gross Observations

GENERAL APPEARANCESKIN: A 3 ½ year-old White Leghorn hen (Blue Bell with lavender leg band) is presented dead for ~ecropsy. The bird is in fair postmortem condition, moderate to severely emaciated and weighs 1.17 kgm. Abdomen is .verely distended.
SKIN: Unremarkable..
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: Unremarkable.
CARDIOVASCULAR: Unremarkable.
DIGESTIVE TRACT/INTESTINE:
Crop: has minimal contents..
Abdomen is severely distended due to numerous pale firm nodules measuring in size from 3 mm to 5 mm on the serosal surfaces of proventriculus, gizzard, intestine including pancreas, oviduct, peritoneum and ovary. There are firm adhesions between the serosal surface of loops of the intestine. There is mild cloudy exudate in the abdominal cavity.
Gizzard has feed.
Small intestine and ceca have greyish contents.
LIVER AND PANCREAS: Unremarkable.
SPLEEN, BURSA AND THYMUS: Unremarkable. .
KIDNEYS/REPRODUCTIVE TRACT: Kidneys are pale and atrophied.
Ovary is not active but the follicles are replaced numerous pale firm nodules.
Oviduct is distended with severe yellow exudate. .
MUSCCULOSKELETAL: Pectorals are severely atrophied.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

T1601912 B
GENERAL APPEARANCESKIN: An eight-month-old Brown hen is presented dead for necropsy. The bird is in fair postmortem condition, mildly emaciated and weighs 1.38 kgm.
~IN: Unremarkable..
..ASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: White chalky precipitates are present on the air sacs and pleura.
CARDIOVASCULAR: Heart is moderate to severely enlarged. Right heart is severely enlarged and the right free ventricular valve is very thin. The left heart has three soft brown irregular nodules attached to the AV valve and one to the endocardium below the valve..
DIGESTIVE TRACT/INTESTINE:
Crop: is severely distended with milky watery contents.
Gizzard has food mixed with fluid. .
Small intestine has brownish pasty contents.
LIVER AND PANCREAS: Liver is dark and has a pale area.
SPLEEN, BURSA AND THYMUS: Spleen is dark . .
KIDNEYS/REPRODUCTIVE TRACT:
Left kidney is also mild to moderately atrophied.
All lobes of the kidneys are pale and have accumulation of white chalky precipitates on the surface as well as in the parenchyma.
Ovary and oviduct are not active. Ovary has small follicles.
MUSCCULOSKELETAL: Pectorals are mildly atrophied. .
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

T1601912 C. 3 1/2 year-old WLH hen. Gross necropsy only. Is very autolyzed and has lesions in the ovary and abdominal cavity suggestive of ovarian carcinoma similar to bird A.

CAHFS Preliminary Version 1 — Accession # — September 09, 2016

Bacteriology

BACTERIAL AEROBIC CULTURE

imal/Source	Specimen	Specimen Type	Results
A-Bluebell	A	Liver Tissue	Pending
A-Bluebell	A	Oviduct Tissue	Pending
B-Danielle	B	Liver Tissue	Pending
B-Danielle	B Heart Valve	Heart Valve	Pending

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A-Bluebell	A	Cecal Contents	Pending
B-Danielle	B	Cecal Contents	Pending

Biotechnology

Influenza A PCR with Internal Control

Animal/Source	Specimen	Specimen Type	Results
A-Bluebell	Pool of A-B	Pharyngeal Swab Pool - VTM	Pending

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

Preliminary Version 1
This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Rita & Caroline
Date Collected: 04/27/2016
Date Received: 04/27/2016
Case Coordinator: John M. Adaska DVM, MPVM, PhD
Preliminary Report Sent By: Adaska, John M. on 4/29/2016 1:50:34PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF
Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-Rita	Name	Leghorn Chicken	Female	3.00 Years
B-Caroline	Name	Leghorn Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

Two backyard hens

Bird A: Rita
1. Ovarian carcinoma with secondary diffuse peritonitis.

Bird B: Caroline
1. Severe egg yolk peritonitis.

Case Summary

Histologic examination of additional tissues from Rita are still pending and further reports will follow as this is completed. I do not anticipate any significant changes in the diagnosis.

Clinical History

Rita was a 3 year old white leghorn (blue & green bands) who was found on 4/19/16 with a penguin stance, being trampled by coop mates. 300cc of yellow, blood tinged fluid was aspirated from her abdomen on 4/19/16. She has been cared for in the Happy Hen Chicken Rescue ICU since that evening. Her crop was slow to empty and she has been lethargic in the ICU.

Caroline (orange band) was a white leghorn hen, 3 1/2 years old, found sick in her coop on 4/19/16. She was hunched, with collapsed, injected comb, and her waddles moved out and in with each breath. 225ml of malodorous, cloudy white fluid was aspirated from her abdomen. She was found dead on 4/24/16.

Gross Observations

Bird A (Rita) this is a carcass of a 3-year-old white hen in fair to poor nutritional condition. The air sacs are grossly normal and there is moderate to marked serous atrophy of epicardial fat. The carcass weighs 1.5 kg. The coelomic cavity contains abundant

yellow to orange tinged fluid and there are scattered nodules throughout the serosal surfaces and intestinal loops are adherent to one another. Intestine contains creamy green material. The crop is full and proventriculus and gizzard are grossly normal. Within the ovary there are multiple variable size nodules on the surface as well as on the surface of the oviduct and intestinal loops. The nodules are firm, white and up to 4 mm in diameter.

Bird B (Caroline) this is a carcass of a 3 1/2 year-old white hen in fair to poor nutritional condition and fair postmortem condition. The carcass weighs 1.56 kg. The airsacs are somewhat cloudy and there is moderate serous atrophy of fat on the epicardial surface of the heart. The crop is full and the proventriculus and gizzard are grossly normal. There is abundant yellow orange fluid within the coelomic cavity and loops of the intestine are adherent to one another with large amounts of fibrin which covers most of the organs in the coelomic cavity. The reproductive tract is grossly normal and flaccid and all other systems are grossly normal.

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A-Rita	Pool of A&B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Bird A: tissues examined include thyroid gland, sciatic nerve, brain, heart, lung, liver, kidney, spleen, ovary, trachea, crop, proventriculus, gizzard and intestines.

The gizzard has a focal area of ulceration of the koilin layer with associated neutrophils. In multiple organs including ovary, liver and numerous sections of intestine there is a large infiltrative neoplastic mass characterized by variable size lobules separated by variably thick connective tissue septa. Individual lobules have variably well-defined acinar like structures with low cuboidal to very poorly defined cells with scant wispy pale basophilic cytoplasm and often very dense round to oval nuclei.

Bird B: Histology was not performed.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
A-Rita	decal tissue	Tissue - Fixed	Pending

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

Preliminary Version 1
This report supersedes all previous reports for this case

CAHFS Case #:
Referral #:
Date Collected: 03/29/2016
Date Received: 03/30/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Preliminary Report Sent By: Shivaprasad, H.L. on 4/7/2016 6:32:30PM

Email To:

Collection Site:

Specimens Received: 1 Carcass;

Comments: Carrier: UPS Ground

Case Contacts

Submitter
Report To , BYF
Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
no id	Unknown	Chicken	Female	3.00 Years

Laboratory Findings/Diagnosis

1. Carcinomatosis, probably of ovarian origin; serosa of the intestine, pancreas, peritoneum and oviduct and ovary.
2. Moderate to severe tracheitis, probably due to mycoplasma sp.
3. Acute multifocal severe nephrosis, kidneys. Probably due to dehydration.
4. Mild to moderate interstitial mineralization, proventricular glands. Secondary to renal failure.
5. Locally extensive gastritis with mucosal base mineralization, gizzard. Secondary to renal failure.
6. Ceca: Tetratrichomonads present.

Case Summary

04/07/16: Carcinoma of ovarian origin is most common in adult hens. The chicken is negative for AI, salmonella and lead. There are a few more tissues and tests pending. In the meantime if you have any questions please give me a call.

Note: Sorry I am a little bit late on sending this report.

Clinical History

Three year old white leghorn hen was found dead in her coop with no obvious cause of death.

Gross Observations

GENERAL APPEARANCE: An adult W,H hen is presented dead for necropsy. The bird is in fair postmortem condition, dehydrated, emaciated and weighs 1.53 Kg.
SKIN: Unremarkable.
NASAL PASSAGES/LARYNX AND TRACHEA: Unremarkable.
LUNG AND AIR SACS: Unremarkable.
CARDIOVASCULAR: Unremarkable.
DIGESTIVE TRACT/INTESTINE:
Crop: has abundant feed (grain mixed with forage and egg shells).

Gizzard: has small amount of forage.
Serosa of the proventriculus, gizzard and intestine: have numerous miliary pale yellow firm nodules, 2 to 4 mm in diameter scattered throughout.
Similar nodules are present in the mesentery and peritoneum.
LIVER AND PANCREAS:
Pancreas: numerous similar nodules like in the mesentery are present in the pancreas obscuring the entire organ.
SPLEEN, BURSA AND THYMUS: Unremarkable.
KIDNEYS/REPRODUCTIVE TRACT: Kidneys are pale and atrophied
Ovary: has a few small pale firm nodules. There are attretic few developing follicles.
Oviduct: active.
MUSCULOSKELETAL: Pectorals atrophied.
NEUROLOGIC SYSTEM: Unremarkable.
ENDOCRINE SYSTEM: Unremarkable.
There are no other gross lesions of diagnostic significance.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
no id	no id	Liver Tissue	Mixed flora Rare#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
no id	no id	Cecal Contents	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

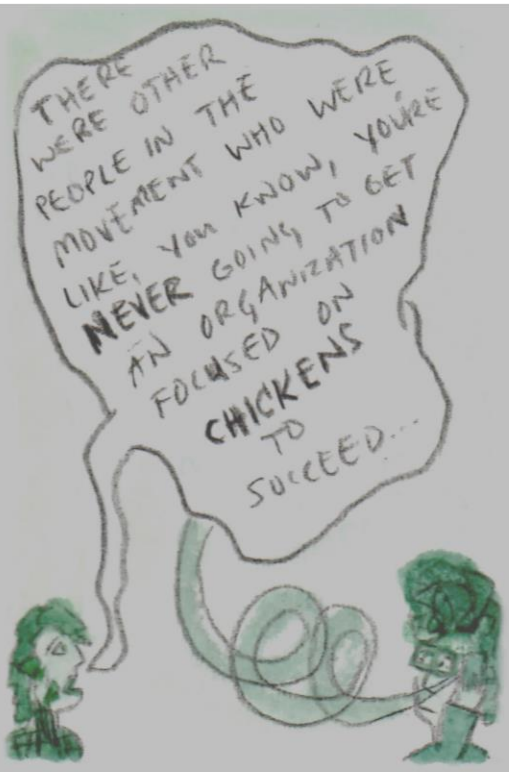
Animal/Source	Specimen	Specimen Type	Results
no id	no id	Pharyngeal Swab - VTM	Not Detected

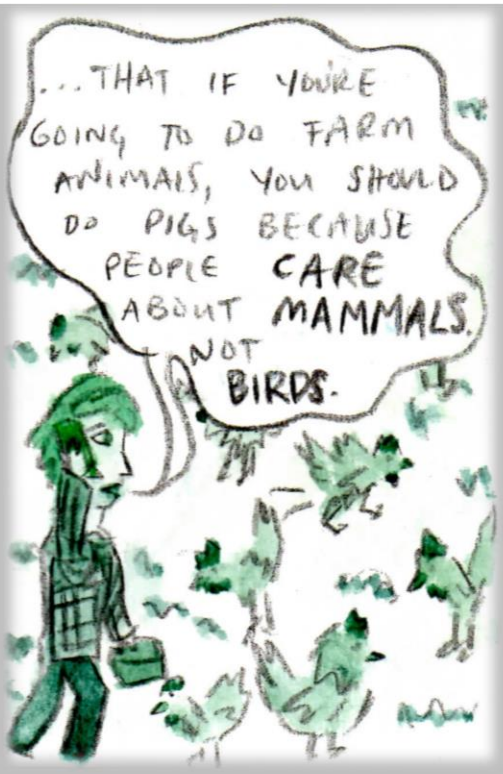
Histology

Brain, nerves/artery, sinus/turbinates, larynx/trachea, lung, liver, spleen, kidney, heart, esophagus, crop, proventriculus, gizzard, intestine, pancreas, ovary, oviduct, thymus, thyroids, skin, are examined.

Ovary and serosal surfaces of the intestine, pancreas, mesentery/fat have proliferation of cuboidal neoplastic epithelial cells forming glands which are arranged as nodules of various sizes.

Kidneys have acute necrosis of tubular epithelial cells with accumulation of eosinophilic material and urates accompanied by inflammation randomly scattered throughout. Tubules also have moderate multifocal mineralization.
Some of the arteries in the kidneys and heart have increased eosinophilia in the tunica media.
Heart: has mild multifocal degeneration of myofibers randomly scattered throughout.
Proventriculus has mild to moderate multifocal mineralization of the interstitium in the glandular parts.
Lung have moderate accumulation of silica in the cytoplasm of macrophages.
Intestine: has focal necrosis of the mucosa and ulceration. Ceca have a few tetratrichomonads.
Gizzard has locally extensive basal mineralization of the mucosa with inflammation in the lamina propria.
Trachea: have moderate to severe infiltration of lymphocytes in the mucosa.





California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Rosanna & Nanna
Date Collected: 06/21/2016
Date Received: 06/26/2016
Case Coordinator: H. L. Shivaprasad BVSc, PhD
Electronically Signed and Authorized By: Shivaprasad, H.L. on 7/7/2016 1:33:57PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYP Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A– Rosanna	Name	Chicken	Female	3.50 Years
B- Nanna	Name	Chicken	Female	3.50 Years

Laboratory Findings/Diagnosis

1. Ovarian carcinoma with metastasis to serosa of the intestine, pancreas and oviduct, Bird A (Red Star, Rosanna).
2. Salpingitis, Bird B (Isa Brown, Nanna), E. coli isolated.
3. Presumptive amyloidosis, liver and spleen, bird B., Congo Red stain pending.
4. Peritonitis, birds A and B.

Case Summary

06/30/16: The diagnoses are self-explanatory based on findings in previous cases that you have submitted. There are a few more tests pending.

07/07/16: The birds are negative for AI, salmonella and lead. This completes all the tests on this case.

Clinical History

CAHFS Preliminary Version 1 Accession # April 07, 2016

Toxicology

"reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be ,tected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
no id	no id	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	ppm	1.0	ppm	<1.0

doing those things forever.
Such desires

CAHFS Final Version 1 Accession # July 07, 2016

The birds are in fair postmortem condition, severely emaciated with keel deviation in and bird A ahe she weighs 1.14 kg and bird B weighs 1.90 kg (bird B)..
Bird B has generalized congestion (dark) of visceral organs in the thoracix and abdominal cavities
Right lung in bird A has congestion and edema.
Crop have fluid ingesta and proventriculus and gizzards are empty, birds A and B

Bird A: the abdomen is severely distended with serous and dark fibrinous exudate of approximately 100 ml. There are numerous grey or pale firm nodules on the serosa of the intestine, pancreas, oviduct and peritoneum. There are firm adhesions between loops of the intestine. Ovary has many similar firm nodules like in the peritoneum. The persistent right oviduct is cystic (7x7cm) and has yellow serous fluid.

Bird B: There is severe fibrinous nodular friable exudate in the oviduct and fibrinous exudate in the peritoneal cavity.

There are no other gross lesions of diagnostic significance.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A-- Rosanna	A	Liver Tissue	No growth after 48 hours
B- Nanna	B	Liver Tissue	No growth after 48 hours
B- Nanna	B	Oviduct Swab-Avian	Escherichia coli Lg#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A-- Rosanna	Pool of A & B	Cecal Contents Pool	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A-- Rosanna	Pool of A & B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Brain, nerves, trachea, lung, liver, spleen, kidney, heart, crop, esophagus, proventriculus, thyroids, adrenals, gizzard, intestine, pancreas, ovary, oviduct, bone, bone marrow and skeletal muscles are examined.

