2019 Proceedings

Midwest Deer & Wild Turkey Study Group Meeting

August 12-14, 2019

Nashville, Indiana

Submitted by:

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Indiana Department of Natural Resources

January 2020

DNR
Indiana Department of Natural Resources

MIDWEST
Association of Fish & Wildlife Agencies

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Background

The Midwest Deer and Wild Turkey Study Group (MDWTSG) meeting is an annual gathering of wildlife managers sanctioned by and affiliated with the Midwest Association of Fish and Wildlife Agencies. Primary objectives of the meeting include dissemination of deer and wild turkey management strategies, discussion of emerging or existing issues associated with deer and wild turkey management, and coordination of regional deer and wild turkey management or research efforts. The meeting location rotates among the Midwestern states that are active within the group.

Forums such as the MDWTSG meeting provide valuable opportunities for state deer and turkey biologists to become acquainted with emerging issues and exchange information and ideas related to deer and turkey research and management. The need for state fish and wildlife agencies to establish and maintain deer and turkey biologist positions and support travel of these biologists to the annual MDWTSG meeting is imperative for exchanging information to promote quality wildlife management and research in each state. It is more important than ever that state agencies are at the forefront of issues related to deer and turkey management in order to protect the heritage and recreational opportunities of hunting for future sportsmen and sportswomen.

Meeting Time and Place

The Indiana Department of Natural Resources (DNR) hosted the 2019 MDWTSG meeting at the Abe Martin Lodge, Brown County State Park in Nashville, Indiana on August 12-14. The MDWTSG appreciates the financial support provided by the National Wild Turkey Federation (NWTF) and the logistical support provided by Mr. Brian MacGowan and the Indiana Chapter of The Wildlife Society.

Attendance

A total of 56 participants and speakers attended the 2019 meeting including state deer and wild turkey biologists from 11 Midwest member states (Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin) and biologists and researchers from the NWTF, QDMA, Indiana University, Purdue University, and Qualtrics. Representatives from North Dakota, Ontario, and South Dakota were unable to attend.

Executive Summary

Attendees at the 2019 MDWTSG meeting were welcomed by John Davis, Deputy Director, Indiana Department of Natural Resources. Following the meeting introduction, there were seven presentations during the joint session on topics related to human dimensions in wildlife, including:

- The effects of cognitive bias on the decision making process
- Diversity and inclusion in hunting culture
- Including survey data from the public in wildlife management
- E-regulation compliance
- QDMA's successes and failures of getting people involved

The human dimensions theme continued during the afternoon joint session with presentations on the following topics:

- Citizen based monitoring surveys

- Assessing public perceptions of deer
- Basics of qualitative research with children
- Engaging stakeholders in CWD management
- Qualtrics – a survey and data collection software

On day two, the deer and wild turkey break-out sessions occurred, including discussion on the following:

- Deer Study Group
  - Setting yearly deer harvest
    - Discussion on the various approaches to setting harvest limits, methods and techniques used, and successes and failures.
  - Important topics for the next 10 years of deer management for Midwestern states
    - The group created a list of topics and chose the top two: declining hunter numbers and management of chronic wasting disease. A letter was drafted explaining the anticipated challenges over the next decade and will be submitted to the AFWA Director's meeting in June 2020 (Appendix 4).
  - Venison donation programs
  - Cultural and management aspect of deer hunting in Europe
  - Data on crossbow users

- Wild Turkey Study Group
  - Indiana's web based Brood Survey and Illustrative Guide
  - Forest management implications of songbird studies on the Hoosier Hardwood Ecosystem (HHE) project
  - Fifty-year assessment of Indiana Spring Turkey Harvest parameters
  - Wild Turkey harvest trends in the Midwest
  - Urban wild turkey issues
  - Shot size and material composition (density) as it relates to the intent of 2005 National Wild Turkey Hunter Safety Task Force recommendations
  - Michigan Wild Turkey Habitat Enhanced Management Initiative (THEM)
  - NWTF year in review

Business Meeting

The business meeting was conducted as a joint session involving both deer and wild turkey program leaders. The Southeast Deer Study Group is interested in hosting a joint meeting with the Midwest Deer Study Group. The group discussed this possibility including logistics, potential topics, and whether to extend an invitation to the Southeast Wild Turkey Group. Both deer and wild turkey leaders were supportive of this opportunity. Kentucky and Ohio will look into it more.

Director Actions Items

The MDWTSG does not have any action items for directors to report from this meeting.

Director Information Items

The MDWTSG would like to inform the Midwest Directors of the following items:

- The MDWTSG meeting was focused on human dimensions topics to broaden knowledge of the use of social science in wildlife management.
- The Midwest Deer Group created a list of key issues that are likely to be significant challenges for the future of Midwest deer management. A letter was drafted to the Midwest Directors focused on the top two issues: declining hunter numbers and management of chronic wasting disease. The goal of this communication is to allow for understanding of current deer biologists' recommendations related to these issues and to provide context for future action items. The letter is in Appendix 4.
- States in the Midwest Wild Turkey Group agreed to share harvest and production data to identify common trends while pursuing factors that may explain the decline in harvests. This was a continuance of the multi-state collaborative effort initiated in the Midwest and Southeast study groups several years ago.
- The Southeast Deer Study Group is interested in hosting a joint meeting with the Midwest Deer Study Group next year.

Time and Place of Next Meeting

The next MDWTSG meeting will be hosted by the Ohio Department of Natural Resources August 17-19, 2020, at the Maumee Bay Lodge and Conference Center, Maumee Bay State Park in Oregon, Ohio.

Appendix 1: Attendance List

List of participants: 2019 Midwest Deer & Wild Turkey Study Group meeting, Nashville, Indiana.

First Name	Last Name	Agency	Email	Phone
Luke	Garver	Illinois Dept. of Natural Resources	luke.garver@illinois.gov	217-782-4377
Tom	Micetich	Illinois Dept. of Natural Resources, ret.		
Dan	Skinner	Illinois Dept. of Natural Resources	daniel.j.skinner@illinois.gov	217-782-7580
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Kevyn	Wiskirchen	Missouri Dept. of Conservation	kevyn.wiskirchen@mdc.mo.gov	573-815-7901 ext. 2899
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Appendix 2: Meeting Agenda

Midwest Deer and Wild Turkey Study Group Meeting

August 12-14, 2019

Abe Martin Lodge at Brown County State Park

Nashville, IN

AGENDA

Monday, August 12, 2019

4:00-8:00 p.m. Arrival and Registration *(Cabin #905);* Check into your cabin or hotel room up at the Hotel Lobby.

6:00-8:00 p.m. Light social *(Cabin #905)*

Tuesday, August 13, 2019

8 -8:45 a.m. Registration continued *(outside of Melodeon)*

7:30-8:30 a.m. Breakfast *(Allison Peabody)*

8:30-9:00 a.m. Welcome, Announcements, Introductions *(Melodeon)*

John Davis, Deputy Director, IN Dept. of Natural Resources

Joe Caudell, Deer Biologist, IN Dept. of Natural Resources

Steve Backs, Turkey Biologist, IN Dept. of Natural Resources

9:00-10:15 a.m. Joint Meeting - Topic Human Dimensions of Wildlife *(Melodeon)*

- Joe Caudell, Indiana DNR - Cognitive Bias and how it Affects the Decision Making Process of Both Customer and Wildlife Managers
- Norman Makoto Su, Indiana University – Diversity and Inclusion in Hunting Culture: Ethnography and the Design of Technology
- Colleen Hartel, Indiana DNR – Beyond Polls of Public Opinion: Survey Data and Wildlife Management

10:15-10:30 a.m. Break (*snacks available in Melodeon*)

10:30-12:00 p.m. Joint Meeting - Topic Human Dimensions of Wildlife *(Melodeon)*

- Joe Caudell, Indiana DNR – Incorporating Public Opinion and Data into Deer Management Decisions
- Emily McCallen, Indiana DNR – Making the Most of What We Have: Utilizing Biological and Human Dimensions Data to Support Management Decisions
- Brian Dhuey, Wisconsin – E-regulation compliance: Assessing Compliance with Electronic Deer Harvest Regulation
- Matt Ross, QDMA - QDMA's Successes and Failures at Getting Folks Involved: A Trip Down Memory Lane

12:00-1:00 p.m. Lunch *(Allison Peabody)*

1:30-3:00 p.m. Joint Meeting - Topic Human Dimensions of Wildlife *(Melodeon)*

- Brian Dhuey, Wisconsin DNR – Citizen Based Monitoring Surveys: The Good, the Bad, the Ugly
- Taylor Stinchcomb, Purdue University – Assessing Public Perceptions of Deer: Qualitative vs Quantitative Approaches
- Alexis B. Peirce Caudell, Indiana University – The Basics of Qualitative Research with Children
- Jacob M. Peterson, Purdue University – Engaging Stakeholders in CWD Management Through Agent-based Models
- Tommy Hoschouer, Qualtrics – The Advanced Capabilities of Qualtrics as a Survey and Data Collection Platform

3:00-3:30 p.m. Break

3:30-4:30 p.m. Joint Business Meeting *(Melodeon)*

6:00-10:00 p.m. Dinner and Social *(Lower Shelter)*

Wednesday, August 14, 2019

8:00-9:00 a.m. Breakfast *(Allison Peabody)*

9:00-12:00 p.m. State Status Reports & Individual Group Meetings *(Deer in Melodeon, Turkey in Priness)*

12:00-1:00 p.m. Lunch *(Allison Peabody)*

1:00-4:00 p.m. Breakout Sessions and Discussions Continue *(Deer in Melodeon, Turkey in Priness)*

6:00-9:00 p.m. Dinner and Social *(on own, but group reservations at Big Wood Pizza in Nashville, IN)*

Appendix 3: Meeting Dates and Location History

Previous Midwest Deer & Wild Turkey Study Group meeting locations.

Year	State	Location	Date
1977	Missouri	Missouri Fountain Grove Wildlife Area	January 17-19
1978	Wisconsin	Wisconsin Wyalusing State Park	January 16-17
1979	Iowa	Iowa Rathburn Fish Hatchery	January 15-18
1980	Minnesota	Minnesota Whitewater State Park	January 21-24
1981	Indiana	Indiana Harrison-Crawford State Park	January 19-22
1982	Ohio	Ohio Lake Hope State Park	January 18-21
1983	Nebraska	Nebraska Louisbille 4-H Camp	January 17-21
1984	Kansas	Kansas Camp Aldrich	January 16-19
1985	South Dakota	South Dakota Black Hills	May 7-10
1986	North Dakota	North Dakota Camp-of-the-Cross	January 20-23
1987	Michigan	Michigan Kellogg Biological Station	January 27-29
1988	Illinois	Illinois Touch of Nature	February 1-4
1989	Missouri	Missouri YMCA Camp of the Ozarks	January 23-26
1990	Wisconsin	Wisconsin Bethel Horizons Prairie Center	January 15-18
1991	Iowa	Iowa Conservation Education Center	January 14-17
1992	Minnesota	Minnesota Whitewater State Park	January 13-16
1993	Indiana	Indiana Harrison-Crawford State Park	January 11-14
1994	Ohio	Ohio Canter's Cave 4-H Park	January 30-February 2
1995	Nebraska	Nebraska Mahoney State Park	January 15-18
1996	Kansas	Kansas Camp Pecusa	January 14-16
1997	South Dakota	South Dakota Camp NeSoDak	August 24-27
1998	North Dakota	North Dakota Camp Grafton	August 9-12
1999	Ontario	Ontario Blue Springs Scout Reserve	August 15-18
2000	Michigan	Michigan Thunder Bay Resort	August 20-23
2001	Illinois	Illinois Dixon Springs Ag. Station	August 19-22
2002	Missouri	Missouri Conception Abbey	August 18-21
2003	Wisconsin	Wisconsin Bethel Horizons Prairie Center	August 24-27
2004	Iowa	Iowa Conservation Education Center	August 22-25
2005	Minnesota	Minnesota Eagle Bluff Envir. Learning Center	August 21-24
2006	Indiana	Indiana Camp Ransburg, BSA	August 20-23
2007	Ohio	Ohio Canter's Cave 4-H Park	August 19-22
2008	Nebraska	Nebraska Fort Robinson State Park	September 14-17
2009	Kansas	Kansas Rock Springs 4-H Camp	September 14-17
2010	North Dakota	North Dakota Camp Grafton	August 22-25
2011	Michigan	Michigan Ralph A. MacMullen Center	September 25-28
2012	South Dakota	South Dakota Custer State Park	October 16-19
2013	Illinois	Illinois Allerton Park	August 18-21
2014	Missouri	Missouri YMCA Camp of the Ozarks	September 9-12
2015	Wisconsin	Wisconsin Perlstein Conference Center	September 8-11

2016	Kentucky	Kentucky General Butler State Resort Park	August 22-25
2017	Iowa	Iowa Honey Creek State Park Resort	August 28-31
2018	Minnesota	Minnesota Camp Ripley	August 27-30
2019	Indiana	Indiana Brown County State Park	August 12-14

Appendix 4: MAFWA Director Letter: Challenges facing Midwestern deer management

December 16, 2019

To: Directors, Midwest Association of Fish and Wildlife Agencies

From: Midwest Deer Study Group

Subject: Challenges facing Midwestern deer management over the next 10 years

Esteemed Directors of Midwest Fish and Wildlife Agencies:

The Midwest Deer and Turkey Study Group is an annual gathering of wildlife managers sanctioned by and affiliated with the Midwest Association of Fish and Wildlife Agencies (MAFWA). This group represents each state's designated experts on deer and turkey population management responsible for the sustainable future of each resource. Historically, the group dates to around 1949, with the development of a statement of purpose in 1958. The Great Lakes Deer Group, as they were called then, identified four primary reasons for meeting: 1) to promote better interchange of information and engage in discussions on matters pertaining to deer and deer range, 2) to improve the understanding of conditions in various territories and states, 3) to supplement the work of the Midwest and North American meetings, and 4) to make recommendations on specific topics, practices, and coordinate research as requested by administrative agencies. These four goals are adhered to with present day meetings.

Following the 2019 Midwest Deer and Turkey Study Group meeting, the deer study group felt it important to provide MAFWA Directors with a short list of key issues that we foresee being significant challenges for the future of Midwest deer management, and to provide context for future action items we may bring to your attention in the coming years. By communicating these concerns, we feel there will be a greater understanding of present-day recommendations from deer program biologists and administrators who are anticipating impacts from these challenges in the future. The top two issues identified by members of the Midwest Deer Study Group are declining hunter numbers and management of chronic wasting disease.

Declining Hunter Numbers

Deer hunters make up the majority, and financial backbone, of most wildlife agencies and routinely make up over 80% of all license buyers. From an operational standpoint, loss of these hunters will contribute to budget shortfalls. In addition, the continual decline of hunters across the Midwest will further limit our ability to effectively manage deer populations. Most Midwestern states are seeing a 2-4% loss of hunters annually. Over the next 10 years, it's probable that hunter numbers will be >15% lower than present day numbers, which are already inadequate to manage deer populations in some areas. In turn we can expect an increased risk to the public (deer-vehicle collisions, Lyme and other tick-borne illnesses, etc.), agricultural damage, habitat degradation, and spread of transmissible diseases such as CWD and potentially Bovine tuberculosis where they exist.

Management of Chronic Wasting Disease

There is nearly universal agreement amongst deer biologists that CWD is one of the top priorities facing deer management for generations to come. Driving much of this concern is uncertainty regarding the impacts that CWD will have on deer populations and hunter numbers in the future. Though much is being learned through research in places like Wyoming, Colorado, and Wisconsin about how CWD impacts deer populations over time, many states have responded to CWD by taking preventative action (ex. baiting bans, herd reduction, carcass movement restrictions, etc.) in the face of an uncertain outcome until new information or new management tools become available. Current management strategies have been politically unpopular and have been obstructed before their efficacy could be demonstrated, leading to limited success in eradicating CWD or reducing its footprint on the landscape. Without noticeable improvements, constituents may lose trust in agencies' ability to manage its resource.

Future Support of Deer Programs

These two threats - declining hunters and CWD - are not independent of one another. As CWD continues to spread across the landscape, it's plausible that widespread CWD could exacerbate the loss of hunters or the difficulty in managing deer populations with existing hunters. Identifying how agencies function in a "new normal" with fewer hunters and CWD on the landscape is one of the greatest adaptation exercises we face in modern day wildlife management.

There are several ways our group feels that Directors can support deer programs to help ease some of the anticipated effects of declining hunter numbers and presence of CWD:

- Work closely with elected officials to support science-based deer management decisions that are made in the best interest of the resource, while working to prevent legislation that either limits deer management options or is likely to have adverse effects on deer populations.
- Support CWD research that assists managers with determining the effectiveness of disease management strategies.
- Continue dialogue with your deer program staff to ensure that deer program priorities are being addressed by the Department.
- Support your agency's deer program staff whose recommendations are based on the best, long-term interest of the resource.
- Recognize that deer management recommendations, particularly with respect to CWD, may not always be popular among constituents and may deviate from previous management approaches. However, with an ever-changing culture and landscape, and as new information becomes available, it will be important for deer programs to be adaptable in the future.

We thank you for the continued opportunity to meet as a group and discuss present and future issues associated with Midwest deer management. Should you have any questions, each state's respective deer program leader would be happy to discuss any of these topics.

Sincerely,

Midwest Deer Study Group

Appendix 5: MDWTSG State Deer Reports

Illinois Deer Status Report MDWTSG -- 2019

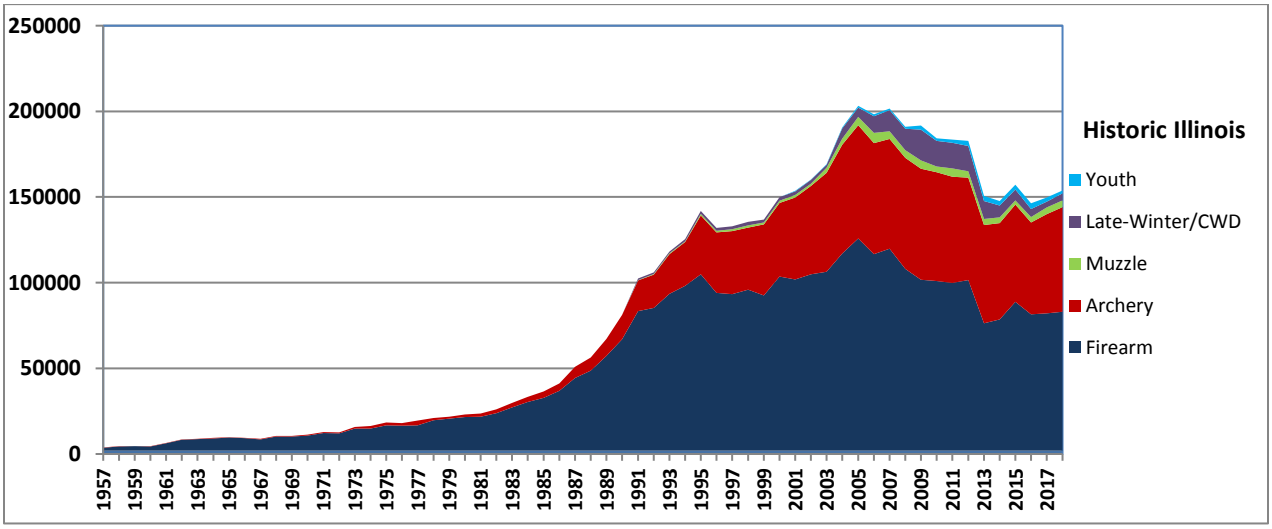
Current Harvest: All seasons deer harvest was 55.2% male: 44.8% female; 46.0% antlered: 54.0% antlerless.

	Antlered*			Button Bucks			Does			Total		
Season	2017	2018	% Change	2017	2018	% Change	2017	2018	% Change	2017	2018	% Change
Archery	26909	26800	-0.4	4555	4787	+5.1	26465	29509	+11.5	57929	61096	+5.5
Youth	972	574	-40.9	252	182	-27.8	1154	904	-21.7	2378	1660	-30.2
Muzzle	1277	1257	-1.6	414	459	+10.9	2074	2184	+5.3	3765	3900	+3.6
LWS	37	23	-37.8	392	436	+11.2	1934	2112	+9.2	2363	2571	+8.8
CWD	304	404	+32.9	170	195	+14.7	669	926	+38.4	1143	1525	+33.4
Firearm	38914	40811	+4.9	8534	7798	-8.6	32669	32348	-1.0	80117	80957	+1.0
Total	**68413**	**69869**	**+2.1**	**14317**	**13857**	**-3.2**	**64965**	**67983**	**+4.6**	**147695**	**151709**	**+2.7**

*NOTE: "Antlered" includes all males older than fawn with, or without antlers.

Factors contributing to observed harvest trends include: 1) herd recovery from the 2012 & 2013 EHD outbreaks; 2) the successful effort to reduce deer-vehicle accident (DVA) rates to goals established for each county resulting in fewer open to late-winter antlerless-only season (LWS); 3) allowing use of youth permits during the 1st firearm season; and, 4) reduced number of permits (>40,000 fewer) allocated in 2018-19 (-7.3% from 2017-18).

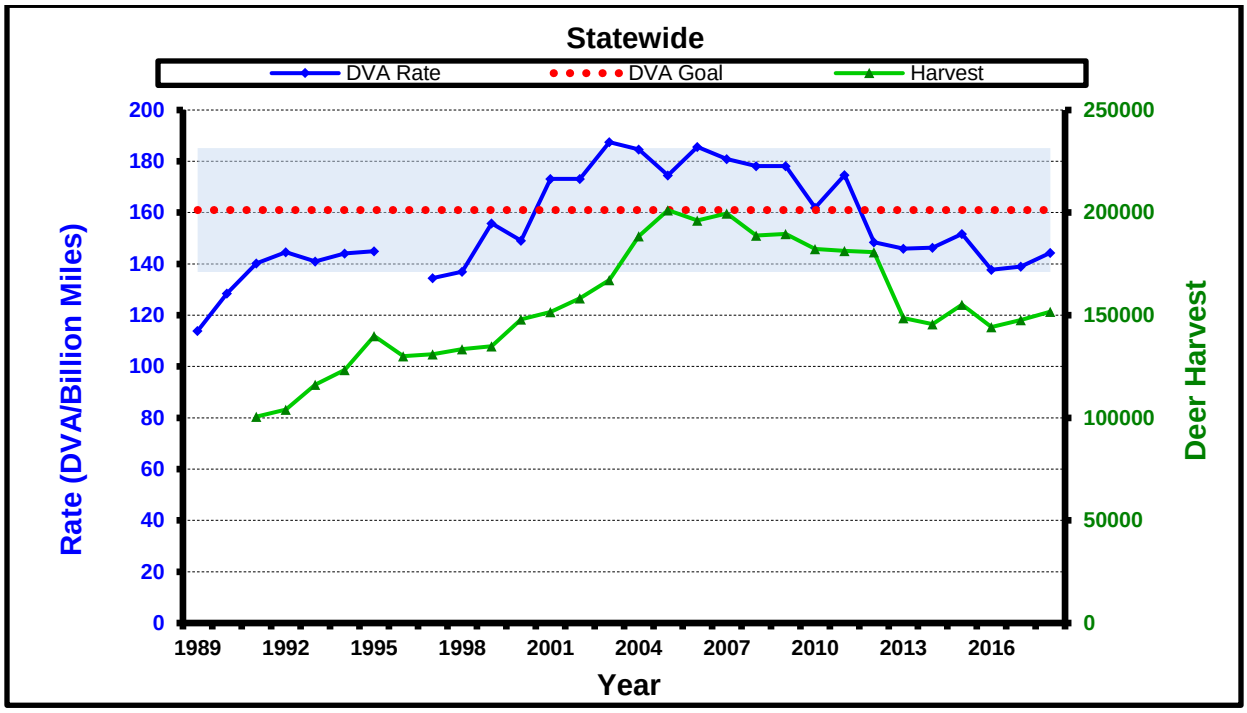
Historic Harvest:



Illinois deer harvest peaked at 201,209 in 2005. EHD outbreaks in 2012 & 2013 likely contributed to our reaching DVA rate goals in many of our counties, and the harvest declines witnessed in those years.

Population Estimate/Trend (see chart, below): Illinois deer harvest (green) and deer-vehicle accident rate (blue) trends are presented in the chart below. We first achieved the statewide goal

DVA rate in 2012. The statewide goal remained unchanged while modifications (upward) were made to 40 or so county goals in early 2014. The discussion regarding the modification of DVA rate goals can be viewed at http://www.dnr.illinois.gov/conservation/wildlife/Documents/RevisingIllinoisDeerManagementObjectives.pdf



License and Season Information:

All Illinois deer hunters are required to obtain a deer permit prior to hunting. Resident landowners of 40 or more acres may obtain free "property only hunting" permits for archery and/or firearm deer hunting on their own property. Non-resident landowners pay reduced fees for "property only hunting" permits. License fees are found on page 5 of the annual hunting digest, and deer permit fee structure is found on page 17 (see https://www.dnr.illinois.gov/hunting/Documents/HuntTrapDigest.pdf **).**

All deer "season dates" are found on page 1 of our annual deer harvest report, and "permits issued" information by season and residency may be found on page 2 of that report. These annual reports may be found on our website at this location: http://www.dnr.illinois.gov/hunting/deer/Pages/AnnualDeerharvestReports.aspx

Management Zones:

Each Illinois County is treated as a separate deer management unit. All 102 counties are open to archery deer hunting, while 99 are open to firearm deer hunting. Only Cook, Du Page and Lake Counties are closed to firearm deer hunting.

There are separate quotas for "either sex" and "antlerless only" permit issuance for each open firearm and muzzleloader deer season county. Quotas are reviewed and adjusted as needed annually by staff from the Forest Wildlife Program. The deer-vehicle accident rate relative to the goal is the primary factor used to determine the amount of pressure to be exerted on antlerless deer, including whether a county is open for the late-winter antlerless only season (LWS). We also take into consideration trends in the number of nuisance deer removal permits issued when determining whether a county may be removed from the LWS, even though it may be at, or below its goal rate. The goal and trends for DVA rates in each county can be found at this location: https://deer.wildlifeillinois.org/visualization

The presence of Chronic Wasting Disease removes DVAs as the guiding factor in herd management, and disease control becomes the primary management objective.

A map of the Illinois late-winter/CWD season counties may be found here: https://www.dnr.illinois.gov/conservation/wildlife/Documents/LateWinterDeerSeasonMap.pdf

2018 Regulation/legislation changes: Included the creation of a 5-county Restricted Archery Zone in east-central Illinois (page 20 of Hunting Digest). Archers in Champaign, Douglas, Macon, Moultrie, and Piatt counties hunted antlered-only deer during the first 15 days of the archery deer season (Oct. 1-15). Similar regulations were in effect in the late 1990s – early 2000s in many of these same counties. The quotas for antlerless only firearm and muzzleloader permits had already been reduced, and then eliminated, in these counties but deer numbers were not recovering to goal; or had continued to decline. High archery harvest (more than half of county total) required some change in order to more equitably distribute opportunity and harvest among user groups. A discussion of this change can be found on page 4 of the 2018-19 Annual Deer Harvest report: http://www.dnr.illinois.gov/hunting/deer/Pages/AnnualDeerharvestReports.aspx

We recommended quota reductions of statewide either-sex and antlerless-only firearm permits of 4% and 8%, respectively. Similarly, we recommended reducing quotas of statewide either-sex and antlerless-only muzzleloader permits by 2% and 8%, respectively.

Biologists recommended removal of four counties (Edgar, Schuyler, Vermilion, and White) from the antlerless Late Winter Season; and added two (Macoupin, Saline) which were previously closed. There were 20 open LWS counties in 2018.

Changes proposed for 2019-20:
A new law was passed last year that would allow non-resident youth hunters to purchase archery deer permits at the same price as a resident. Changes to permit sales should be in place to allow non-resident youths to purchase permits at the lower price starting this summer.

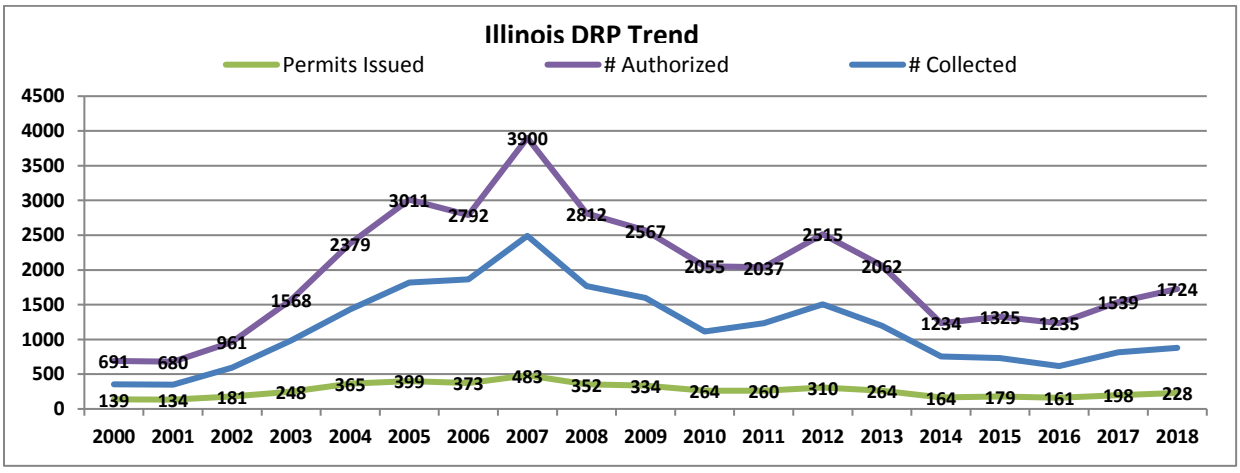
HB2777 passed the House and the Senate and has been signed by the Governor. This new law requires the Department to provide an annual report to the General Assembly that includes: (1) the number of surplus deer taken during each separate harvest season; (2) the number of deer found to have a communicable disease or other abnormality; and (3) what happens to the deer taken during each separate harvest season.

We have recommended a quota reduction for either-sex (-1.2%) and increase to antlerless-only firearm permits (0.93%). Similarly, we have recommended reducing quotas of either-sex (1.20%) and increasing (1.15%) antlerless-only muzzleloader permits.

Biologists recommended removal of one county (McLean) from the antlerless Late Winter Season; and added one (Effingham) which was previously closed. There will now be 20 open LWS counties.

Urban/Special Hunts: Forty-two **Deer Population Control Permits (DPCPs)** were issued to 11 municipalities and agencies in seven counties. There were 1,358 deer authorized and 1,243 (92%) were collected. Adult animals taken on DPCPs from areas in or near where CWD has been documented (or is likely to be an infection route) are sampled for CWD. Two CWD-positive animals were detected in the 627 usable samples taken during DPCP removals in 2018-19. (Complete report available upon request)

Deer Management Assistance/Crop Damage: There were 232 **Deer Removal Permits (DRPs)** issued in 55 counties during 2018; compared to 198 issued in 51 counties during 2017. The 227 lethal removal permits authorized take of 1,724 deer (1,197 antlerless; 5 antlered; 522 either sex) and 879 (51%) were collected. Sixty-three percent of permits issued were for excessive damage to corn and/or soybeans; 54% of all permits were issued during the months of June and July. Forty-three permits were issued for public safety at airports. (Complete report available upon request) Historic Illinois DRP activity is found in the chart below:



DISEASES: In 2018, 241 reports from 51 counties reported 458 probable **EHD** deaths statewide. Central Illinois counties of Peoria (77) and Fulton (73) led the way followed by Lawrence (35) in the southeast. In 2017 there were 66 reports of 169 animals from 32 Illinois counties. The 2012 EHD outbreak had the highest number of citizen reports (977); reported deaths (2,968); and affected counties (87).