Bird A: The nodules seen grossly on serosa of the pancreas, intestine, oviduct and ovary are composed of neoplastic cuboidal epithelial cells forming glands of various sizes. Desmoplastic reaction is minimal.
Bird B has fibrinous inflammation in the oviduct.
Liver in the sinusoids and spleen in the vascular sinuses and around vessels has accumulation of homogenous eosinophilic material accumulation.

There is inflammation in the peritoneum in both birds..

CAHFS Final Version 1 Accession # July 07, 2016

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type	Analyte	Result	Units	Rep. Limit	Units	Ref. Range
A-- Rosanna	A	Liver Tissue	Lead	Not Detected	ppm	1.0	ppm	<1.0
B- Nanna	B	Liver Tissue	Lead	Not Detected	ppm	1.0	ppm	<1.0

CAHFS Final Version 1 Accession # May 30, 2016

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type	Analyte	Result	Units	Rep. Limit	Units	Ref. Range
A- Wendy	A	Liver Tissue	Lead	Not Detected	ppm	1.0	ppm	<1.0
B- Fluffy	B	Liver Tissue	Lead	Not Detected	ppm	1.0	ppm	<1.0

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Jane/Ranger
Date Collected:
Date Received: 06/01/2016
Case Coordinator: Jennine N. Ochoa, DVM, PhD
Electronically Signed and Authorized By: Ochoa, Jennine on 6/8/2016 2:43:30PM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: carrier: UPS

Case Contacts

Submitter
Report To , BYF Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A-Jane	Name	Leghorn Chicken	Mixed	Adult
B-Ranger	Name	Chicken		

Laboratory Findings/Diagnosis

Two backyard chickens submitted via the backyard chicken surveillance program

Final report 6/8/2016:
Jane: Egg yolk coelomitis
Ranger: Septicemia (hepatitis, myocarditis)

Preliminary report 6/2/2016:
Jane (Leghorn):
1. Egg yolk coelomitis/Salpingitis

Ranger (Rooster):
1. Open

Case Summary

Final report 6/8/2016:
Ranger died from septicemia, although a specific bacteria was not isolated from the liver. In addition the route of initial bacterial entry is not determined, although the intestine cannot be ruled out given autolysis/rot may mask lesions. The thickening over the pectoral muscles seen grossly was fibrous tissue and the edema may have been secondary to septicemia, which can result in blood vessel leakage. Salmonella was not isolated, nor was lead detected in the liver.

Preliminary report 6/2/2016:
Jane/Leghorn hen: The cause of death is due to chronic egg yolk peritonitis/salpingitis, a condition often seen in backyard flocks with prolific layers. She had evidence of a previous event that her immune system had walled off.

Ranger/Rooster: A cause of death is not determined by gross examination. There was significant edema around the keel bursa,

California Animal Health & Food Safety Laboratory System
18830 Road 112
Tulare, CA 93274-9042
(559) 688-7543

FINAL REPORT

This report supersedes all previous reports for this case

CAHFS Case #:
Referral #: Wendy & Fluffy
Date Collected: 05/20/2016
Date Received: 05/20/2016
Case Coordinator: John M. Adaska DVM, MPVM, PhD
Electronically Signed and Authorized By: Adaska, John M. on 5/30/2016 9:58:02AM

Email To:

Collection Site:

Specimens Received: 2 Carcass;

Comments: Carrier: UPS

Case Contacts

Submitter
Report To , BYF — Backyard Flock , CA

Specimen Details

Animal/Source	ID Type	Taxonomy	Gender	Age
A- Wendy	Name	Chicken	Female	2.50 Years
B- Fluffy	Name	Chicken	Male	2.00 Years

Laboratory Findings/Diagnosis

Backyard flock birds

Animal A [Wendy]: severe diffuse egg yolk peritonitis.

Animal B [Fluffy]
1. Bacterial septicemia [coagulase negative Staphylococcus] with secondary splenic lymphoid depletion and amyloid deposition.
2. Multifocal erosive dermatitis of the comb, probable bacterial.

Case Summary

In Wendy there was severe egg yolk peritonitis. In Fluffy the spleen and liver were enlarged at postmortem examination and these are both consistent with bacterial septicemia. We isolated coagulase negative Staphylococcus from both of these organs in pure culture thus confirming the suspected diagnosis. Additional testing is pending and further reports will follow.

Final Report 5/30/16: All testing has been completed and there are no additional significant results.

Clinical History

A-Wendy was a 2 1/2 year old white leghorn hen found depressed, with collapsed injected comb and closed eyes 3 days ago. Her crop has been full and doughy for the past 3 days, not eating much. She has been in the ICU on antibiotics for the past 3 days and was found dead this morning.

B-Fluffy was a 2 year old Rhode Island red rooster. About 6 months ago he developed a 1cm scab on his comb which never healed, even with antibiotics (systemic). Otherwise he seemed fine. Yesterday he was found depressed and unable to stand. He was brought into the ICU and placed on antibiotics. He could not stand in cage - collapsed. Died on morning of 5/19/2016, less

than 24 hours after he was found. Note: The lesions on his comb had been getting progressively worse over the past month.

Gross Observations

Bird A (Wendy):
White female chicken in poor body condition and moderate post-mortem condition. Severe diffuse peritonitis in coelomic cavity with moderate amounts dry yellowish material. Markedly enlarged liver with a mottled appearance. Severe atrophy of pectoral (breast) muscles.

Bird B (Fluffy)
Brown rooster in good body condition and moderate post-mortem condition. Multiple crusty and erosive lesions of variable size on the comb. Severe dehydration. Small amounts of clear yellow fluid in the pericardial sac. Markedly enlarged, firm liver. Markedly enlarged spleen.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
A- Wendy	A	Liver Tissue	No growth after 48 hours
A- Wendy	A	Oviduct Swab-Avian	Staphylococcus spp. coagulase negative Rare#
B- Fluffy	B	Liver Tissue	Staphylococcus spp. coagulase negative Mod#
B- Fluffy	B	Spleen Tissue	Staphylococcus spp. coagulase negative Mod#
B- Fluffy	B	Pericardial Swab	Mixed flora Rare#

Salmonella culture – Avian (non-NPIP)

Animal/Source	Specimen	Specimen Type	Results
A- Wendy	Pool of A&B	Cecal Contents Pool	No Salmonella sp. detected

Biotechnology

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A- Wendy	Pool of A&B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Tissues examined in both birds include lung, liver, trachea, heart, spleen, kidney, crop, proventriculus, gizzard, small intestine and colon. In animal A [Wendy] ovary, oviduct and sinuses are examined and in animal B [Fluffy] brain, comb, pancreas, skeletal muscle, thyroid gland and sciatic nerve are examined.

Animal A: the liver has multifocal and coalescing areas in which hepatocytes are hypereosinophilic and have somewhat hyalinized cytoplasm but there is minimal associated inflammation. In addition there are scattered small aggregates of lymphocytes usually within portal areas. Multiple tissues and mesentery have surfaces with abundant debris bacteria and patchy heterophilic aggregates. Within the mesentery there also aggregates of heterophils around blood vessels within the parenchyma. The ovary has occasional small foci of dense heterophil aggregates.

Animal B: the spleen has severe lymphoid depletion and congestion with small amounts of hyalinized eosinophilic material [probable amyloid] within follicles. The comb has patchy epithelial necrosis with large numbers of associated heterophils.. There are occasional foci of necrosis within the deeper tissues as well and these have associated bacterial cocci. Occasional blood vessels in the mesentery and associated with the pancreas have luminal bacterial cocci.

Biotechnology

APMV-1 qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A-Jane	Pool of A & B	Pharyngeal Swab Pool - VTM	Negative

Avian Influenza matrix gene qRT-PCR

Animal/Source	Specimen	Specimen Type	Results
A-Jane	Pool of A & B	Pharyngeal Swab Pool - VTM	Not Detected

Histology

Ranger histology 6/8/2016:

Liver: Multifocally there are areas of necrosis with little inflammation.

Heart: Separating myofibers are several small clusters of lymphocytes.

Air sac: The air sacs are thickened by increased amounts of thick collagen (fibrosis).

Pectoral muscles: Fibrosis thickens the fascia overlying the pectoral muscles.

Tissues examined include: sinuses, trachea, lung, air sacs, heart, esophagus, crop, proventriculus, ventriculus, intestine (autolyzed), liver, pancreas, kidneys, cloaca, spleen, testes (active), brain, and sciatic nerve.

DECALCIFICATION

Animal/Source	Specimen	Specimen Type	Results
B-Ranger	B decal tissue	Tissue - Fixed	COMPLETED

Toxicology

are not unknown. Look in the mirror.

Chapter 7. Witnessing Pandora: Doing "undone science" at farmed animal sanctuaries

Preface

Pandora is on birth control. Pandora is a hen. Because she has been bred to lay eggs almost daily, she is prone to developing cancer and other health problems. Found outside a gas station in winter, Pandora was brought to Heartland Farm Sanctuary. At Heartland, Pandora and those supporting her struggle with this embodied, often deadly legacy. Originally developed for ferrets, hormonal birth control-like implants are one strategy farmed animal sanctuaries pursue, though they are controversial, expensive, and a limited solution.

The past tense, "farmed," and the term "sanctuary" connote a sense of the animals at these sites experiencing a radical departure from their previous lives as commodities or producers of commodities. Yet, as in Pandora's case, and as the previous chapters have shown, much of the work that takes place at sanctuaries entails negotiating and struggling against animals' commodified lives. For chickens, as the most modified, the most populous, and frequently the least well-regarded of farmed animals, these challenges are especially acute.

Sanctuary affiliates describe the state of medical knowledge for sanctuaries using phrases like "in the stone age," "like the wild west," and "where human medicine was in the 19th century" (personal communications, August 2017). Regardless of which, if any, of these terms are the most appropriate, this chapter asks why sanctuary medicine is so limited, and how sanctuaries develop medical knowledge about chickens such as Pandora. In the following section, I outline the contours and significance of the problem: how chickens have fallen out of spaces of

knowledge production, and how and why implanting Pandora was not simply a matter of following existing procedures or formal norms. Next, I describe how sanctuaries respond to these knowledge gaps. I develop the concept of "witnessing" as it has been used in science studies, feminist theory, and activism, and argue that witnessing offers a process and ethos of medical knowledge production different from that of much laboratory science. I suggest that this synthesized understanding of witnessing is particularly apt for understanding sanctuary science and medicine. Then, I discuss how witnessing is practiced at sanctuaries, focusing on how sanctuaries learn to treat problems having to do with reproduction in hens bred to lay eggs, including but not limited to the case of Pandora. In the conclusion, I speculate on what this means for sanctuaries and what witnessing at sanctuaries adds to our understanding of witnessing as science and politics.

Falling out

Through a series of regulatory and cultural-economic decisions, sanctuary chickens have fallen out of many regulatory spaces that govern and support other animals (the introduction describes this in general, whereas this chapter focuses on how it manifests medically). This is perhaps best encapsulated by the structure of veterinary training programs and practices. Veterinary schools track students into "large animal," "small animal," and sometimes avian or exotic animal specializations. For example, the curriculum for the University of California–Davis veterinary medicine program, which is often rated the best of such programs in the United States, offers large animal and small animal tracks, and optional avian rotations (DVM Program 2018, Curriculum Design 2018).

This differentiation in veterinary training carries into veterinary practice, such that there is simply no veterinary specialty that focuses on rescued chickens. "Large animal" veterinarians, often described as farm vets, focus on livestock, or what Shukin (2009) refers to as a form of "animal capital." While these veterinarians receive some training in chicken care and might ultimately become poultry veterinarians, this training has emphasized production and managing chicken populations since the 1940s. Treatment is thus oriented toward maintaining the (commodified and commodity producing) flock (Jones 2003). "Cull the bird" or part of the flock is a common response to health problems, as sick individuals impinge on profits.[32] A veterinary technician who works with chickens in a companion animal practice builds on this, discussing the formal training they received in chicken care:

> I did a couple summers with the Poultry Consortium [a research and education program aimed at industrial poultry production], to get avian experience, and we did a TON of chickens. That was the only solid base research for avians. Avian was mostly through poultry, so a lot of chickens, we visited, um, Purdue. [whispering:] It was awful.
>
> I really got way more than I wanted to know about the whole poultry industry in general. Not the pet aspect of it but the industry aspect. Helpful knowledge in terms of nutrition, egg laying, reproductive tract, how they're built and how they function. But just in my opinion, it's horrible. (personal communication, July 2017)

The contrast between the "pet aspect" of bird care and the "industry aspect" are thus significant in practice as well as in training (see Chapter 5 for more on the significance of pets). However, at the relatively recent time that the technician was receiving training, that was the only way they could learn about topics such as chicken anatomy and nutrition.

---

[32] This differentiation and emphasis on prioritizing production developed further alongside the rise of the factory farm in the 1950s, 1960s, and 1970s. An historian of veterinary medicine notes that veterinarians either adapted to focus on herd health, left veterinary medicine entirely, or became part of the rising demand for veterinarians who served pets (Jones 2003:113-114). Also worth noting about this is that it is relatively recent, rather than longstanding.

Though sanctuaries have gone to large animal veterinarians, they often prefer to avoid them, especially for chickens. As a former executive director of Farm Sanctuary states, "Key on the farm animal side is that these animals have been bred and raised to be killed. So the vets are used to supporting industry. They know a lot about it, but they don't have experience with animals that are given the blessing and benefit of living their lives out to their fullest" (personal communication, July 2017). The statement "living out their lives to the fullest" gestures toward the significant differences in lifespan for production versus sanctuary chickens. Production egg-laying chickens are killed when production decreases, at 12 to 18 months. Roosters in egg-laying operations are killed at birth or whenever they are identified to be roosters (see Introduction), and chickens used for meat are killed at 6-8 weeks (Potts 2012). Thus, in addition to their focus on populations rather than individuals, large animal veterinarians are unfamiliar with chickens living beyond their most productive age. Illustrating this challenge, a sanctuary manager describes the large animal veterinarian they work with sometimes, in contrast to their avian veterinarian (pseudonyms given):

> I don't like them. A lot of the time they'll look at us really funny, [because] we treat our animals as companions. [Our goat] Lucy, for example, if she was a goat in a group of dairy goats and she had this illness, she'd be euthanized immediately. And their vets are used to going out to all these farms where there's a production situation. A lot of the time they don't understand why we'd want to keep an animal alive. They don't even know how to treat it, because it's not normal to treat something, normally you'd just euthanize the animal. And Miranda's Avian Clinic is different because they're so interested in learning. Valley Creek Farm Vet is a struggle. You'd think they would get that, know the animals have feelings and their own wants and desires. And it's almost like they just feel about dogs and cats. (personal communication, June 2017)

"Small animal" veterinarians treat pets such as dogs and cats as companion animals. Sanctuary affiliates have had some success working with them, especially in recent years. Their formal training is not focused on chickens, especially rescued chickens, but some of them will work with sanctuaries. "Some are really good and some are not as good," a sanctuary manager

reports. Of those who are willing to work with sanctuaries, they reflect, "It's not like they're dismissive of chickens, it's that they don't have that much experience" with the unique problems sanctuary chickens face (personal communication September 2027). They also have different medications available than avian practices. As a companion animal veterinarian who works with at least two sanctuaries remarks:

> You got to find a source of what's the drug to use in chickens and see if you have it in the hospital. So my drugs on the shelf are mostly for cats and dogs. If I were doing large animal practice, I'd have a different set of drugs for horses or cows, and I'd be choosing something from there. So it just depends on what you've got. (personal communication, June 2017)

This can sometimes be a disadvantage, but frequently simply results in different, rather than inferior, drugs being used. This is in part because of regulations on drugs available for chickens, which I discuss later.

Finally, "avian/exotic" veterinarians are the newest track in veterinary practice. They treat birds such as parrots and parakeets (Hess and Rose 2016), but are not trained in chicken care specifically. One veterinarian discusses this new specialty: "Now [in contrast to the 1990s] some universities offer avian residencies, but not that many. [And it is] in avian training, it's not chickens per se" (personal communication August 2017). Avian/exotic veterinary specialists often have more experience with wild or pet birds, but less with chickens. Another veterinarian comments that "the closest [species we see] are obviously gonna be pet birds, which are probably 50% of our clientele. But as far as the other species we see a lot of egg issues with are reptiles, turtles" (personal communication, August 2017). Per the prologue and the previous chapter, "egg issues" such as cancers and prolapses are indeed a major challenge for chicken health, and they are especially significant in birds who have been bred to lay eggs at

higher rates than wild and other domesticated birds. The fact that avian or exotic animal veterinarians have training in this is in part what makes their expertise especially relevant to treating sanctuary chickens.

Additionally, while farmed animals at sanctuaries can have the opportunity to live "out their lives to the fullest," they are prone to different and in some cases more extreme health challenges because of breeding. Pandora was bred for egg-laying, and her health problems are largely caused by that. Similarly, birds bred for meat are prone to problems walking and organ failure due to weight gain, and birds bred for cockfighting are prone to aggression and heart problems due to testosterone. Thus it is precisely what makes them profitable that makes them sick.

Overall, though, while each of these specializations have fragments of knowledge about chicken care, there remain significant knowledge gaps. As the founder of a major chicken sanctuary summarizes: "the lack of knowledge in the veterinary field about what to do with chicken related diseases is amazing. The lack of history, data… There's decades of stuff on other birds but not on chickens" (personal communication, July 2017).

These exclusions are compounded by regulatory language. Because the United States Department of Agriculture categorizes chickens as "agricultural animals," veterinarians are, in the words of an avian veterinarian referenced in the Interlude, "very limited in the drugs we can use, because chickens are considered food animals." FARAD, the Food Animal Residue Avoidance Databank, limits the use of antibiotics in chickens on the basis of wanting to

prevent antibiotic resistance in the food supply (FARAD, n.d.). "FARAD will give you a good idea of what veterinarians are up against," the veterinarian continues.

> It can make it tough. But maybe they'll come up with a… I don't know how they're going to have a solution of pets versus… it's all about, you know, the egg production and things like that, so… But, basically, there are certain drugs we're allowed to use. Very few.
>
> "Would it be helpful to be able to use different drugs?"
>
> Yeah, it would be fabulous. But the problem is it's all about egg production, or meat production. They don't want it in the animals. Just like they're having problems 'cause SO many people use [drug name] that they're getting resistance. If you have a really bad infection, homeopathic medicine's not going to really help you. The animal's got septic bloodwork, you have to use antibiotics, but you're very limited in what you can use. You can't or you will lose, you WILL lose your license. It makes medicine very difficult for the poultry, because that's not the same for pigeons, for raptors, for psittacines [parrots]. [For them] we can use what we need, but for the chickens it's very difficult. It's much more difficult to treat. I feel bad for 'em but, it's a matter of losing your license. (personal communication, August 2017)

This conversation points to the contrast between chickens and other birds. The regulatory challenges of FARAD make it difficult to treat chickens, even when a veterinarian is knowledgeable about what would likely work.

Finally, and as mentioned earlier, even among farmed animals at sanctuaries, chickens are often the least well-regarded. Allen Kornberg, a former executive director of Farm Sanctuary and current director of a sanctuary accreditation organization, noted that, "There's a pretty big community of equine veterinarians, there's money in that. But once you get past that, it's such small communities." (personal communication, July 2017) This makes it yet more difficult to care for chickens.

The upshot of these gaps in knowledge and regulation is that there is considerable "undone science" (Frickel et al 2010) with regard to sanctuaries. "Undone science" refers to "systematic nonproduction" of knowledge or research areas that are "left unfunded, incomplete, or generally ignored" (444) by major institutions, but which social movements deem important to research or understand. Examples include the environmental health hazards of chlorine, and environmental risk factors for breast cancer. Perhaps closer to the work of sanctuaries, Hobson (2007:262) describes the process of sun bear rescue (from bile farming) and rehabilitation. He notes that "[t]he lack of available scientific research meant that AAF [Animals Asia Foundation] workers had to, but were also free to, experiment with the bears' rehabilitation, although in keeping with international best practice guidelines." Though not referencing undone science explicitly, Hobson similarly gestures toward scientific questions that it would be helpful to answer.

Undone science points out a void in scientific research. In sun bear rehabilitation, and at farmed animal sanctuaries, these voids are often addressed outside of the laboratory. However, these voids are not simply in terms of knowledge, but also in terms of methods. Sanctuary affiliates are often tacitly and/or explicitly opposed to traditional animal testing or activities such as randomized controlled trials , as these are part of the forms of animal exploitation that sanctuaries strive to challenge. Thus, addressing them using more "traditional" scientific practices is, if not out of the question, not what sanctuaries strive to do. How, then, do sanctuaries respond to these gaps, or how do sanctuaries do this undone science?

I suggest that sanctuaries address these voids through the practice of witnessing. I argue that, in addition to animal activists and scholar-activists practicing witnessing as more and less traditional forms of protest, witnessing is a key mechanism of knowledge generation, validation, and circulation at sanctuaries. In the following section, I review uses and interpretations of witnessing in animal activism, science and technology studies, and feminist theory, calling for the synthesis of the three in sanctuary science. After that, I discuss how witnessing occurs at sanctuaries, through several medical practices and several formal and informal institutions.

Witnessing in animal activism, science, and feminism

"Witnessing" has a long history in animal activism, in which activists will seek to share stories of nonhuman animals made to suffer by society. Dave (2014) suggests that witnessing is a way animal advocates in India became such. Likewise, feminist animal geographer Gillespie's (2016) practice of witnessing drove her to share the stories of cows in modern agriculture. It is perhaps easier to understand the significance of witnessing by what it is not: Gillespie clarifies the difference between witnessing and observation. The latter, she notes, can involve telling stories about those "whose lives are otherwise erased" (Gillespie 2016:577), but involves an emotional or affective break from the witnessed. This erases or dilutes the imperative that this knowledge be mobile. Witnessing is also different from voyeurism, in which the voyeur seeks a heightened "affective experience of being alive in his or her own skin" (Dave 2014:440).

Witnessing is particularly important as an intersectional feminist practice, as it can be undertaken to "reveal and document hierarchies of power and inequality that affect the

embodied experiences of marginalized individuals and populations" (ibid:572-3). Likewise, witnessing is a way to counteract the erasure of such hierarchies, such as those that enable animal commodification, suffering, and death. Because of this, witnessing can be unpleasant. As Dave (2014:440-1) writes, witnessing is "the imperative … to see in a manner that is present, to root themselves when they might rather run or turn away." Witnessing, therefore is an approach to knowledge circulation: it demands *action*, often through learning to see hierarchies and then sharing stories.

Further, witnessing involves a productive entanglement of information and emotion. Witnessing involves attention to "the political function of emotion" (Gillespie 2016:573). Often this is described in terms of cultivating empathy and care (Gillespie 2016, Gruen 2015, Dave 2014), as in how Gillespie learns to grieve for and then write about cows at dairy cow auctions. She describes this as a way to transform grief and other emotions into political action. However, I want to suggest that it is broader than that, and often involves recognizing the limitations of empathy. For witnessing can also enable the continuation of problematic relations in a certain sense, in that the witness can leave the witnessed behind (Gillespie 2016). Witnessing in activism is thus premised on emotional connection (variously defined), action, and limiting the power of the witness: the witness' actions are circumscribed by their perception of the subject being witnessed.

Redfield (2006) develops the concept of "motivated truth" to describe *temoignage*, translated to witnessing or advocacy, at Doctors Without Borders/Medicins Sans Frontieres (MSF), in which the organization will speak out about human rights violations. Witnessing is seen as a

mandate for the organization and a choice that individuals members can, but are not required to make. In this kind of witnessing, "the generation of fact [is presented] in addition to the assertion of value, through combinations of personal testimony, statistics, and independent research" (ibid., 6). This work, on information and knowledge, thus speaks to the witnessing of empirical science, to which I now turn.

Witnessing by activists contrasts somewhat with the witnessing of empirical science. In activism, the emphasis on knowledge production is often downplayed or rendered implicit. Through emotion, a story becomes obvious and the emphasis becomes on taking action. In *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*, Shapin and Schaffer (1985 [2011]) place an emphasis on knowledge production, examining how the production of scientific knowledge was intertwined with the social and political order (21, 332). Examining the rise of experimental science, they discuss the necessity of Boyle's creation of a space for "collective witnessing" by eyes and hands for experimental science to be successful (335-6). This space, Shapin and Schaffer argue, was co-created by liberal political activities and norms, such as the assumption of free and freely acting men, and an idea of community "that rejected absolute hierarchical control by a master" (338-9). This classic work in science and technology studies thus points out how scientific experiments need to be made perceptible to a freely-acting community to be accepted, and likewise that witnesses share certain norms and values with those doing the experiment, the "modest witness" of the experimenter.

However, the "modest witness" should also be understood in context of feminist critiques of visuality, disembodiment, and ocularcentrism. Feminist scholars, including some of those

already cited in this dissertation, have responded critically to visual metaphors, as either passive or having pretenses of passivity from a position of power (Braidotti 2006). The modest witness can indeed be interpreted in this light, or, in a more extreme sense, as disembodied, and thus uninfluenced by embodiment or the partiality of perspective (Haraway 1991, ibid. 1997).

Responding to this, feminist STS scholars Haraway and Murphy invoke the concept of the *immodest witness* as an important corrective to Shapin and Schaffer. The modest witness is not simply a disembodied and ahistorical demonstrator, they contest. Rather, embodiment and positionality are constitutive of any observation or knowledge production. Murphy's (2012:74) discussion of feminist self-help clinics thus invokes the concept of the "immodest witness" who "materially displayed her embodiment as a constituent component of observation." To the immodest witness, "all knowledge is situated" (Haraway 1988), and, further, one's positionality and the positionality of witnesses is a strong influence on, if not deterministic of, scientific results (Haraway 1997, Harding 1986, Fujimura 2006).

Immodest witnesses draw attention to how marginalized groups can bring unique and sometimes especially valuable or accurate perspectives to answering research questions, through drawing on the experience of their identities. Immodest witnessing has close ties with what Harding describes as the epistemological project of feminist postmodernism, in which identity, such as feminist identity or gender identity, is not understood as static or essentialist, but contingent, fractured, and multiple. This contingency, and acknowledging it, is what can render feminist or other claims "more plausible and less distorting" (ibid.:28). Worth

remembering here is that immodest witnesses act on the basis of their own (contingent, fractured, and multiple) identities (Murphy 2012, Fujimura 2006).

Lastly, feminist theorist Sara Ahmed (2004, see also Ahmed 2017 and Oliver 2001) discusses witnessing with particular attention to exploring what emotions *do* socially. Witnessing becomes a way to form collectives, through a recognition of similitude and difference. In her discussion of pain, she writes that complete empathy is impossible: we cannot literally have the experience of another's pain. This impossibility, she suggests, leads to "a demand for collective politics, as a politics based not on the possibility that we might be reconciled, but on learning to live with the impossibility of reconciliation, or learning that we live with and beside each other, and yet we are not as one." Thus Ahmed's witnessing is not based on collective identity, but, like Redfield's, a way of forming contingent collectives across difference.

The following chart summarizes these approaches:

Witnessing as…	In…
Approach to scientific knowledge production	STS
Approach to strong objectivity through situated knowledge	Feminist STS
Approach to knowledge circulation (contrasts with observation)	Protest
Approach to forming contingent collectives across unequal positions	Feminist theory

I want to suggest that witnessing, in all of these senses, is how sanctuary science works. Witnessing doesn't have to be political only in the sense of offering a critique, and is not simply scientific in the sense of an embodied collective process of observation. STS has long shown us that science is inherently political, whether those politics are embedded in the status quo or tacitly or explicitly against it. Like Redfield, I want to elaborate on the "motivated truth" pursued by witnessing. However, unlike Redfield, sanctuaries' work is in the sense of gaps in

medical knowledge – doing undone science – rather than speaking about human rights violations while practicing medicine. Thus, sanctuaries and their networks become sites of knowledge production. Particularly through considering witnessing in Ahmed's work and in the activism described here, witnessing is quite different from notions of science and knowledge production as predominantly about passively seeing, rather than acting (cf. Irigaray 1974, Braidotti 2006).[33]

It is especially important to do this documentary work with/on sanctuaries now, as animal care practices are rapidly changing and as the sanctuary movement develops and gains more attention. Standards are being developed and reevaluated, veterinary medicine is rapidly changing with influences by sanctuaries and the urban agriculture movement, and sanctuaries are yearning for more knowledge, for financially accessible knowledge, and for knowledge appropriate to their needs. Thus, sanctuary science might look considerably different in five years.

How, then, does witnessing take place at sanctuaries? What can this practice add to our understandings of witnessing more broadly? The answer to these questions are the subject of the remainder of this chapter. Again, though other sanctuary chickens too face many health

[33] This is partly a product of the activism and scholarship on activism I have cited here, and likely not coincidentally a result of my politics of citation. Another animal activist project, the SAVE Movement (n.d.), holds vigils outside of slaughterhouses, with the aim of "bearing witness" to what is going on. They explicitly draw on a Tolstoyan understanding of witnessing. They could indeed be critiqued as primarily about seeing rather than doing, as passive, and as believing they are documenting a complete, rather than partial picture. Though there are certainly exceptions to this, I do not focus on actions such as those of the SAVE Movement because this dissertation tries to amplify and think with scholars and scholar activists who are women and people of color – and Tolstoy is indeed a deceased white man. I suspect that with a more traditional/hegemonic politics of citation, such examples would be more common, making the feminist critiques even more salient.

challenges, I focus on reproductive problems in hens bred for egg-laying. Witnessing occurs in daily life, in treatment, in the futility of treatment, and among and between members of the broader sanctuary community.

Before continuing, it merits recognizing that the productive entanglement of emotion and scientific knowledge production is not new or exceptional. Whitney discusses the significance and then erasure of emotion in field ecologists and citizen scientists (2013). Further, witnessing is a close relative to theories of care and animal care, particularly as evoked by scholars such as Puig de la Bellacasa (2017) in terms of seeing "matters of care" as an alternative to "matters of concern." I return to this in the conclusion. First, I to discuss several ways that witnessing happens at sanctuaries, and from this deduce several techniques of witnessing that make it not limited, but a viable alternative to laboratory studies and standardized medicine.

Witnessing rhythms and patterns: aspirational archiving

A major part of witnessing at sanctuaries entails defining and learning to see chicken health, illness, and distress in a sanctuary context. One way of doing this is a process I call "aspirational archiving." Aspirational archiving is when sanctuaries keep records, in part because they *are* useful. This record-keeping is also because sanctuaries *hope* they will be useful, for themselves, for another sanctuary, or for the sanctuary community.

Happy Hen Chicken Rescue, the focus of the interlude, did necropsies on most of their deceased chickens over the last two years (birds who had died of predators were exceptions, as their cause of death was known). They did this through reappropriating resources designed for

biosecurity of chickens in the food supply. The University of California extension programs conducted necropsies of domestic chickens for free, as part of an effort to monitor disease prevalence throughout the state and prevent outbreaks.[34] Happy Hen Chicken Rescue, however, took advantage of this program as a way to learn what had happened to the birds. This was in the interest of gaining information. They learned that, as they had suspected, most of the deaths were due to reproductive problems: cancers and other diseases as a result of egg-laying.