Chronic Wasting Disease (CWD) management continued in Illinois. There were 8,877 animals tested (8,825 usable, 7 pending) statewide, with 90 positives identified in FY'19 - the highest number of cases in a year. Recent results were: 8,697 tested; 51 positives in FY'18; 7,800 tested; 75 positives in FY'17; and 8,544 tested; 72 positives in FY'16. The CWD-positive animals came from 14 of 17 counties in which CWD has been previously identified. Between 15 January and 31 March 2019, agency sharpshooters took 1,017 deer (20 positive) from 125 sections in 15 counties. This compares to 997 deer (15 positive) from 125 sections in 15 counties in FY'18; and 984 deer (24 positive) from 129 sections in 15 counties in FY'17. Additionally, Deer Population Control Permit holders provided 627 testable animals; 2 were CWD-positive. Prevalence rates for hunter-harvested deer in known CWD counties were 1.6% (all adult deer); 1.9% (adult males); and 1.2% (adult females). To date, 826 positives have been identified from 122,680 testable white-tailed deer. (See complete report, in "Relevant Links" section.) A map of cumulative positive animal locations can be found at: https://www.dnr.illinois.gov/programs/CWD/Documents/CWDMap.pdf.

Research: Current research includes (1) assessing the relative importance of male and female deer for direct and indirect disease transmission; (2) comparing spatial interactions between deer, coyotes, and bobcats, and the age-specific predation mortality of deer between areas with differing predicted risk levels; and (3) evaluating the effects of CWD management on disease prevalence/dynamics.

Hot Topics: The bill passed by the Illinois General Assembly prior to last year's meeting that mandated a research study of the effects of deer feeding, would have also allowed feeding while the study was ongoing, got vetoed by the Governor. The Senate failed to over-ride with 3/5 majority.

HB2783 proposed allowing rifle deer hunting with cartridges similar to those legal for handgun hunting in Illinois. The bill passed the House on a vote of 100-10-1, but never made it to a vote in the Senate before the end of the regular session.

Relevant Links: Illinois Deer Website: https://deer.wildlifeillinois.org/

2019-20 Illinois Hunting Digest:
http://www.dnr.illinois.gov/hunting/Documents/HuntTrapDigest.pdf

Annual Deer Harvest Summary - link to Illinois deer harvest reports (2005-2018): http://www.dnr.illinois.gov/hunting/deer/Pages/AnnualDeerHarvestReports.aspx

Chronic Wasting Disease Annual Report - link to all Illinois CWD information, including latest annual report: http://www.dnr.illinois.gov/Programs/CWD/Pages/default.aspx

Late-winter/CWD Season – **2019-20** map of counties open to these special seasons will be available in October: http://www.dnr.illinois.gov/conservation/wildlife/PublishingImages/LateWinterDeerSeasonMap.jpg

Deer Removal Permit & Urban Deer Population Control Permit annual reports were available in meeting handouts and may be provided upon request. No link was available at the time of this report.

2018-2019 Indiana Deer Program Report

Joe N. Caudell and Olivia D. L. Vaught

I. Current Harvest

A total of 111,251 deer were harvested during the 2018-19 hunting season (Table 1) which was 2.1% lower than the 2017-18 total of 113,590. The antlered deer harvest was 4.8% higher (47,256) than the previous year (45,088), making it the 15th highest antlered deer harvest since 1951.

Table 1. Deer harvested by season during the 2017-2018 and 2018-2019 hunting season.

Season	2017-18	2018-19
Youth	1,463	1,647
Archery*	31,738	31,554
Firearms*	67,236	67,165
Muzzleloader	8,871	8,165
Special Antlerless	4,282	2,720
Total	113,590	111,251
Antlered	45,088	47,256
Antlerless	68,502	63,995

*Includes archery or firearms harvest from the Deer Reduction Zones.

Table 2. Deer harvested by type of equipment used during the 2017-2018 and 2018-2019 hunting season.

Equipment	2017-18	2018-19
Bow	17,066	16,069
Shotgun	20,303	17,878
Muzzleloader	15,325	14,278
Handgun	392	388
Rifle	45,730	47,015
Crossbow	14,774	15,623
Total	113,590	111,251

II. License and Season Information

During the 2018-2019 deer hunting season, 175,170 in-state deer hunting licenses and 11,540 out-of-state deer hunting licenses were sold (Tables 3 and 4). 67,970 bundle licenses were sold which allow individuals to take up to 3 deer. This resulted in 300,395 privileges to take deer during the 2018-2019 hunting season (Table 4), excluding Youth licenses, exempt individuals, and individuals possessing a valid lifetime licenses. Individuals exempt from license requirements in Indiana include:

- Resident owners of Indiana farmland or lessees who farm that land, along with their spouses and children, while hunting that farmland,
- Trustees and named trust beneficiaries comprised solely of the members of an immediate family when hunting on the trust property,
- Residents engaged in full-time military service and who are carrying leave orders and a valid IN driver's license, and
- Youth participating in free youth hunting weekends.

Table 3. Indiana deer hunting licenses fees 2018-2019.

License	Resident	Nonresident
Res. Youth Consolidated Hunt/Trap	$7	N/A
Nonres. Youth Deer Hunting	N/A	$24
Nonres. Deer License Bundle (youth)	N/A	$65
Deer Hunting	$24	$150
Deer License Bundle	$65	$295

Table 4. Indiana deer hunting licenses sold during the 2018-2019 hunting season.

License	Number Sold
Res. Deer Hunting	78,727
Res. Deer License Bundle	67,970
Res. Youth	28,473
Nonresident	11,540
Total	186,710

Table 5. Indiana 2018-2019 deer hunting season dates and bag limits.

	Hunting Dates	Bag Limit
Reduction Zone*	Sept. 15, 2018 – Jan. 31, 2019	1 antlered deer AND 9 antlerless deer OR 10 antlerless deer
Youth	Sept. 29 and 30, 2018	1 antlered AND the number of bonus antlerless deer per county quota
Archery	Oct. 1, 2018 – Jan 6, 2019	2 antlerless deer OR 1 antlered and 1 antlerless deer (AND bonus antlerless county quota)
Firearms	Nov. 17, –Dec. 2, 2018	1 antlered deer (AND bonus antlerless county quota)
Muzzleloader	Dec. 8 – 23, 2018	1 antlered deer OR 1 antlerless deer (AND bonus antlerless county quota)
Special Antlerless**	Dec. 26, 2018 – Jan. 6, 2019	The number of bonus antlerless deer per county with a quota of 4 or more

*Designated counties or portions of counties

**Special Antlerless Season only in counties with a bonus antlerless quota of 4 or more

III. Historical Harvest

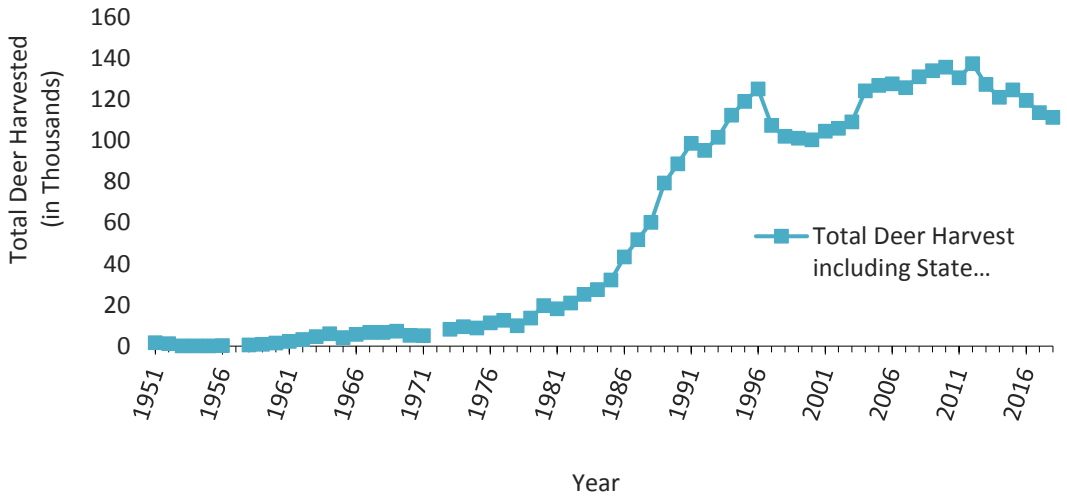


Figure 1. The total number of deer harvested in Indiana each year from 1951 to 2018 including state park hunts.

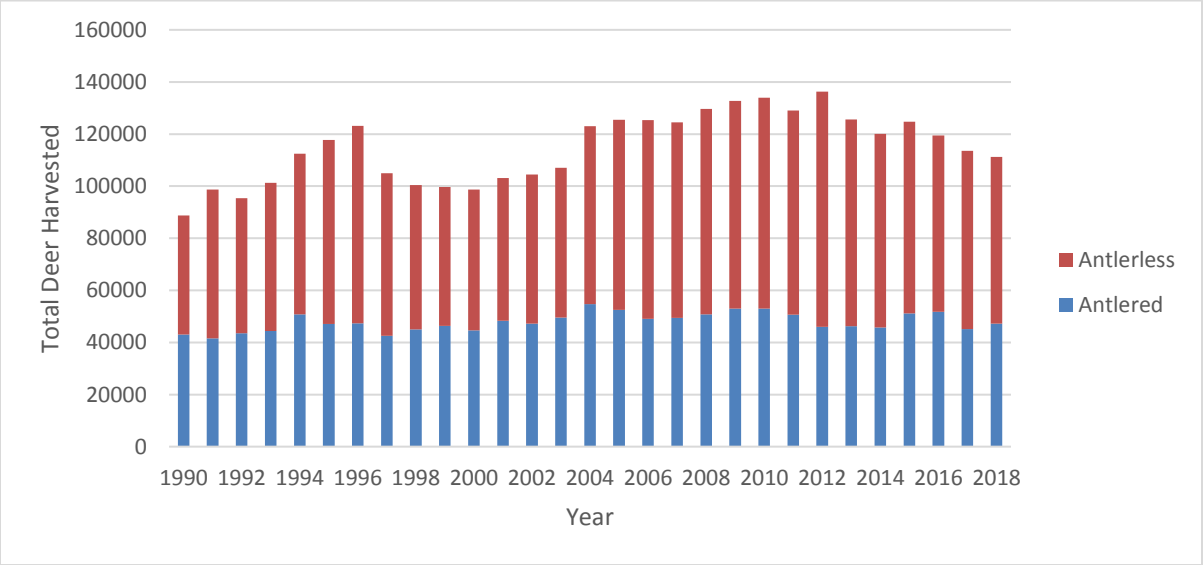


Figure 2. The proportions of yearly deer harvest totals that are antlered and antlerless since 1990.

IV. Population Trends
Indices for Indiana deer population density are currently being developed.

V. Management Units
Management units in Indiana are defined by counties. For example, the Bonus Antlerless deer quotas are set individually by county.

VI. Regulation/legislation Changes

No significant changes

VII. Urban/Special Hunts
In Indiana, there are two special hunts that aim to control deer populations and allow hunters to harvest deer in addition to the statewide bag limits. Hunters may participate in the Deer Reduction Zone (previously Urban Deer Zone) season or the Bonus Antlerless program. Deer Reduction Zones allow hunters to harvest up to 10 deer (10 antlerless, or 9 antlerless and 1 antlered) in defined areas with increased deer-human conflict (e.g. deer-vehicle collisions). Participants aiming to satisfy the Reduction Zone bag limit must harvest an antlerless deer before harvesting an antlered deer. A Deer Reduction Zone license is required for each deer harvested. The Deer Reduction Zone season does not override any local ordinances that restrict shooting firearms and bows. Reduction Zones for the 2018-2019 Deer Reduction Zone season included Allen County (primarily Fort Wayne), Evansville, Indianapolis (all of Marion County and portions of Boone, Hamilton, Hendricks, Johnson, and Morgan counties), Muncie, Michigan City/LaPorte, Lafayette, portions of Lake and Porter counties, South Bend/Mishawaka/Elkhart, and Warsaw.

In 2018, Deer Reduction Zone Corridors were added along segments of major roadways in 10 counties (Brown, Dearborn, Dekalb, Fulton, LaGrange, Madison, Monroe, Steuben, Wabash, and Warrick counties) that experience high levels of deer-vehicle collisions. These zones were subject to the same regulations as traditional Deer Reduction Zones. See section X. Research for more information.

The Bonus Antlerless license allows hunters to harvest additional antlerless deer in any county during all hunting seasons. In 2018, county bag limits (quotas) ranged from A to 8, with “A” designated counties only allowing the harvest of one antlerless deer from November 29, 2018 to January 6, 2019. A license is required for each bonus antlerless deer, and a hunter may purchase an unlimited number of licenses as long as county quotas are observed. The Special Antlerless season allows hunters to harvest antlerless deer using firearms in counties with quotas of 4 or more.

In 2018, the Community Hunting Access Program (CHAP), which is designed to increase hunting opportunities for deer in urban environments and to help alleviate human-deer conflicts, funded applications from five communities. The program provides partners with financial and technical assistance to administer hunting programs in their communities. Communities work closely with certified CHAP Hunt Coordinators who develop, implement, and manage hunts within the community.

VIII. Management Assistance/Crop Damage
Crop Damage

2018-2019 Indiana Deer Program Report

Joe N. Caudell and Olivia D. L. Vaught

Deer control permits are issued when individuals, business, and/or agencies experience problems with deer. Permits are used to reduce conflict between landowners and deer in localized areas. They are not used as a form of population control, as demonstrated by the low take when compared with the number of deer harvested during the hunting season. Typical problems experienced in Indiana include browsing damage to crops, orchards, and plants used for landscaping. Permits are issued when landowners can demonstrate damage in excess of $500. Permits may also be issued to address disease concerns, as has been needed in recent years in parts of Franklin and Fayette counties to address issues with bovine tuberculosis.

A total of 277 deer control permits were issued statewide, with an average of 16.6 deer authorized per permit and an average of 6.8 deer taken per permit. Reported damage at the time of the application ranged from $200 to $88,055. Average percent of soybean crops reported as damaged was 21.7% (n=157; CI_{95}=18.0%, 25.5%) . Average percent of corn crops reported as damaged was also 21.7% (n=139; CI_{95}=17.5%, 25.8%).

A total of 1,737 deer were taken statewide on deer damage permits, which represents 1.6% of the aggregate number of hunter-harvested deer and the number of deer taken on control permits in 2018. Most of the deer taken on control permits were does and button bucks (n=1, 467), which represents 2.2% of the total number of does harvested by hunters and taken on permits in 2018. A much smaller number of bucks (n=274) were taken on control permits, which represents 0.6% of the total number of bucks harvested by hunters and taken on control permits in 2018. The majority of deer (77%) taken on control permits were either consumed or donated for human consumption.

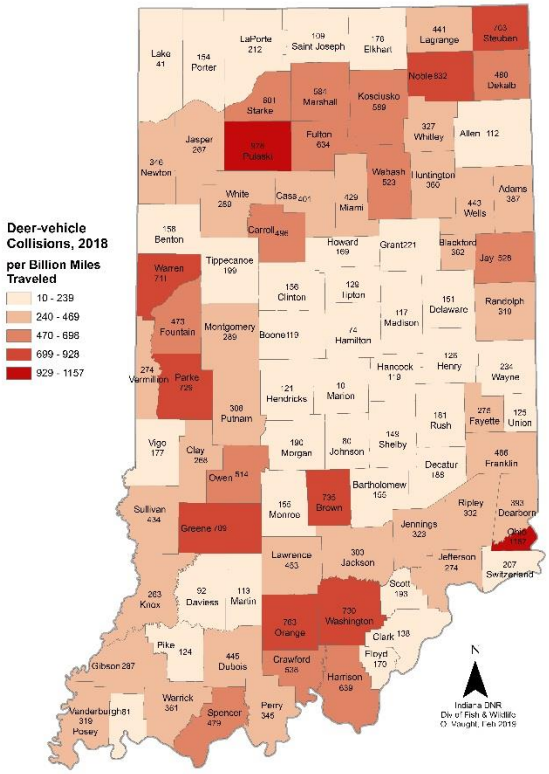


Figure 3. Deer-vehicle collision per billion miles travelled in Indiana in 2018.

Deer-Vehicle Collisions

Deer-vehicle collisions are analyzed by standardizing across years and counties using statistics on the Daily Vehicle Miles Traveled (DVMT) provided by the Indiana Department of Transportation. This adjustment (collisions per billion miles traveled) accounts for changes in traffic volume between counties to allow for an unbiased comparison between counties and years. The total reported deer-vehicle collisions across the state increased from 15,414 collisions in 2017 to 15,270 in 2018. The number of deer-vehicle collisions per billion miles traveled in 2018 was 194, similar to the 198 collisions per billion miles traveled reported in 2017.Counties with the highest number of deer-vehicle collisions per billion county miles traveled were Ohio (1,157), Pulaski (978), and Noble (832) (Figure3). Two counties had 50 or fewer deer-vehicle collisions per billion county miles traveled: Marion (10) and Lake (41). Deer-vehicle collisions per billion miles traveled decreased in 42 counties and increased in 50 counties compared to 2017. Twelve counties showed a greater than 15% increase in deer-vehicle collisions per billion miles traveled while 15 counties showed a greater than 15% decrease compared to 2017. Only Union County had an increase in the number of deer-vehicle collisions per billion miles traveled greater than 50%. Most deer-vehicle collision in 2018 occurred on state roads (36.5%) and county roads (28.4%). More than 50% of deer-vehicle collisions in 2018 occurred between September and December. The economic cost of deer-vehicle collisions in 2018 was over $66.7 million based on the average estimated cost per collision.

IX. Disease Issues / Updates

Bovine Tuberculosis

Bovine tuberculosis (bTB) is a chronic disease caused by the bacterium *Mycobacterium bovis*. Indiana DNR and other state and federal partners test wild white-tailed deer for bovine tuberculosis because it was found in cattle in Franklin County in 2008, 2009, and 2016 and in Dearborn County in 2011. The disease was also detected in captive deer from a farm in Franklin County in 2009. Between 2009 and 2015, a total of 1,454 wild white-tailed deer were sampled in the bovine tuberculosis surveillance zone and none of these deer tested positive for the disease. A new case of bovine tuberculosis was identified in cattle on another farm in Franklin County in May 2016 which resulted in 2,047 deer being tested during the 2016-2017 hunting season. Another case of bovine tuberculosis was detected in a different cattle farm in northern Franklin County in December 2016. As a result, surveillance in the 2017-2018 deer hunting season was centered on this farm in northern Franklin and southern Fayette counties, and 480 samples from deer were collected. In 2018-2019, 89 hunter harvested deer were tested in this same area. An additional 93 deer were removed within a 1.5 mile radius of the affected farm in early 2019 as part of a targeted clean-up effort after the infected cattle were removed from the farm. Bovine tuberculosis was not detected in any of these deer samples.

CWD Surveillance

A total of 756 hunter-harvested deer, 180 road-killed deer, 26 targeted deer, and 7 found-dead deer were tested statewide in 2018, including 15 hunter-harvested deer from Illinois, Michigan, and Missouri . Detection abilities were calculated for each targeted surveillance county and non-target counties. Our ability to detect the disease ranged from 3.26% to 1.63% in the northwest targeted area and 1.31% in Steuben County in the northeast. To date, no wild deer have tested positive for CWD from Indiana.

X. Research

Effectiveness of Targeted Hunting for the Purpose of Reducing Deer Vehicle Collisions

Since 2012, Deer Reduction Zones (DRZs) have been established in localized areas across more than a dozen counties. DRZs mitigate deer-related problems faced by communities while allowing hunters additional opportunities to harvest deer. In 2018, Indiana DNR established new DRZ corridors along segments of major roadways that had high rates of deer-vehicle collisions (DVCs). We analyzed the 2012-2017 DVC data reported to Indiana Department of Transportation using a hotspot analysis technique in the ArcGIS mapping software to identify road segments with DVC rates statistically higher than what would be expected if the collisions occurred by random chance.

DVC hotspots were identified along several sections of major roads in Brown, Dearborn, Dekalb, Fulton, LaGrange, Madison, Monroe, Steuben, and Wabash counties (see wildlife.IN.gov/8534.htm for more details). In order to mitigate this conflict, Indiana DNR designated a DRZ corridor extending ½ mile to either side of the centerline of the identified road segments in these counties. Hunting was allowable on the entirety of any parcel of land that was intersected by the DRZ corridor.

The goal of the DRZ corridors is to target localized deer-human conflicts along roads and to evaluate the effectiveness of DRZs as a tool to mitigate DVCs. When selecting a segment of road for a DRZ corridor, we also selected a non-included

segment of road to serve as a control. After the DRZ corridors have been in place for a few hunting seasons, we will evaluate the number and rates of DVCs along these segments of road compared to those of the previous years and to the control segments of road outside of the DRZ. This will help us determine if the number or rates of DVCs decreased as a result of the DRZ corridor. Analyses will begin after the 2019-2020 hunting season.

Obtaining Citizen Input on a Local Scale for Deer Management in Indiana

In 2015, Indiana DNR administrators were asked to obtain county-level public input using the model of Wisconsin's County Deer Advisory Councils (CDACs), in which one Council was created in each of 72 counties (WDNR 2013). In 2016, Indiana DNR agreed to a limited trial of a modified version of the Wisconsin CDAC model, resulting in the formation of 10 CDACs through grassroots efforts within those counties. Indiana's modified version was a 100% grassroots variation, in which local CDAC coordinators were responsible for recruiting representative members, contacting Indiana DNR to obtain deer management data, conducting their own surveys, arranging meetings, and reporting back to Indiana DNR.

The effectiveness of these different public input methods had not been previously compared to determine which provides the most high-quality data at a cost reasonably assumed by Indiana DNR. We examined four options to achieve the goal of increasing the quantity and quality of public input: 1) replace existing paper surveys with an internet-based approach that would increase the frequency and scope of data collected and ensure their applicability as a reliable index for deer populations (termed Citizen Survey Method); 2) a direct interface, county-based deer advisory committee based on the Wisconsin model, using Indiana DNR staff as liaisons to each council (termed the county-based Indiana DNR-facilitated CDAC model); 3) a direct interface, region-based model that retains most of the functionality of the Wisconsin model, but creates conglomerates of counties for representation by each CDAC (termed the regional Indiana DNR-facilitated CDAC model); and 4) a grassroots-facilitated CDAC model that allows citizens to set up a CDAC with minimal guidance and input from Indiana DNR (termed the county-based grassroots-facilitated CDAC Model). The grassroots model was piloted in 10 Indiana counties in 2016. We evaluated each model for their estimated ability to obtain unbiased and representative public input data and for their cost (e.g., time, resources, etc.) to Indiana DNR for obtaining those data.

We found that the *Citizen Survey Method* would not result in additional staff, office space, vehicles, or other expenses, as the Indiana DNR already has time and personnel designated to conducting surveys and would cost $32,000 per year in the first five years. The Wisconsin-style CDAC model or *Indiana DNR-facilitated CDAC model* would be an estimated $921,266 annual expense and a one-time start-up cost of $250,000. The *Regional Indiana DNR-facilitated CDAC model* would be an estimated $349,150 annually with a one-time start-up cost of $75,000. The *County-based Grassroots-Facilitated CDAC Model* would be an estimated $279,100 annually and a one-time cost of $50,000.

In 2016, all 10 of the trial CDACs held meetings and provided a county bonus antlerless quota recommendation based on public meetings and local surveys conducted by the local CDAC organizer in each county. While some Indiana DNR conservation officers were in attendance at the meeting, the primary role of Indiana DNR was to provide county-level data about the harvest. In response to this need, Indiana DNR added the county-level data to the annual Indiana White-tailed Deer Report so that anyone interested would have access to the same data. In 2017, three of the 10 CDAC counties contacted Indiana DNR to provide harvest recommendations. In 2018, only one county provided harvest recommendations based on a survey of their CDAC members but it was unclear if a meeting was held or if only surveys were used. All recommendations received from the CDACs were included as a sociological data point for that county in the annual Indiana DNR meeting to set the county bonus antlerless quota recommendations.

Because of the cost, experience of other states, and the lack of representation often occurring with public meeting-based input models, Indiana DNR elected to use the *Citizen Survey Method* to obtain input from its citizens on deer management. This has been met with many positive comments from deer hunters and deer hunting groups, including the groups that were the driving force behind bringing CDACs to Indiana. We use two primary surveys to gather information. Immediately after a hunter harvests a deer and electronically check it in, they receive a notification to fill out a survey about their deer and their hunt. Between 1,000 and 2,000 hunters annually participate in this survey. After the end of the deer season, all individuals who have created an account with the Indiana DNR Division of Fish and Wildlife (DFW), either for a license, checking in a game animal, or for any other purpose, receive an email invitation to complete a deer management survey.

In 2018, 269,389 invitations were emailed to complete the Deer Management Survey for anyone who had an electronic account and DFW had contact with in the past 5 years (i.e., purchased a hunting or fishing license, checked in a game animal, etc.); 23,283 surveys were started, and 12,659 surveys were completely finished. In 2019, 398,102 invitations were emailed to anyone we had ever had an electronic account with DFW; 33,987 surveys were started, and 24,955 were completely finished. The responses in both years have included about 10% from individuals who were non-hunters. Ultimately we believe that the driving factor behind the CDACs was for greater input and representation into deer management in Indiana. Because we share the data back with everyone in our annual Indiana White-tailed Deer Report and we can demonstrate how that data is used in setting harvest quotas, we have experienced an increase in satisfaction with deer management in Indiana.

Integrated Deer Management Research Project

Starting in the Fall of 2018, Indiana DNR began working with Purdue on a 4-year Integrated Deer Management Project that will lead to significant improvements in the data available to Indiana DNR for deer management. This project will result in a model that will integrate biological data (i.e., population data, harvest characteristics, and various population ratios), ecological data (i.e., effect of deer on their habitat), and sociological data to aid in the decision making process for setting harvest regulations. To achieve this, Purdue is assessing the methods used to obtain data for each of these three areas for the most cost effective methods for Indiana in various regions throughout the state.

XI. Hot Topics

CWD Task Force

Indiana DNR created a CWD Task Force in 2018 to take on the responsibility of pre-planning for management in the event that CWD is found in Indiana. The Task Force is addressing such questions as how best to communicate management and surveillance strategies to the public, surveillance and management of CWD, legal issues, prevention, and a number of other issues relevant to the management of CWD.

XII. Relevant Links

Indiana Division of Fish and Wildlife homepage: http://www.in.gov/dnr/fishwild/
DNR: Indiana Deer Hunting, Biology, and Management: http://www.in.gov/dnr/fishwild/8367.htm2017 Indiana White-tailed Deer Report: http://www.in.gov/dnr/fishwild/8367.htm
2016 Indiana White-tailed Deer Report: http://www.in.gov/dnr/fishwild/files/fw-DeerSummaryReport_2017.pdf
Deer Reduction Zones: http://www.in.gov/dnr/fishwild/8534.htm
2018-2019 Bonus Antlerless Deer Map: http://www.eregulations.com/indiana/hunting/bonus-antlerless-deer/
Wildlife Diseases including Bovine Tuberculosis: http://www.in.gov/dnr/fishwild/5466.htm

Prepared by Tyler M. Harms, Biometrician and Deer Program Leader

I. Current Reported Harvest

Total reported harvest statewide for the 2018-2019 season was 107,857, which is an increase of approximately 2% from last year. Total licenses sold for the 2018-2019 remained essentially unchanged from last year at 340,252 licenses. County-specific antlerless license quotas increased in 8 counties and decreased in 1 county, resulting in a net increase of 1,550 antlerless licenses available to hunters statewide. Additionally, a January antlerless-only season was implemented in Allamakee, Appanoose, Clayton, and Wayne counties in an effort to increase harvest and subsequently decrease deer densities to slow the spread of Chronic Wasting Disease (CWD).

Comparison of license sales and reported harvest by season for the previous 2 years.

	2017 - 2018		2018 - 2019		% Change	
Season	**Licenses**	**Harvest**	**Licenses**	**Harvest**	**Licenses**	**Harvest**
Youth	9,377	3,217	9,693	3,650	3%	13%
Disabled	437	143	397	138	-9%	-3%
Archery	89,129	22,665	87,559	21,339	-2%	-6%
Early Muzzleloader	11,285	3,423	10,514	3,594	-7%	5%
Shotgun 1 (Paid)[1]	64,600	26,604	60,087	24,142	-7%	-9%
Shotgun 2 (Paid)[2]	61,242	19,955	64,508	23,259	5%	17%
Shotgun LOT[3]	42,017	11,161	42,302	11,837	1%	6%
Late Muzzleloader	40,272	9,629	39,972	9,885	-1%	3%
Special Hunts	2,701	1,221	2,827	1,405	5%	15%
Depredation	3,565	1,907	3,875	2,242	9%	18%
Nonresidents[4]	14,869	5,578	15,002	5,476	1%	-2%
January Antlerless	NA	NA	3,059	890	NA	NA
Total	**339,651**	**105,578**	**340,252**	**107,857**	**0%**	**2%**

[1] – 1st shotgun season (5-days beginning 1st weekend in Dec) for licenses not claiming landowner/tenant preference.

[2] – 2nd shotgun season (9-days beginning 2nd weekend in Dec) for licenses not claiming landowner/tenant preference.

[3] – Both shotgun seasons (14-days) for landowner/tenants choosing the shotgun firearm season.

[4] – Nonresident licenses for either shotgun 1, shotgun 2, archery, late muzzleloader, disabled hunter, or holiday antlerless-only season. Quota of 6,000 nonresident general deer/antlerless-only licenses, 35% of which can be archery licenses. An additional 4,500 antlerless-only licenses are available for either one of the shotgun seasons or the disabled hunter season.

License sales, hunters, reported harvest, and success rates by license type and season for 2018 – 2019.

					Reported Harvest					Success	Percent
Season	**Group[1]**	**Type**	**Licenses**	**Hunters**	**Does**	**Antlered**	**Buttons**	**Sheds**	**Total**	**Rate[2]**	**Does**
Youth	Paid	Either-sex	9,177	9,177	1,111	2,030	229	9	3,379	37%	33%
		Antlerless	485	423	200	6	21	0	227	47%	88%
	LOT	Either-Sex	55	55	5	11	NA	0	17	31%	29%
		Antlerless	57	57	22	0	0	0	27	47%	81%
		Total	**9,693**	**9,693**	**1,338**	**2,047**	**254**	**11**	**3,650**	**38%**	**37%**
Disabled	Paid	Either-sex	326	309	38	61	13	0	113	35%	34%
		Antlerless	43	34	20	0	2	0	22	51%	91%
	LOT	Either-Sex	18	18	2	NA	0	0	2	11%	100%
		Antlerless	10	10	1	0	0	0	1	10%	100%
		Total	**397**	**397**	**61**	**61**	**15**	**1**	**138**	**35%**	**44%**
Early	Paid	Either-sex	6,879	6,879	620	1,591	111	1	2,323	34%	27%
Muzzleloader		Antlerless	1,480	1,121	565	3	82	0	650	44%	87%
	LOT	Either-Sex	1,242	1,242	120	210	23	0	353	28%	34%
		Antlerless	913	852	232	7	29	0	268	29%	87%
		Total	**10,514**	**10,514**	**1,537**	**1,811**	**245**	**1**	**3,594**	**34%**	**43%**
Shotgun 1	Paid	Either-sex	43,850	43,849	4,450	10,902	1,141	30	16,523	38%	27%
		Antlerless	16,237	10,049	6,403	94	1,103	19	7,619	47%	84%
Shotgun 2	Paid	Either-sex	47,363	47,363	5,465	8,666	1,401	101	15,633	33%	35%
		Antlerless	17,145	10,062	6,532	55	978	61	7,626	44%	86%
Shotgun 1 & 2	LOT	Either-Sex	22,931	22,931	1,597	3,731	362	25	5,715	25%	28%
		Antlerless	19,371	15,627	5,026	140	917	39	6,122	32%	82%
		Total	**166,897**	**51,225**	**29,473**	**23,588**	**5,902**	**275**	**59,238**	**35%**	**50%**
Late	Paid	Either-sex	22,333	22,333	1,857	3,165	272	74	5,368	24%	35%
Muzzleloader		Antlerless	10,700	7,042	2,624	12	402	91	3,129	29%	84%
	LOT	Either-Sex	2,625	2,625	157	254	29	7	447	17%	35%
		Antlerless	4,314	3,848	810	13	95	23	941	22%	86%
		Total	**39,972**	**3,194**	**5,448**	**3,444**	**798**	**195**	**9,885**	**25%**	**55%**

License sales, hunters, reported harvest, and success rates by license type and season for 2018 – 2019.

					Reported Harvest					Success	Percent
Season	**Group[1]**	**Type**	**Licenses**	**Hunters**	**Does**	**Antlered**	**Buttons**	**Sheds**	**Total**	**Rate[2]**	**Does**
Archery	Paid	Either-sex	53,577	53,576	1,275	10,474	226	28	12,003	22%	11%
		Antlerless	23,040	15,597	5,793	36	791	14	6,634	29%	87%
	LOT	Either-Sex	5,206	5,206	161	1,112	26	2	1,301	25%	12%
		Antlerless	5,414	4,657	1,183	17	128	5	1,333	25%	89%
		Total	**87,237**	**57,137**	**8,412**	**11,639**	**1,171**	**49**	**21,271**	**24%**	**40%**
Senior Crossbow	Paid	Antlerless	322	322	54	0	14	0	73	23%	74%
Special Hunts		Antlerless	2,827	1,274	1,229	1	160	15	1,405	50%	87%
Depredation		Antlerless	3,875	1,572	1,997	23	209	13	2,242	58%	89%
Nonresidents[3]	Paid	Either-sex	6,063	6,063	101	2,715	25	7	2,848	47%	4%
		Antlerless	8,939	8,936	2,247	151	216	14	2,628	29%	86%
Total			**340,252**	**166,021**	**52,544**	**45,564**	**9,115**	**634**	**107,857**	**32%**	**49%**

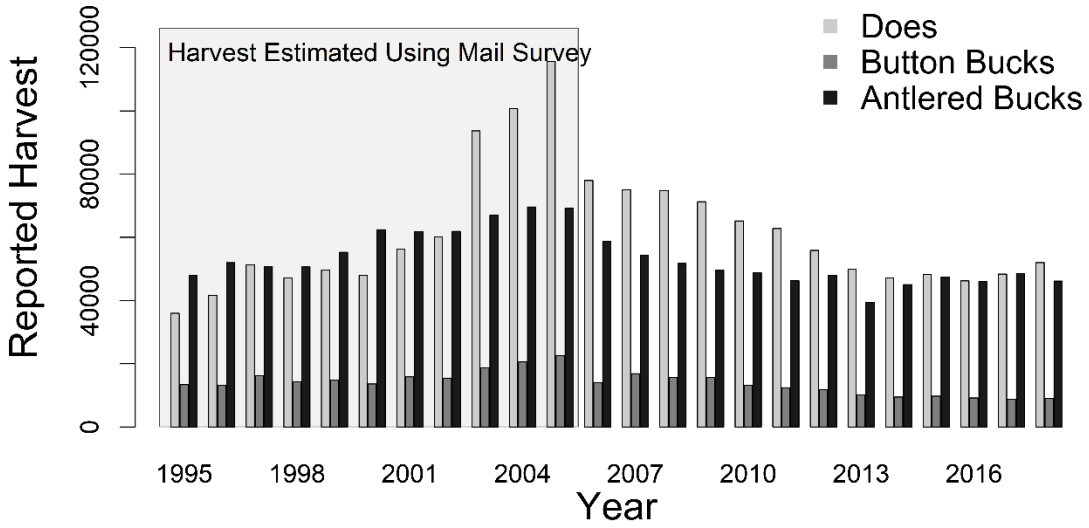
[1] – LOT = landowner/tenant licenses; Paid = non-landowner/tenant licenses.

[2] – Percent of licenses that reported harvested deer.

[3] – Nonresident licenses for either shotgun 1, shotgun 2, archery, late muzzleloader, disabled hunter, or holiday antlerless-only season.

- Quota of 6,000 nonresident general deer/antlerless-only licenses, 35% of which can be archery licenses. An additional 4,500 antlerless-only licenses are available for either one of the shotgun seasons or the disabled hunter season.

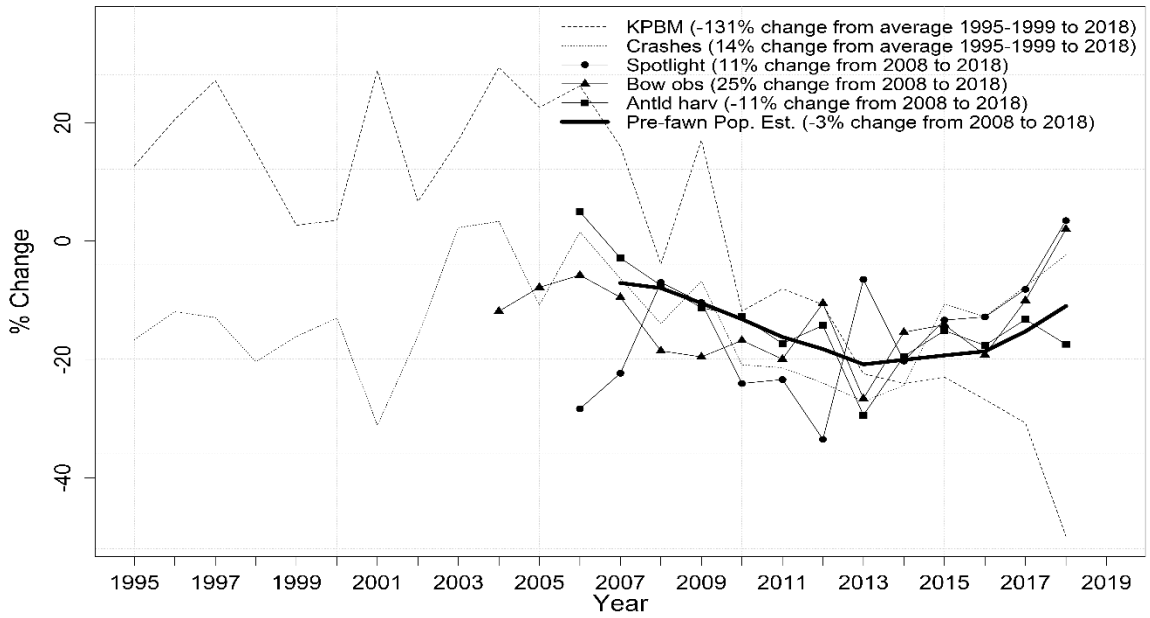
II. Historical Harvest



Trend in harvest for does, button bucks, and antlered bucks from 1995 to 2018 in Iowa. *Shaded area represents time period during which harvest was estimated using a mail postcard survey. Electronic reported harvest has been utilized since 2006.*

III. Population Trends

Our statewide population trend increasing slightly but is still within our harvest-based population goal of 100,000-120,000 deer annually.



KPBM = recovered deer-vehicle collisions (IADOT and Salvage Tags) divided by billion miles driven on secondary highways (IADOT estimate).

* Crashes = animal-related crashes reported to IADOT.
* Bow obs = bow hunter observation survey from start of archery season through Friday before 1st weekend in December.
* Antld harv = reported antlered deer harvest.
* Pre-fawn Pop. Est. = pre-fawning (~end-May) population index from deterministic 2-sex, 10-age class accounting model.

IV. License and Season Information

County resident antlerless quotas will be changed in 24 counties, with 20 increasing and 4 decreasing, for a total of 77,225 antlerless licenses available during the 2019-2020 season. The nonresident quota of 6,000 general deer/antlerless-only licenses, 35% of which can be archery licenses, distributed among 10 zones remains the same. An additional 4,500 antlerless-only licenses are available for nonresidents.

Fees: Landowner/Tenant: $2.00 (Either-sex [farm unit])
$2.00 - General Deer [1]
[1] - Hunting License and Habitat Fee not required

Resident: $70.00 (Either-sex or Antlerless; **previously $60.50**)
$22.00 – Hunting License (≥16 years; **previously $19.00**)
$15.00 – Habitat Fee (16 to 64 years old; **previously $13.00**)
$33.00 – General Deer or Antlerless (**previously $28.50**)

Nonresident:
$644.00 (Either-sex & Mandatory Antlerless; **previously $551.00**)
$131.00 – Hunting License (≥18 years old; **previously $115.00**)
$15.00 – Habitat Fee (16 to 64 years old; **previously $13.00**)
$498.00 – General Deer & Antlerless Tag (**previously $426.00)**

$412.50 (Optional Antlerless-only [county]; **previously $353.00**)
$131.00 – Hunting License (≥18 years old; **previously $115.00**)
$15.00 – Habitat Fee (16 to 64 years old; **previously $13.00**)
$266.50– Optional Antlerless Tag[1,2] (**previously $228.00**)
[1] - do not have nonresident deer tag
[2] – nonresident landowner preference

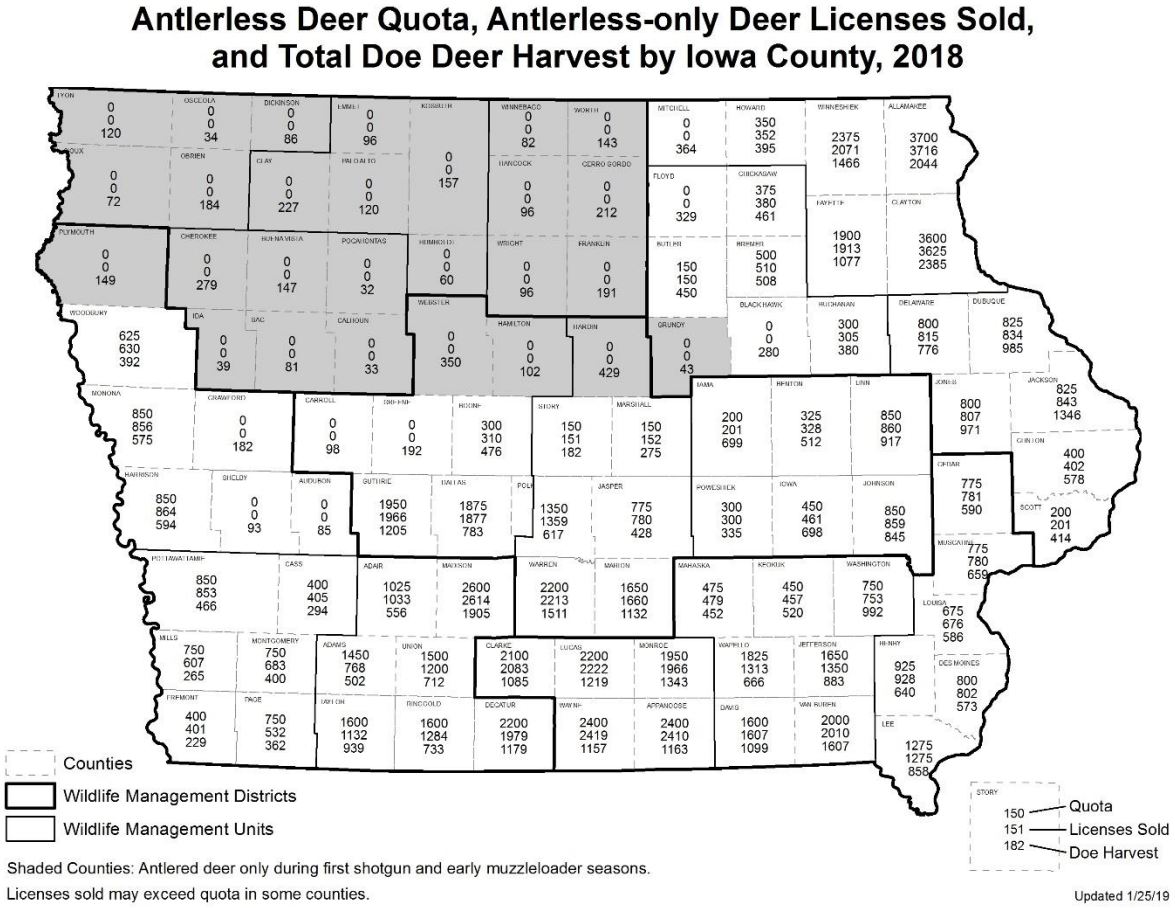
$237.00 (Holiday Antlerless-only [county]; **previously $206.00**)
$131.00 – Hunting License (≥18 years old; **previously $115.00**)
$15.00 – Habitat Fee (16 to 64 years old; **previously $13.00**)
$91.00 – Holiday Deer Antlerless Tag[1,2] (**previously $78.00**)
[1] - do not have nonresident deer tag
[2] - if leftover Optional Antlerless-only Tags

Minimum Age: None. Must be 12 years old with Hunter Safety to hunt without direct supervision

Season Dates:		
	Archery:	Oct. 1 - Dec. 6 & Dec. 23 – Jan. 10
	Early Muzzleloader:	Oct. 12 – Oct. 20
	Late Muzzleloader:	Dec. 23 – Jan. 10
	Shotgun 1:	Dec. 7 – Dec. 11
	Shotgun 2:	Dec. 14 – Dec. 22
	Youth/Disabled:	Sep. 21 – Oct. 6
	Holiday Antlerless:	Dec. 24 – Jan. 2 (leftover nonresident tags, only nonresidents)
	January Antlerless:	Jan. 11 – Jan. 26
	Special Mgmt. Hunts:	Season dates vary depending on management unit.

V. Deer Management Units

We have 16 Deer Management Units (each approximately 6 counties) in Iowa that correspond with how field staff are stationed throughout the state. While deer management decisions are made at the level of DMUs, allocation of antlerless licenses (our primary method for population management) is done at the county level. The below figure shows the antlerless license quota, number of antlerless licenses sold, and total antlerless harvest by county for the 2018-2019 season.



VI. Regulation/Legislative Changes

Legislation was passed during the 2018 session that provided the Department of Natural Resources authority to set license fees via administrative rule rather than requiring a change to the Code of Iowa. In response to this change, license fees were increased for most hunting and fishing licenses by 17% for the 2019-2020 season. Hunting and fishing license fees had not been changed since the early 2000's. See the above License and Season Information section for current and previous deer license fees.

Resident county-specific antlerless license quotas will change in 24 counties with quotas increasing in 20 counties and decreasing in 4 counties. This will result in a net increase of 3,525 antlerless licenses statewide with the goals of managing local populations within goal levels and, in certain counties, reducing densities to help slow the spread of CWD.

Lastly, the January antlerless-only season will remain in 4 counties (Allamakee, Appanoose, Clayton, and Wayne) and will be added in 1 county (Winneshiek). All allowable weapons in previous seasons are allowed during this season in addition to centerfire rifles 0.24 caliber and larger. This season is being implemented in counties with Disease Management Zones (DMZ) for CWD or in counties adjacent to DMZ counties.

VII. Special Management Hunts

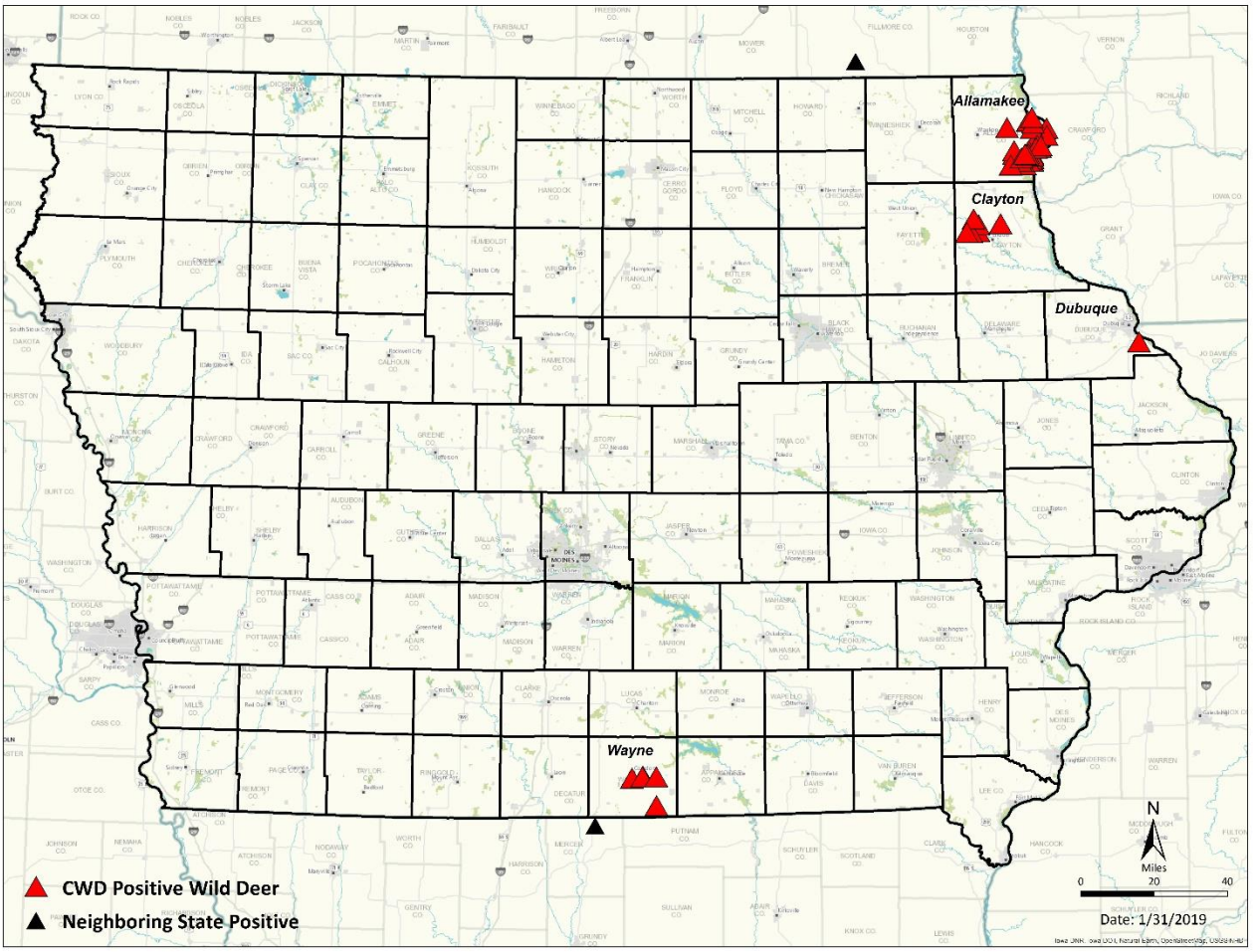
Special management hunts are conducted within various municipalities, parks, and other refuge areas each year. These hunts are managed by a local authority in cooperation with our Depredation staff and are approved annually by the Natural Resources Commission. Below is a summary of the special management hunts conducted during the 2018-2019 season.

Area	Type	Licenses Available	Licenses Sold	Reported Harvest
AMANA COLONIES ZONE	Archery & Firearm	250	157	67
AMES (CITY)	Archery	50	14	6
AMES (PERIMETER)	Archery & Firearm	50	30	4
BETTENDORF & RIVERDALE	Archery	125	76	36
BLACK HAWK COUNTY	Archery	290	198	83
CEDAR RAPIDS (CITY)	Archery	400	206	108
CLINTON (CITY)	Archery	75	59	27
CORALVILLE (CITY)	Archery	200	125	50
CORALVILLE (PERIMETER)	Archery	500	500	180
COUNCIL BLUFFS (CITY)	Archery	300	86	43
DAVENPORT (CITY)	Archery	250	241	86
DE SOTO NWR	Muzzleloader Oct. 22 - 23	100	7	0
DE SOTO NWR	Muzzleloader Dec. 17 - 18	100	15	4
DUBUQUE (CITY)	Archery	250	161	88
DUBUQUE COUNTY	Archery & Firearm	250	110	46
ELDORA (CITY)	Archery	50	11	2
ELKADER (CWD PERIMETER)	Archery & Firearm	250	47	30
ELK ROCK STATE PARK	Muzzleloader	25	25	14
GREEN VALLEY STATE PARK	Muzzleloader	30	19	11
HARPERS FERRY (CWD PERIMETER)	Archery & Firearm	250	95	57
HONEY CREEK STATE PARK	Archery & Firearm	50	38	28
IAAP	Archery & Firearm	1200	428	225
IAAP	Early Muzzleloader	40	8	1
IOWA FALLS (CITY)	Archery	50	47	33
IOWA FALLS (PERIMETER)	Archery & Firearm	30	3	0
JEFFERSON COUNTY PARK	Archery	25	9	4
JONES COUNTY CENTRAL PARK	Archery	50	15	6
KENT PARK (ARCHERY)	Archery	100	64	29
KEOKUK (CITY)	Archery	50	17	9
KNOXVILLE (CITY)	Archery	25	0	0
LAKE AHQUABI STATE PARK	Archery	30	10	6
LAKE DARLING STATE PARK	Archery	50	28	12
LAKE IOWA COUNTY PARK	Archery	50	28	12
LAKE IOWA COUNTY PARK	Muzzleloader	75	25	12
LAKE MILLS (CITY)	Archery	50	6	1
LAKE OF THREE FIRES STATE PARK	Archery	40	38	21
LEDGES STATE PARK	Archery	40	25	7
MAQUOKETA CAVES STATE PARK	Archery	30	26	15
MARSHALLTOWN (CITY)	Archery	60	37	18
MARSHALLTOWN (PERIMETER)	Archery & Firearm	40	21	1

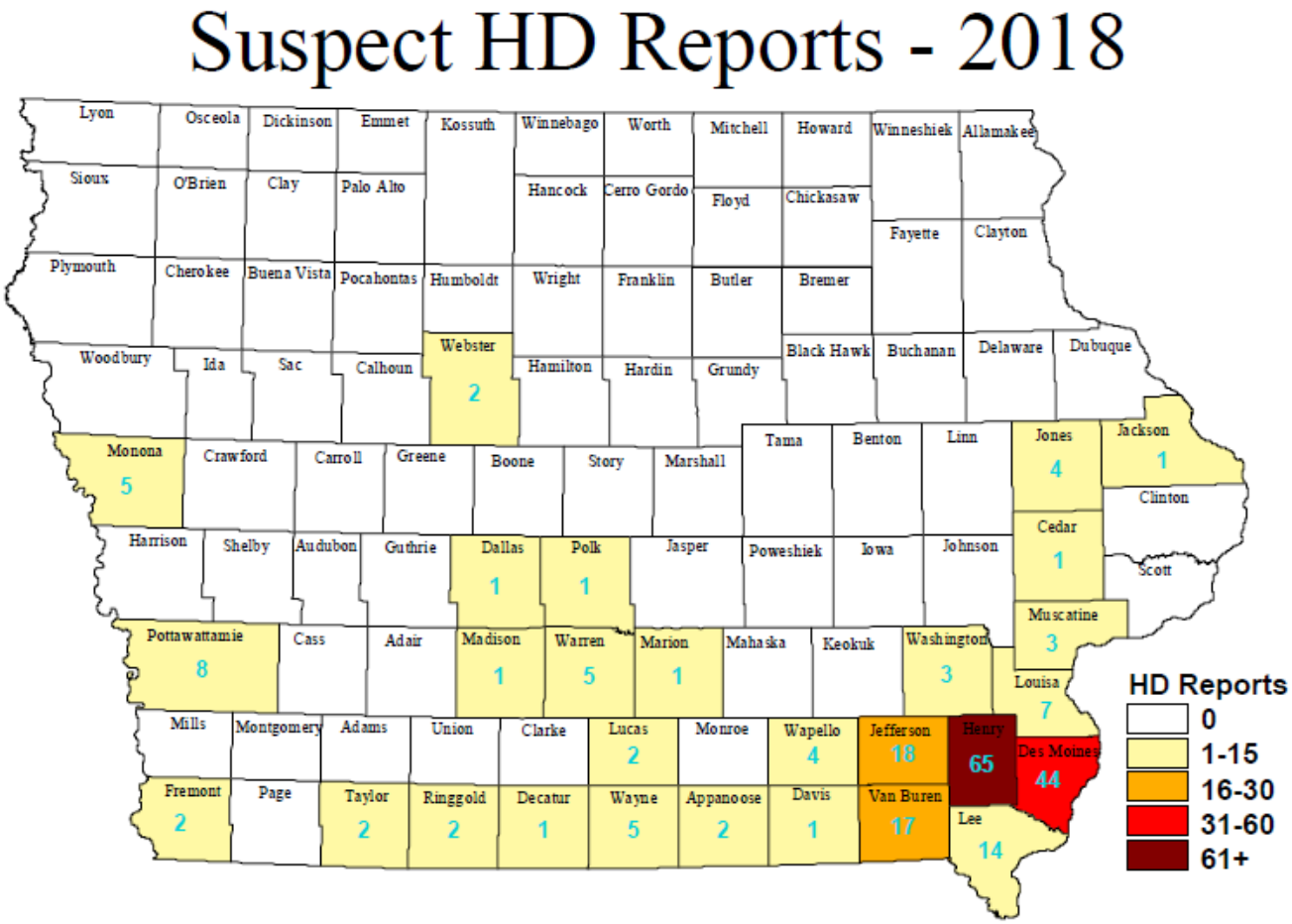
Area	Type	Licenses Available	Licenses Sold	Reported Harvest
MASON CITY	Archery	150	150	54
MOUNT PLEASANT (CITY)	Archery	50	3	1
MUSCATINE (CITY)	Archery	150	113	52
OSKALOOSA (CITY)	Archery	100	24	11
OTTUMWA (CITY)	Archery	125	91	51
PIKES PEAK STATE PARK/MCGREGOR	Archery	100	38	11
PINE LAKE STATE PARK	Archery	30	26	9
POLK-DALLAS ARCHERY ONLY	Archery	1000	570	316
POLK-DALLAS RURAL ZONE	Archery & Firearm	75	25	7
REICHELT AREA	Muzzleloader	30	23	8
RIVERSIDE PARK CARROLL CCB	Archery	40	1	1
SCOTT COUNTY PARK	Archery	50	18	11
SEYMOUR (CWD PERIMETER)	Archery & Firearm	250	112	66
SMITH WILDLIFE AREA	Firearm Dec. 3 - 7	3	3	1
SMITH WILDLIFE AREA	Firearm Dec. 10 - 18	3	3	1
SMITH WILDLIFE AREA	Firearm Dec. 19 - Jan 10.	3	3	1
SQUAW CREEK PARK	Archery	100	60	24
STONE STATE PARK	Archery	50	50	18
Totals		**8189**	**4368**	**2025**

IX. Diseases

CWD – Since the fall of 2013, 46 wild deer have tested positive for CWD statewide, which now includes 4 counties. Wayne County in south-central Iowa was added to the list of counties within which CWD was detected in free-ranging deer in 2017 when a single deer tested positive. In 2018, 4 additional deer tested positive for CWD in Wayne County, all of which were outside the Disease Management Zone. Also in 2018, a single roadkill deer tested positive for CWD in Dubuque County, which is south of Allamakee County and Clayton County in eastern Iowa. The below map illustrates the current distribution of CWD-positive samples collected in Iowa through 2018.



EHD – We received 222 reports of suspected EHD mortalities in 28 counties in 2018. Most reports were concentrated in 5 counties in southeast Iowa: Des Moines, Henry, Jefferson, Lee, and Van Buren.



X. Research

Iowa DNR research projects include a continuing evaluation of distance sampling methods using 12 years of spotlight data conducted on 199, 25-mile transects each year in March or April. We initiated a pilot study in 2017 evaluating the efficacy of our spotlight survey which included repeated visits to 20 selected spotlight survey routes throughout the state. We continue to evaluate alternative methods for estimating density and abundance, assess temporal variation in spotlight survey data, and determine whether different survey strategies can be employed (e.g., shorter routes) with hopes of completing this evaluation this fall. Additionally, we developed a habitat suitability map for deer in Iowa that was subsequently related to our spotlight survey counts to estimate a statewide abundance of deer. This effort was summarized in a manuscript that was recently published in the *Journal of Wildlife Management* (Kaminski et al. 2019: Using spotlight observations to predict resource selection and abundance for white-tailed deer).

In winter 2019, we initiated a small study to compare estimates obtained from recently developed density estimation methods using data from remote cameras to aerial counts on a small number of areas throughout Iowa. This effort will be replicated in winter 2020, but preliminary results indicate density

estimates using remote cameras and Space-To-Event (STE) models are very similar to minimum counts obtained from aerial surveys.

Iowa State University (P.I. Dr. Julie Blanchong, M.S. student Dan Adams) recently completed a study evaluating the influence of both biotic and abiotic factors on antler characteristics of White-tailed Deer across Iowa. Antler size, not surprisingly was positively correlated with age, but was also positively correlated with the amount of agriculture on the landscape and average summer temperature in the birth year and negatively correlated with the amount of forest on the landscape and winter severity prior to birth.

We are involved in several regional research collaborations including evaluation of remote camera technology and study design on density and abundance estimates, a multi-state project to develop rapid and commercially-available genetic resources for deer population assessment, and a multi-state simulation study to evaluate various management strategies for reducing prevalence and spread of CWD.

XI. Hot Topics

Similar to previous years, CWD and management strategies in regards to mitigating prevalence rates in Iowa continue to be the most important priority for both the IA DNR and many Iowa residents. There has also been discussion and bills proposed in regards to baiting and feeding rules. Lastly, we continue to receive requests to add specialty weapons to the list of approved weapons for harvesting deer in Iowa, including but not limited to centerfire rifles (currently allowed during the January antlerless season but not during other firearms seasons) and pneumatic rifles and bows.

XII. Links

None.

I. Current Harvest

Hunter harvest of deer during the 2018-19 seasons was estimated to be 81,769, a 2.8% increase from 2017-18 when 79,567deer were taken (Table 1). The total deer harvest in 2018-19 seasons was 0.88% below the three-year average and is 5.09% below the five-year average and was the 13th largest total harvest in Kansas since modern hunting seasons began in 1965. Mule deer harvest continues to decline and 82 fewer mule deer were harvested, although the antlerless harvest increased by 75 deer.

Table 1. Deer Harvest by Age/Sex and by Equipment. Kansas deer harvest estimates are obtained from a post-season survey administered online and by mail.

Harvest Age Structure*						
	Antlered Ad Bucks	**Male Fawns**	**Adult Does**	**Female Fawns**	**Ad Buck Shed Antler**	**Total**
White-tailed Deer	41,056	2,713	33,411	1,980	798	79,958
Mule Deer	1,597	13	180	6	15	1,811
By Residents	30,745	2,364	26,480	1,761	572	60,506
By Non-Residents	11,908	362	7,111	225	241	19,061
Total	**42,653**	**2,726**	**33,591**	**1,986**	**813**	**81,769**

Harvest by Equipment*				
	Compound Bow	**Recurve / Long Bow**	**Crossbow**	**Total**
Archery	20,599	579	8,766	29,944
	In-Line MZ	**Traditional MZ**		**Total**
Muzzleloader	2,304	412		2,716
	Centerfire Rifle	**Shotgun and Slug**	**Pistol**	**Total**
Firearms	48,732	231	145	49,108

*All estimates are rounded to nearest whole number. Sub-totals may not add exactly.

II. License Sales and Seasons

The Kansas Active Outdoors Licensing System data showed 106,896 people purchased 179,247 permits for the 2018-19 seasons, down 3.8% and 1.9% respectively from values in 2016-17 (Fig. 1). This is the fourth year in a row that deer permit sales have declined. These declines were in resident hunters and mostly in resident over-the-counter permits. Non-resident hunter and permit numbers are restricted to a draw and typically the few leftover permits after the drawing sell out quickly. In 2018-19, for the second consecutive year, no either species antlerless only permits were allocated due to concerns about the range and population of mule deer.