Amassing necropsies was also emotionally driven: they sought a sense of closure. At the same time, they were driven by a desire to use this information. If there were issues that could impact other birds, such as parasites that could be treated, they wanted to know. Finally, they hoped that someday they would either find time to do something with the data or that someone else would, demonstrating a hope that having this data would be helpful to chickens more broadly. This archiving practice is thus aspirational in that the sanctuary hopes that having data will be helpful to others in the future.

In a second situation, I was part of a team that developed a bird health checklist at Heartland Farm Sanctuary.[35] This was a knowledge building and flattening move: in the past, if anything seemed amiss, volunteers would contact Quincy, the avian specialist at the sanctuary. She would then determine whether the bird needed a vet visit or whether the issue could be treated or monitored in-house. We made a list of the birds, their known conditions, a plan of what to

[34] They later switched to charging $20 per necropsy, because more people sent chickens than they'd anticipated.

[35] Animal health checks are a common, albeit not ubiquitous, practice at sanctuaries.

look for on their bodies. Volunteers on the bird health check team were to check some birds every week during our shift(s) and then mark them off, with any notes of things amiss or possibly amiss. The hope here was that we would be able to notice changes earlier, outside of individual observation. For instance, if a bird had lost weight, that was a potential sign of concern, which might lead to weighing them every week for a few weeks rather than once a month. This seems to have been successful. In the words of Alicia, the Shelter Manager:

> We try to be more aware of what's going on with them. When I first started here, nobody did chicken checks, everybody would run around, then they would get sick, and then we would take them to the vet and they would die, because it was too late. So maybe now we're just more aware of things, we have a lot more volunteers that report what's going on, that's true of all our animals. I think we notice things better than we used to. (personal communication, June 2017)

Her comment about *noticing better* gestures toward how archiving is a practice of learning to see. This checklist created a critical proximity and distance for us as caretakers: rather than simply assessing based on emotion or impulse, we had information from previous weeks and months from which to learn. It seemed especially important for chickens, because, as Alicia explained, by the time we noticed that they were sick by our standards, they were often past the point of treatment. Some attributed it to chickens being prey animals and wanting to hide signs of illness. The checklist, though, enabled us to calibrate our observations: if a bird seemed to have lost weight based on how they looked to us as individuals, we could compare it to previous weeks.

A final example is a well-known chicken-specific sanctuary. Managed by Sue, the sanctuary keeps records of when chickens are implanted and how long the implant seems to prevent egg-laying in each chicken. Sue posts these calendars online, hoping that others will find them useful, because there are no studies on how long the implants last in chickens. While no

sanctuary I talked with mentioned these calendars, many had indeed learned about the implants through Sue. The use of the implants and how knowledge about them circulated is further discussed in the following section.

From witnessing futility to queer transposition

Friese and Clarke (2011:32) use the term "transposition" to "describe and compare how findings about different species, the infrastructures supporting different species and the bodies of different animals have been mobilized at different research sites." Transposition for them describes movement of scientific findings to a different *place* or a different *context*. By using medical drugs or procedures originally developed for another species (e.g., ferrets), or another context (capitalist production), sanctuaries transpose this knowledge. I suggest the term *queer transposition* captures this process at sanctuaries, as it gestures towards the way this work challenges gender norms, norms about reproduction, and orientation more broadly (Ahmed 2007, 2017). Queer transposition characterizes the development, use, and knowledge circulation of the implants given to chickens such as Pandora.

Hormonal implants are of relatively recent use in chickens: the first sanctuaries began to use them in the early 2010s. To understand how they came about, though, it is necessary to look both earlier in time and to chicken-specific sanctuaries. The founder of one of the first chicken sanctuaries, Sue, whom I referenced at the end of the previous section, talks about the challenges she faced in learning about chicken care:

> When we first started, I volunteered at a wildlife rehabilitation clinic and university raptor center for 2 or 3 years so I could learn critical care techniques. That was not quite satisfactory because their whole mindset is quite different from that of companion animals, it's all about being releasable. When there was something that under the right

> care could be treatable, the recommendation was always to euthanize. That was the best I could do, 'cause every other vet I reached out to, even ones that specialized in birds, said "no, we don't treat chickens." That was in the early 2000s. So I kept looking, then found one and then another and another. (personal communication, July 2017)

Sue's story reiterates how sanctuary chickens fall out of spaces of veterinary medicine: the significance of "undone science" to her work. It also, however, emphasizes how she dealt with it: by seeking education in wildlife rehabilitation and a raptor center, in part to learn animal care herself. She notes the significant differences in perspective (being releasable) with those of sanctuaries, who are not trying to re-wild or release chickens, but readily states there was still some knowledge that she could transpose to her sanctuary from volunteering with these groups.

Drawing on other information about animal care is a common refrain at sanctuaries: "We were very lucky to find Vicki, a former physician's assistant," Alicia of Heartland Farm Sanctuary commented. "She's been able to translate a lot of human medicine to animals … And then we've had people come through here, like Katie, a vet student" (personal communication, June 2017). If lucky, the presence of veterinarians and other medical professionals at sanctuaries is certainly not anomalous, and is a central way sanctuaries develop medical care practices. [include figure of different backgrounds] Many volunteers begin without considering themselves to have relevant expertise, but then it turns out that many are experts of some sort: "Just a lot of getting advice from different experts in different areas. If it's something we don't know, the veterinarian is taking care of it and we do the daily care" (personal communication, June 2017).

Sue describes a central struggle introduced in the previous section: "no matter what we were

doing about the housing, diet, lighting… we kept losing them to repro[ductive] disease" (personal communication, July 2017). Again, this focus on housing, lighting, and diet transposes knowledge about other birds and egg-laying to chickens. It also transposes knowledge about chickens into a sanctuary context, in some cases inverting information about how to increase egg-laying: exposing hens to more light is known to increase egg-laying, so simply by not doing so sanctuaries can mitigate this.

Again, though, this practice was of limited success. Sue continues: "I finally said, Dr X what can be done? He says Sue, he says, there's these implants we use for other birds, shuts down the ovaries. And I said, sign me up" (personal communication, July 2017). Sue's is the first known sanctuary to use implants, and many others found out about them through her. In summary, then, sanctuaries had to find the right veterinarians, and to find each other.

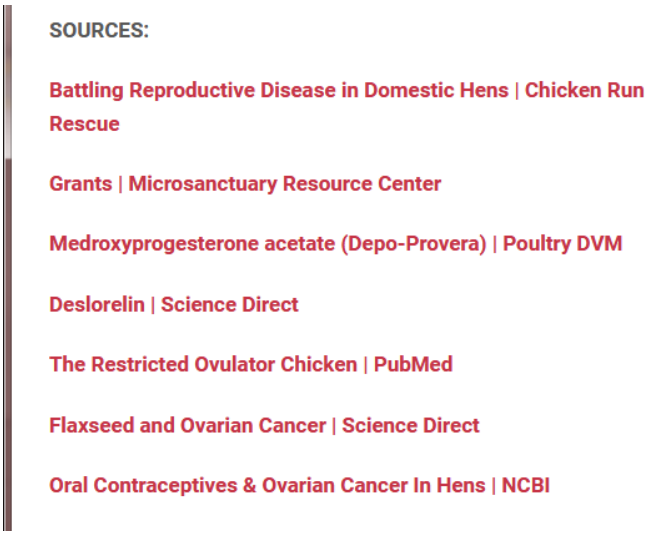
Additionally, the implant drug deslorelin is licensed in the US for ferrets, so companion animal veterinarians learn about it there. Other vets learned about it through working with zoo animals or birds, such as parrots, where it's used off-label. Still other vets learned about the implants through sanctuaries mentioning them. Further, their use is legally limited. As one veterinarian remarked: "We have to make sure we have the special ones [a specific brand] because the ones available in the US are not licensed for chickens. We have to order the ones from Australia to use off label" (personal communication, July 2017).

Likewise, sanctuaries find and learn from one another in various ways. Some of this knowledge circulation is through direct connections. "At first we had to call vets out for certain things,"

commented a manager of a sanctuary that started almost ten years ago. She noted that she at first visited several sanctuaries and talked with more established sanctuaries. Eventually, they became more established themselves. "Other sanctuaries contact us a lot now… And like at Sol Criations [another sanctuary] they'll have questions and call us, and we'll have the answers! It's nice" (personal communication, June 2017).

A final example of queer transposition is the Open Sanctuary Project. As a social-media based form of information-sharing among sanctuaries, it is similar to the Vegans with Chickens and the Global Coalition of Farm Sanctuaries facebook groups. I focus here on the Open Sanctuary Project because they are the most explicit about showing their information sources, because they are led by a person of color, and because they are not Facebook. Formed in 2018, the project researches and shares information about animal care best practices online, for chickens and 11 other species.

Especially worth looking at is the combination of sources they use. In their article on Deslorelin implants, their sources are shown at left. The first two are from sanctuaries and sanctuary organizations (the Microsanctuary Resource Center is founded by Triangle Chicken Advocates, a sanctuary). The next two are resources designed by and for veterinarians. The final three, however, are scientific research that uses hens as model organisms to study human



disease. The last is another process of inversion, although not directly from the egg industry this time. Because they are so prone to ovarian cancers themselves, hens are sometimes used as model organisms for studying ovarian cancer in humans.

The Open Sanctuary Project also flags sources considered to be "non-compassionate." Non-compassionate sources are sources in which the publisher and/or organization "advocates for or condones the use of animals or substances that come from their bodies for human benefit... While the data sourced may include elements of compassionate care, we believe that it's important to note that **we do not condone** these sources' views about animals and their role in the world." (Griffler 2018b). They reference non-compassionate sources because "While we would prefer that all information comes from sources such as fellow sanctuary founders and caregivers as well as veterinary journals, due to the current state of animal agriculture and the general attitude of animals being viewed solely as commodities for human benefit, much of the research available on a wide variety of topics comes exclusively from non-compassionate sources." (ibid) This deliberately compromising position, of not condoning the source's views but considering the information useful, echoes Happy Hen Chicken Rescue's practice of sending birds to the University of California food safety laboratories for necropsies. Sanctuaries, for the most part, seem to deliberately make these compromises frequently.

Through queer transposition, sanctuaries have developed practices for chicken care that build on and synthesize knowledge from many fields, about many species, and taking several approaches. This has helped build sanctuary medicine such that chickens going to the veterinarian are not always one-way trips, and it has also enabled sanctuaries to do some of the

work themselves. However, thus far the hormonal implants have been depicted in primarily a positive light, though in reality their use is limited and somewhat controversial. The following section speaks to this controversy, which reveals a third practice of witnessing: reorienting health.

Witnessing daily life: Reorienting health

Though many sanctuaries have knowledge of the implants through other sanctuaries and veterinarians, their use is debated. A common tension around the implants regards their cost and side effects. This, combined with a simple lack of access to them, leads many sanctuaries to not use them on some or all of their chickens. Because of this, and because even sanctuaries who use implants will have birds who are not implanted, at least for a time (because they are new, because of other health issues, or because of implants are wearing out but not yet replaced), there will often be egg-laying birds. This leads to a question often posed to sanctuaries: "what do you do with the eggs?" Responses to this question, as well as tensions around implants' cost and side effects, I suggest, reveal a third practice of witnessing. This practice is reorienting health – reconsidering what health means, in the context of farmed animals. As with the previous section, this can also be read as a queer practice, as it deals with themes of orientation, and also with those of desire, reproduction, and the family. As science studies scholars and health justice advocates have demonstrated, individual medical care has long been intertwined with political and political economic issues. Sanctuaries demonstrate how this is the case in chicken care by reorienting health.

The cost of implants varies based on the veterinarian, the number of implants given, and other factors. Harkening back to the issue of chickens' falling out of regulatory spaces, one veterinarian mentioned having to switch to only implants from Australia because of licensing issues, for instance. As such, implants range from seventy-five to several hundred dollars each, and can last from weeks to many months. Even at the low end, for a sanctuary that has thirty hens who need to be implanted once a year, this becomes a high cost, sometimes prohibitively so, for a sanctuary's budget. These debates, however, reveal the political economic dimensions of health among rescued chickens: that its costs are scaled to companion animal medicine, and that capitalism both causes many of their health problems and impedes sanctuaries and veterinarians from solving them.

Issues with side effects from implants are somewhat more complicated. Sanctuaries have seen birds seeming to get depressed and losing feathers and been concerned. However, there is more to this picture. Molting, a process of losing and growing new feathers (on either part or all of their body), is a side effect of the drug. Molting is an energy-intensive process and can be tiring to birds, hence their appearance as depressed. However, this side effect is relatively temporary compared to the usual lifespan of the implants, and the main longer-term side effect is missing feathers, which take longer to grow back. Though the birds may look strange, as Mary Britton Clouse says, the result is "nothing but healthy birds" (personal communication, July 2017). Thus, despite the cost, many sanctuaries choose to implant at least some of their birds. Pandora, for instance, was implanted, while others who laid less frequently or didn't seem to have health problems associated with laying, were not.

Reorienting health with respect to chicken reproduction is perhaps even more apparent in terms of chickens who still lay eggs at sanctuaries. Most sanctuaries with egg-laying hens and roosters cohabiting emphasize the importance of collecting eggs. As United Poultry Concerns (2014) states:

> Our role is to educate people to understand why we do not allow our hens to hatch chicks: First because this is a sanctuary and not a breeding or farming operation. Second because we do not support bringing animals into a world in which the majority are mistreated by our species and in which millions already exist who need caring and responsible homes.

In this respect, sanctuaries are *anti-natalist*, opposing breeding and reproduction, and this applies to sanctuaries' internal operations as well as their stated goals more broadly. This allows for vague exceptions, such as feral chickens in warm climates (e.g., Hawai'i), but otherwise raises what is to some an uncomfortable point, of stopping chickens from reproducing or parenting if they want to (Donaldson and Kymlicka 2015).

An extremely common next step after collecting them is that sanctuaries will feed eggs back to chickens. Recipes abound: some sanctuaries will crack them open, raw; others will scramble them, sometimes with vegetables; still others will hard-boil and mash them. This story entails emphasizing how domestic chickens have been modified. Where red jungle fowl, commonly believed to be the ancestor of the modern chicken, lay less than a dozen eggs per year, domestic chickens can lay almost one egg per day (Singer 2009). This point is less about naturalness as an essential characteristic, and more about situating contemporary chickens relative to other norms. Treating the red jungle fowl as one such norm, had chickens not been bred, they would still lay eggs, but they would not lay nearly as many. Likewise, as the shelter director of Farm

Sanctuary notes, "It sounds odd to a lot of people, but it is actually not far removed from their natural behavior, as wild chickens will eat broken eggs so they don't attract predators" (ibid.).

Sanctuaries thus feed eggs back to chickens, in part to restore nutrients lost through egg-laying. They make a point of including the shells, which contain calcium, as part of efforts to prevent "broken bones, osteoporosis and formation of shell-less eggs (which can be fatal)" (Singer 2009). A leading microsanctuary, Triangle Chicken Rescue, echoes and adds to this (Triangle Chicken Advocates n.d.):

> Hens will eat their own eggs! Indeed, hens love them. Plus, eggs provide much-needed calcium and other nutrients that can help hens, who have been genetically manipulated through centuries of selective breeding, avoid problems with egg binding and other deadly conditions.

This practice offers a different narrative about health, naturalizing and denaturalizing the egg-laying of contemporary chickens by detailing how hens have been bred to lay significantly more eggs than their ancestors. Further, they normalize the practice of chickens eating their eggs, through the arguments that wild chickens will eat eggs to avoid predators and that the eggs contain necessary nutrients that are lost in laying. These arguments also recognize or accord chickens agency in solving, to an extent, the problems posed by commodification. Nature becomes one source of knowledge with which to solve a problem, coupled with observation.