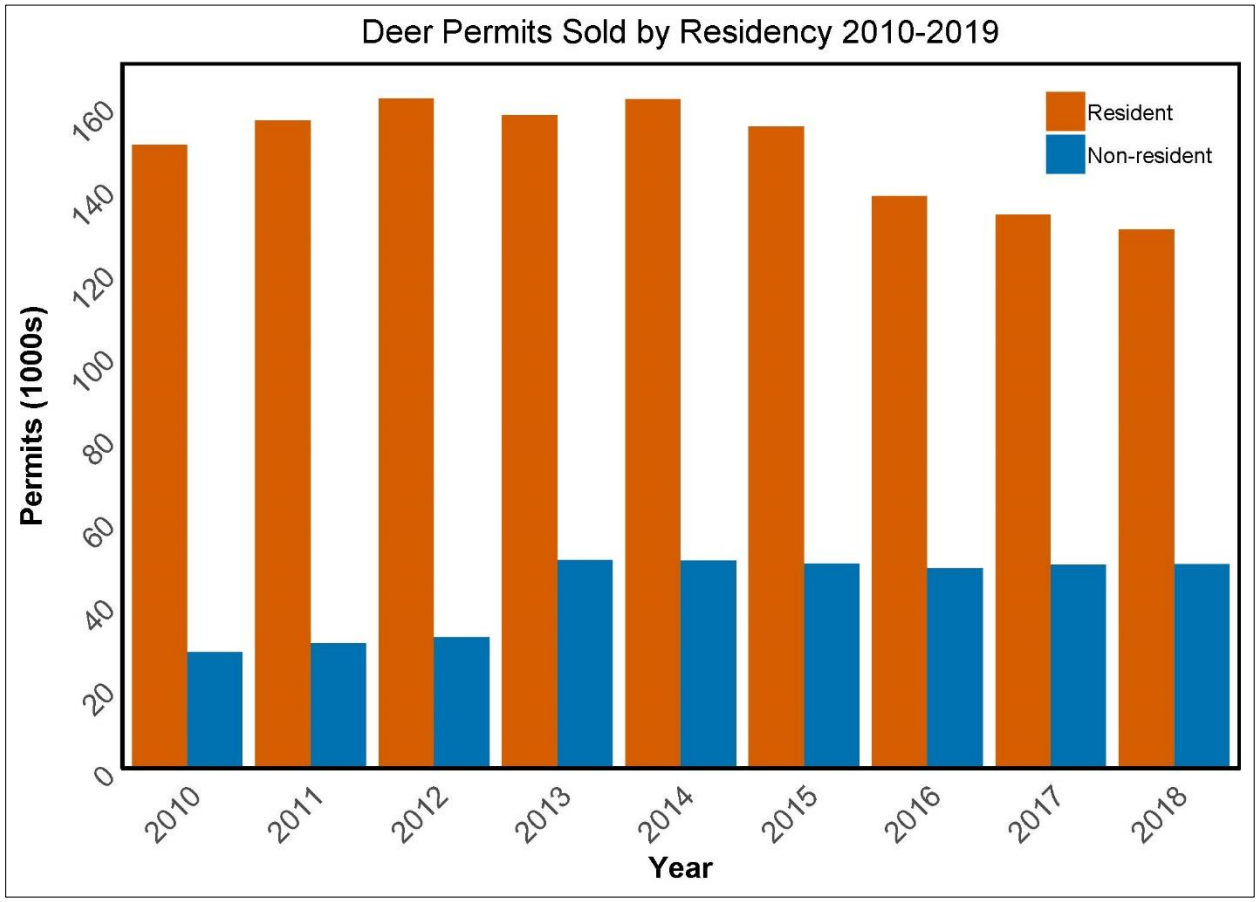


Figure 1. Deer permit sales 2010 to present. Resident sales (orange) have declined the last three years. Non-resident sales have remained steady since most non-resident permits are limited availability through the random draw, variation in non-resident permits is typically due to changes in the number of hunt-own-land or white-tail antlerless only permits sold.

III. Historical Harvest

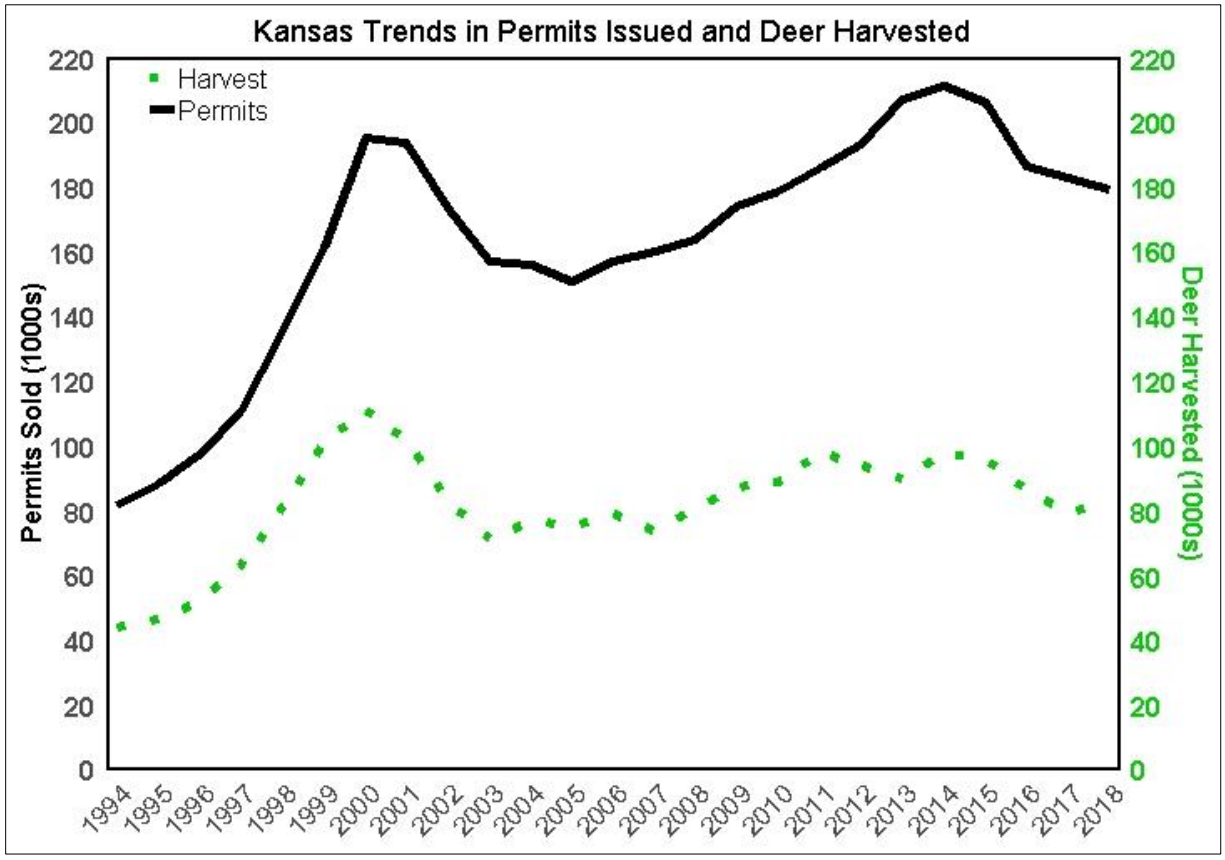


Figure 2. Trends in Deer Permits Sold and Deer Harvest in Kansas. Permit numbers include both either-sex and antlerless only permits. Deer harvest is all species and sexes combined.

IV. Population Estimate/Trends

Population – Deer related vehicle accidents have provided a long-term deer population trend indicator in Kansas. In the early 2000s we initiated line transect distance sampling procedures to assist in the monitoring of population trends (Fig. 3). Deer vehicle accident data from 2018 was not yet available from the Kansas Department of Transportation during the preparation of this report.

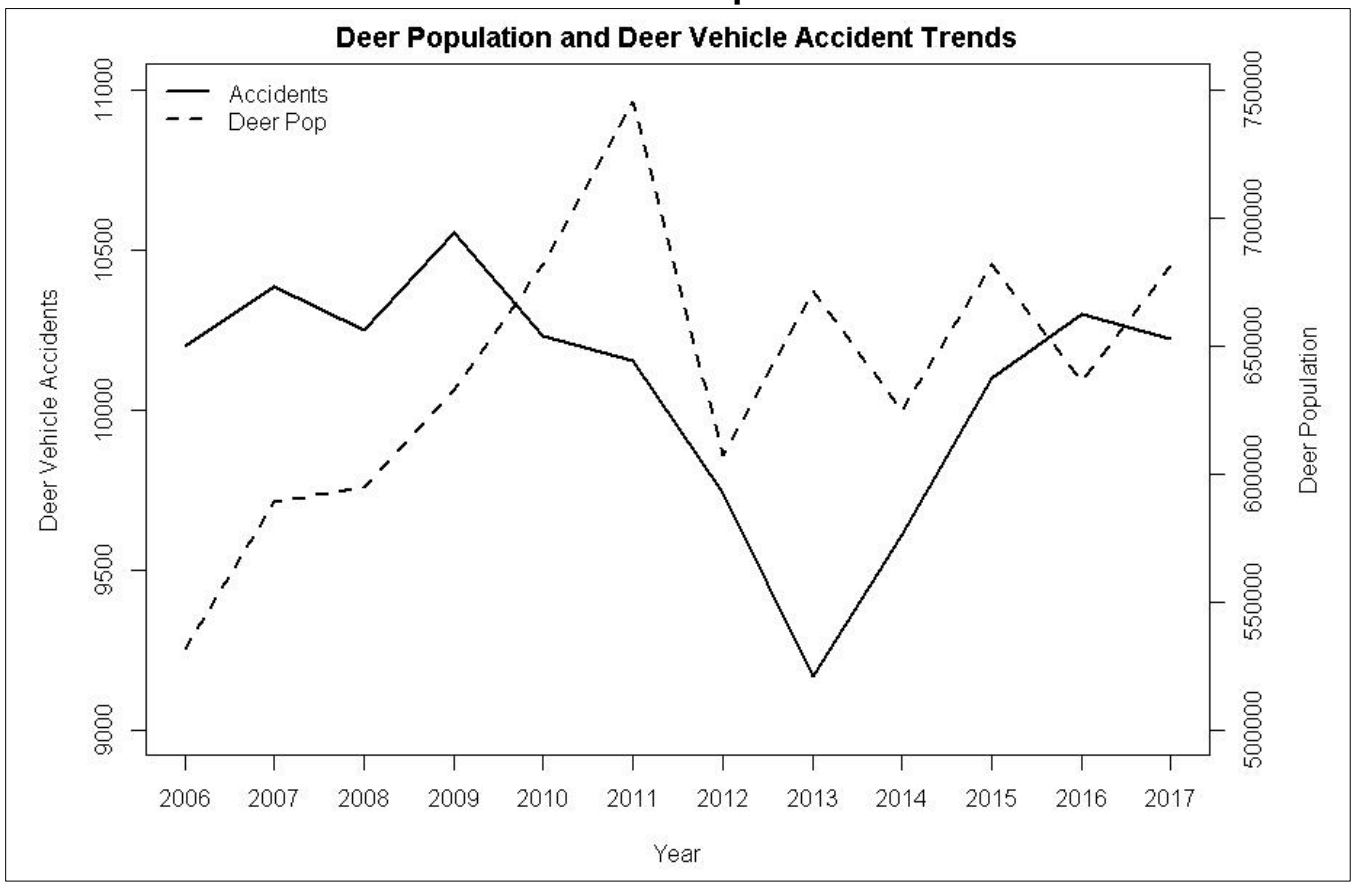


Figure 3. Deer population and reported deer/vehicle accident trends.

Demographics

Since 2006 we have classified about 5,900 deer per year during the spotlight / distance survey. Over the past 12 years there has been average observations of approximately 33 antlered bucks per 100 adult does and 57 fawns per 100 adult does. Fawns per 100 does has been declining from the peak in 2009 of 70.2 to 44.5 in 2018. Bucks per 100 does was stable at 32.2 bucks. Approximately a third of the antlered deer have been estimated to be yearlings, however the proportion of yearlings in the populations appears to be declining through the years (Fig. 4).

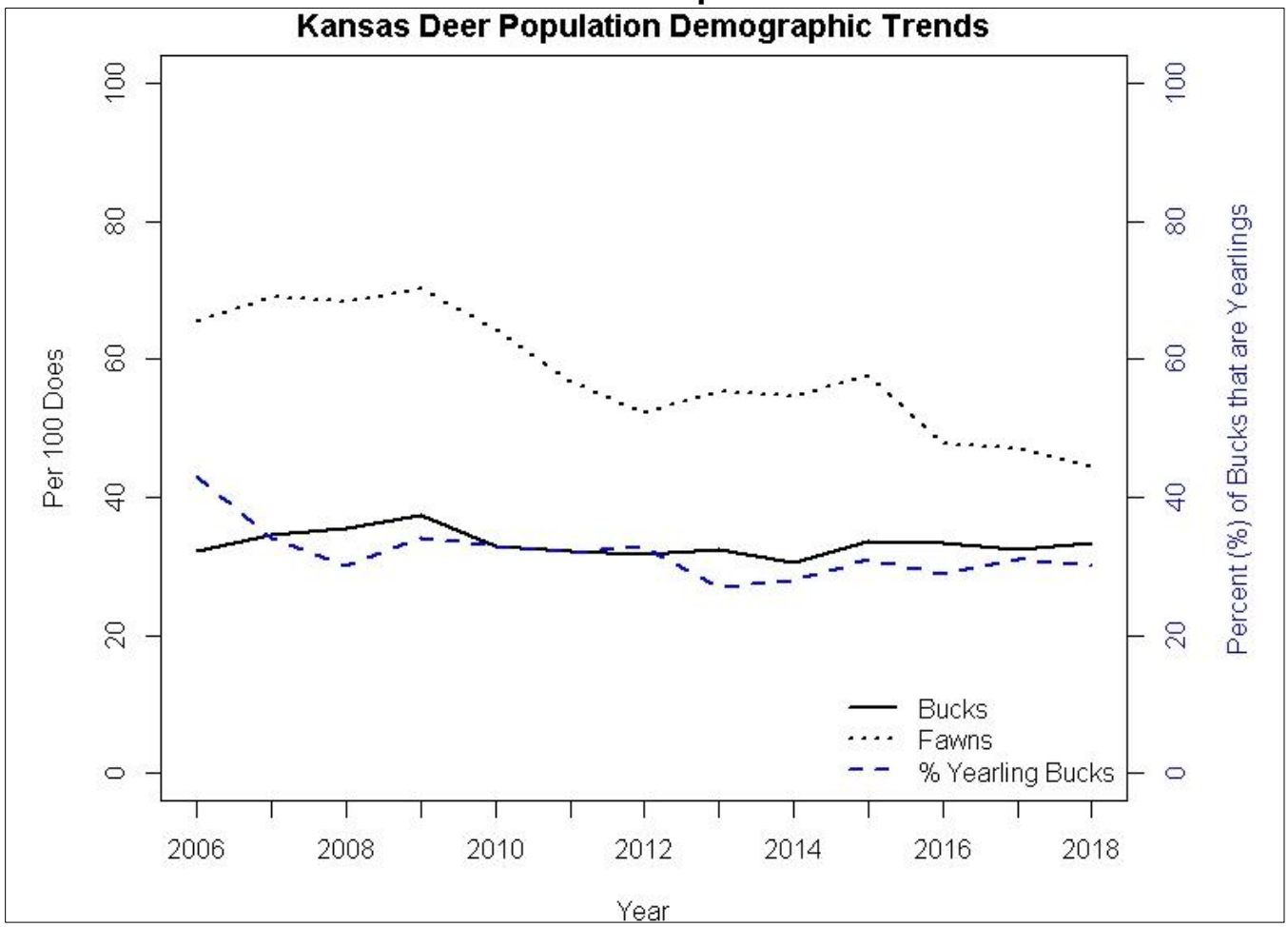


Figure 4. Demographic trends of deer in Kansas. Estimates of buck and fawn to 100 doe ratios and proportion of bucks that are yearlings are determined from yearly spotlight data.

V. Deer Management Units:

The Kansas Department of Wildlife Parks and Tourism (KDWPT) manages deer at the scale of Deer Management Units (DMU). Population trends, harvest and human dimensions aspects to deer management are summarized by these units. Boundaries are established by major state and federal highways (Fig. 5) easily identified and located by hunters, while the shapes are intended to capture areas of similar physiographic and ecological values. Long term maintenance of unit boundaries is desired for trend analysis.

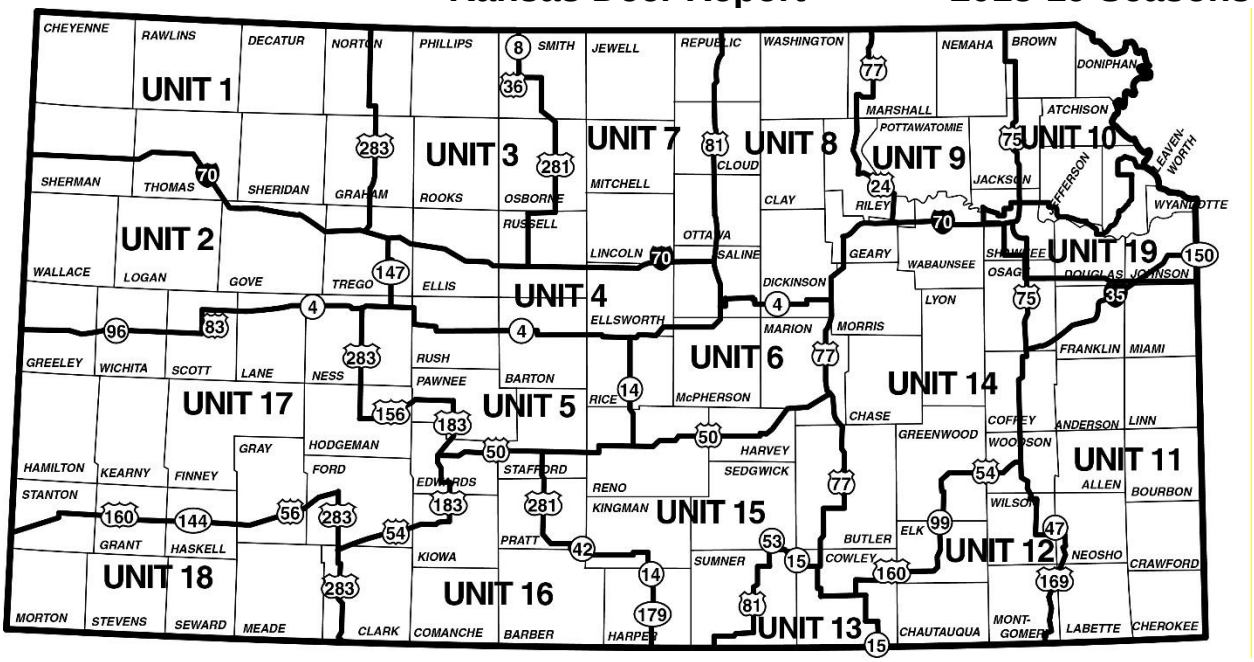


Figure 5. Kansas Deer Management Units. Units have changed little since implementation.

VI. Regulation/legislation

The January Antlerless Only Season in some units was shorted to one day in some deer management units to decrease harvest yet still provide some hunting and herd management opportunity. The pre-rut antlerless only firearms season was also moved to the Columbus Day weekend and extended to three days to provide some additional hunting opportunity for firearms hunters.

A bill was introduced to the state legislature that would create a transferable landowner deer permit that would take effect after all non-resident permits are drawn or non-resident leftover permits are sold. The bill passed the Kansas House of Representatives but did not pass out of committee in the Senate.

VII. Urban/Special Hunts Special permits have been issued to municipalities (including parks in suburban areas and airports) to allow culling in areas where local deer abundance created safety or public intolerance of the deer and traditional hunting by citizens had been prohibited by local ordinances. KDWPT continues to create special hunts to encourage the harvest of deer or to provide special access for youth, veterans and individuals with disabilities. Special hunts are used in some areas to create low hunter densities to emphasize quality experiences. They are also used in areas where additional antlerless deer need to be taken.

KDWPT began a new program (iWIHA) to increase hunting opportunities near urban centers. The program which leases hunting opportunities similar to the Walk-In Hunting Access program but requires an online reservation for daily use. The properties enrolled have access limits on the number of hunters per day, which should help maintain quality opportunities

throughout the various seasons. In 2018, there were 27 enrolled tracts that were hunted. There were 874 daily check-ins to hunt and 66% (575) of all check-ins were to hunt deer. Archery hunters utilized iWIHA properties the most of any deer hunter group (80%) and rifle hunters made up 17% of the check-ins. It should be noted that many of the tracts enrolled limit deer hunting to archery methods only. A total of 9 deer were reported being harvested on iWIHA tracts. Resident hunters made up approximately 92% of all use (includes hunting other game besides deer) on iWIHA properties.

VIII. Deer Management Assistance/Crop Damage

KDWPT District Wildlife Biologists, Public Land Manager and Natural Resource Officers have been authorized since 1999 to issue Deer Control Permits (DCP) to landowners suffering from damage caused by deer. DCP allow landowners and up to two resident agents to kill deer outside the dates of traditional hunting seasons. They allow the use of techniques typically not allowed where fair chase is a goal. All control permits become invalid when a regular hunting season is open. The issuing employee reviews each site and confirms damage caused by deer. They specify conditions and times when the permit may be used. During 2018, the majority of deer damage complaints occurred in Southeastern Kansas (Fig. 6) where deer densities have been increasing.

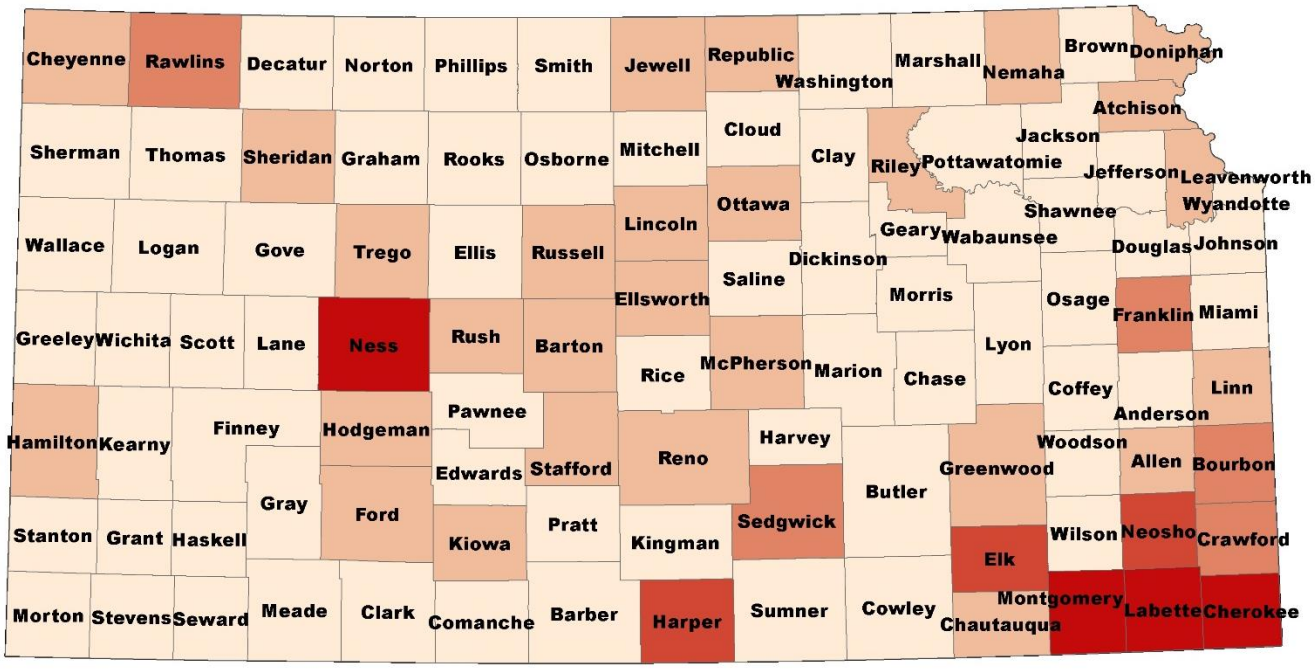


Figure 6. Deer Control Permits Issued in 2018. Darker colors indicate more permits issued, lightest color indicates no permits issued.

IX. Diseases

EHD

KDWPT staff and individuals from the public reported a total of 36 deer suspected (Fig. 7) of being affected by epizootic hemorrhagic disease virus (EHDV) or blue-tongue virus (BTV). Samples were obtained for testing from 12 of the 36 animals and were sent to SCWDS for diagnostic testing. EHDV-2 was the serotype detected in 6 eastern Kansas white-tailed deer. Hemorrhagic disease viruses were not detected in 5 of the 12 sampled deer, which included 4 white-tailed deer and one mule deer. White-tailed deer was diagnosed as having a chronic hemorrhagic disease infection.

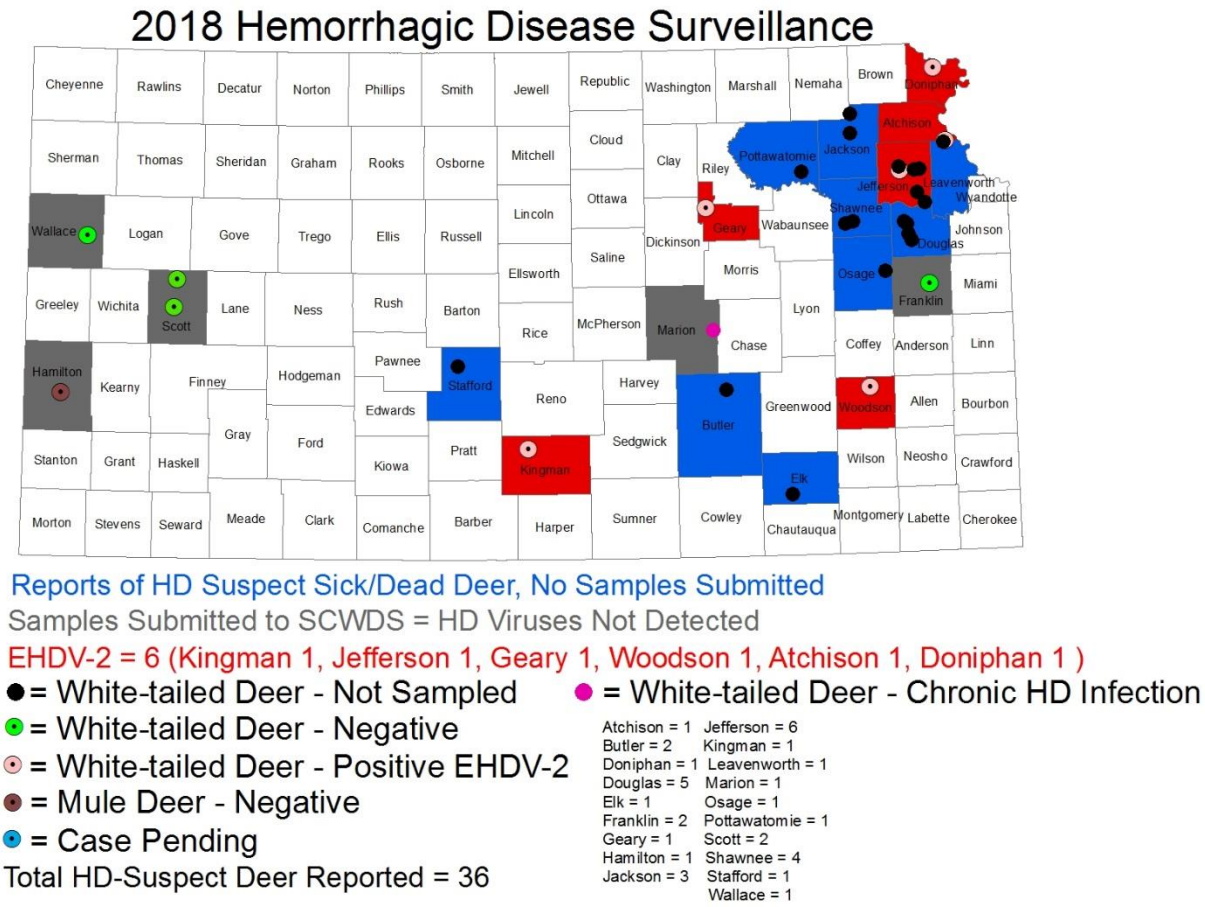


Figure 7. EHD map showing suspect and positive cases.

CWD

KDWPT CWD surveillance occurs on a clockwise rotational basis through five zones (Fig. 8), with a different zone being sampled each year. The sample goal for each zone is 458 to detect 1% prevalence with 99% confidence. In 2018 sampling was completed in the southwest zone. All sick/suspect animals are also sampled and samples from some road kills are collected. Data from private hunter submissions are also included if shared with the agency.

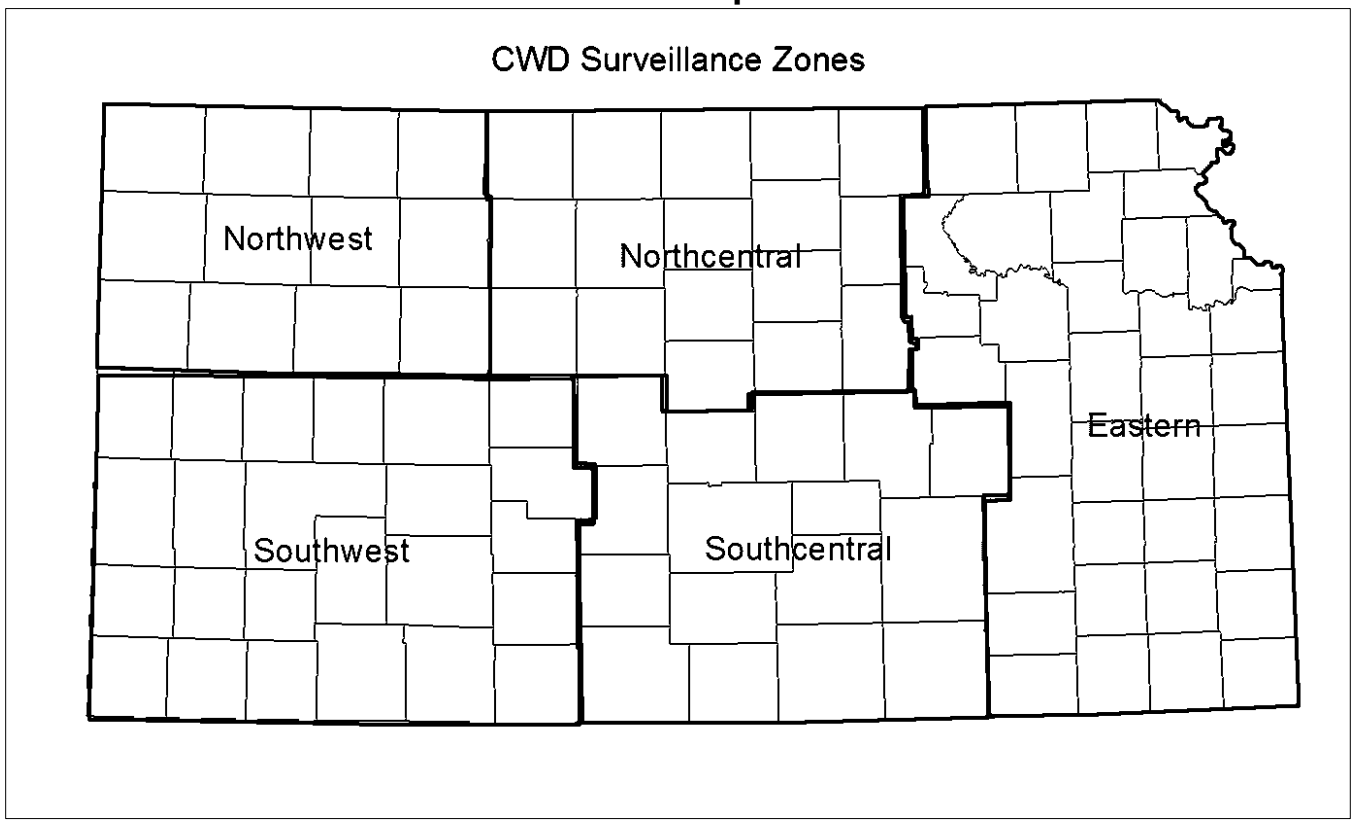


Figure 8. Kansas CWD Surveillance Zones. Sampling occurs on a clockwise rotation with a different zone sampled each year.

There were 56 positive cases of CWD identified from sampling in the 2018-19 season. Positive samples were made up of 39 white-tailed deer, 15 mule deer, and 2 unknowns. 31 of the positives were apparently healthy deer harvest by hunters, 14 were from sick/suspect deer, 10 were scientific collection, and 1 was hit by a vehicle. This brings the cumulative total of positive detections in Kansas to 235 since surveillance began in 1996.

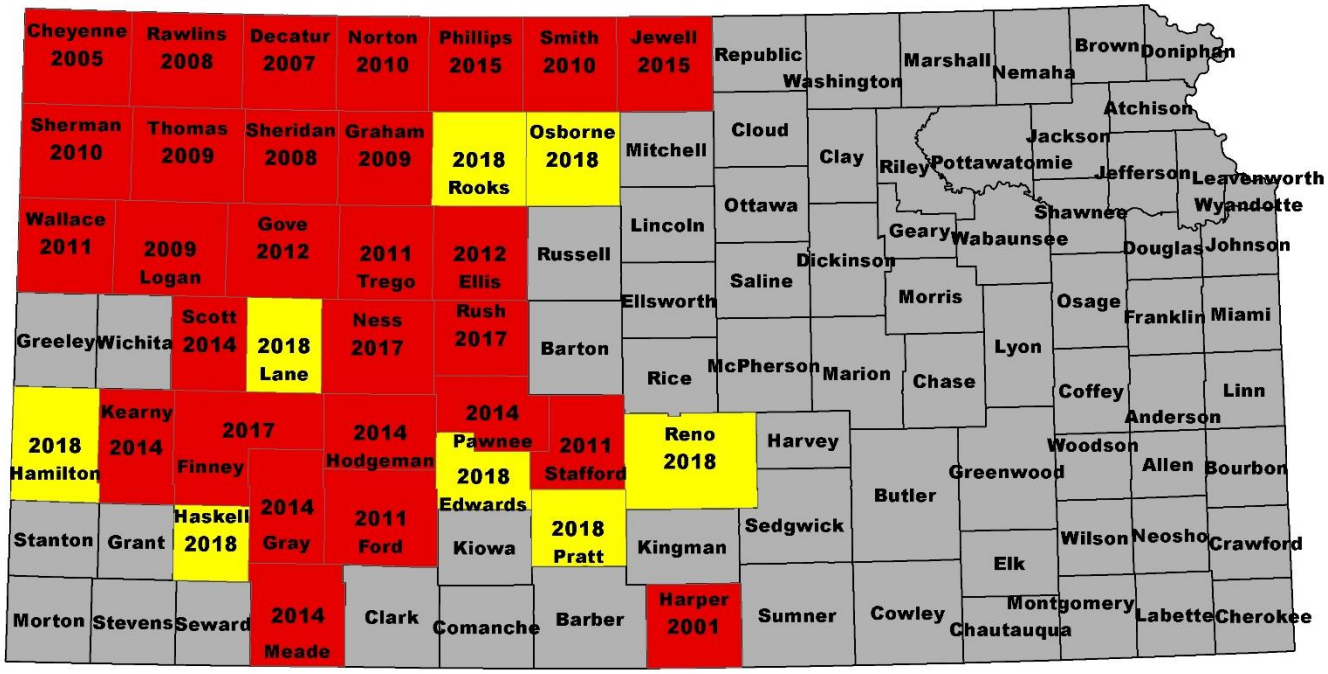


Figure 9. Kansas Counties with Chronic Wasting Disease Detections. The year in each county indicates the first year CWD was detected in that county. Yellow counties are counties in which CWD was first detected in 2018.

CWD has yet to be detected in the eastern half of Kansas (Fig. 9). Northwest Kansas, where CWD was initially detected by KDWPT, continues to have the most positive samples. In 2018 KDWPT will be initiating a human dimensions survey to assess hunter knowledge of CWD and palatability of potential actions or regulations for CWD infected deer herd management.

X. Research

KDWPT in collaboration with the Kansas Cooperative Fish and Wildlife Research Unit within Kansas State University initiated a research project to investigate intra-and-interspecific survival rates, cause specific mortality, movement, home range size and habitat selection of white-tailed and mule deer in western Kansas. In February of 2018, 120 deer were captured across two study sites. There were 60 deer caught at each site, 30 of each species at each site with even distribution between sexes. All collared does were ultra-sounded during capture and fitted with Vaginal Implant Transmitters (VIT) so that fawns could more easily be captured and collared also. Overall, fawn survival was low during the first year of data collection averaging 26.6% over the first seventy days after birth, with mule deer having lower survival (16.6%) than white-tailed deer (35.1%). The primary attribute of fawn habitat use for both species was greater vegetative cover. Doe survival was high yet could not be calculated because no does dies in 2018. Buck mortality consisted of mostly anthropogenic sources, mainly firearms hunters, but also archers, vehicles and poaching.

XI. Hot Topics

Antlerless season lengths and opening date.

During the 2018-19 season deer hunter harvest survey, hunters were asked to indicate their satisfaction with January white-tailed deer antlerless only (WAO) season opening date and length. Answers were recorded on a 7-point scale (extremely dissatisfied, dissatisfied, slightly dissatisfied, neutral, slightly satisfied, satisfied, extremely satisfied). Hunters were asked to identify the deer management unit (DMU) they would most likely hunt antlerless deer. Satisfaction data was analyzed by DMU using the potential for conflict index (Manfredo et al. 2003). DMU's have varying WAO season lengths. DMUs 6,8,9,10,16, and 17 have had one day seasons for the previous two years. DMUs 1, 2, 3, 4, 5, 7, 11, 12, 13, and 14 have had seasons ranging from 5-11 days, while DMUs 15 and 19 have had seasons 12-18 days long. DMU 18 has not had a January WAO season since 2012 due to a low deer population caused mainly by drought.

Hunters were asked how satisfied they were with the opening date of the WAO seasons which is the same all units (January 1). In general, hunters were satisfied with the January 1 opening date (Fig. 10). Hunters in DMUs with the longest season were the most satisfied and least conflicted with the opening date. Hunters in DMUs that have had only a single day season recently were least satisfied and answers conflicted the most (were in the extremity of opposite ends of the scale.

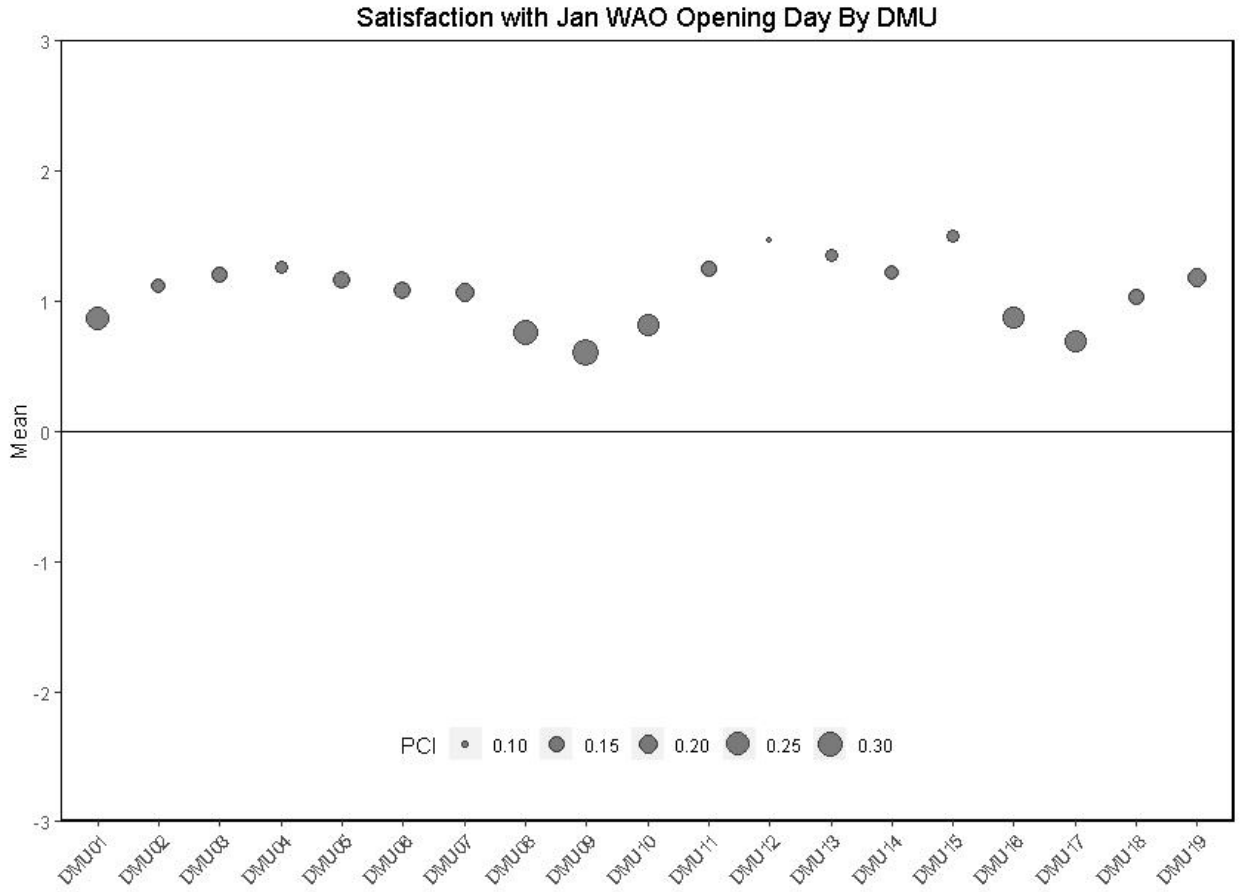


Figure 10. Kansas deer hunter satisfaction with January white-tailed deer antlerless only season opening date by deer management unit. Answers were provided on a 7-point scale (extremely dissatisfied, dissatisfied, slightly dissatisfied, neutral, slightly satisfied, satisfied, extremely satisfied). Dots further above zero indicate greater satisfaction. Larger dots indicate greater potential for conflict between answers – answers were more extreme.

When asked about how satisfied they were with WAO season lengths on the same 7-point scale answers generally varied according to the length of season within the hunter's unit of choice, as did the potential for conflict of the answers. Generally, hunters in DMU's with the longest seasons were satisfied and had the least potential for conflict (Fig. 11). Hunters in DMUs with only a single day season recently were generally unsatisfied and displayed the most potential for conflict. Hunters in DMUs where season length was moderate had moderate satisfaction and moderate conflict compared to hunters in DMU's with short or long lengths. The exception was DMU 18 where no WAO season has been open for several years. Hunter response from DMU 18 was most similar to the responses of hunters in DMUs with moderate lengths; this could be an artifact of low sample size (n=30).

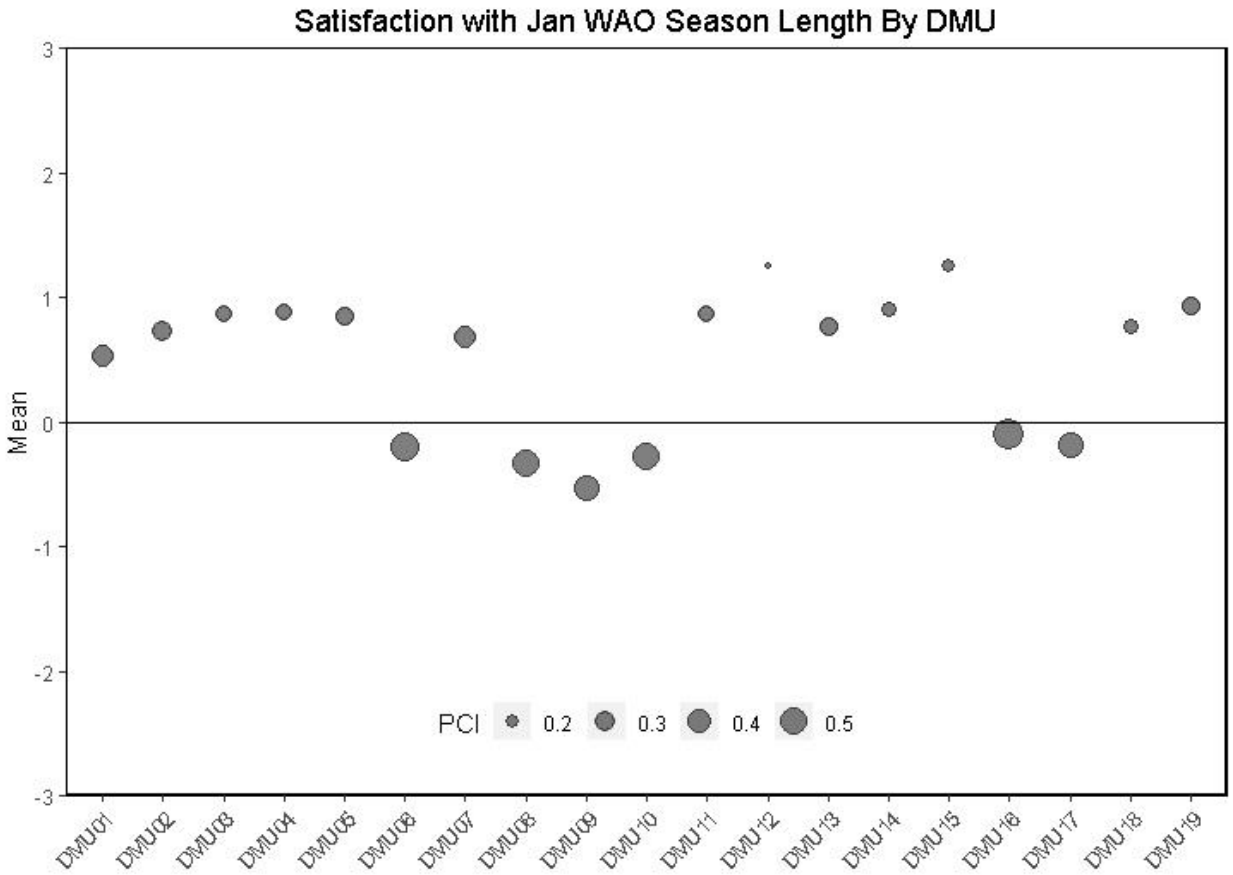


Figure 11. Kansas deer hunter satisfaction with January white-tailed deer antlerless only season length by deer management unit. Answers were provided on a 7-point scale (extremely dissatisfied, dissatisfied, slightly dissatisfied, neutral, slightly satisfied, satisfied, extremely satisfied). Dots further above zero indicate greater satisfaction. Larger dots indicate greater potential for conflict between answers – answers were more extreme.

Manfredo, M.J., J.J. Vaske, and T. L. Teel, 2003. The potential for conflict index: A graphic approach to practical significance of human dimensions research. Human Dimensions of Wildlife 8:219-228.

XII. Relevant Links

KDWPT Regulations are available on-line at:
http://kdwpt.state.ks.us/news/Hunting/Hunting-Regulations

General information on deer management may be located at:
http://kdwpt.state.ks.us/news/Hunting/Big-Game-Information

Chronic wasting disease information and maps may be found at:
http://kdwpt.state.ks.us/news/Hunting/Big-Game-Information/Chronic-Wasting-Disease

2018-19 Kentucky Deer Program Report

Gabe Jenkins, David Yancy and Kyle Sams

Current Harvest

145,753 deer were harvested during the 2018-19 deer season, which is the second highest harvest on record. We observed a 7% increase from the 2017-18 season (136,018) and the 2018-19 season is 11% above the 10 year average (131,011). In years with poor to average statewide acorn production (2018 white/red oak acorn production average was 57%), deer tend to travel more in search of food resulting in more deer sightings, which could be a contributing factor in the increase in harvest observed in the 2018-19 season. However, white oak acorn production seems to be more important in terms of deer movements because higher deer harvests tend to correlate with poor white oak acorn production years. In addition, there were optimal hunting weather conditions during the major hunting timeframes, which also contributed to the near record setting harvest.

Deer Season Harvest Comparison: 2017-18 v 2018-19

Weapon/Sex	2017-18	2018-19	% Difference
Archery	19,128	18,119	-5.3%
Modern Gun	104,155	109,869	5.5%
Muzzleloader	14,618	13,053	-10.7%
Crossbow	4,547	4,705	3.5%
Total	136,018	145,753	7.2%
Females	61,109	66,727	9.2%
Male Visible	66,989	70,952	5.9%
Male Not Visible	7,914	8,066	1.9%
Total	136,018	145,753	7.2%

2018-19 Hunter Success Rates

Successful hunters	# deer killed	% of successful hunters
76,066	1	73.2%
19,098	2	18.4%
5,806	3	5.6%
2,957	4+	2.8%
Total successful hunters	103,927	
Average Hunter Harvests:	1.4	

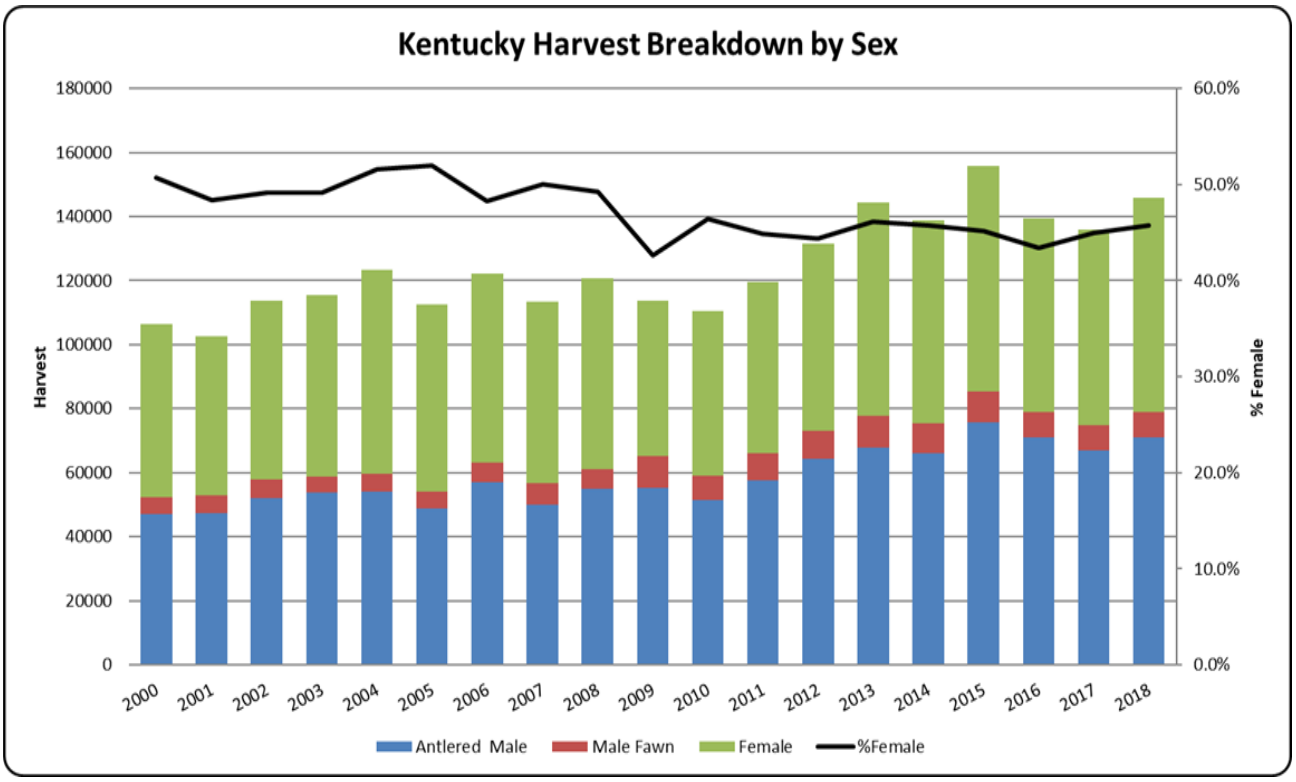
Historical Harvest

		Firearms*				Archery**			Grand Total	
Year	Males	Females	Total	% of Grand Total	Males	Females	Total	% of Grand Total	Total	Change
1976	3,042	434	3,476	100%					3,476	
1977	5,257	425	5,682	100%					5,682	63%
1978	5,633	379	6,012	93%	265	156	421		6,433	13%
1979	6,864	578	7,442	92%	426	194	620	8%	8,062	25%
1980	7,323	665	7,988	82%	1,004	710	1,714	18%	9,702	20%
1981	12,079	1,055	13,134	88%	1,145	704	1,849	12%	14,983	54%
1982	13,908	1,896	15,804	88%	1,308	857	2,165	12%	17,969	20%
1983	14,383	1,644	16,027	86%	1,607	1,098	2,705	14%	18,732	4%
1984	17,174	3,170	20,344	88%	1,650	1,018	2,668	12%	23,012	23%
1985	21,551	4,473	26,024	87%	2,724	1,327	4,051	13%	30,075	31%
1986	27,773	6,884	34,657	88%	3,144	1,719	4,863	12%	39,520	31%
1987	37,790	16,582	54,372	90%	3,831	2,169	6,000	10%	60,372	53%
1988	38,528	19,025	57,553	90%	4,444	2,263	6,707	10%	64,260	6%
1989	39,564	23,103	62,667	89%	4,887	2,595	7,482	11%	70,149	9%
1990	42,863	23,288	66,151	89%	4,798	2,969	7,767	11%	73,918	5%
1991	48,881	36,037	84,918	91%	3,979	4,037	8,016	9%	92,934	26%
1992	45,108	28,556	73,664	90%	4,243	4,031	8,274	10%	81,938	-12%
1993	41,809	19,738	61,547	89%	4,148	3,829	7,977	11%	69,524	-15%
1994	47,310	22,387	69,697	88%	4,427	4,665	9,092	12%	78,789	13%
1995	47,854	25,336	73,190	89%	4,591	4,359	8,950	11%	82,140	4%
1996	48,538	25,161	73,699	90%	3,760	4,696	8,456	10%	82,155	0%
1997	51,820	28,996	80,816	92%	3,350	3,776	7,126	8%	87,942	7%
1998	52,125	42,174	94,299	91%	4,115	5,656	9,771	9%	104,070	18%
1999	45,040	38,267	83,307	87%	4,396	7,524	11,920	13%	95,227	-8%

2000	48,212	45,572	93,784	88%	4,175	8,303	12,478	12%	106,262	12%
2001	48,747	41,233	89,980	88%	4,263	8,463	12,726	12%	102,706	-3%
2002	53,972	48,157	102,129	90%	3,837	7,686	11,523	10%	113,652	11%
2003	54,745	49,282	104,027	90%	3,943	7,487	11,430	10%	115,457	2%
2004	55,518	55,083	110,601	89%	4,754	9,247	14,001	11%	124,602	8%
2005	49,670	50,558	100,228	89%	4,322	7,864	12,186	11%	112,414	10%
2006	57,630	49,055	106,685	87%	5,537	9,850	15,387	13%	122,072	9%
2007	51,368	46,780	98,148	87%	5,343	9,945	15,288	13%	113,436	-7%
2008	55,733	49,375	105,108	87%	5,431	10,071	15,502	13%	120,610	6%
2009	58,387	39,135	97,522	86%	6,757	9,305	16,062	14%	113,584	-6%
2010	52,254	39,951	92,205	84%	6,916	11,255	18,171	16%	110,376	-3%
2011	58,159	41,358	99,517	83%	7,765	12,371	20,136	17%	119,653	8%
2012	64,665	45,530	110,195	84%	8,429	12,765	21,194	16%	131,389	10%
2013	68,703	51,559	120,262	83%	9,018	15,128	24,146	17%	144,409	10%
2014	67,221	50,346	117,567	85%	8,157	13,173	21,330	15%	138,897	-4%
2015	74,544	53,302	127,846	82%	9,191	14,132	23,323	15%	155,730	12%
2016	64,287	46,898	111,185	80%	9,921	13,635	19,567	17%	139,429	-10%
2017	65,074	47,248	112,322	83%	9,831	13,861	23,556	17%	136,018	-2%
2018	69,734	53,194	122,928	84%	9,291	13,533	22,824	16%	145,753	7%

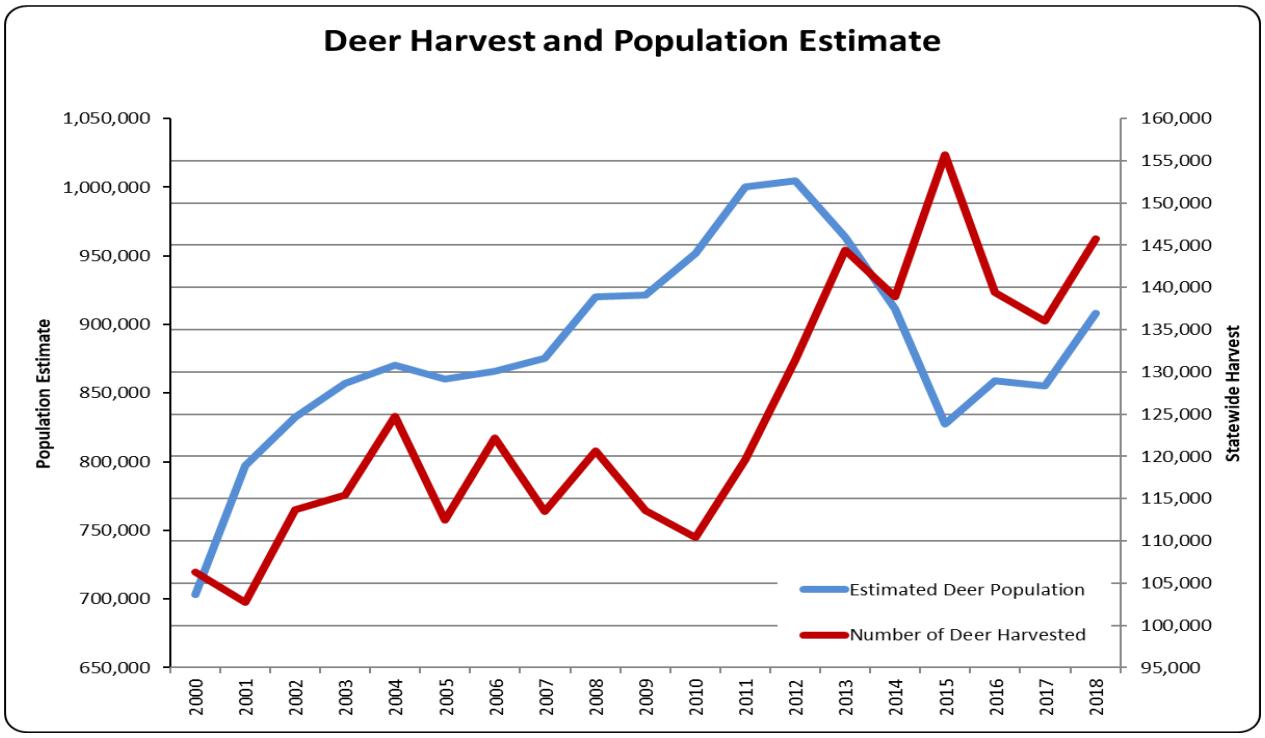
* Includes muzzleloader and modern firearms.

** Records of archery harvest began in 1978. Includes crossbow harvest.



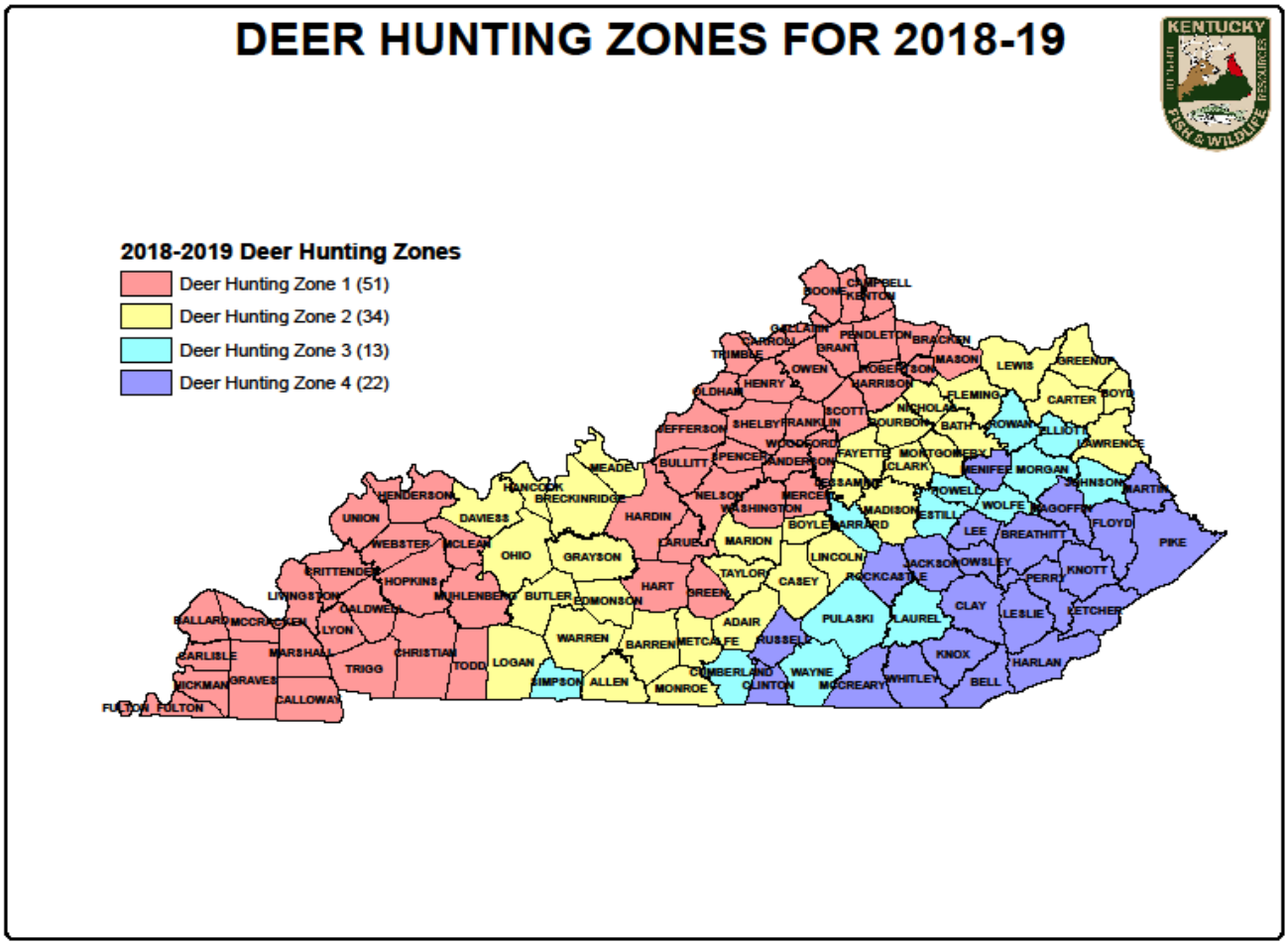
Population Trends

Overall, the statewide deer population estimate shows a stable to slightly increasing trend. The 2018 statewide estimate is 908, 291 deer at the start of the 2018-19 hunting season, which is a 6% increase from 2017-18 (855,090). However, the 2018 population estimate was 1.4% below the 10-year average (921,451). This estimate is generated from harvest and age structure data, which is collected through telecheck reports and by KDFWR staff.