Also significant, though, is the reference to chickens' desires: "hens love them." It is thus not simply mechanistic agency of nutrient necessity, but the trickier question of the animals' desire. This builds on the previous debate about chicken desires at sanctuaries. Further, when

we collect eggs and feed them back to chickens at sanctuaries I have volunteered at, we feed them to roosters as well as hens, making the argument of nutrient necessity as the primary motivation a bit weaker. In the passage by Triangle Chicken Rescue, nutrients become a nice bonus, but desire is the primary motivator.[36]

The limits of witnessing

Throughout this chapter, I have portrayed sanctuaries and witnessing in a primarily positive and progress-oriented light. However, witnessing at sanctuaries has its limitations. Some of these are undercurrents throughout. Allen's comment that veterinarians have little knowledge about the problems sanctuary animals face when living out their lives past productive ages is still true. Sanctuaries still have limited means of supporting geriatric animals: we brought a

[36] This issue also speaks to the point of the "scrambled eggs and values" section in the hoarding chapter. Health is about chickens, not about human cultural desires for eggs. Even so, not all eggs will be used, harkening back to the weakening of waste/value dichotomies. Some eggs will be deliberately separated out, if, for instance, one or more hens in the flock are on medications. These will be thrown away. Others might simply be collected and missed: left in a barn refrigerator and forgotten, or brought straight to the compost pile or trash. Staff and volunteers might be too busy with other tasks: there might be actively sick animals, the volunteer who cooks the eggs might be away, or, depending on the flock population, there might be more eggs than volunteers and staff can cook and return. Sanctuaries, too, renarrate this, as in this passage from Free From Harm, a nonprofit that promotes sanctuaries:

> The popular notion that it is wrong to waste chickens' eggs by not eating them is based on the presumption that their eggs are actually ours to waste, further reinforcing the anthropocentric notion that the eggs belong to us, not them. So, based on this logic, if we discover abandoned and unfertilized turtle eggs or duck eggs or robin eggs, we are also compelled to steal them and make a meal out of them so as not to let them "go to waste." If we look more closely at this logic, we find that the issue is not one of food wasting, but of cultural conditioning. (from "the logic of not wasting eggs")

This passage calls into consideration the cultural construction of waste (e.g., Moore 2012), and in so doing, challenges both capitalist-anthropocentrism and chickens' domesticated legacy. Though they have been bred and domesticated to lay eggs for humans, simply *by wasting* them per capitalist-anthropocentric norms challenges, as the passage points out, whether they are "ours to waste." It also challenges the capitalist-anthropocentric norm of finding (economic) value and resisting waste.

five-year old rooster to an avian veterinarian after he started having balance problems, and the veterinarian's response was: "he's old. That doesn't happen." We wound up giving him anti-inflammatory medicine to help his joints, and he lived another year. However, roosters can often live much longer than this, which gestures toward the incompleteness of witnessing.

Further, as sanctuary-centric, witnessing can entail proliferating knowledge gaps which have already been addressed in veterinary practice, but have yet to be transposed to a sanctuary chicken context.

Additionally, witnessing is unstandardized, which enables creativity but is also intertwined with limited oversight. Though sanctuaries do witness one another through communicating with one another, directly and through social media, there are no methods of enforcement or broadly changing practices. One veterinarian discussed how a sanctuary she worked with was especially reluctant to euthanize when the animals seemed to be suffering and were past the point of help. Given sanctuaries' histories with veterinarians suggesting euthanasia when other options were present, this can be interpreted in the sanctuary's favor, but possibly not.

To that end, however, (or rather, to a different sort of end), sanctuary accreditation organizations such as the Global Federation of Animal Sanctuaries and the American Sanctuary Association have formed, which provide standards and support for sanctuaries. However, their reach to farmed animal sanctuaries has thus far been limited (although it is growing, and the subject of future work). GFAS, as its executive director states,

> has been around for about 10 years, so about 11 years ago, standards were being built. It was an expert roundtable. Sanctuary directors, experts on sanctuary, and when they

> could, vets. They had discussion, and whenever they could, they would bring in science. It was harder to bring in science on the farm animal side bc there's a whole lot of people who know everything about a broiler hen, a horrible word, for six weeks, but nothing about a two year old chicken. [or a five year old chicken like Gromit] So we try to be very scientific, but my sense of deep experiential vs peer reviewed scientific, we were more on the deep experiential side for farm animals (unlike, say, equines). (personal communication, July 2017)

Organizations for sanctuaries to witness one another are thus crucial, and growing.

Another limit is that sanctuaries can capitalize on companionship. In veterinary practice and at sanctuaries, there are tensions between seeing animals as companions, pets, commodities, and otherwise. In the previous chapter, I elaborated these tensions further, but in this section, I want to call attention to another part of the process of how some sanctuaries construct their sanctuary and work with veterinarians. This speaks to the processes of reorienting health and queer transposition, but in a way that can risk capitulating to the status of agricultural animals as commodities.

That is the financial language which is part of veterinary practice. Veterinarians often recognize that care can be expensive, which is a struggle that sanctuaries have addressed in ways discussed throughout this chapter. This was partly a product of the political economic hierarchy of chickens within the sanctuary, with chickens being less charismatic and thus more difficult to fundraise for. The struggle can be exacerbated by the issue that chickens are frequently among the most expensive to treat, because they tend to get sick and because farm vets proved to be unhelpful for chickens. Heartland described a transition from taking in chickens based on who would fit with existing flocks or in extra space, to being limited by their budget. When they switched from using a farm veterinarian, who was unhelpful for

chickens, to the University of Wisconsin veterinarians, their expenses rose, though the UW veterinarians were indeed more helpful. As Alicia commented:

> "because our vet bills have been so high, we're not taking in any more chickens [right now], unfortunately, because they're going to get the same care as everybody else, but it's like 4 times more expensive, so much more expensive. So we're like, no more, because the ones we get are older or come in sick or whatever. So unfortunately that's our constraints right now. We don't wanna take in anybody and not be able to take care of them." (personal communication, June 2017)

Thus Heartland limited the number of birds they would take in in large part because of financial constraints, given that chickens tended to require more veterinary care than other species. Perceived financial constraints on the part of veterinarians presented a similar issue, as veterinarians were often skeptical of someone wanting to spend money to treat a chicken. As a founder of Farm Sanctuary noted, "We had to be really assertive about that [working with veterinarians]. And once they realized we were going to pay the vet bills it was more okay." This challenge of being assertive has perhaps dissipated somewhat for sanctuaries with access to avian veterinarians, but the challenge of vet bills is still significant.

One potential limit of witnessing is thus its reliance on sanctuaries with economic privilege. A leading chicken sanctuary stated of their work with veterinarians:

> Our feeling is by working with a companion animal vet, we pay top dollar for the services because number one if your mission is to elevate the status then you've gotta put your money where your mouth is and not try to do things on the cheap. So we're fortunate, we have supporters who know that that's what we're doing. And the vet bills, I think they're gonna build a wing just on what we've spend on Tammy. Now there's a sign outside saying we treat pet chickens. Once Dr. K got that we were serious, that we weren't looking for cheap medicine, we wanted quality medicine, he got it that there was a market there. When you value an animal enough to value that kind of care, someone's going to provide it. (personal communication, July 2017)

The emphasis on *creating a market* for veterinary care pivots the emphasis on knowledge to an emphasis on money. Value is temporarily reduced to financial value. Worth becomes worth

spending money on. This contrasts with much of the work of sanctuaries, which entails exploding the concept of value to that beyond profit.

A further and associated danger is promoting privatized knowledge: sanctuaries rely on being able to do certain kinds of medical care in house, as described in the sections above. This both builds practical knowledge and ways of seeing among sanctuary workers, and makes sanctuary work more (financially) accessible. It is indeed fortunate that this sanctuary has supporters who finance the paid-professional (as opposed to unpaid professional) labor of veterinarians, but if this were the case more broadly, many sanctuaries would simply be unable to exist. While the contrast between "cheap" and "quality" medicine is true to a certain extent under capitalism, the two are indeed compatible at other sanctuaries, in certain cases.

Conclusion: Witnessing as activist science

Witnessing is fallible and limited. Further, it can result in the use and circulation of misinformation. However, what it offers is a process and ethos of medical knowledge production different from that of much laboratory science. I have shown how witnessing at sanctuary works through three queer practices: aspirational archiving, queer transposition, and reorienting health. I have also shown how it fails and is incomplete by necessity.

To conclude this chapter I want to discuss this significance of witnessing as activist science, answering the question "how does this matter?" First, explicating witnessing as scientific method and ethos is especially important in the current moments of sanctuaries. Sanctuaries are at a pivotal moment, where they are exerting greater influence on medical practice and also

starting to self-regulate further (the latter is the subject of a future project). Thus it is important to argue *now* for the power of witnessing, as it could be abandoned for processes that might lose some of its advantages: animal testing, centralized veterinary knowledge. Witnessing is all we have, and though we need more resources to support it, it is likely all we need as an approach.

At sanctuaries, witnessing offers a way of learning about nonhuman animals that is distinct from, on the one hand, the randomized controlled trials of laboratory science. On the other hand, it offers a way of producing knowledge and caring for animals that **foregrounds desires**. Witnessing offers a different and complemetary perspective relative to animal care. Care, particularly animal care, has recently been critiqued as potentially patronizing and controlling. Giraud and Hollin (2016) describe how discourses of care are put into practice, not to accommodate the affective needs of animal subjects, but to manipulate them into compliance with research protocol and ensure that experiments "progressed more smoothly" (41). In other words, care was used not to challenge instrumentalization, but to support it. In the sanctuary world, Donaldson and Kymlicka (2015:56) caution against paternalism, in which "structures and routines" can be "created as much for the convenience and legal protection of caregivers and administrators as for the needs and wishes of residents." The institutional structure of sanctuaries and the discourse of care thus leaves sanctuary residents with "a hard shell of restrictions" that can be difficult or impossible to contest. At the same time, theory on care recognizes the importance of empathy (Gruen 2015), the productive and critical entanglement of "labor/work, affect/affections, ethics/politics" (Puig de la Bellacasa 2017:5), and the importance of recognizing power inequality in dependency and interdependency (ibid., Taylor

2017). Witnessing, I argue, can indeed be situated alongside these accounts, but offers a corrective to care in its attentiveness to seeing desires and recognizing hierarchies.

More broadly, Robbins and Moore (2013:16) introduce the concept of "ecological anxiety disorder" to talk about scientists' anxieties about being both overly normative (as in concepts such as 'invasive species') and not normative enough (as in how their results have implications for human impacts on the environment). To resolve this paralyzing contradiction, they call for "directly confronting what we want as scientists and citizens and acknowledging where these desires put us relative to others in the world." In this chapter, I have argued that sanctuaries do exactly this, through witnessing as a scientific method. At sanctuaries, humans intervene with vested interests. One of these interests is seeing and foregrounding the desires of sanctuary residents. Caregivers who witness are coming from a perspective of trying and learning to read desires of individuals and integrate them into structures (see also Puig de la Bellacasa 2017 and Taylor 2017).

Second, witnessing is **non-identitarian**. Sanctuary caregivers come to the sanctuary with different backgrounds and training in animal care, including human care. In this chapter, I have discussed volunteers and staff with backgrounds in wildlife rehabilitation, nursing and gynecology, animal testing, animal shelter work, animal welfare science, and biology. Further, sanctuaries draw from different bodies of knowledge and approaches to animal care: the limits of small animal, large animal, and avian medicine become strengths when considered from a non-identitarian perspective, combined with medical research and animal behaviorists. Recalling the sanctuary that tried housing, diet, and lighting before turning to hormonal

implants, each of these reflect different approaches, which could easily be foreclosed upon were the sanctuary to have gone to a professional focusing only on husbandry or only on medicine. This therefore facilitates queer transposition, and also speaks to the power of activist-scientist and veterinary collaboration more broadly (we could say scientist/lay, but I'm attempting to break down that boundary by emphasizing the formal and informal training of caregivers).

Third, witnessing is **anti-assimilationist**. This contrasts with scientist-led and scientist-centric movements that are characterized as public engagement with science (PES) and/or citizen science. Sanctuary affiliates are indeed trying to get scientists and medical practitioners to act differently, as in the use of implants for chickens. However, crucial to the work of most sanctuaries is access to knowledge and tools themselves, rather than relying on veterinarians for every health issue. This is perhaps most obvious in organizations such as the Open Sanctuary Project, but it is also prevalent throughout sanctuaries. This I would argue is a strength of witnessing

Fourth, the ethical focus of witnessing is at the **site of relation** and/or knowledge production. This is worth mentioning because, despite the names of groups such as Vegans with Chickens, sanctuary work contrasts with veganism in this respect. Veganism is traditionally considered to have its focus at the site of consumption: refusing to consume animal products and consuming alternatives in order to enact change. Vegan materials reference the number of animals saved by becoming a vegan, for instance. Sanctuaries, instead, directly rescue animals, and their ethical/political focus is on the support of the animals. In so doing, sanctuaries will muddy the waters of veganism as a politics of purity in favor of a politics of cultivating

interspecies relations. The Open Sanctuary Project, for example, references studies done on chickens as model organisms, acknowledging that these are "non-compassionate," but helpful nonetheless. Likewise, sanctuaries will use ointments made from sheep (Bag Balm), chicken food made from other chickens[37], and so forth.

Fifth, and most broadly, this chapter has expanded understandings of witnessing as a concept, particularly as it applies to situated knowledge. Through combining activist, STS, and feminist perspectives on witnessing, this chapter has shown that witnessing in activism is also a form of knowledge production, in addition to a form of protest. It is undergirded by a critical proximity and distance: it is neither an empathic perspective, where emotions could predominate over other forms of information production, nor a neutral-distant perspective. Further, drawing on Ahmed's work on the contingency of pain and looking at the case of sanctuaries, witnessing at sanctuaries is a way of expanding the practice of situated knowledge production. Situated knowledge (Haraway 1997) is historically based on identity – questions of who I am or who we are as a marginalized group – from which it offers the lessons that all knowledge is situated and that certain perspectives might be more valuable than others in answering certain questions (e.g., Fujimura 2006). In this paper, situated knowledge is one based on identity, but also on (species) difference; i.e., questions of **how we relate.** Witnessing thus expands the field of situated knowledge production from one of including or focusing on marginalized groups to also consider the power relations therein.

[37] This is the case for most chicken food, which includes byproducts from animal agriculture, such as baby roosters. For this reason, some sanctuaries turn towards food specified for "birds" rather than chickens.

Conclusion

"[Dependency] demands intimacy … there has to be involvement and interaction; there can be no illusion of independence. This vulnerability can create frightening opportunities for coercion, but it also holds the potential for new ways of being, supporting, and communicating – new ways of creating meaning across differences in ability and species" (Taylor 2017, 217)

Starting in the 1980s, farmed animal sanctuaries in the United States have been rescuing, rehabilitating, and caring for agricultural animals – animals who have been bred to be commodities. This project examined the science, politics, and alternative economies produced by farmed animal sanctuaries. I treated sanctuaries as liminal sites that care for rescued animals while critiquing the breeding processes that created them. In so doing, sanctuaries accept and negotiate the intimacy and vulnerability created by the dependency relationship of care. How they do so, however, makes a "mess" of philosophical principles and theories (Pachirat 2018) in favor of more complicated, yet mundane, negotiations. This project began with these everyday negotiations.

In this project, I asked the following questions:

1. What is the landscape of chicken sanctuary in context of contemporary farm sanctuary movements?
2. What is the political economy of chicken sanctuary?
3. How do sanctuaries contribute to new ways of conceptualizing animals?
4. How do sanctuaries and their networks develop, catalyze, and circulate scientific and medical knowledge about chickens?