Deer Management Zones

Each of Kentucky's 120 counties serves as an individual management zone. There are currently 4 different zones that are used to influence the herd: Zone 1 being the most liberal and zone 4 being the most restrictive on antlerless harvest. All zones allow for only one antlered deer per person per season. In Zone 1 counties, hunters may take either sex with no season limit on antlerless deer using all weapon types. In Zone 2 counties, hunters may take either sex with a bag limit of 4 deer (either 4 antlerless or 3 antlerless and one antlered). In zone 3 counties, hunters may take either sex with a bag limit of 4 deer (either 4 antlerless or 3 antlerless and one antlered), however, only one antlerless can be taken with a modern gun. In zone 4 counties, hunters may take a total of 2 deer (1 antlered & 1 antlerless). Zone 2 hunters may use all weapon types to harvest the 4 deer limit. Zone 3 hunters may only harvest 1 antlered and 1 antlerless deer with a firearm. Zone 4 hunters may only take 1 antlered deer during modern gun season and 1 antlerless deer during the last 3 days of the late muzzleloader season.



Regulation/Legislation Changes

Regulation changes for the upcoming 2018-19 season:

- Statewide deer permit will be modified from two deer to four deer (only 1 antlered).
  - Zone 1 – unlimited antlerless, one antlered
  - Zone 2 – 4 deer total; either 4 antlerless or 3 antlerless and one antlered
    - All deer can be harvested via archery, crossbow, muzzleloader, or modern gun
  - Zone 3 – 4 deer total; either 4 antlerless or 3 antlerless and one antlered
    - Only one antlerless and one antlered deer shall be harvested with a modern gun.
  - Zone 4 – 2 deer total; only one antlerless and one antlered deer shall be harvest
    - The one antlerless deer can only be harvested during the youth gun hunts, archery, crossbow, or during the last 3 days of muzzleloader season.

- Youth Deer Permit will be modified from 1 deer to four deer (only 1 antlered)
    - It would follow the changes listed above for deer permit.
- Modern Gun Season will be 16 days for all zones
    - Additional of six days for zones 3 and 4
- Special Deer Hunt Program will be a 1-2 day hunt with a modern gun on private lands sponsored by the KDFWR's Recruitment, Retention, and Reactivation (R3) branch.
- Prohibit the construction and or deployment of a device that is designed to entangle or trap the antlers of a deer.
- County Zone Changes
    - To Zone 1
        - Union, Henderson, McLean, Muhlenberg, Todd, Mercer, Mason, Hart
    - To Zone 2
        - Warren, Allen, Monroe, Barren, Metcalf, Adair, Edmonson, Butler, Breckenridge, Meade, Hancock, Daviess, Taylor, Casey, Lincoln, Boyle, Madison, Clark, Montgomery, Bath
    - To Zone 3
        - Garrard, Pulaski, Wayne, Laurel
    - Zone 4
        - No change

Deer Management Assistance/Crop Damage

Currently, aside from using the hunting season as a control method, Kentucky has two additional ways to help alleviate damage issues: 1) Deer Control Tags (in-season), are issued to landowners who need additional deer tags during the hunting season and are for antlerless deer only. Each control tag issued has a unique identifying number that is used to report a single harvested deer via telelcheck. During the 2018-19 season, 3,581 deer control tags were issued to landowners, in which only 36% were reported via telechecked. 2) Deer Destruction Permits (out-of-season), are issued to landowners during the growing season to reduce the herd and diminish damage. These tags can be for either sex, but require landowners to relinquish any antlers to KDFWR. Additionally, KRS 150.170(7) states, "Landowners, their spouses or dependent children, or their designee who must be approved by the commissioner, who kill or trap on their lands any wildlife causing damage to the lands or any personal property situated thereon shall not be required to have a hunting or trapping license and may do so during periods other than the open season for the particular species without a tag and dispose of the carcass onsite. Tenants, their spouses, their dependent children, or other persons approved by the commissioner, shall also have the same privilege."

Deer Control Tag Issuance

Zone	DCT Issued 2015	% Used	DCT Issued 2016	% Used	DCT Issued 2017	% Used	DCT Issued 2018	% Used
1	2113	42%	1616	35%	1395	42%	1776	34%
2	1329	45%	1451	30%	1416	42%	1275	36%
3	576	49%	755	34%	887	37%	376	38%
4	614	48%	777	34%	615	39%	154	58%
Statewide	4632		4599		4313		3581	

Diseases Issues

EHD

Hemorrhagic disease (HD), which is a vector-borne disease of white-tailed deer, is caused by two related orbiviruses: epizootic hemorrhagic disease virus (EHDV) and bluetongue virus (BTV). HD viruses are considered the most important viral agents affecting deer populations in the United States. The virus is transmitted from animal to animal through the bite of an infected midge which is active in the late summer and early fall. Severe outbreaks are often associated with drought conditions because drought creates an increased amount of breeding habitat for the midges. The midges die off for the year after a hard freeze, eliminating new cases of HD. HD is reported in localized areas from at least a few counties nearly every year in Kentucky, although outbreaks can be considerably large and widespread. In 2017, a large HD outbreak occurred in the eastern portion of Kentucky. Over 4,500 suspected cases were reported in eastern Kentucky using an online self-reporting system that was available to the public. In 2018, KDFWR biologists had 35 suspect HD deer reported. This is only slightly above a normal year. The majority of the deer were from northeastern Kentucky, in a region just north and west of where the main outbreak was in 2017.

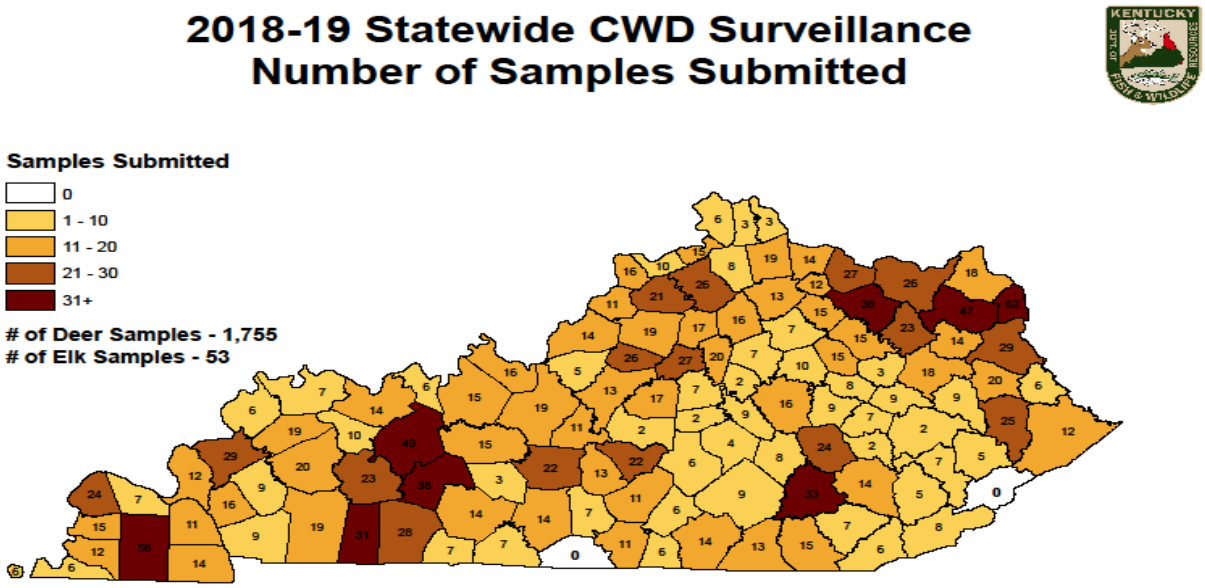
CWD

To detect CWD should it arrive in Kentucky, KDFWR adopted a CWD monitoring plan in 2002. That plan is a three-part monitoring program to test: 1) a random sampling of hunter-harvested deer, 2) target or suspect animals (i.e., animals that appear ill), and 3) a year round random sample of roadkill deer. In 2006, KDFWR adopted a contingency plan to deal with CWD if it was ever found in Kentucky. Since 2002, more than 30,000 deer samples have been tested. 1,755 deer were submitted for CWD testing in 2018-19, and all samples have tested negative for the disease.

Risk Assessment Strategy for CWD sampling.

- Due to loss of USDA funding and the increase cost of sample testing at SCWDS, a CWD protocol was developed to assess the risk down to the county level. This strategy will target more "higher risk" areas and focus less on hunter harvested animals.

Assessment is based upon captive cervid locations, number of cervid transportation permits per facility, wild deer and elk density estimates, proximity to CWD + areas, and the number of processors/taxidermist per county.



Research

No current or ongoing research

Hot Topics

See regulations changes for the 2018-19 season above.
In 2019-20

- Crossbow season will begin on the third Saturday in September and run through the third Monday in January.
- A person shall not import a cervid carcass or carcass part that has any part of the spinal column or head from any other state or country.
    - A person importing a legally taken cervid carcass or carcass part may possess the following items;
        - Antlers
        - Antlers that are attached to a clean skull plate
        - A clean skull

        - Clean upper canine teeth
        - A finished taxidermy product
        - The hide
        - Quarter or deboned meat
- Baiting Ban
- Urine Ban
- Captive Cerivd Reg Changes

Relevant Links

KDFWR Home Webpage – http://fw.ky.gov/Pages/default.aspx

KDFWR Deer Regulation Webpage – http://fw.ky.gov/Hunt/Pages/Deer-Hunting-Regs.aspx

KDFWR Diseases & Wildlife Health Webpage – http://fw.ky.gov/Wildlife/Pages/Diseases-and-Wildlife-Health.aspx

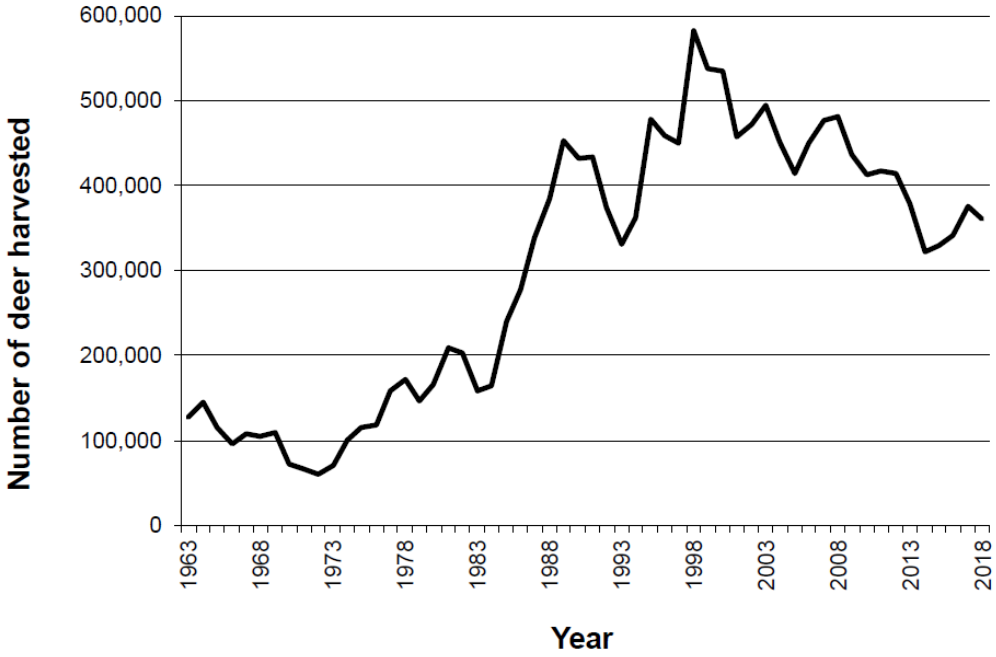
I. Current Harvest

The 2018-19 total deer harvest was estimated to be 360,666; down by 4.2% from 2017-18. The decrease was likely due in part to continued decline of hunters, as well as poor weather conditions noted during the firearms season in the Northern Lower Peninsula.

	Bucks		Does		Buttons		Total		
	2017	2018	2017	2018	2017	2018	2017	2018	Change (%)
Firearms	**126,167**	**126,396**	**63,898**	**65,824**	**N/A**	**N/A**	**190,065**	**192,221**	**1.1**
Archery									
Crossbow	**55,086**	46,094	**37,827**	28,577	**N/A**	N/A	**92,913**	74,671	**-19.6**
Vertical Bow	**28,569**	22,288	**15,577**	14,658	**N/A**	N/A	**44,146**	36,946	**-16.3**
Total	**83,655**	68,382	**53,404**	43,235	**N/A**	**N/A**	**137,059**	111,617	**-18.6**
Muzzleloader	**10,632**	9,915	**13,427**	15,339	**N/A**	**N/A**	**24,058**	25,254	**5.0**
Antlerless									
Early Antlerless	**N/A**	N/A	**2,231**	4,523	**N/A**	N/A	**2,231**	4,523	**102.7**
Late Antlerless	**N/A**	N/A	**14,340**	16,167	**N/A**	N/A	**14,340**	16,167	**12.7**
Total	**N/A**	**N/A**	**16,571**	20,690	**N/A**	**N/A**	**16,571**	20,690	**24.9**
Youth	**4,911**	6,753	**2,282**	3,308	**N/A**	**N/A**	**7,193**	10,062	**39.9**
Total*	**225,656**	211,754	**150,709**	148,912	**N/A**	**N/A**	**376,365**	360,666	**-4.2**

*Totals include additional disability hunts not previously recorded. An additional 6,986 deer were taken on DMAP permits that are not included in this total.

II. Historical Harvest

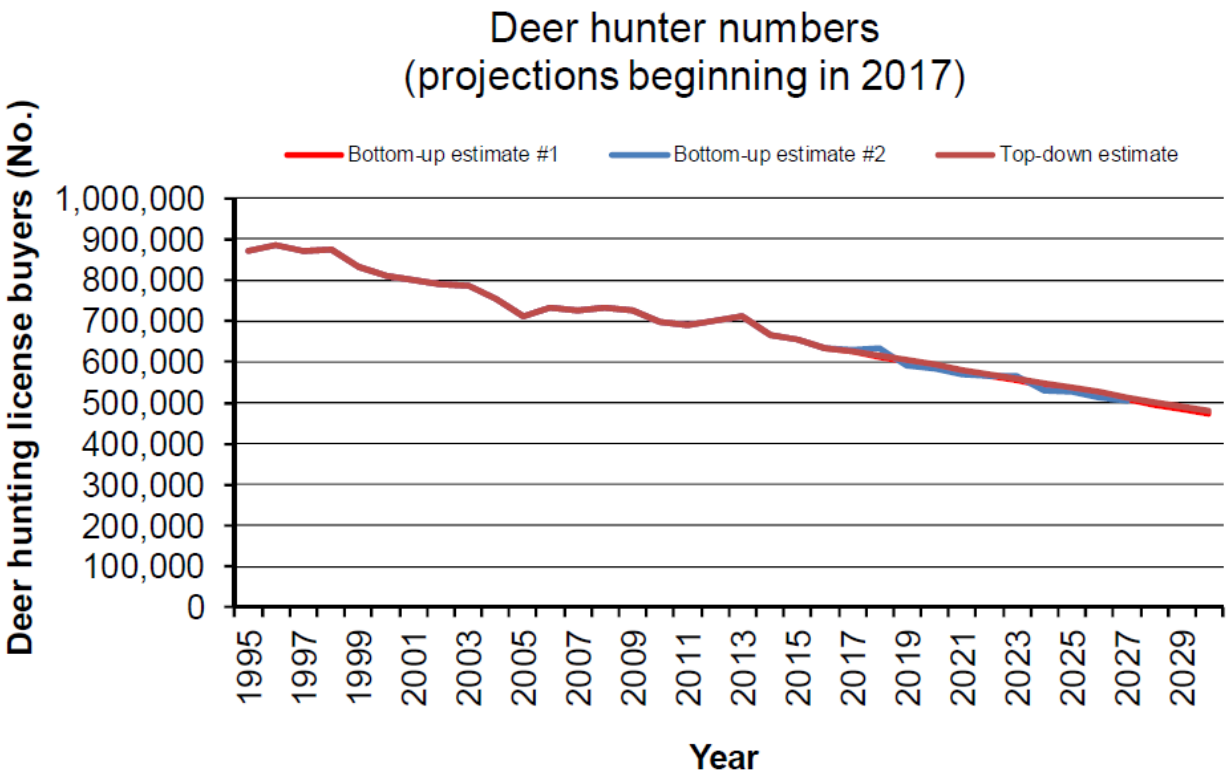


III. Population Estimate/Trends

Michigan DNR no longer conducts population estimates.

III. Population Estimate/Trends (cont'd)

Demographics –


Deer hunter numbers
(projections beginning in 2017)
Bottom-up estimate #1
Bottom-up estimate #2
Top-down estimate
Deer hunting license buyers (No.)
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
Year

IV. Deer Management Zones (For 2019):

DEER - LOWER PENINSULA

Lower Peninsula Antler Point Restrictions (APR)

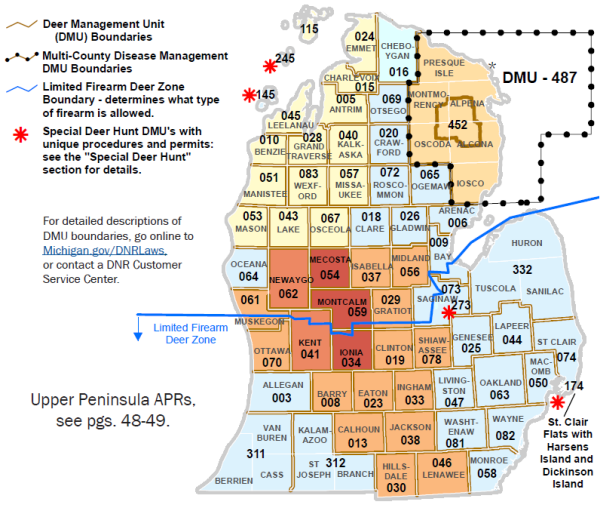
APRs vary throughout the state based on the type of deer license and the hunting location. Use the map and chart on these two pages to find the APR for your desired hunt.

1. On the map, locate the DMU(s) you wish to hunt.
2. Match the color of your desired DMU(s) to the color(s) in the charts on pg. 43 to see the type of deer you may harvest in each season based on your license.

Antler Point Restriction Key

- Antlerless Deer
- At least one antler 3 inches or longer
- 2 or more points* on one side
- 3 or more points* on one side
- 4 or more points* on one side

* A legal point must be at least 1 inch long as measured from its tip to the nearest edge of the antler beam.



		Seasons		
		Archery	Firearm	Muzzleloader
Deer License		Antlerless or 4+	Antlerless or 4+	Antlerless or 4+
Deer Combo License	Regular Tag	Antlerless or 4+	Antlerless or 4+	Antlerless or 4+
	Restricted Tag	Antlerless or 4+	Antlerless or 4+	Antlerless or 4+
Deer License		Antlerless or 1+	Antlerless or 1+	Antlerless or 1+
Deer Combo License	Regular Tag	Antlerless or 1+	Antlerless or 1+	Antlerless or 1+
	Restricted Tag	Antlerless or 1+	Antlerless or 1+	Antlerless or 1+
Deer License		Antlerless or 1+	1+	1+
Deer Combo License	Regular Tag	Antlerless or 1+	1+	1+
	Restricted Tag	Antlerless or 1+	1+	1+
Deer License		Antlerless or 1+	1+	1+
Deer Combo License	Regular Tag	Antlerless or 1+	1+	1+
	Restricted Tag	Antlerless or 4+	4+	4+
Deer License		Antlerless or 4+	Antlerless or 4+	Antlerless or 4+
Deer Combo License	Regular Tag	Antlerless or 1+	Antlerless or 1+	Antlerless or 1+
	Restricted Tag	Antlerless or 4+	Antlerless or 4+	Antlerless or 4+
Deer License		Antlerless or 3+	3+	3+
Deer Combo License	Regular Tag	Antlerless or 3+	3+	3+
	Restricted Tag	Antlerless or 4+	4+	4+

Upper Peninsula Antler Point Restrictions (APR)

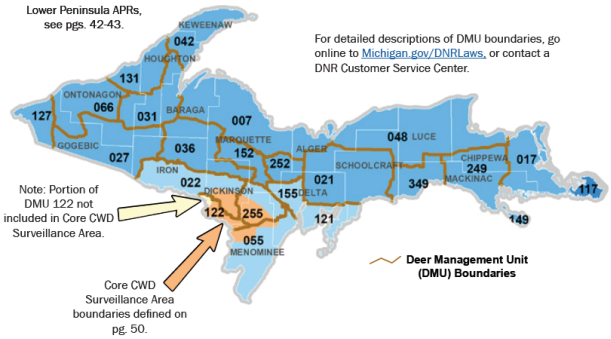
APRs vary throughout the state based on the type of deer license and the hunting location. Use the map and chart on these two pages to find the APR for your desired hunt.

1. On the map, locate the DMU(s) you wish to hunt.
2. Match the color of your desired DMU(s) to the color(s) in the charts on pg.49 to see the type of deer you may harvest in each season based on your license.

Antler Point Restriction Key

- Antlerless Deer
- At least one antler 3 inches or longer
- 2 or more points* on one side
- 3 or more points* on one side
- 4 or more points* on one side

* A legal point must be at least 1 inch long as measured from its tip to the nearest edge of the antler beam.



		Seasons		
		Archery	Firearm	Muzzleloader
Deer License				
Deer Combo License	Regular Tag			
	Restricted Tag			
Deer License		or		
Deer Combo License	Regular Tag	or		
	Restricted Tag	or		
Deer License		or		
Deer Combo License	Regular Tag	or		
	Restricted Tag	or		
Deer License		or		
Deer Combo License	Regular Tag	or		
	Restricted Tag	or		
Deer License				
Deer Combo License	Regular Tag or Restricted Tag			

DMU 117 has a limit of ONE antlered deer.

2018-19 Harvest Regulation Summary

V. Regulation/legislation

1) <u>New for 2019</u>
   a) Baiting and feeding ban in core CWD surveillance area in Upper Peninsula (orange area in figure above).
   b) Antler Point restrictions applied to Mecosta, Montcalm, and Ionia counties (4 points per side).
   c) Liberty hunt (Youth season) moved one week earlier (Sept 14-15) statewide.
   d) Reinstate antlerless option for archers, eliminate antler point restrictions, and allow crossbows in late archery season in core CWD surveillance area in the Upper Peninsula (orange area in figure above).
   e) Add Barry, Lenawee, and Midland counties to CWD Management Zone.
   f) Require that deer collected with a salvage permit as a result of collision with a motor vehicle may not be removed from the county where the animal was killed, with the exception of deboned meat or bone-in quarters.

VI. Urban/Special Hunts

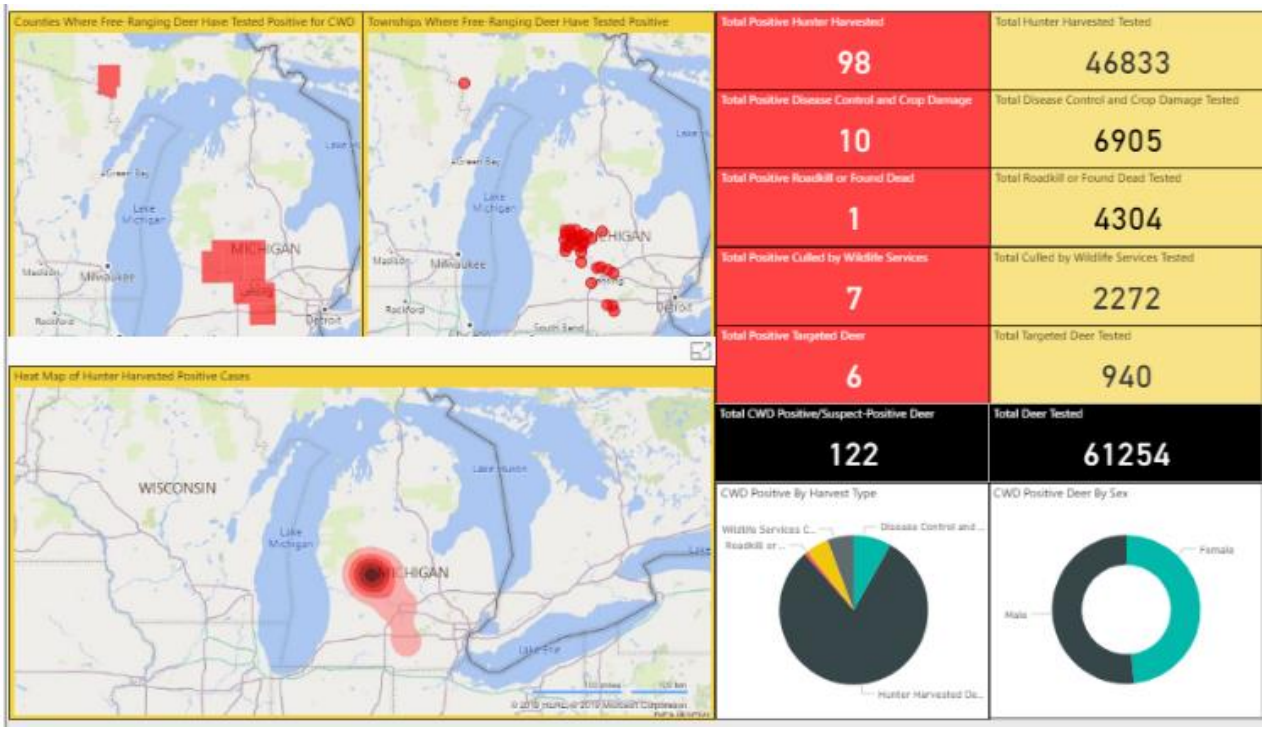
Ann Arbor completed the third year of a research project that aims to evaluate the efficacy of a joint management approach using sterilization and sharpshooting. Shooters removed 112 deer during the third-year research effort, while sterilizing 6 female deer. A helicopter survey conducted in February 2019 showed 298 deer in year three compared to 276 in year 2. City-wide access for trapping and culling efforts continues to challenge the effectiveness of both techniques. The city has allocated additional money for deer research this year, though an official amendment for the existing permit to continue research has not yet been received by the Department. The authorization of this permit has led to strained relationships with many conservation organizations, including Safari Club and Michigan United Conservation Clubs, who view this permit and authorization of sterilization of deer as a betrayal of trust between the management agency and their organization.

VII. Deer Management Assistance/Crop Damage

Nothing noteworthy occurred.

VIII. Diseases - CWD

Since the discovery of CWD in May of 2015, the MDNR has completed 4 years of surveillance in the designated CWD Management Zone. A total of 61,254 deer have been sampled statewide during that time, with the detection of 122 total CWD positive animals. Positive deer have been identified outside of the core surveillance area each year, leading to further expansion of our CWD core area and CWD Management Zone to what is now 5 counties for the Core and 19 counties for the Management Zone, with the core also included in the management zone (see orange and red shaded areas for the Lower Peninsula under category IV). Additionally, continued surveillance is occurring in the Upper Peninsula after the detection of one positive deer in Dickinson County in 2018.



IX. Research

CWD Research

Research is ongoing at both Michigan State University and the State University of New York looking at the influence of external factors on the spread or potential introduction of CWD. Field research began in the winter of 2018, including the use of GPS collars to monitor movements within the existing CWD management zone and along the Michigan-Wisconsin border. Modeling looking at potential risk to CWD expansion or introduction has begun and we have outlined various factors that will be used to determine population densities over the next couple of years. An antler point restriction (APR) study was approved by our Natural Resources Commission, looking at the impacts of APRs on herd demographics and the potential impact of those changes on CWD.

Finally, the state of Michigan and Michigan State University recently completed a Request for Proposal process offering nearly $5 million dollars to support future CWD research. Successful recipients will be announced in the coming months.

Predator-Prey Project

Project is entering its tenth year looking at the complex interactions of deer survival, winter severity, and predators in Michigan's Upper Peninsula. The initial study was set in the low snow fall zone, and the team has recently concluded the study in the mid-snowfall zone. A final three years has begun in the high snow fall zone where deer are obligate migrators. Project is funded by Safari Club International and headed up by researchers at Mississippi State and Northern Michigan University. Visit http://www.fwrc.msstate.edu/carnivore/predatorprey/index.asp for more details.

X. Hot Topics

CWD, DMAP/Out of Season Permits

XI. Relevant Links

www.michigan.gov/deer

www.michigan.gov/cwd

2019 Minnesota Deer Program Report

Brian Haroldson, Eric Michel, & Barb Keller

I. Current Harvest

In 2018, hunters registered 188,706 white-tailed deer, a 5% decrease from the previous year, and 3% less than the 10-year mean (Table 1). The slight decrease in harvest was primarily attributed to a decrease in antlered buck harvest during the firearm season. The decrease may be due to several factors, including an early opening date coinciding with more standing corn on the landscape and poor weather in some areas of the state during opening weekend. Firearm hunters accounted for 82% of total harvest, followed by archery (12%) and muzzleloader (5%) hunters. Total license sales were stable between 2017 and 2018 (Table 2).

Table 1. Registered deer harvest in Minnesota, 2016–2018.

	Antlered			Antlerless			Total		
Season	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**
Firearm	88,876	88,467	81,801	55,594	79,033	74,423	144,470	167,500	156,224
Archery	8,931	9,180	9,009	11,429	11,878	13,656	20,360	21,058	22,665
Muzzleloader	3,113	3,595	3,784	5,270	5,615	6,033	8,383	9,210	9,817
Total	100,920	101,242	94,594	72,293	96,526	94,112	173,213	197,768	188,706

II. License and Season Information

License sales, fees, and hunting season dates are shown below (Table 2, Table 3, and Table 4).

Table 2. Statewide deer license sales in Minnesota, 2012–2018.

	2012	2013	2014	2015	2016	2017	2018
FIREARM							
Resident License	391,615	387,373	372,659	376,942	376,149	368,407	360,229
Non-Resident License	12,484	12,410	11,642	12,270	12,590	12,923	12,825
Mgmt/Intensive Harvest Permit	85,336	92,879	28,239	46,017	65,081	86,470	108,014
Youth License	62,932	64,608	62,673	62,602	61,442	58,779	56,726
Early Antlerless Season Permit	0	1,126	1,362	2,117	2,568	2,563	2,737
Disease Management Permit	4,362	3,308	0	0	3,308	4,276	6,907
Free Landowner License	4,769	4,800	4,383	4,228	4,325	5,109	5,176
Total License Sales	561,498	566,504	480,958	504,176	525,463	538,527	552,614
Either-Sex Permits Issued	32,766	36,178	26,326	30,855	39,552	20,385	13,971
ARCHERY							
Resident License	93,959	92,459	91,907	94,390	93,327	89,959	87,202
Non-Resident License	1,810	1,903	1,897	2,032	2,087	2,016	1,992
Youth License	11,271	12,169	11,907	11,905	10,860	9,961	9,002
Total License Sales	107,040	106,531	105,711	108,327	106,274	101,936	98,196
MUZZLELOADER							
Resident License	53,445	46,217	39,283	44,955	46,433	46,626	43,656
Non-Resident License	452	400	351	435	440	514	459
Youth License	4,439	4,622	4,316	4,786	4,738	4,821	4,467
Total License Sales	58,336	51,239	43,950	50,176	51,611	51,961	48,582

Table 3. Deer license fees in Minnesota, 2018.

License Type	Resident	Nonresident
Landowner	$0	$0
Youth (Age 10-12)	$0	$0
Youth (Age 13-17)	$5	$5
Disease Mgmt	$2.50	$2.50
Early Antlerless	$8.50	$45
Bonus Antlerless	$18	$91
Regular Firearm	$34	$185
Regular Archery	$34	$185
Regular Muzzleloader	$34	$185
Super Sports	$100	N/A

Table 4. Season dates for various deer seasons in Minnesota, 2018.

Season	Zone	Dates
Archery	Statewide	Sept. 15 - Dec. 31
Early Antlerless	*	Oct. 18-21
Youth Firearm	*	Oct. 18-21
Firearm	1	Nov. 3-18
Firearm	2	Nov. 3-11
Firearm	3A	Nov. 3-11
Firearm	3B	Nov. 17-25
Firearm	6	Nov. 3-25
Firearm	CWD Mgmt	Nov. 3-11, 17-25
Muzzleloader	Statewide	Nov. 24 - Dec. 9

* = Select DMUs throughout the state.

III. Historical Harvest

After a sharp decline from 1968 to 1971, the statewide deer harvest generally increased through the early-1990s. Harvest was then reduced through the mid-1990s to stabilize and then increase deer densities. The notable harvest reductions in 1996 and 1997 were the result of severe back-to-back winters preceding the hunting seasons. From the late-1990s to 2003, harvest steadily increased to a record 289,421. Liberal bag limits and high antlerless harvests maintained relatively high harvest numbers through 2007. From 2007 through 2014, antlerless harvest decreased. In 2013, another severe winter resulted in a notable harvest reduction the following year, and in subsequent years harvest has increased (Figure 1). One goal from the *Minnesota White-tailed Deer Management Plan 2019-2028* was an annual harvest of 200,000 animals. The 2019 harvest is expected to be slightly below this goal.

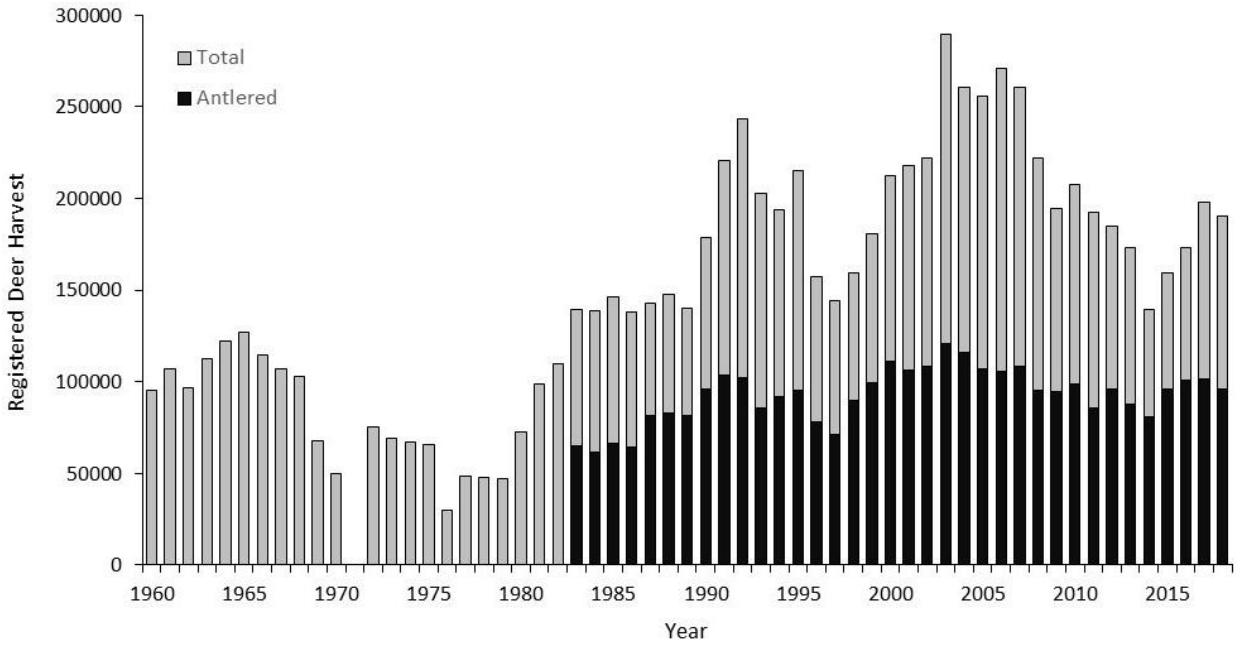


Figure 1. Registered deer harvest in Minnesota, 1960–2018.

IV. Population Estimates/Trends

The Minnesota Department of Natural Resources (MNDNR) estimates deer populations at the deer management unit (DMU) level using a stochastic 2-sex, 2 age-class harvest accounting projection model, and adjusts management strategies to achieve population goals. Population estimates from modeling were calibrated with data from aerial surveys, when available, and compared with trends of antlered harvest per hunter. In addition, a recent wildlife management staff survey was implemented to assist model interpretation based on varying hunting season and winter severity conditions. Since the 1990s, there have been 2 distinct periods when liberal antlerless quotas were used to reduce densities that had exceeded the population goal: during the early 1990s and 2000s. However, severe winters following liberalized harvest in the mid-1990s and early-2010s exacerbated density reductions below goal in many areas. Between 2018 and 2019, 15% of modeled DMUs showed a decreasing population trend, 55% showed an increasing trend, and 29% were stable.

V. Deer Management Units/Zones

Annually, 1 of 7 bag-limit management strategies can be implemented within each DMU, based upon an index of deer density relative to population goal. In 2018, DMUs were partitioned into 1 Bucks-only area, 39 Lottery areas (Bucks-only unless successful in lottery drawing), 36 Hunter Choice areas (either-sex tag), 31 Managed areas (either-sex with 1 additional antlerless tag), 21 Intensive areas (either-sex with 2 additional antlerless tags; 4 areas included an early firearm season with 5 additional antlerless tags), and 2 No Limit Antlerless areas (Figure 2).

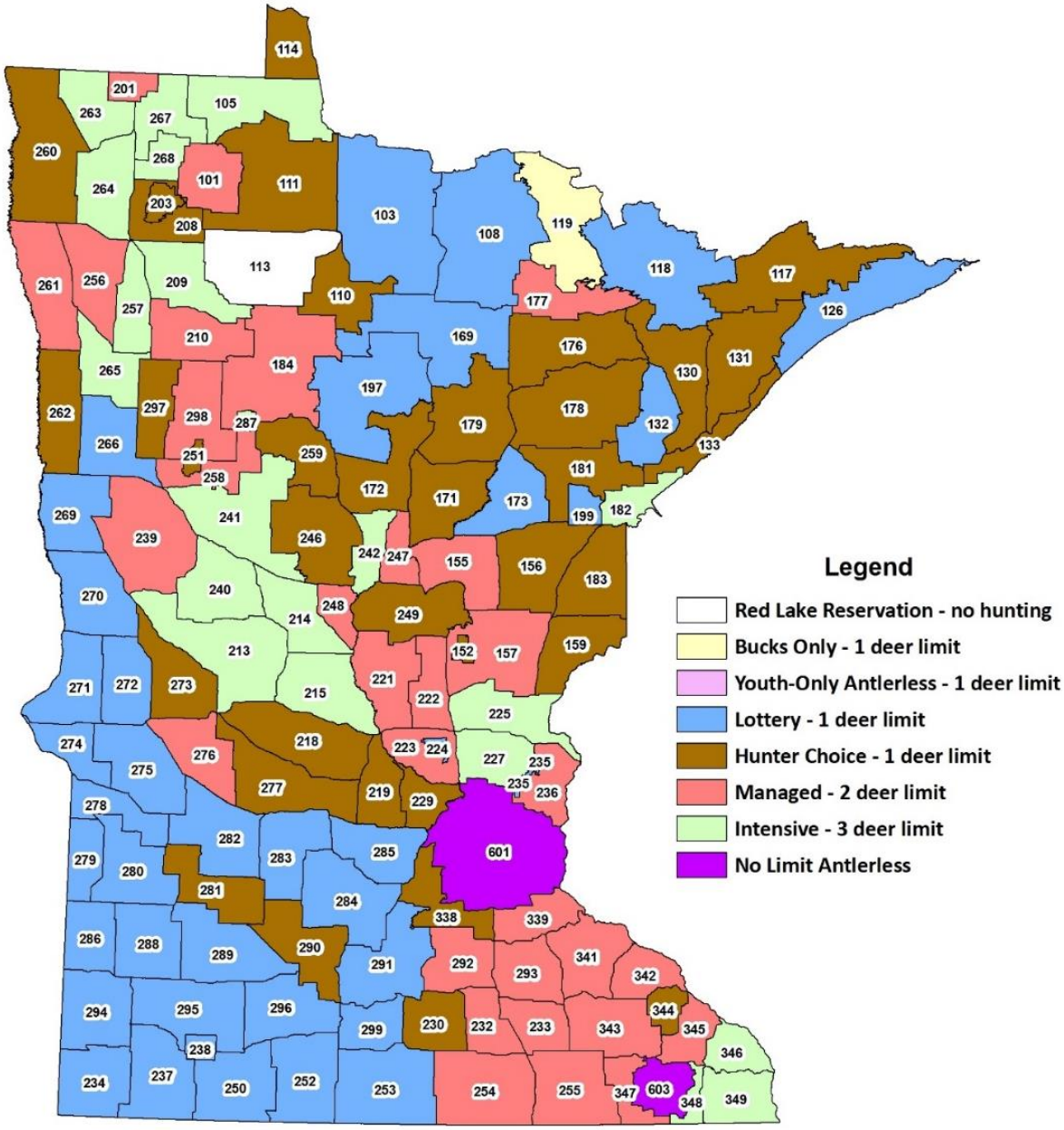


Figure 2. Deer season management designations in Minnesota, 2018.

VI. Regulation/Legislation Changes

New for 2019:

- DMU boundaries have been modified to incorporate changes to chronic wasting disease (CWD) management (Figure 3).
    - Created the North-Central CWD Management Zone (DMU 604).
    - Expanded the Southeast CWD Management Zone (DMUs 643, 645, 646, 647, 648, 649, 655).
    - Created the Southeast CWD Control Zone (DMUs 255, 343, 344).

- The DMU numbering system has been modified to clarify where CWD management occurs.
    - The metro deer management zone is now DMU 701.
    - The North-Central and Southeast CWD Management Zones now utilize 600-series DMU numbers.
- Due to the expansion of CWD, antler-point restrictions are repealed in all southeast DMUs except 338, 339, 341, and 342. In addition, party hunting (aka cross-tagging) restrictions for antlered bucks are repealed in these same areas. Party hunting and point restrictions formerly occurred throughout all 300-series DMUs.
- The bag limit for legal bucks is increased from 1 to 3 in the Southeast CWD Management Zone. Hunters are restricted to 1 legal buck per license type (archer, firearm, muzzleloader). The bag limit was formerly 1 legal buck for all license types combined.
- The prohibition on deer feeding and attractants has been expanded to include 18 (formerly 6) counties in north-central and southeast Minnesota. Feeding is prohibited in areas where CWD was detected in captive deer. Deer feeding and attractants are prohibited in areas in proximity to where CWD was detected in wild deer.
- Hunters are required to present adult deer or submit tissue samples for CWD testing as follows:
    - Throughout all archery, firearm, and muzzleloader seasons in the North-Central and Southeast CWD Management Zones;
    - During the first two days of firearm seasons A and B in the Southeast CWD Control Zone;
    - During the first two days of firearm season A in the Central CWD Surveillance Area (DMUs 219, 277, 283, 285).
- Whole carcasses of deer, <u>including fawns</u>, taken within a CWD Management or Control Zone must remain within the management or control zone until a ‘not-detected’ test is confirmed. Fawns were formerly exempt from carcass movement restrictions.
- Hunters may use a dog to retrieve a wounded deer or bear.
- The 4-day youth deer season has been expanded statewide, except for DMU 287.

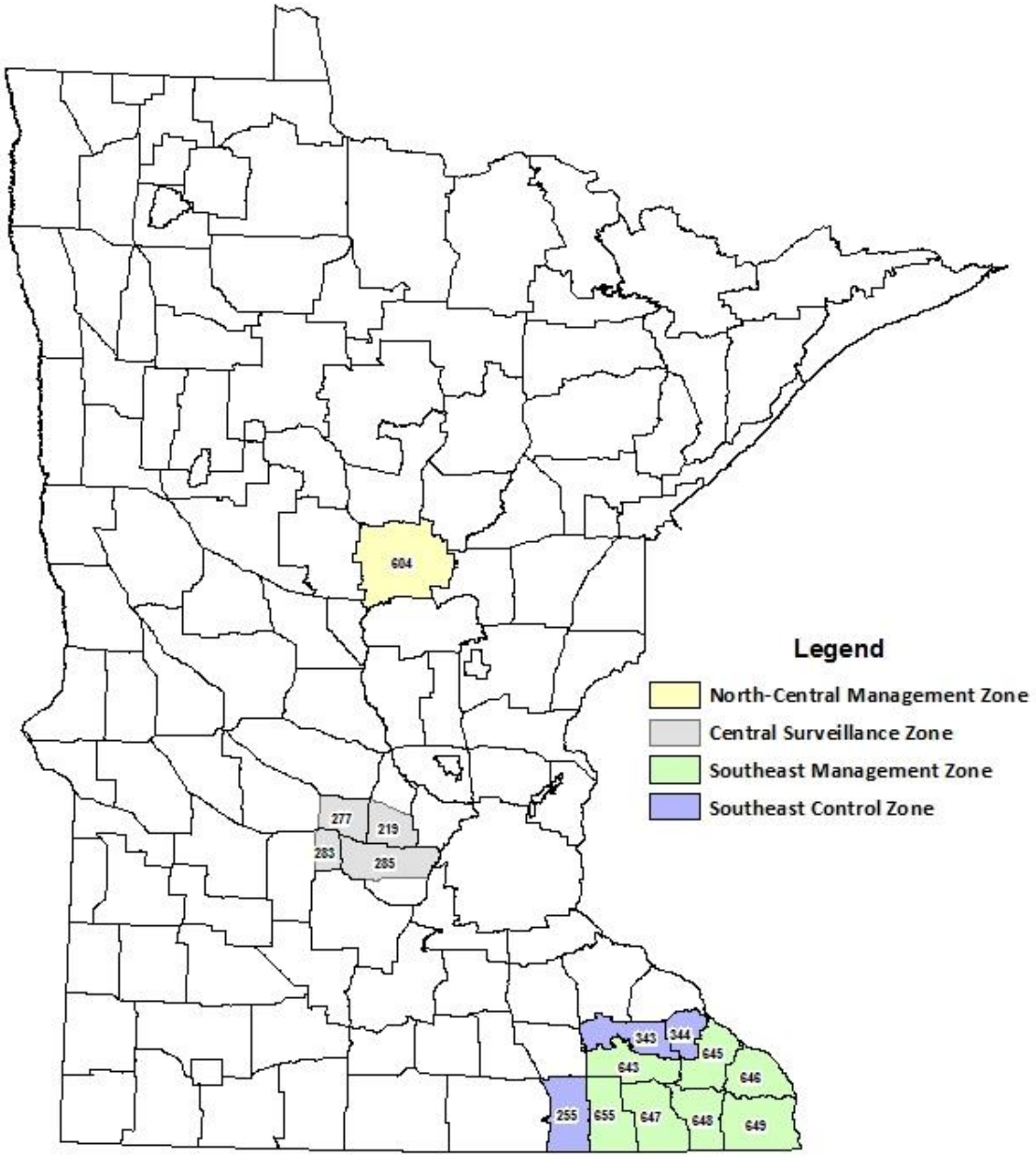


Figure 3. Chronic wasting disease surveillance areas in Minnesota, 2019.

VII. Urban/Special Hunts

Special Hunts: MNDNR cooperates with municipalities, state and county parks, and other public land entities throughout Minnesota to administer special hunts in areas where the number of hunters and weapon types must be limited to control the harvest or in the interest of public safety. During the 2018 deer season, special hunts were held in 92 areas and the reported harvest was 2,039 deer.

Urban Deer Damage Management: An approximately 300-square mile area surrounding the Twin Cities metropolitan area is designated a “metro zone” where hunters may harvest an

unlimited number of antlerless deer with proper licenses. In 2018, 3,230 deer were registered in the metro zone during the hunting season. In rare circumstances (~12 permits issued annually), MNDNR issues shooting permits for managing deer in urban areas. When permits are issued, deer may be removed outside of hunting seasons, at night, over bait, and with firearms. Either animal damage contractors or local law enforcement conduct the deer removals and all venison must be donated for charitable food distribution.

VIII. Deer Management Assistance/Crop Damage

MNDNR does not compensate farmers financially for crop damage caused by deer. Wildlife managers are available to work cooperatively with agricultural producers to develop strategies to reduce deer damage and to improve deer population management. Farmers who enter into a Cooperative Damage Management Agreement with MNDNR are eligible to receive material assistance from the state, including installation of exclusion fencing. To minimize damage to standing crops, localized population management techniques (including hunting and shooting permits) are used to decrease deer numbers where they are causing damage. If sport-hunting is used to the fullest extent and damage is still excessive, MNDNR may issue shooting permits to agricultural producers to harvest deer outside of hunting seasons. In addition, a pilot program was instituted in 2012 in southeastern Minnesota which allows the use of depredation permits allocated to specific properties where deer damage is occurring. Depredation permits allow increased bag limits for private sport-hunters to harvest additional antlerless deer during regular hunting seasons. This program is undergoing review.

IX. Diseases

CWD: In fall 2018, mandatory surveillance for CWD in hunter-harvested white-tailed continued across three surveillance areas in the state. In the north-central and central surveillance areas, sampling occurred over the opening weekend of the firearm season for a second consecutive year, in response to positive cervid farms discovered in Crow Wing and Meeker counties. We collected 888 and 462 samples from hunter-harvested deer in the north-central and central surveillance areas, respectively; no CWD was detected. In southeast Minnesota, 3,122 samples were collected during opening weekends of the 2 firearm seasons in DMUs outside the CWD Management Zone (DMU 603); three new CWD-positive cases were detected. This marked the first time CWD was detected outside of the CWD Management Zone, which was established in 2016. In DMU 603, we tested 1,250 hunter-harvested deer and detected 11 positive cases. Additionally, two deer that were found dead by hunters also had CWD. Disease prevalence in DMU 603 had doubled from the previous fall, from 0.41% to 0.89%. In response to both the increase in CWD prevalence and spread into new areas, MNDNR implemented additional management actions post-season to curb the spread of disease, including special late hunts, landowner shooting permits (LSP), and agency culling. Late hunts accounted for another 1,004 deer harvested and 5 new cases of CWD, 4 in DMU 603 and 1 in DMU 346. Shooting permits were mailed to 3,559 landowners in Fillmore county; however, only 245 permits were utilized to harvest 409 deer. Shooting permits were also mailed to 245 landowners in Winona and Houston counties, resulting in only 33 additional deer taken. Agency culling removed 493 deer in DMU 603 (12 CWD-positive) and 47 in DMU 346 (2 CWD-positive). Thus, post-season efforts in the southeast resulted in 1,986 additional samples with 19 new positives. In February

2019, an adult doe that was found dead less than a half mile from a CWD-infected cervid farm in Crow Wing county was confirmed with the disease, marking the first occurrence of CWD in a wild deer in northern Minnesota. Through a combination of landowner shooting permits, agency culling, and opportunistic sampling, 115 deer were tested from February–April in the area immediately surrounding the infected farm and no CWD was detected. To date, 52 wild deer have been confirmed CWD positive in Minnesota since surveillance efforts began in 2002.

X. Research

Distance Sampling – Roadside Observation Surveys: This project was the first year of a 2-year pilot study designed to evaluate the feasibility of using roadside distance-sampling (DS) surveys to generate a reliable and cost-effective population monitoring metric for white-tailed deer in Minnesota's farmland and transition zones. In spring 2018, we surveyed 15 primary sampling units (PSUs) ≥3 times to assess temporal variation in deer population estimates; we observed a similar number of deer across replicates 1–3 (total deer/replicate for all PSUs = 1,038, 1,002, and 1,082, respectively). PSUs included high- and low-density road segments based upon juxtaposition to deer cover. Mean perpendicular sighting distance was greater in the low-density stratum (135 m) compared to the high-density stratum (108 m). As expected in convenience sampling from roadways, deer detections spiked away from the road, which likely reflected road avoidance rather than animal movement. Among-plot variation accounted for approximately 89% of total variation in raw deer counts. Thus, variation due to survey day (run) was relatively small compared to variation in counts among PSUs. Among the 8 DS models fit to the survey data, the 2 best-supported models included a covariate for relative visual obstruction (RVO). Models with strata as a covariate did not fit the data well, which suggests that the detection function [g(x)] did not vary significantly among the 2 strata. The deer density estimate from the top model was 8.6 deer/mi^2 (95% CI = 6.1–12.2). Estimates from the other models were similar. Likewise, the density estimate when data from each stratum were analyzed separately was nearly identical ($\widehat{D}$ = 8.5, ~95% CI = 5.5–11.3), which supports the decision to use a stratified DS estimator where data are pooled across strata to estimate g(x). The density estimate from a winter aerial survey ($\overline{x}$ = 6.4, 95% CI = 5.1–7.7) was comparable. Precision of the density estimate from our top model was reasonable (CV = 17.1%), but likely optimistic because it may not adequately reflect variation due to survey date. Precision was much lower (mean CV = 24.8%) when we bootstrapped distance data using PSU and run (surrogate for survey date). Overall, density estimates seem reasonable and precision was better than expected. We have identified and resolved several data collection and survey-design challenges and have developed detailed field protocols to ensure consistency in data collection. Another year of data collection will be helpful for evaluating the ultimate question of whether a DS metric can be effectively and reliably used to help monitor white-tailed deer populations in Minnesota's farmland and transition areas.

Evaluating GPS Collars for Monitoring Neonatal Deer Survival and Movement: Placing GPS collars on white-tailed deer neonates is relatively new and design flaws currently exist with commercially available electronics (e.g., weight, position) and expandable bands (e.g., premature expansion, band material). In addition, an efficient method of locating and capturing neonates is needed. Our objectives in this pilot study were to: 1) evaluate efficacy of using

unmanned aerial vehicles (UAV's) equipped with infrared (IR) sensors to locate newborn fawns; and 2) validate performance of all components (e.g., electronics, expandable band) of GPS radiocollars on white-tailed deer neonates under field conditions in southern Minnesota. Capture efforts occurred from 28 May to 11 June 2019 on 18 Wildlife Management Areas administered by MNDNR. Primary cover-types on these areas included wooded riparian corridors, wetlands, and uplands composed of cool- and/or warm-season grasses. During the first few days, we spent time identifying and distinguishing the IR signature (i.e., brightness, size, shape) of fawns from non-target animals using imagery from the UAV's IR and visible-light cameras. Identified non-target animals included adult deer, raccoons, coyotes, muskrats, pheasants, ducks, and various songbirds. Initially, we flew the UAV at 46 m above ground level and maintained a flight speed of 4–5 meters/second. As we became more confident in identifying fawns, we increased flight altitude and speed to increase sampling efficiency. Based on IR signature, we located 41 fawns and confirmed identification of 31 (76%) using either the visible light camera or ground searches. For many of the unconfirmed cases, we located the IR signatures pre-dawn, but were unable to confirm identification and suspect the fawns moved prior to our confirmation attempts. Regardless, we have high confidence that these targets were fawns based on consistency of the IR signature from confirmed targets. Overall, fawn detection via IR and UAV worked well during pre-dawn periods or with an overcast sky during daylight hours. In contrast, detection proved difficult beginning approximately 2 hours post-sunrise when the sun heated the landscape sufficiently to eliminate the temperature differential between the deer and background objects. Under these conditions, we had many false positives and were unable to discriminate fawns. Throughout the sample period, we captured and collared 13 fawns (7 F; 6 M) at 8 sites and deployed 8 Vectronic and 5 Telonics collars. Mean weight and age at capture was 10.1 pounds and 5.3 days, respectively. To date, 2 Telonics collars were shed via premature expansion of the neck band. Evaluation of study objective 2 is ongoing.

Making Fine-Scale Measurements of Winter Habitat Use by Deer: MNDNR began a 2-year pilot study of white-tailed deer habitat in northcentral and northeastern Minnesota during winters 2017–2018 and 2018–2019. This study is using cutting-edge GPS-collar, remote sensing, and GIS technologies to monitor and assess deer habitat use on 2 winter ranges. During March 2018−May 2019, we recovered 30 of 60 collars that had been fitted to free-ranging deer. These collars stored 34,758 locations on-board (100% fix-success) and successfully transmitted 27,177 (88%) GPS locations. The mean horizontal error was 16 m (± 0.07) and median error was 10 m. We classified 604 and 1,012 cover type polygons at the stand level within the Inguadona Lake and Elephant Lake study sites, respectively. Spatially, dense conifer stands accounted for 12% and 23% and forage openings for 12% and 11% of the 2 study sites. During winter 2017−2018, collared deer using dense conifer stands were a mean of 146 m (± 8) and 240 m (± 5) from the nearest forage opening at the Inguadona and Elephant Lake sites, whereas they were a mean of 136 m (± 5) and 190 m (± 4) from the center of the stand they were using. Deer using forage openings were a mean of 247 m (± 7) and 179 m (± 7) to the nearest dense conifer stand at the 2 sites and 206 m (± 5) and 146 m (± 3) from the center of the opening in use. The mean area of dense conifer stands being used was 8 ha (± 0.2) and 47 ha (± 2) at Inguadona Lake and Elephant Lake, respectively. The ability to make fine-scale measurements of available habitat

and how it is being used by deer will allow us to characterize the area, shape, juxtaposition, and arrangement of cover types and assess their value on winter ranges in a way that can be incorporated into integrated habitat and forest management prescriptions.

Winter Survival and Cause-Specific Mortality of Deer: Ongoing studies that examine the influences of environmental, intrinsic, and demographic factors on survival and cause-specific mortality rates of white-tailed deer have been critical to enhancing our understanding of population performance and to improving management. A recent evaluation report from the Office of the Legislative Auditor recommended that the "…DNR should conduct field research to collect and utilize more information about Minnesota's deer… and inform the department's vital rate estimates of deer births and deaths, and better reflect deer population dynamics" to improve our understanding of demographics and habitat requirements. Using cutting-edge GPS collars, and remote sensing and GIS technologies, we recently launched a study that will inform a level of understanding of habitat requirements and drivers of population performance required by managers to prescribe forest manipulations that best support population goals. Herein, our objectives are to compare winter survival rates and cause-specific mortality (and influential factors) of adult (≥1.5 yr) female deer residing on study sites in northcentral (Inguadona Lake) and northeastern (Elephant Lake) Minnesota. We predicted that survival, percent winter mortality, and the impact of wolf predation would be influenced by winter severity in a way that is consistent with our understanding of this relationship garnered from a previous long-term (1991−2005) study in northcentral Minnesota. The *natural* mortality rate during the first winter (2017−2018) was high; 6 of 19 (31.6%) GPS-collared adult female deer (3 at each site) were all killed by wolves during 10 April to 31 May 2018. Overall survival had decreased to 0.68 (95% CI = 0.50−0.93) by then. But this was a *pilot year*, so the survival estimate was limited by small sample sizes (10 collared deer per site) and represented only the late–winter season (12 March to 28 May 2018) due to delayed capture operations. However, during the second winter (2018−2019), with more than twice the sample size (n = 51), the *natural* mortality rate was also high (36.7%); 17 of 49 deer were preyed upon by wolves and 1 by bobcat between 1 November 2018 and 20 April 2019 (cutoff for analysis for this annual report). Eight mortalities occurred at Inguadona Lake and 9 at Elephant Lake. The overall survival rate was 0.70 (95% CI = 0.57−0.86). The wolf predation rates during the 2 winters (31.6% and 34.7%) notably exceeded what we had expected based on the documented relationship of the previous long-term study. Typically, adult female deer enter winter in better physical condition than fawns and adult males, and thus have the highest probability of surviving winter. Our findings at least suggest that during both winters overall mortality rates at the population level, across sex and age classes, were likely higher than indicated by our adult female data. Ongoing federal protection of wolves in Minnesota limits MNDNR management options and has at least contributed to the estimated wolf population almost doubling from winter 1988−1989 (1,521 wolves) to the present (~2,900 wolves). Caution may be warranted in interpreting our preliminary findings, but they highlight the need for multi-year continuation of this study to better understand whether deer-habitat-wolf predation relationships have been changing since completion of the MNDNR's previous long-term study, a potentially significant consideration relative to implementation of the state's recently developed deer management plan.

Deer Movement Dynamics and Potential Prion Transmission from a CWD Disease Outbreak: Now in its second year, MNDNR is continuing a study to investigate the movement dynamics of wild white-tailed deer in southeastern Minnesota. The detection of CWD in fall 2016 in Fillmore County motivated this project to 1) understand potential pathways of CWD spread on the landscape by movement of deer, and 2) increase our likelihood of managing the outbreak in this and other areas of Minnesota. During March 2018, we captured and fitted 109 deer (49 fawn (≤1 yr) males, 34 fawn females, 25 adult (≥1 yr) males, 1 adult female) with GPS collars in our study area centered around DMU 603. We captured and collared an additional 64 deer (25 fawn males and 39 fawn females) during February 2019. As of 30 July 2019, 66 of 173 deer remain available for tracking. There were 45 known mortalities due to hunter-harvest (n=14), poor health (n=6), vehicle collision (n=5), agency culling (n=4), unknown cause (n=4), and capture-related issues (n=12). A significant number of collars (n=80) from 2018 failed due to either hardware malfunction or collar expansion failure. To date, only one collar from 2019 has failed. At the end of the fall-2018 dispersal period (1 Dec 2018), 37 deer were available to examine fall movements. We considered movements during the fall, excursions, or temporary movements outside of an established adult home range. Females had a slightly higher rate of excursion than males at 55% versus 31%, respectively. The average distance traveled by females and males was 5 km and 11 km, respectively. Based on our second year release cohort of 64 animals, average winter home range size was 184 ha and 265 ha for fawn female and male deer, respectively. Preliminary assessment of dispersal suggests that dispersal probability of fawn females (44%, n=34) was about equal to fawn males (45%, n=22) in spring 2019. The average apparent dispersal distance travelled was 15.8 km (n=15) and 31.4 km (n=10) for fawn females and fawn males, respectively. These rates of dispersal are comparable with those of 2018, however, average male dispersal distance was double that of females in 2019, almost completely opposite of what we observed in 2018. These data are informative for understanding potential CWD spread in wild deer in southeastern Minnesota and enable MNDNR to adjust surveillance and management activities more effectively to counter CWD spread in Minnesota.

Bow Hunter Observation Survey: The primary objective of this ongoing study is to evaluate the use of bow hunter observation data via mail and email surveys as an index of white-tailed deer, wild turkey, and various furbearer populations. Our secondary objective is to compare trends in fawn:adult female deer ratios from bow hunter observations to other recruitment metrics. In 2018, we administered 17,729 mail and 11,319 email surveys and received 1,359 mail and 332 email responses, which resulted in adjusted response rates of 0.077 and 0.029, respectively. Response rates were comparable among regions, however they differed between survey modes. Email respondents also averaged 35% fewer trips per hunter ($\bar{x}$ = 6.19, SE = 0.29) compared to the mail responses ($\bar{x}$ = 9.54, SE = 0.17). Despite lower response rates and fewer observations later in the season, hours hunted per trip (email $\bar{x}$ = 3.12, SE = 0.07, mail $\bar{x}$ = 3.15, SE = 0.03) and observation rates per hour among species did not differ between survey modes. Overall, the percent of antlered deer among total deer observations was greatest in the transition ecozone ($\bar{x}$ = 0.19), followed by the farmland ecozone ($\bar{x}$ = 0.18) and forest ecozone ($\bar{x}$ = 0.15). The greatest observed fawn:doe ratio was in the transition ecozone ($\bar{x}$ = 0.84),

followed by the farmland ecozone ($\bar{x}$ = 0.67) and forest ecozone ($\bar{x}$ = 0.64). Among the other species surveyed, there was more diversity in the forest ecozone, with relatively more bear, bobcat, wolf, fisher, and gray fox observations, compared to the transition and farmland ecozones. Turkeys had the highest proportion reported (compared to all other species) in the transition ecozone. Although mean age, response rates, and trips per hunter were all significantly different between email and mail respondents, similar observation rates suggested that inferences about population trends could be obtained from either survey mode. However, the low response rates and low number of trips per hunter from the email survey results in a reduced amount of information. It appeared the email respondents entered observations earlier in the season and were less likely to record observations later in the season, potentially the cause for the fewer trips per hunter than the mailed surveys. It is currently unknown if trends in observation rates among years will be similar between survey modes. We hope this survey will contribute to our knowledge of population trends and if so, determine the minimum spatial scale required to provide reliable inferences.