My dissertation took several major steps toward answering the above questions, through

braiding together methods ranging from ethnography to Q sorts, alongside visual methods such as mapping and cartooning. I literally and analytically mapped the rise of chicken sanctuary movements. Through using the concept of a safe space as an analytic lens, I identified four threads of chicken rescue and sanctuary, with different but overlapping priorities and perspectives (Q1). Then, drawing on theories of hoarding as deviant accumulation (e.g., Herring 2014), I traced how sanctuaries decommodify chickens, beginning with taking them out of capitalist production regimes (Q2). Hoarding, I claim, is a pivot point in the decommodification process, which can be liberatory or problematic – and often both. Next, building on debates between and within individual sanctuaries and between sanctuaries and street activists, I speculate that sanctuaries are engaging in cultural change, through rehabilitating animality. In studying this, I found that disagreements often pivot on whether chickens are considered "natural" and how the terms is defined, and identified several concepts that characterize sanctuary chickens (Q3). These concepts, I suggest, can contribute to rehabilitating animality, broadening our social imaginations about the possibilities for interspecies and intraspecies relations. Lastly, I explored how sanctuaries develop medical knowledge about chickens, arguing that sanctuary science bridges understandings of witnessing in the history of science, feminist science, queer/feminist theory, and activism (Q4).

The significance of this project is threefold in terms of audiences. It contributes to scholarship on the co-construction of political economy and scientific knowledge. However, unlike most of this work, which focuses on how capitalism influences scientific knowledge (e.g., Sunder Rajan 2006, Goldstein and Johnson 2015), it examines the challenge of decommodifying life.

Thus, it contributes to debates concerning decommodification, offering hoarding as one approach and process. It also contributes to debates about interspecies relations, presenting alternative ways of conceptualizing and understanding farmed animals, and exploring tensions therein. Then, this project discusses the process of doing undone science (Frickel et al 2010), and demonstrating how witnessing is both a process of knowledge production and mundane political intervention. Additionally, this work speaks to the growing movement in the humanities and social sciences toward visual storytelling, adding a multispecies dimension to fields such as graphic medicine. Lastly in terms of academic audiences, the critical politics of citation this project offers demonstrates, first, that it is possible to create, draw on, and focus on alternatives to hegemonic (white, male, ableist, white supremacist) canons. In so doing, it also contributes to alternative canons, particularly in critical animal geographies.

Second, this work is significant to sanctuaries and their networks. Scholarship on sanctuaries rarely focuses on agricultural animals, and when it does, it frequently sees them as institutions that should be oriented toward animal rights in a liberal society, or in a primarily critical lens, oriented towards pointing out the problems with factory farming (Baur 2008, Donaldson and Kymlicka 2015). Such scholarship is of course still valuable! Even so, I hope that this dissertation has demonstrated that sanctuaries do considerably more than that, acting (also or instead) as sites of knowledge production, novel social relations, and novel political economies. In this vein, it has shed light on chicken sanctuaries, as part of farmed animal sanctuary movements but with ties to other bird sanctuaries. Several waves of the chicken sanctuary movement – specifically, ecofeminist approaches and the microsanctuary movement – may

shed light on other sanctuary approaches. It has also, hopefully, shed light on some of the disagreements within and between and challenges and legacies of sanctuaries.

Finally, there is widespread popular dissatisfaction with the way contemporary industrial agriculture works, but further disagreement about alternatives. My inquiry into the daily workings, aspirations, and compromises of sanctuaries responds to these social quandaries in what I hope is an unromantic way. My use of visual ethnography (comics, illustrations, maps) allows the work to speak to a larger audience.

Like many projects, the process of doing this research and crafting this dissertation raised additional questions. I conclude, therefore, with themes this project did not address or only began to address that might be (and in some cases, are) topics for future work. I introduce these themes, discuss how they emerged and what, if anything, I or others have done to address them, and how they might figure into future research.

Ethics in multispecies research

While doing my dissertation I found that multispecies ethnography often falls in between human subjects research, regulated by institutional review boards, and animal subjects research, regulated by animal care and use committees. I ran into issues of, for example, whether to give sanctuary animals their real names, how and what to write about sanctuaries whose practices themselves seemed unethical (e.g., what is now Chapter 4), and what kinds of medical care I could and should participate in as a researcher. Some of these I have discussed in Chapter 7, whereas others I have deliberately not discussed or excluded from my research.

I have taken several steps to begin to address this ethical and regulatory gap that fall outside of the scope of this dissertation but well within the scope of future research and service.

After graduation, I will read my dissertation material auto-ethnographically to write on this regulatory gap, and will conduct a literature review of ethics in critical animal studies research. Meanwhile I have been and will continue organizing activities to build review and support systems to discuss these issues. I organized a panel session on this topic at the 2019 American Association of Geographers meeting. We explored themes such as (quoted from the call for participation):

- the use and limits of existing regulations that apply to multispecies ethnography/multispecies geographic research
- ethical, political, and/or emotional challenges of multispecies research
- principles for multispecies research
- strategies for ethical multispecies research
- the use of informal or quasi-formal peer review

Building out of this, a colleague and I are putting together a special issue on the topic, which at time of writing we are in the process of submitting to *ACME: A Journal of Critical Geography*.

An additional complication of organizing a special issue is that the animal studies literature and animal activism literature is disproportionately white, cis- and heteronormative, and ableist. We thus included a statement in the call that "We thus seek in this special issue to foreground and amplify the work of scholars and scholar-activists of underrepresented and/or marginalized identities. To that end, we especially invite scholars and scholar-activists of color, queer scholars, differently abled scholars, and majority world scholars to participate. Further, we encourage all submissions to engage critically with the politics of citation and

amplify a diverse set of voices." The results were amazing and fascinating! We received over 20 submissions from a diverse group of scholars and scholar-activists in working in the United States, Canada, the Netherlands, Australia, New Zealand, and Kenya, Indonesia, the UK and elsewhere. In the selection process, we turned down proposals that did not in some way meet this part of the call, even when they did discuss ethics in multispecies research.

Consent beyond forms

This might seem like a tangent, in that it's not about nonhuman animals! But it occurred while presenting my research and it's about privilege and challenging the racial hierarchies within humans, in which people of color are simultaneously animalized and seen as less than human (Wynter 2015, Ko and Ko 2017). I participated as a panelist at an AAG session this spring titled "Critical Q Methodology," on the basis of using Q in this dissertation. During a go-round in which we shared our experiences with Q, another panelist talked about getting hired to do a Q study involving indigenous and settler-colonial perspectives about land. At least one indigenous person didn't want to do the study, and the scholar reported saying something like "I drove four hours to get here and I'm not leaving without a sort." After this, according to the scholar, they did the sort, and the scholar agreed to emphasize one of the points that was especially important to the sorter. I pushed them on how they violated the person's consent and exploited the difference in structural privilege. The panelist appeared to me to be white and masculine, and identified themselves as a relatively senior scholar. They said that otherwise they wouldn't have been able to include their perspective. "Then you don't get to include their perspective, or you have to find another way to include it that respects them," I

remarked, forcefully, agitated. Another presumably white participant stepped to their defense, "I've had some sorts where I've had to *cajole* people into participating, too."

I'm not sure where else to go with this now, except to say that respecting consent is so important, and so basic, in doing ethnographic work. This includes respecting the blatant and obvious "no," and also creating space for saying "no" in more subtle ways, and navigating those respectfully.

I'm writing about it here, because I want to make a few connections and comparisons. First, I had to not write about certain things in my research because it was important to me to respect the people I was working with. Unlike the regulatory gaps for multispecies research, human subjects work such as Q sort interviews are regulated. Of course, not all regulations are ethical, but in this case, IRB should be helpful... but wasn't. So, another part of the issue in research ethics is how to prevent these sorts of things from happening, and figuring out what to do when they do. At this point, all I'm doing is hoping that calling that person out meant something to them and the other participants in the session, and including this here to spark conversation.

Intersectionality in animal rescue

My dissertation focused primarily on animal care at and in association with sanctuaries, yet raised questions about intersectionality in the rescue process itself, and rescue can involve other institutions. As discussed, sanctuary chickens come from different sources: backyard flocks, farms of various scales, Kaporos rituals, and cockfighting, among others. Kaporos is a

purification ritual associated with the Jewish New Year among Orthodox communities, and centers on chicken sacrifice. The sins of individuals are allegedly transferred to chickens, who are then killed. This ritual is legal and protected in the United States. Kaporos is protested by sanctuaries and by some Jews, and some Kaporos chickens are rescued each year through private means. I was involved with transporting Kaporos chickens to sanctuaries several steps and organizations after they were rescued, but I was not directly in the rescue process. However, this project is less about the rescue process itself and more about the discourses surrounding it, although it certainly includes how those discourses are material. As someone with Jewish heritage, I am in a position to critique this ritual somewhat from within.

By contrast, in some respects, cockfighting is a practice associated with Mexican, Southeast Asian, and American South communities. It is illegal in all states, but is still somewhat widespread and associated with transnational networks. The American Society for the Prevention of Cruelty to Animals intervenes in cockfighting as part of its work against blood sports, and sanctuaries will often work with the ASPCA as well as local law enforcement agencies. One way into examining this is through the recent cockfighting ban in Puerto Rico, an action that should be critiqued as a colonialist move, even as it is simultaneously good for individual birds. Thus, though animals might be rehabilitated, the ban as made might not actually help with rehabilitating animality. Likewise, working with law enforcement means working with a white supremacist institution. A more medium and long term study might involve working with the ASPCA, which would entail drawing on my experience doing emergency response, as the ASPCA, in their rescue efforts, uses similar protocol.

Sanctuary medicine

There are significant gaps in sanctuary medicine, a point that this dissertation has hopefully shed light upon. However, sanctuary medicine is a dynamic field. Veterinarians I interviewed stated that they are learning about chickens through working with sanctuaries, including learning new treatments. This combined with the backyard chicken movement is influencing veterinary education: many short courses have become available over the last several years in chicken care, through veterinary organizations and sanctuaries (Chicken Run Rescue and Clorofil). Further, sanctuary practices are evolving: during the time I was at Heartland, several important changes happened. We went from a trip to the vet being a one way trip for euthanasia to a trip having a possible, sometimes likely, return with treatment. We also developed practices of occasionally bringing animal friends along to accompany sick chickens. Finally, we developed record-keeping processes, of different things to check for on each bird, and the bird group would do this, ensuring that each animal was checked at least once a month, and more frequently if something was amiss. For example, if a chicken was losing weight, this was a possible indicator of something amiss, so we would switch to weighing them once a week. We had a mailing list for bird people, to communicate issues and follow up.

However, despite this growth, much is still unknown: veterinarians note that many medications are unavailable for use on chickens because they are considered "food animals." With the continued rise of sanctuaries, as well as the backyard chicken movement (Blecha and Leitner 2014), this may change to become more or less stringent. It may entail new category work, assimilationist or not: if a "pet" category becomes viable and regulated for chickens, this could be good or bad for individual chickens or chickens as a population, in that individual

animals may be granted exceptions while reinforcing chickens' status as agricultural animals. Questions of what to do with aging animals – not animals who are old, per se, but animals who are older than intended for production – are still unanswered.

Finally, on the edges of the sanctuary community, animal caretakers are increasingly collaborating with high schools and colleges to develop prosthetics for differently abled chickens and other animals. There is debate about whether this is appropriate animal care or whether it should be something done by licensed veterinarians, in that it could undermine the status of chickens as "school projects" rather than subjects deserving of care. Alternately, these programs are indeed providing innovative care for the animals they work with, enabling a better quality of life.

This, I suspect and hope, will be the overarching theme of my next long-term project.

Sanctuary regulation

Sanctuary medicine operates in a dearth of knowledge and institutional norms. Sanctuary regulation suffers and succeeds in a similarly networked space. However, there have been changes in recent years in voluntary regulations, as the major animal sanctuary accreditation organization, the Global Federation of Animal Sanctuaries, is attempting to reach out more to farmed animal sanctuaries, and in so doing, is rewriting their chicken care standards, and plans to rewrite other farmed animal care standards as well. Likewise, newer organizations such as The Microsanctuary Movement and The Open Sanctuary Project are writing about best practices for chicken care, and as the sanctuary movement develops, sanctuaries are looking

for ways to hold one another accountable. This area of research could be another part of a project focusing especially on sanctuary medicine.

Other farmed animals, other sanctuaries

In places this project tacitly and/or explicitly addressed issues associated with other farmed animals. However, for the most part, I focused on chickens. This had advantages in terms of offering focus and allowing to trace sanctuary medicine more specifically. Moreover, as animals considered the most marginalized, even at sanctuaries, chickens perhaps especially bring the challenges faced by sanctuaries into relief.

However, inherent to this was a limit in scope, leaving out Baine, the paralyzed goat who travelled around on a cart built by university engineering students, in collaboration with a sanctuary. Chicken medicine is premised on chickens falling into and out of specific medical categories, such as pets and wild birds. On the other hand, chickens are becoming increasingly familiar to parts of society through the backyard chicken and urban agriculture movements. This could be said to be the case to a much more limited extent in terms of pigs. There is more knowledge about medical conditions of larger farmed animals, such as cows and pigs, because they are individually worth more to farmers, and because veterinarians are trained in their care. However, there is less knowledge about older animals, akin to the issues with chickens aging.

Likewise, chickens are for the most part not considered "cute" by much of society – unlike pigs, for example, who often raise a simultaneously cute/disgusting register. Other farmed

animals thus might have a significantly different representational politics. As sanctuaries noted, other animals *are* better for fundraising. The work of Kathryn Gillespie (2018) on cows discusses cows at sanctuaries in particular, and is a start to this. Likewise, other work on sanctuaries (Abrell 2016, Donaldson and Kymlicka 2015) moves this forward. However, species-specific work and work on the departure of sanctuaries from farms would undoubtedly answer the original questions of my dissertation differently.

Finally, this work focused on sanctuaries in the United States. I suspect there would be many similarities with farmed animal sanctuaries internationally, but also significant differences.

References

[Anonymous]. n.d. Sanctuaries: A Website of Animal Place. Available at http://www.sanctuaries.org/. Last accessed 5 July 2019.

[Anonymous]. n.d. Farm Animal Sanctuary Directory: Visit Shelters Worldwide. Available at: https://www.vegan.com/sanctuaries/. Last accessed 5 July 2019.

[Anonymous]. n.d. Refuges and sanctuaries for farmed animals that promote veganism. An *All-Creatures.org Links Directory Page*. Available at https://www.all-creatures.org/links/sanct.html. Last accessed 5 July 2019.

[Anonymous]. 2019. Food Animal Residue Avoidance Databank. Last accessed 22 April 2019, available at: http://www.farad.org.

[Anonymous]. 2018. United States Code Annotated. Title 7. Agriculture. Chapter 54. Transportation, Sale, and Handling of Certain Animals. Michigan State University: Animal Legal and Historical Center. Last accessed 22 April, 2019. Available at: https://www.animallaw.info/statute/us-awa-animal-welfare-act.

[Anonymous]. 2018. DVM Program. UC Davis Veterinary Medicine. Last accessed 23 April 2019. Available at https://www.vetmed.ucdavis.edu/dvm/dvm-program.

[Anonymous]. 2018. Curriculum Design. UC Davis Veterinary Medicine. Last accessed 23 April 2019. Available at https://www.vetmed.ucdavis.edu/dvm/dvm-curriculum-overview.

Abrell, E. L. 2016. "Saving Animals: Everyday Practices of Care and Rescue in the US Animal Sanctuary Movement". *CUNY Academic Works.* https://academicworks.cuny.edu/gc_etds/1345.

———. 2017. Introduction: Interrogating captive freedom: the possibilities and limits of animal sanctuaries. *Animal Studies Journal* 6(2): 1-10.

Adams, C. 1990. *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory*. New York: Bloomsbury Academic.

Ahmed, S. 2004. *The Cultural Politics of Emotion*. New York: Routledge.

———. 2017. *Living a Feminist Life*. Durham: Duke University Press.

Animal Charity Evaluators. 2017. "What is cause prioritization?" Last accessed 2 November 2019. Available at https://animalcharityevaluators.org/advocacy-interventions/prioritizing-causes/.

Ankeny, R. and S. Leonelli. 2011. "What's so special about model organisms?" *Studies in the History and Philosophy of Science Part A* 42(2): 313-323.

Bakker, K. 2004. *An Uncooperative Commodity: Privatizing Water in England and Wales.* Oxford: Oxford University Press.

Baur, G. 2008. *Farm Sanctuary: Changing Hearts and Minds About Animals and Food*. New York: Touchstone.

Blecha, J. and Leitner, H. 2014. Reimagining the food system, the economy, and urban life: New urban chicken-keepers in US cities. *Urban Geography* 35(1): 86-108.

Bohanec, H. 2013. *The Ultimate Betrayal: Is There Happy Meat?* Bloomington, IN: iUniverse.

Boostrom, R. 1998. "Safe spaces": Reflections on an educational metaphor. *Journal of Curriculum Studies* 30(4): 397-408.

Braidotti, R. 2006. Posthuman, all too human: Towards a new process ontology. *Theory, Culture and Society* 23(7-8): 197-208.

Britton-Clouse, M. 2008. Understanding rooster behavior and rooster socialization. Chicken Run Rescue. http://www.chickenrunrescue.org/Rooster-Behavior. Last accessed 8/13/18.

Bruilliard, K. 2016. New technique may prevent the gruesome deaths of billions of male chicks. *The Washington Post.* https://www.washingtonpost.com/news/animalia/wp/2016/10/27/new-technique-may-prevent-the-gruesome-deaths-of-millions-of-male-chicks/?noredirect=on&utm_term=.face4cbe94ab.

Butler, J. 2004. *Precarious Life: The Powers of Mourning and Violence*. New York: Verso. Select chapters.

———. 2009. *Frames of War: When is Life Grievable?* New York: Verso. Select chapters.

Callon, M. 1986. Some elements of a sociology of translation: Domestication of the scallops and the fisherman of St. Brieuc Bay. In J. Law (Ed.) *Power, Action and Belief: a new Sociology of Knowledge? Sociological Review Monograph*. London, Routledge.

Castree, N. 2003. Commodifying what nature? *Progress in Human Geography* 27 (3): 273-297.

Clarke, A. 2005. *Situational Analysis: Grounded Theory After the Postmodern Turn*. Thousand Oaks: Sage.

———. 2003. Situational analyses: Grounded theory mapping after the postmodern turn. *Symbolic Interaction* 26(4): 553-576.

Clark-Parsons, R. 2018. Building a digital Girl Army: The cultivation of feminist safe spaces online. *New media & society* 1-20.

Clark-Parsons, R. 2019. The work of classroom safe spaces. *Teaching Media Quarterly* 7(1): 2-11.

Collard, R-C. & J. Dempsey. 2013. Life for sale? The politics of lively commodities. *Environment and Planning A* 45(11):2682-2699.

Collard, R-C. 2012. Cougar-human entanglements and the biopolitical un/making of safe space. *Environment and Planning D: Society and Space* 30: 23-42.

———. 2014. Putting animals back together, taking commodities apart. *Annals of the Association of American Geographers* 104 (1): 151-165.

———. 2015. "Ethics in research beyond the human." In *The Routledge Handbook of Political Ecology*. T. Perreault, G. Bridge, J. McCarthy, Eds. Routledge.

Collective, Counter Cartographies, C. Dalton, and L. Mason-Deese. 2012. Counter (Mapping) Actions: Mapping As Militant Research. *ACME: An International Journal for Critical Geographies* 11(3): 439-466.

Community Economies Collective. N.d. Diverse Economies Iceberg. Available at: http://communityeconomies.org/index.php/about/community-economies-research-and-practice. Last accessed 5 July 2019.

Cooney, N. 2015. How to dominate Facebook. Available at https://mercyforanimals.org/dominate-facebook. Last accessed 5 July 2019.

Dave, N. 2014. Witness: Humans, animals, and the politics of becoming. *Cultural Anthropology* 29(3): 433-456.

Davis, A and Boggs, G. L. "On Revolution: A Conversation Between Grace Lee Boggs and Angela Davis." Empowering Women of Color Conference: A Holistic Approach: Justice, Access and Healing. March 2, 2012. Transcript. https://www.radioproject.org/2012/02/grace-lee-boggs-berkeley/. Accessed 5 July 2019.

Davis, K. 2019. Farmed Animal Sanctuaries. Available at http://upc-online.org/sanctuaries/. Last accessed 5 July 2019.

Djohari, N., Pyndiah, G. and Arnone, A. 2018. Rethinking 'safe spaces' in children's geographies. *Children's Geographies* 16(4): 351-355.

Domosh, M. 2003. Toward a more fully reciprocal feminist inquiry. *ACME: An International E-Journal for Critical Geographies* 2(1):107-111.

Donaldson, S. and W. Kymlicka. 2015. Farmed animal sanctuaries: The heart of the movement? A socio-political perspective. *Politics and Animals* 50-74.

Donovan, J. and C. Adams, eds. 1996. *Beyond Animal Rights: A Feminist Caring Ethic for the Treatment of Animals*. New York: Continuum.

Douglas, M. 1966. *Purity and Danger*. New York: Routledge.

Eden, S., A. Donaldson, and G. Walker. 2005. Structuring subjectivities? Using Q methodology in human geography. *Area* 37(4): 413-422.

England, K. 1994. Getting personal: Reflexivity, positionality, and feminist research. *Professional Geographer* 40(1):80-89.

Epstein, S. 2008. "Beyond the standard human?" Martha Lampland and Susan Leigh Star (Eds): *Standards and Their Stories: How Quantifying, Classifying, and Formalizing Practices Shape Everyday Life*. Ithaca: Cornell University Press.

Foer, J. S. 2009. *Eating Animals*. New York: Little, Brown and Company.

Fox R, 2006. Animal behaviours, post-human lives: everyday negotiations of the animal-human divide in pet-keeping. *Social & Cultural Geography* 7: 525-537.

Frickel, S., S. Gibbon, J. Howard, J. Kempner, G. Ottinger, and D. Hess. 2010. Undone science: charting social movement and civil society challenges to research agenda setting. *Science, Technology and Human Values* 35(4): 444-473.

Friese, C. and A. E. Clarke. 2011. Transposing Bodies of Knowledge and Technique: Animal Models at Work in the Reproductive Sciences. *Social Studies of Science* 42(1): 31-52.

Friese, C. 2013. *Cloning Wild Life: Zoos, Captivity and the Future of Endangered Animals*. New York: New York University Press.

Frost, R.O. and G. Skeketee. 2010. *Stuff: Compulsive Hoarding and the Meaning of Things*. New York: Mariner Books.

Frost, R. O., G. Skeketee, and D.F. Tolin. 2011. Comorbidity in hoarding disorder. *Depression and Anxiety* 28: 876-884.

Frost, R. O., G. Patronek, A. Arluke, and G. Steketee. 2016. The hoarding of animals: An update. Psychiatric Times 32(4). http://www.psychiatrictimes.com/addiction/hoarding-animals-update.

Fusari, S. 2017. What is an animal sanctuary? Evidence from applied linguistics. *Animal Studies Journal* 6(2): 137-160.

Gallagher, K. and D. Porock. 2010. The use of interviews in Q methodology: Card content analysis. *Nursing Research* 59(4): 295-300.

Gentle Barn, The. n.d. A brief history. https://www.gentlebarn.org/about-us/. Last accessed 15 August 2019.

Gibson-Graham, J. K. 1996. *The End of Capitalism (As We Knew It)*. Minneapolis: University of Minnesota Press.

———. 2006. *A Postcapitalist Politics*. Minneapolis: University of Minnesota Press.

———. 2008. Diverse economies: performative practices for 'other worlds.' *Progress in Human Geography* 1-20.

Gidwani, V. and R.N. Reddy. 2011. The afterlives of 'waste': Notes from India for a minor history of capitalist surplus. *Antipode* 43(5): 1625-1658.

Gieryn, T. 1983. Boundary-work and the demarcation of science from non-science: Strains and interests in the professional ideologies of scientists. *American Sociological Review* 48(6): 781-795.

Gillespie, K. 2018. *The Cow With Ear Tag #1389*. Chicago: The University of Chicago Press.

Gillespie, K. and R. Collard. 2015. Critical Animal Geographies: Politics, Intersections, and Hierarchies in a Multispecies World. New York: Routledge.

Gillespie, K. 2014. Sexualized violence and the gendered commodification of the animal body in Pacific Northwest US dairy production. *Gender, Place & Culture: A Journal of Feminist Geography* 21(10): 1321-1337.

———. 2016. Witnessing animal others: Bearing witness, grief, and the political function of emotion. *Hypatia* 31(3): 572-288.

Gireau, E. and G. Hollin. 2016. Care, laboratory beagles and affective utopia. *Theory, Culture and Society*. 33(4): 27-49.

Global Federation of Animal Sanctuaries. N.d. What is a Sanctuary. Available at https://www.sanctuaryfederation.org/about-gfas/what-is-a-sanctuary/. Last accessed 5 July 2019.

Goldstein, J. and Johnson, E. 2015. Biomimicry: New Natures for and Against Capital. *Theory, Culture, Society*, 32(1).

Graeber, D. 2015. "Dead Zones of the Imagination" In *The Utopia of Rules: On Technology, Stupidity, and the Secret Joys of Bureaucracy*. Melville House.

Gramsci, A. 1978. *Selections From the Prison Notebooks.* Transl: Quentin Hoare. International Publishers Company.

Griffler, Z. 2018a. Suprelorin implants: A valuable tool in chicken healthcare. Last accessed 22 April 2019. Available at: https://opensanctuary.org/article/suprelorin-implants-a-critical-tool-in-chicken-health/

———. 2018b. What does "non-compassionate source" mean at The Open Sanctuary Project? Last accessed 22 April 2019. Available at: https://opensanctuary.org/article/what-does-non-compassionate-source-mean/

Gruen, L. and C. Adams, eds. 2014. *Ecofeminism: Feminist Intersections with Other Animals and the Earth.* New York: Bloomsbury. Select chapters.

Gruen, L. 2015. *Entangled Empathy: An Alternative Ethic for our Relationships with Animals*. New York: Lantern.

Hanchard. 2018. Rescued roosters send Fox Island couple to court over noise nuisance. https://www.king5.com/article/news/local/pets-and-animals/rescued-roosters-send-fox-island-couple-to-court-over-noise-nuisance/. Last accessed 14 August 2019.

Happy Hen Animal Sanctuary. n.d. Our Goals. http://www.happyhen.org/about. Last accessed 14 August 2019.

Haraway, D. 2007. *When Species Meet*. Minneapolis: University of Minnesota Press.

Hartal, G. 2018. Fragile subjectivities: constructing queer safe spaces. *Social and Cultural Geography* 19(8): 1053-1072.

Haraway D. J. 1988. Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies* 14(3): 575-599.

———. 1991. A cyborg manifesto: Science, technology, and socialist-feminism in the late twentieth century. In *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge. 149–182.

———. 1997. *Modest_Witness@Second_Millenium.FemaleMan_Meets_OncoMouse: Feminism and Technoscience.* New York and London: Routledge.

———. 2003. *The Companion Species Manifesto: Dogs, People, and Significant Otherness.* Chicago: Prickly Paradigm Press.

———. 2007. *When Species Meet*. Minneapolis: University of Minnesota Press.

Heartland Farm Sanctuary. n.d. What is Heartland? https://heartlandfarmsanctuary.org/what-is-heartland/. Last accessed 14 August 2019.

Hen Harbor. n.d. About Hen Harbor. http://henharbor.org/new-page. Last accessed 14 August 2019.

Herring, S. 2014. *The Hoarders: Material Deviance in Modern American Culture*. Chicago: The University of Chicago Press.

Hess, L. and S. Rose. 2016. *Unlikely Companions: The Adventures of an Exotic Animal Doctor*. Philadelphia: Da Capo Press.

Hobson, K. 2007. Political animals? On animals as subjects in an enlarged political geography. *Political Geography*. 26: 250-267.

Humane Methods of Livestock Slaughter. 7 U.S.C. §1902 https://www.govinfo.gov/content/pkg/USCODE-2015-title7/html/USCODE-2015-title7-chap48-sec1902.htm

Johnson, J.T., R.P. Louis and A.H. Pramono. 2005. Facing the future: Encouraging cartographic literacies in indigenous communities. *ACME: An International E-Journal for Critical Geographies* 4(1): 80-98.

jones, p. 2004. "Mothers with Monkeywrenches: Feminist Imperatives and the Animal Liberation Front." In *Terrorists or Freedom Fighters? Reflections on the Liberation of Animals*, ed. S. Best, and A.J. Nocella. New York: Lantern.

———. 2014. Eros and the mechanisms of eco-defense. In Adams, C. and Gruen, L. (eds) *Ecofeminism: Feminist Intersections with Other Animals and the Earth*. New York: Bloomsbury Academic. 91-108.

Irigaray, L. 1974. Speculum of the Other Woman. Transl: Gillian Gill. Ithaca: Cornell University Press.

Katz, C. 2001. Vagabond capitalism and the necessity of social reproduction. *Antipode* 33(4): 709–728.

Kristeva, J. 1982. *Powers of Horror: An Essay on Abjection.* New York: Columbia University Press.

Kirabo, S. 2017. Three ways Black veganism challenges white supremacy (unlike conventional veganism). *Black Youth Project*. Available at http://blackyouthproject.com/three-ways-black-veganism-challenges-white-supremacy-unlike-conventional-veganism/. Last accessed 5 July 2019.

Ko, A. and Ko, P. 2017. *Aphro-ism: Essays on Pop Culture, Feminism, and Black Veganism from Two Sisters*. Brooklyn: Lantern Books.

Latour, B. 1997. *Aramis or the Love of Technology*. Transl: Catherine Porter. Cambridge: Harvard University Press.

———. 2011. Love your monsters: Why we must care for our technologies as we do our children. *Breakthrough Journal* 19-26.

Law, J. 1990. Introduction: Monsters, machines and sociotechnical relations. *The Sociological Review* 38(1): 1-23.

Lepawsky, J. and M. Billah. 2011. Making chains that (un)make things: waste-value relations and the Bangladeshi rubbish electronics industry. *Geografiska Annaler Series B* 121–139.

Lepwasky, J. and C. Mather. 2014. From beginnings and endings to boundaries and edges: rethinking circulation and exchange through electronic waste. *Area* 43(3): 242–249.

Lorde, A. 1984. *Sister Outsider: Essays and Speeches.* Berkeley: Crossing Press.

Lorimer, J., and C. Driessen. 2013. Bovine biopolitics and the promise of monsters in the rewilding of Heck cattle. *Geoforum* 48: 249-259.

Lorimer, J. 2010. Elephants as companion species: the lively biogeographies of Asian elephant conservation in Sri Lanka. *Transactions of the Institute of British Geographers.* 35(4): 491-506.

———. 2015. *Wildlife in the Anthropocene*. Minneapolis: University of Minnesota Press.

Massey, D. 1994. *Space, place, and gender*. Minneapolis: University of Minnesota Press.

Mattingley, D.J. and Falconer-Al-Hindi, K. 1995. Should women count? A context for the debate. *Professional Geographer* 47(4): 427-435.

Marx, K. 1990 [1867]. *Capital Vol 1.* London: Penguin.

Microsanctuary Resource Center. N.d. "Our Core Principles." http://www.microsanctuary.org . Last accessed 13 August 2019.

Moore, S. 2008. The politics of garbage in Oaxaca, Mexico. *Society and Natural Resources* 21: 597–610.

———. 2009. The excess of modernity: Garbage politics in Oaxaca, Mexico. *Professional Geographer* 61(4): 426–437.

Mott, C. and D. Cockayne. 2017. Citation matters: Mobilizing the politics of citation toward a practice of 'conscientious engagement.' *Gender, Place & Culture* 24(7):954-973.

Murphy, M. 2012. *Seizing the Means of Reproduction: Entanglements of Feminism, Health, and Technoscience*. Durham: Duke University Press.

Nast, H. 2006a. Critical pet studies? *Antipode* 38(5): 894-906.

———. 2006b. Loving...whatever: alienation, neoliberalism, and pet-love in the twenty-first century. *ACME: An International E-Journal for Critical Geographies* 5: 300-327.

Nelson, N. 2015. Model homes for model organisms: intersections of animal welfare and behavioral neuroscience around the environment of the laboratory mouse. *BioSocieties* 1-21.

Oliver, K. 2001. *Witnessing: Beyond Recognition*. Minneapolis: University of Minnesota Press.

Pachirat, T. 2018. "Sanctuary." In Gruen, L (ed) *Critical Terms for Animal Studies*. Chicago: University of Chicago Press. 337-356.

Page, B. 2005. Paying for water and the geography of commodities. *Transactions of the Institute of British Geographers* 30: 293–306.

Patronek, G. 1999. Hoarding of animals: An under-recognized public health problem in a difficult-to-study population. *Public Health Reports* 114: 81–87.

Pearce, M. and R. Louis. 2008. Mapping indigenous depth of place. *American Indian Culture and Research Journal* 32(3): 107-126.

Pile, S. 2010. Intimate Distance: The unconscious dimensions of the rapport between researcher and researched. *The Professional Geographer*, 62(4) pp. 483-495.

Polanyi, K. 1944. The Great Transformation: The Political and Economic Origins of Our Time. Boston: Beacon Press.

Popke, E.J. 2001. Modernity's abject space: The rise and fall of Durban's Cato Manor. *Environment and Planning A* 33: 737–752.

Potts, A. 2012. *Chicken*. London: Reaktion Books.

Power, E. 2008. Furry families: making a human-dog family through home. *Social & Cultural Geography* 9: 535-555.

Puig de la Bellacasa, M. 2017. *Matters of Care: Speculative Ethics in More Than Human Worlds*. Minnesota: University of Minneapolis Press.

Pulido, L. 2000. Rethinking environmental racism: White privilege and urban development in Southern California. *Annals of the Association of American Geographers* 90(1): 12-40.

Prudham, S. 2007. The Fictions of Autonomous Invention: Accumulation by Dispossession, Commodification and Life Patents in Canada. *Antipode* 39: 406–429.

———. 2009 "Commodification". In Noel Castree, David Demeritt, Diana Liverman, and Bruce Rhoads (Eds) *Companion to Environmental Geography*. Oxford: Basil Blackwell. 123–142.

Redfield, P. 2006. A less modest witness: Collective advocacy and motivated truth in a medical humanitarian movement. *American Ethnologist* 33(1): 3-26.

Reno, J.O. 2014. Toward a new theory of waste: From 'matter out of place' to signs of life. *Theory Culture and Society* 31(6): 3-27.

Research Animals Resources and Compliance. 2019. Institutional Animal Care and Use Committee. Last accessed: 22 April 2019. Available at: https://www.rarc.wisc.edu/iacuc.html

Robbins, P. and R. Krueger 2000. Beyond bias? The promise and limits of Q method in human geography. *Professional Geographer* 52(4):636-648.

Robbins, P. and S.A. Moore. 2013. Ecological anxiety disorder: diagnosing the politics of the Anthropocene. *Cultural Geographies*. 20(1): 3-19.

Roestone Collective. 2014. Safe space: Towards a reconceptualization. *Antipode* 46(5): 1346-1365.

Rooster Haus Rescue. N.d. Home Page. Last accessed 14 August 2019. https://www.roosterhaus.org/.

Rooster Redemption n.d. Mission. Last accessed 14 August 2019. https://www.roosterredemption.org/.

Rooster Sanctuary at Danzig's Roost. n.d. About Danzig's Roost. Last accessed 29 August 2019. https://www.roostersanctuary.org/.

Rose, G. 1997. Situating knowledges: positionality, reflexivities and other tactics. *Progress in Human Geography* 21(3):305-320.

Sack, C. 2017. Resistance mapping. Available at: https://northlandia.wordpress.com/2017/10/14/resistance-mapping/.

Sandbrook, C.G., J.A. Fisher, and B. Vira. 2013. What do conservationists think about markets? *Geoforum* 50: 232-240.

Sangtin Writers and R. Nagar. 2006. *Playing with Fire: Feminist Thought and Activism Through Seven Lives in India.* Minneapolis: University of Minnesota Press.

SAVE Movement, The. n.d. Home Page. https://thesavemovement.org/the-save-movement/. Last accessed 2 November, 2019.

Schmolck, P. 2018. The QMethod Page. http://schmolck.org/qmethod/. Last accessed 13 August, 2018.

Shapin, S. and S. Schaffer. 2011 [1985]. Leviathan and the Air Pump: Hobbes, Boyle, and the Experimental Life. Princeton UP.

Shukin, N. 2009. *Animal Capital: Rendering Life In Biopolitical Times*. Minneapolis: University of Minnesota Press.

Singer, J. 2009. What about eggs? Making Hay with Gene Baur : Advocating for Farm Animals with Farm Sanctuary. Last accessed 22 April 2019. Available at https://farmsanctuary.typepad.com/making_hay/2009/07/what-about-eggs.html.

Skeketee, G., A. Gibson, R.O. Frost, J. Alabiso, A. Arluke, and G. Patronek. 2011. Characteristics and antecedents of people who hoard animals: An exploratory comparative interview study. *Review of General Psychology* 15(2): 114-124.

Stallybrass, P. 1998. "Marx's coat." *Border Fetishisms: Material Objects in Unstable Spaces*. 183–207.

Star, S.L. 1990. Power, technology, and the phenomenology of conventions: On being allergic to onions. *The Sociological Review* 38(1): 26-56.

Stengel, B. and Weems, L. 2010. Questioning safe space. *Studies in Philosophy and Education* 29(6):505-507.

Striffler, S. 2005. *Chicken: The Dangerous Transformation of America's Favorite Food*. New Haven: Yale University Press.

Sunder Rajan, K. 2006. *Biocapital: The Constitution of Postgenomic Life.* Introduction. Durham: Duke University Press.

Taylor, S. 2017. *Beasts of Burden: Animal and Disability Liberation.* New York: The New Press.

Triangle Chicken Advocates. n.d. Vegans with Chickens. Last accessed 22 April 2019. https://trianglechickenadvocates.org/vegans-with-chickens/

———. n.d. Home Page. Last accessed 14 August 2019. https://trianglechickenadvocates.org/.

Tuan, Y-F. 2004. *Dominance and Affection: The Making of Pets*. New Haven: Yale University Press.

Twine, R. 2010. Intersectional disgust: animals and (eco)feminism. *Feminism & Psychology* 20(3): 397-406.

Valentine, G. 1997. Making space: Lesbian separatist communities in the United States. In P. Cloke and J Little (eds) *Contested Countryside Cultures*. London: Routledge. 9-22.

VINE Sanctuary. n.d. “Pacifico.” http://vine.bravebirds.org/profiles/pacifico/ Last accessed 15 August 2019.

Webler, T., Danielson, S., & Tuler, S. 2009. Using Q method to reveal social perspectives in environmental research. Greenfield MA: Social and Environmental Research Institute. Downloaded from: http://www.seri-us.org/sites/default/files/Qprimer.pdf

Whitney, K. 2013. Tangled up in knots: an emotional ecology of field science. *Emotion, Space and Society*. 6: 100-107.

Winders, D. 2017. Captive wildlife at a crossroads—sanctuaries, accreditation, and humane-washing. *Animal Studies Journal* 6(2): 161–178.

Wynter, S. and McKittrick, K. 2015. “Unparalleled catastrophe for our species? Or, to give humanness a different future: Conversations.” In K McKittrick (ed) *Sylvia Wynter: On Being Human as Praxis.* Durham: Duke University Press.

Appendix A: Semi-structured interview questions

Note: the categories these originally fell into diverge from the chapters that I had originally envisioned!

General for people who work at or with farm sanctuaries

1. What do you currently do at or in association with a farm sanctuary?
2. What tasks or activities are part of your daily or weekly work?
3. How did you start working at or with a farm sanctuary?
4. How has the sanctuary changed since you started?
5. What do you most appreciate about farm sanctuaries?
6. What, if anything, do you wish the farm sanctuary you work at/with or other farm sanctuaries did differently?
7. How would you conceptualize the relationship of the sanctuary to the animals it supports? Do you think this is different from how other organizations you work with view these animals?

Construction of scientific/medical knowledge focus

1. What does caring for the farm animals you work with entail?
2. What kinds of health problems do you encounter among chickens? How do you treat them? Which would you say are the most common?
3. How did you learn to provide medical care for or otherwise rehabilitate animals [can specify specific medical issues or practices in this question: the use of the deslorelin implant, treatment of reproductive issues, the use of different medications]?
4. Do you have [formal,informal] training in a field related to animal care and rehabilitation, and if so, what? How well does this map on to what you do now with farm animals?
5. What kinds of (material, financial, or informational) resources do you use to provide medical care and/or rehabilitation?
6. Who or what do you turn to when an animal is sick? Why?
7. Does the sanctuary practice euthanasia or something like it? Why or why not?
8. Can you give an example of a particularly successful case of care for a specific animal? What made this successful?
9. Can you give an example of a particularly challenging case of care for a specific animal? What made this challenging?
10. What are you most proud of in terms of how the sanctuary you work with practices medical care?
11. What do you wish was different about how the sanctuary you work with practices medical care?
12. How has medical treatment of chickens changed over the last X years, in your experience or at your practice? What hasn't changed?

13. Do you work with rescued chickens or chickens at sanctuaries? Is this different from or similar to working with other chickens and people?

Alternative economies focus

1. What kinds of work do you do at [sanctuary]? Can you describe daily/weekly activities you're involved in?
2. Where do most volunteers come from (if sanctuary has a volunteer program), and why/how do they get involved?
3. What kinds of activities does the sanctuary do besides animal care?
4. What organizations does the sanctuary collaborate with? What do these collaborations look like?
    1. Has working with other organizations changed how you do your work or think/feel about your work?
    2. Are certain organizations more challenging to work with? How so? Are there any that you used to work with but don't anymore?
    3. Can you think of an example of when you've influenced people at other organizations through collaborating with them, or when you've been influenced in turn? If so, how?
    4. What is valuable to you about working with other organizations?
5. Have you encountered any sanctuaries that are hoarding situations? Can you describe them? What, if anything, do you do when you encounter a hoarding situation?

Representational practices focus

1. How do animals' past lives influence how you take care of them now?
2. How are animals' lives at the sanctuary similar to their situations before they arrived at the sanctuary? How are they different?
3. What did you imagine a farm sanctuary would be like before you arrived? How is this similar/different?
4. How would you describe your relationship with the animals here? With one or more specific animals?
5. How does other staff relate to the animals here? One or more specific animals?
6. What are some of your favorite or most memorable images of the animals/the sanctuary? Why are these your favorites or especially memorable?

Appendix B: Subject selection and factor analysis for Q sorts

Subject selection

As aforementioned, Q method seeks to capture a range of perspectives. Some overlap is generally sought, but "Q participants are a sample of a population, but not in the same way that respondents in a survey study are a sample of a population" (Webler et al 2009:22). Because the goal is not to sample the population but to sample perspectives, "[t]he ideal number of Q participants is a tradeoff between two rules of thumb. The upper end is determined by the rule that it is wise to have more observations [Q statements] than variables [subjects/Q sorts] in a study where statistics will be used to analyze the results." The second rule is that the number of perspectives revealed relies on a minimum number of statements and people, and that it generally requires 3 people to cohere one perspective (so, 6 participants could reveal 2 perspectives, 9 could reveal 3, and so on... with exceptions that are unable to be determined in advance). Webler et al suggest that ratios of 1:2 or 1:3 sorts to statements are common (primer p23). In this case, for 25 statements, this meant I should seek 8-12 sorts. I ended up in the middle of that, with 10 sorts.

All participants had done at least some volunteer work at a sanctuary, offering perspectives from five established sanctuaries in total. Moreover, due to their work (paid or otherwise) and perspective, all would qualify as "opinion leaders" or people "with well formed opinions" (primer). Many were also in decision-making roles: five participants had microsanctuaries in their backyards and houses; one was a member of the board of The Microsanctuary Movement. Two others were on the board or in management roles at sanctuaries as well. Four led animal care shifts as paid sanctuary workers, leading animal care shifts. At least three were or had been involved in "open rescue," or going onto factory farms, taking animals, and publicizing the event (often but not exclusively chickens in the case of this group of subjects). And in terms of demographics, there were four men, five women, and one nonbinary individual. Most (nine) subjects were white, and one was Chinese-American.

Factor analysis

Note: in Chapter 5, factors 1 and 2 are reversed in name for the sake of the narrative.

I used PQMethod for analysis (Schmolk 2018). I ran several versions of the analysis: one with two factors, and several with three factors, differently rotated and differently flagged. Each factor is a social perspective, a sort of "idealized sort" (Webler et al 2009). I kept three factors for three reasons. First, it is standard practice to use factors with an eigenvalue of greater than one, which was the case for three (their eigenvalues were 4.66, 1.55, and 1.10; the other five factors were less than one). Second, with the third factor added, one sort that did not load conclusively onto any factor was strongly loaded onto the third (.91, indicating that its correlation with factor 3 is 91%). The three factors explained 47%, 16%, and 11% of the variance,

respectively, for a total of 74% of the variance. This is on the high end of the range of expected variance that a Q sort can explain (Webler et al 2009). Finally, I kept the third factor because of its content: it was a social perspective I had seen in ethnographic work and document collection.

The correlations between factors can be seen below. The low correlations between factors indicate their distinctness from one another, supporting the choice of three factors.

Factor	1	2	3
1	1.00	.47	.18
2	.47	1.00	.11
3	.18	.11	1.00

With three factors, I used Principle Component Analysis (PCA), which attempts to balance commonality among sorts as well as the specificity of each sort. I tried rotating them using the Varimax option provided in the program as well as manual rotation. Factor rotation is conducted in order to attempt to associated individuals predominantly with one factor. In the program, the number of each sort will appear on a grid in which the X axis is one factor and the Y axis is the other (only two factors can be rotated at once). Rotation is used to better line up the sorts with the factors. My manual rotation produced the same results as the Varimax rotation.

The final step, after rotation, is flagging sorts, or identifying those sorts that load highly onto a given factor. The description of each factor is derived from the sorts that are flagged as loading onto it (Webler et al 2009:31). I generated results using automatic flagging as well as manually editing the automatically generated flags. Sorts were automatically flagged as affiliated with a given factor if their correlation with it was, in this case, greater than .7. Results with automatic flagging are shown below, with an "X" denoting a flag. I generated final sorts that used automatic flagging that that tried flagging sort 4 onto factor 3, but wound up not keeping it because the difference between its correlation with factor 3 and factors 1 and 2 was not high; it did not sort strongly onto any factor. Though it is desirable in factor analysis to find a solution in which each sorter loads highly onto a single factor, it is also possible that "confounders," or "people [who] have truly hybrid views" exist: I speculate that this is the case for sorter 4.

Sort number	Factor 1	Factor 2	Factor 3
1	0.0126	0.7577X	-0.2342
2	0.8465X	0.4077	-0.0372
3	0.8457X	-0.0791	0.0685

4	0.4707	0.4335	0.5097
5	0.0665	-0.0135	0.9080X
6	0.8654X	0.2549	0.2450
7	0.6555X	0.2247	0.0906
8	0.2569	0.7090X	0.3857
9	0.2854	0.8651X	0.0796
10	0.1887	0.7747X	0.1652