XI. Hot Topics

Deer Plan: In 2016, the Minnesota Office of the Legislative Auditor issued an evaluation on MNDNR's deer management program that recommended we develop a long-range, strategic deer management plan. MNDNR completed a statewide deer plan in 2018. The plan includes 15 performance measures and targets:

- Engagement opportunities – increase by 25% from 2019 to 2024.
- Timeliness of information about deer season decisions – communicated publicly each year before July 1.
- Adherence to public trust governance principals related to MNDNR deer management – public perception survey scores greater than 3.5 average (1 to 5 scale).
- Public land access for deer-related recreation – 6,000 additional acres per year.
- Private land access for public hunting – increase Walk-In Access program enrollment to 35,000 acres.
- Deer permit areas in goal range – ≥75%.
- Deer harvest – statewide 200,000 reported harvest.
- Deer disease surveillance success – 100% of target samples attained each year.
- Size of disease-positive core areas – 0 square miles.
- Deer habitat management – 100,000 acres of enhancement activities on wildlife management areas each year.

Progress: In 2019, a statewide Deer Advisory Committee was formed consisting of 20 members of the public from throughout the state representing a broad diversity of deer-related interests. This committee will serve as a sounding board for deer management issues and facilitate communication between the public and MNDNR. The second year of 'deer open houses' are being held throughout the state during February/March and August/September. Plans are underway to communicate on the above performance measures and targets on the MNDNR website.

XII. Relevant Links

2019 Hunting & Trapping Regulations –
http://www.dnr.state.mn.us/regulations/hunting/index.html

2019 Deer Hunting Season Information –
http://www.dnr.state.mn.us/hunting/deer/index.html

Annual reports summarizing deer harvest, population modeling, surveys, and winter severity –
http://www.dnr.state.mn.us/mammals/deer/management/statistics.html

CWD news, testing, and results –
http://www.dnr.state.mn.us/cwd/index.html

General information on goal setting –
http://www.dnr.state.mn.us/mammals/deer/management/population.html

Minnesota Office of the Legislative Auditor report on deer population management –
http://www.auditor.leg.state.mn.us/ped/2016/deermanagement.htm

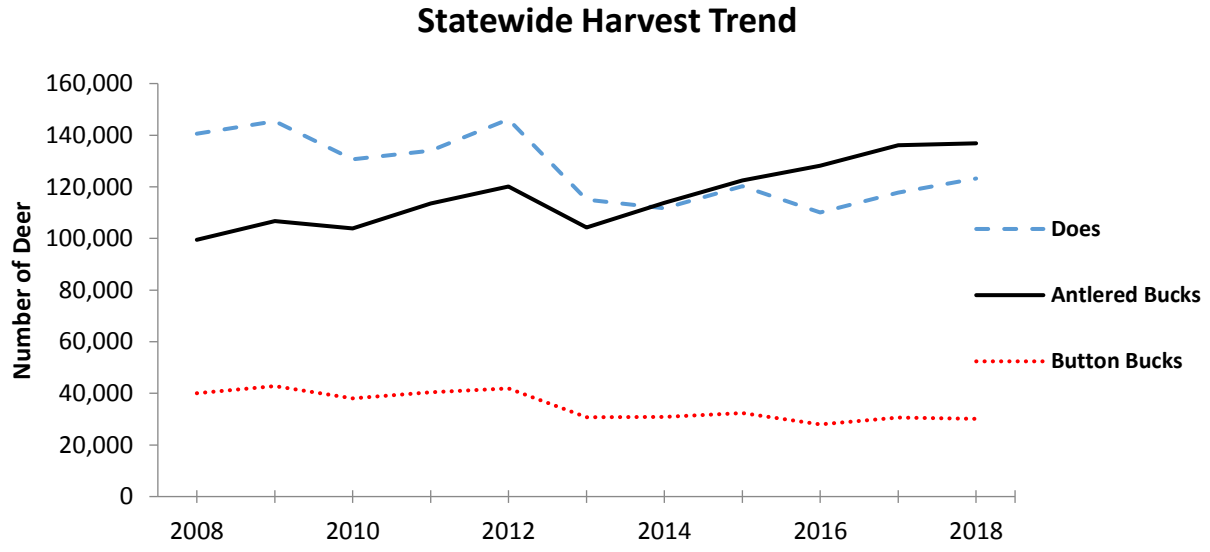
2019–2028 Deer Management Plan –
https://www.dnr.state.mn.us/mammals/deer/management/planning/index.html

I. Current Harvest

The 2018-2019 harvest of 290,224 deer was a 2% increase from 2017-18 and 12% less than the 10-year average. Antlered buck harvest exceeded antlerless harvest for the fifth consecutive year and is the highest ever recorded in Missouri at 136,851. During the 2018-19 season, deer harvest generally increased during the longer portions of the deer season and declined during the shorter portions. Hunters harvested 52,923 deer during the archery season, which is the highest ever recorded in Missouri. The proportion of the archery season harvest attributed to crossbows has increased from 30%, to 38%, to 43% the last three years.

Season/ Portion	Antlered Bucks			Button Bucks			Does			Total		
	2017	*2018*	*Diff*	*2017*	*2018*	*Diff*	*2017*	*2018*	*Diff*	*2017*	*2018*	*Diff*
Archery	21,283	20,708	-3%	5,347	5,351	0%	25,361	26,864	6%	51,991	52,923	2%
Managed	395	439	11%	218	235	8%	749	895	19%	1,362	1,569	15%
Early Youth	10,124	7,834	-23%	1,617	1,447	-	5,671	4,364	-23%	17,412	13,645	-22%
Late Youth	1,299	1,160	-11%	453	338	-	1,363	1,097	-20%	3,115	2,595	-17%
November	100,161	103,582	3%	20,267	20,041	-1%	72,369	77,115	7%	192,797	200,738	4%
Alternative	2,830	3,096	9%	1,311	1,588	21%	5,886	7,425	26%	10,027	12,109	21%
Antlerless Only	35	32	-9%	1,389	1,114	-	6,349	5,499	-13%	7,773	6,645	-15%
Total[1]	**136,127**	**136,851**	**1%**	**30,602**	**30,114**	**-2%**	**117,748**	**123,259**	**5%**	**284,477**	**290,224**	**2%**

[1] This table is not an inclusive list of permit types.



II. License and Season Information

Season Dates:

Archery Season: September 15 – January 15, closed during the November portion of the firearms deer season

Firearms Season:

Youth Portions: October 27-28; November 23-25
November Portion: November 10-20
Antlerless Portion: November 30 – December 2
Alternative Methods Portion: December 22 – January 1

Permit Type[1]	Cost	Number Issued	% Change from 2017
Permittee Archery Any-Deer	$19	117,142	1%
Landowner Archery Any-Deer	$0	98,653	-25%
Youth Archery Any-Deer	$9.50	7,645	1%
Permittee Archery Antlerless	$7	59,214	9%
Landowner Archery Antlerless	$0	187,967	-25%
Youth Archery Antlerless	$3.50	3,168	14%
Permittee Firearms Any-Deer	$17	278,289	-2%
Landowner Firearms Any-Deer	$0	172,775	-4%
Youth Firearms Any-Deer	$8.50	50,512	-5%
Permittee Firearms Antlerless	$7	187,688	1%
Landowner Firearms Antlerless	$0	158,272	-1%
Youth Firearms Antlerless	$3.50	24,036	-1%
Resident Firearms		837,402	-2%
Nonresident Firearms		34,170	4%
Resident Archery		458,439	-16%
Nonresident Archery		15,350	8%

[1] This table is not an inclusive list of permit types.

The number of firearms permits issued was down (-2%) for residents and up (4%) for nonresidents. Large declines were observed for landowner archery permits, however, this likely does not reflect a decline in hunter participation. Rather, a change was made at permit vendors in 2017-18 whereby a landowner could more easily receive all landowner permits in a single action rather than specifying which permits they wanted individually. This led to many hunters inadvertently receiving archery permits when they only intended to hunt with a firearm. This issue was corrected during 2018-19, resulting a large decline in the number of landowner archery permits issued compared to 2017-18.

III. Population Trends

Missouri's deer population, based on a simple deterministic accounting style model, declined from a peak in the early-to-mid 2000s until about 2013. During the last five years, the statewide population has generally been increasing, as the population has been recovering from a severe hemorrhagic disease outbreak in 2012. It is important to note that deer populations vary throughout the state due to availability of food and cover, hunter density and goals, harvest regulations, and hemorrhagic disease outbreaks. Historically high deer numbers have occurred in northern Missouri that were above culturally acceptable levels; thus, harvest opportunities were liberalized to reduce deer numbers. Liberalized regulations coupled with hemorrhagic disease outbreaks have reduced deer densities in these areas, in some cases below desirable levels, thus regulations have been changed to promote population stabilization/increase. Generally, areas of southern Missouri have been stable to slightly increasing due to conservative antlerless harvest opportunities.

IV. Deer Management Units

Each of Missouri's 114 counties serves as a separate deer management unit. Additionally, some counties have portions designated as Urban Zones, thus are considered separate management units.

V. Regulation/Legislation Changes

<u>2018-19 Season (significant changes)</u>

- The CWD management zone was expanded to 48 counties. Regulation changes that apply to counties within the management zone include:
    - Feeding and mineral supplementation ban
    - The 4-point antler point restriction is repealed in those counties where it was previously instituted
    - Antlerless permits are increased
    - Hunters harvesting deer during the opening weekend of the November portion of the firearms season must present the deer or deer head to a sampling station on the day of harvest

VI. Urban/Special Hunts

Annually, there are managed deer hunts that occur on state (e.g., parks, some MDC lands) and federal properties that restrict the number of hunters and harvest based on a lottery, quota system. These are approved by the MDC annually and run by the agency with authority over the area.

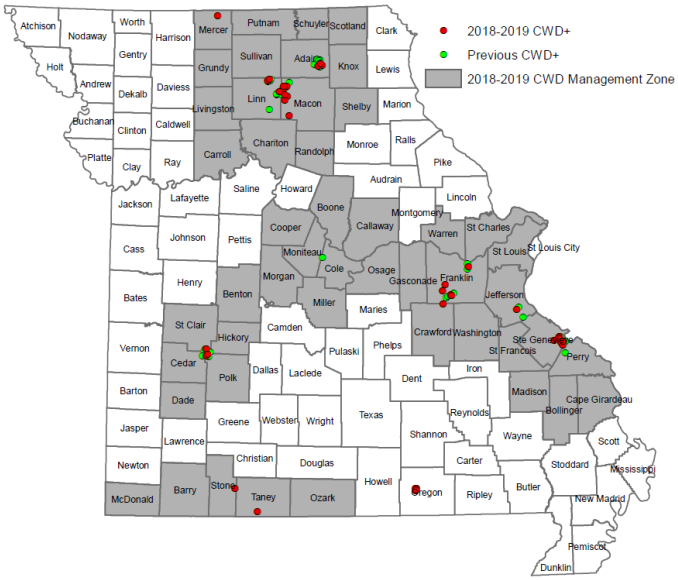
Currently, there is one urban zone in Missouri in the Kansas City area. This area include whole or portions of counties and has more liberal regulations than other areas to increase the harvest of deer.

VII. Deer Management Assistance/Crop Damage

Currently, MDC can provide deer depredation permits to landowners and lessees to address deer conflicts that result in significant economic losses (e.g., crop damage, nursery damage) and risks to human safety (i.e., airports). Starting in 2019, MDC has initiated a pilot deer management assistance program (DMAP) to offer several options to localized deer management issues. The program is available to landowners in 3 central Missouri counties and 4 southeast Missouri counties.

VIII. Disease Issues/Updates

<u>Chronic Wasting Disease</u>



- During 2018-19 CWD surveillance season, 32,010 free-ranging deer were sampled.
    - 27,947 from CWD Management Zone
    - 4,063 from outside CWD Management Zone
- 2,244 deer were culled post-hunting season within CWD Core Areas (within 1-2 sq. mi of CWD detections)
- 33 CWD+ deer were detected
    - 27 hunter-harvested, 12 culled, 1 road-killed, and 1 found dead
- Since 2012, 116 CWD+ deer have been detected
- For upcoming sampling year:
    - Reduce CWD Management Zone to include counties within 10-miles of a CWD detection
    - Conduct mandatory sampling in all 29 CWD Management Zone counties during November 16-17
    - Statewide CWD sample collection by participating taxidermists and meat processors
    - Continue targeted culling in CWD Core Areas (January 16 – March 15)
    - Evaluate additional public outreach and communication opportunities

Hemorrhagic Disease

- In 2018, there were a small number of confirmed and suspected reports of Hemorrhagic Disease (HD)
- HD was confirmed through PCR or virus isolation in 5 deer and 3 elk

IX. Research

Deer Survival and Recruitment Research Project

This is the 5th and final year of the research project. During the 2018-2019 season, 294 deer (116 adults, 52 yearlings, 126 fawns) were marked with a GPS transmitter, ear tag, or both across Northwest and Ozark study sites. In the Northwest study site, 100% of adults (*n* = 23), 90% of yearlings (*n* = 10), and 0% of fawns (*n* = 18) were pregnant. In the Ozarks study site, 98% of adults (*n* = 48), 86% of yearlings (*n* = 14), and 7% of fawns (*n* = 28) were pregnant. During summer 2018, 89 neonate fawns were captured (50 in the Northwest, 39 in the Ozarks). As of June 1 2019, 12 of those deer were still alive, 36 had died, 37 collars had separated, 1 collar was removed and replaced with a GPS collar, and 3 collars were no longer detectable.

Statistical Population Reconstruction Software Development

We have made progress on additions to the most recent version of the software PopRecon (**POP**ulation **RECON**struction) 3. Coding for the third phase of the software is currently underway. This includes additional age-structure capabilities of harvest data inputs and complexity of harvest regimes which can be modeled. Testing of these and previous additions to the program are ongoing. A fourth phase of development will occur in 2020. The final phase of development will include 2-sex modeling and partial closure of age-classes to harvest. We now have three years of binary morphometric and mandatory check station data along with additional years of meat processor data with increased sample sizes. These data are currently being evaluated to guide future data collection efforts and shape the evaluation of implementing SPR with morphometric data. We will use these data to begin preliminary modeling of segments of the population subject to consistent harvest regulations over the previous five to 10 years.

CWD Modelling Project

We are currently using the CWD Surveillance Model to assess priority sampling areas based on past sampling numbers and other risk factors. We will use these results in our upcoming statewide surveillance season. The infection dynamics model is complete and is currently being used to conduct simulations to assess the effects of management strategies (targeted culling, increased hunter harvest, removal of the antler-point restriction) on CWD prevalence and spread.

Elk Population Demographics Research Project

We are monitoring survival, reproduction, and habitat use of the restored elk population in the Missouri Ozarks. A total of 33 calves were collared during 2018 and monitored for survival. A failure in the calf collars biased survival rates low (42%). Without the collar failures, survival would likely have been closer to 60%, which would still have been lower than the previous two-year average of 67%. Large scale

capture efforts for both adults and neonates are finished. Only three adult bulls were captured last year to deploy remaining collars. Efforts have switched to monitoring remaining deployed collars and data analysis. We are monitoring 36 GPS/VHF collars and 29 VHF-only calf collars; thus, we are monitoring a total of 65 elk in Missouri. Meningeal worm is still the leading identified mortality factor with roughly a third of mortality events attributed to the parasite.

X. Hot Topics

Carcass Transport and Disposal Regulations

In June 2019, Missouri's Conservation Commission gave initial approval of regulations pertaining to transport and disposal of cervid carcasses. Proposed regulations would limit transportation of cervid carcasses into and within the state and provide provisions for transporting cervid carcasses to processors and taxidermists. Proposed regulations would also establish a requirement for commercial processors and taxidermists to dispose of unused cervid parts in a sanitary landfill or transfer station.

Chronic Wasting Disease Management Zone Changes

Beginning in 2019, Missouri's Chronic Wasting Disease (CWD) Management Zone will include all counties within 10 miles of a CWD detection. Previously, all counties within 25 miles of a CWD detection were included within the zone. The change was the result of preliminary data from an ongoing research project in Missouri, in which more than 90% of deer dispersed less than 10 miles. This change resulted in a reduction from 48 counties in the CWD Management Zone in 2018 to 29 counties in 2019. This change involved removing 22 counties previously in the zone and adding 3 counties as a result of 2018/2019 CWD surveillance efforts. The antler-point restriction was reinstated in all counties removed from the CWD Management Zone that previously had the regulation in place. Additionally, placement of grain, salt products, minerals, and other consumable natural and manufactured products is not prohibited in counties outside of the zone.

Deer Management Assistance Program

In 2019, MDC will be piloting a Deer Management Assistance Program. The pilot effort will occur in 4 southeast Missouri counties and 3 counties in east-central Missouri. Private properties of at least 500 acres located outside of municipal boundaries are eligible for the program, as are properties of at least 40 acres located inside the boundaries of a city or town. Individual parcels of land, regardless of ownership, may be combined to satisfy the acreage requirement. The program will provide additional antlerless deer harvest opportunities on enrolled properties to address deer damage concerns and to achieve recreational deer management goals.

Framework for Elk Hunting Season

In June 2019, Missouri's Conservation Commission gave initial approval of a framework to establish an elk hunting season. The season would occur within a three-county area in the Missouri Ozarks and would involve a random lottery drawing for a limited number of bull tags for Missouri residents. The season would consist of two portions: a 9-day archery season and a 9-day firearms season. MDC biologists will evaluate biological data against several benchmarks established by the Conservation Commission to make a quota recommendation for 2020.

NEBRASKA DEER STATUS REPORT – 2019

43rd Midwest Wild Turkey Working Group Meeting – August 12-14, 2019
Abe Martin Lodge at Brown County State Park, Nashville, Indiana

Luke Meduna – Big Game Program Manager
Nebraska Game and Parks Commission
2200 N 33rd
Lincoln, Ne 68503
402-471-5442 / luke.meduna@nebraska.gov

I. Current Harvest

Total deer harvest was 58,348, consisting of 46,569 whitetail and 11,779 mule deer. WT buck harvest decreased 6% to 27,194 and ranks 13th all-time. MD buck harvest also decreased 6% to 9,250 and ranks 3rd all-time.

Whitetail deer are nearly from EHD/drought losses in 2012; however, populations in some eastern units are slightly below desired levels. Whitetail buck harvest is similar to early 2000's levels. Mule deer populations are mostly recovered from drought and meningeal worm losses in 2010-2011. Many mule deer units are at or near historic high buck harvest and total MD buck harvest the past three years were all in the top three all time.

Deer Harvest: 2018-2019

Permit	Adult Bucks		Antlerless		Permits Sold	Success Rate
	MD	WT	MD	WT		
Nov. Firearm	5,149	13,749	309	4,804	43,356	55%
Landowner	1,345	3,490	448	1,823	13,983	51%
Statewide Buck	339	3,085	1	30	10,056	34%
Youth	1,311	2,817	179	1,076	11,011	49%
Archery	615	2,662	53	627	16,797	24%
Muzzleloader	460	993	95	457	7,167	28%
Season Choice AO	27	194	1,440	5,032	15,924	42%
River Antlerless	1	200	12	5,515	9,038	63%
Total	9,250	27,194	2,529	19,375	127,332	46%

II. License and Season Information

Deer permit sales the past ten years ranged from 122,000 to 142,000. Permit sales declined 2.6% in 2018 to 127,332. Nonresidents accounted for 15.8% of the 93,351 total hunters in 2018**.**

A permit fee increase of approximately 18% occurred in 2017.

$8 youth deer permits help with hunter recruitment and are available to resident and nonresident youth age 10-15. Youth permits are valid statewide with minor exceptions.

Bonus antlerless permits are added to twenty-two permit types in units to increase the bag limit on permits where we are unable to increase harvest by simply increasing permit quotas.

2018 License and Permit Fees

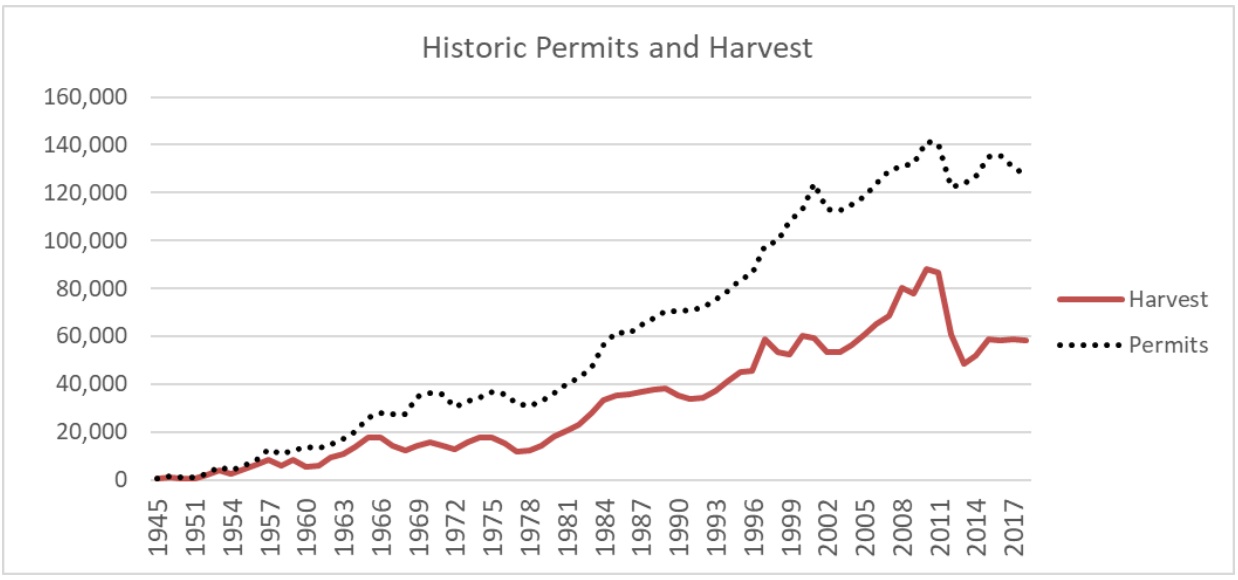
License	Resident	Nonresident
Youth Deer	$8	$8
River Antlerless	$14	$70
SCA Antlerless	$37	$70
Landowner	$20	$122.50
AR, MZ, November Firearm	$37	$242
Statewide Buck	$173	$798
Restricted Statewide Buck	$128	$698
Statewide Whitetail Buck	$88	$600
Habitat Stamp	$25	$25

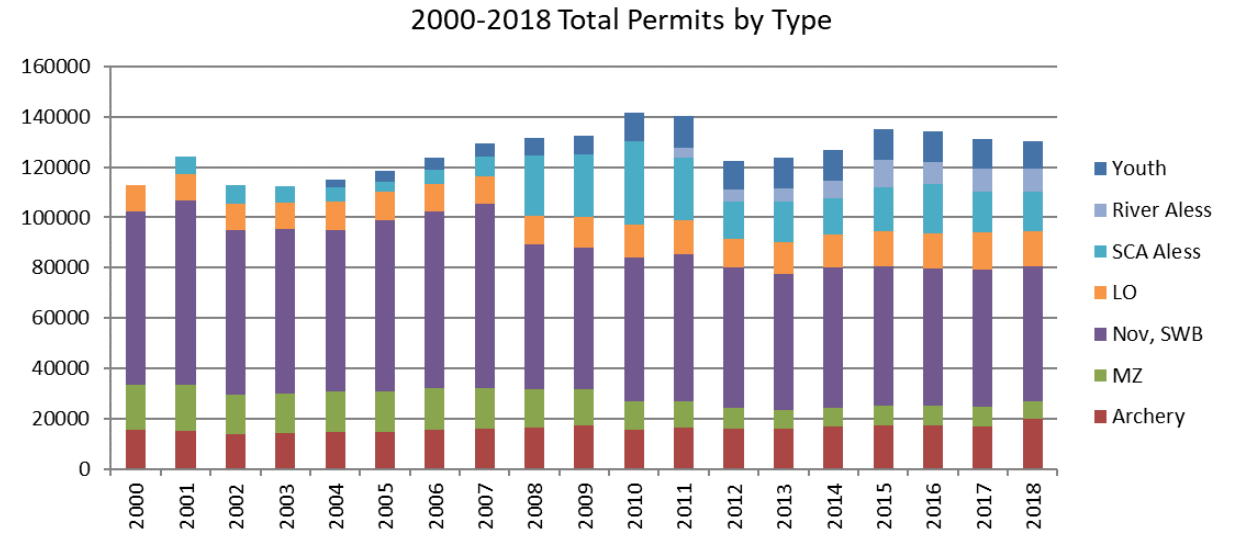
2018 Season Dates

Archery	Sept. 1 – Dec. 31
November Firearm	Nov. 10-18
December MZ	Dec. 1-31
Antlerless	Sept. 1 – Jan. 15
Statewide Buck	Sept. 1 – Dec. 31
Youth and Landowner	Sept. 1 – Jan. 15

III. Historical Harvest

Nebraska's first deer season was in 1945, 361 mule deer and two WT bucks were harvested. Harvest of MD bucks set a new record in 2017 at 9,801. WT buck harvest surpassed MD buck harvest in 1969 when 5,700 WT bucks were harvested. WT herds peaked in 2010 (38,000 bucks harvested) and crop damage exceeded landowner tolerance. Aggressive harvest reduced herds in some units and large EHD losses in 2012 reduced herds by 30% in much of the state. Current deer populations are at acceptable levels in most units.





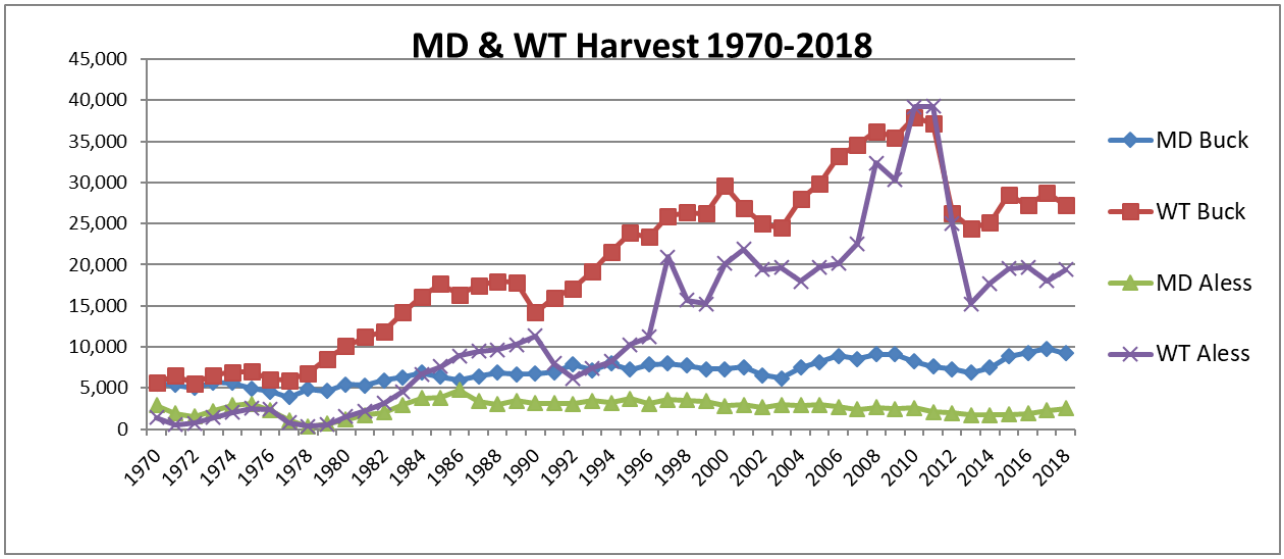
IV. Population Trends

Whitetail populations have generally increased until interrupted by aggressive antlerless harvest (2008-2011) and a major EHD event (2012). WT buck harvest the past 3 years has been stable (27,000 – 28,000) compared to a record buck harvests (33,000 – 38,000) in 2006-2011. Current goals are to increase WT populations in deer units that border the Missouri River where herd growth and deer harvest remain lower than desired.

Mule deer herds have increased in most western units in response to low doe harvest. Eastern MD units struggle to maintain viable populations regardless of management actions. Restricted doe harvest and favorable weather the past 4 years has allowed mule deer to grow, with record harvest of MD bucks in 2016 (9,257 bucks) and 2017 (9,801 bucks).

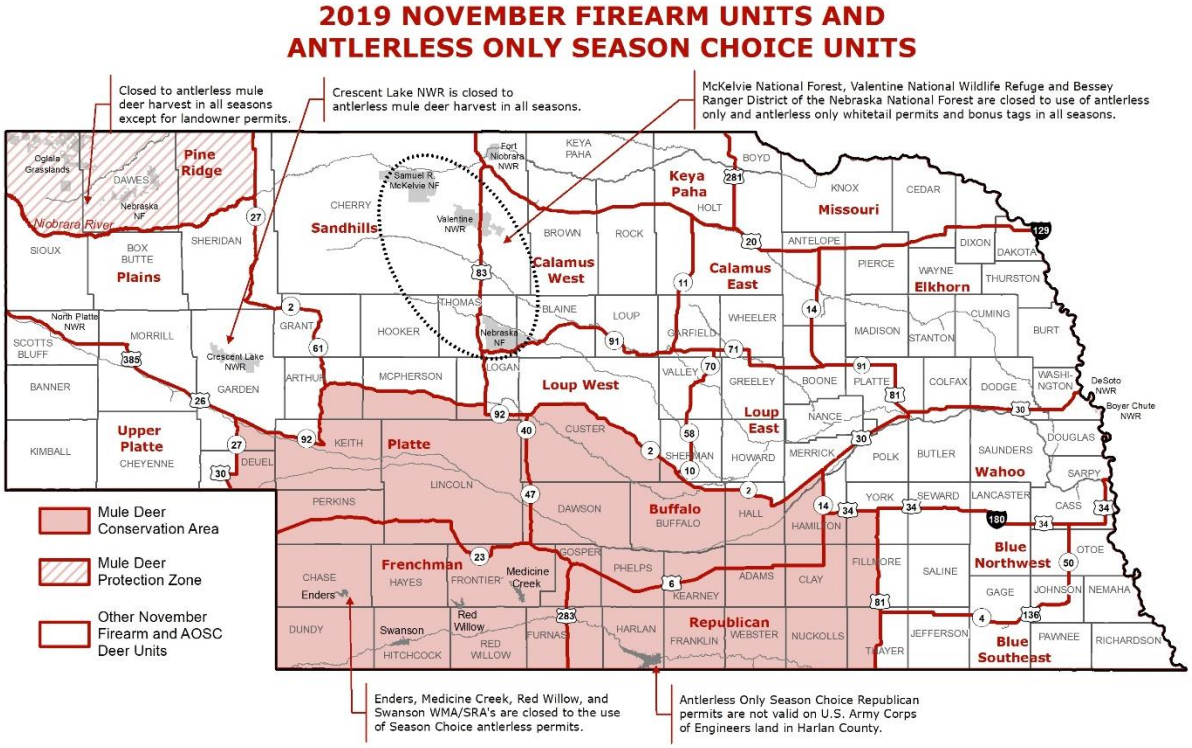
Buck age structure for both WT and MD harvest (and presumably population) have increased drastically in the last 20 years. In 2000, 70-80% of the harvest was of yearling bucks, now >70-80% of the harvest is 2+.

Buck harvest is our primary indicator of population trends.



V. Management Units

There are 18 deer management units with harvest objectives for each unit.



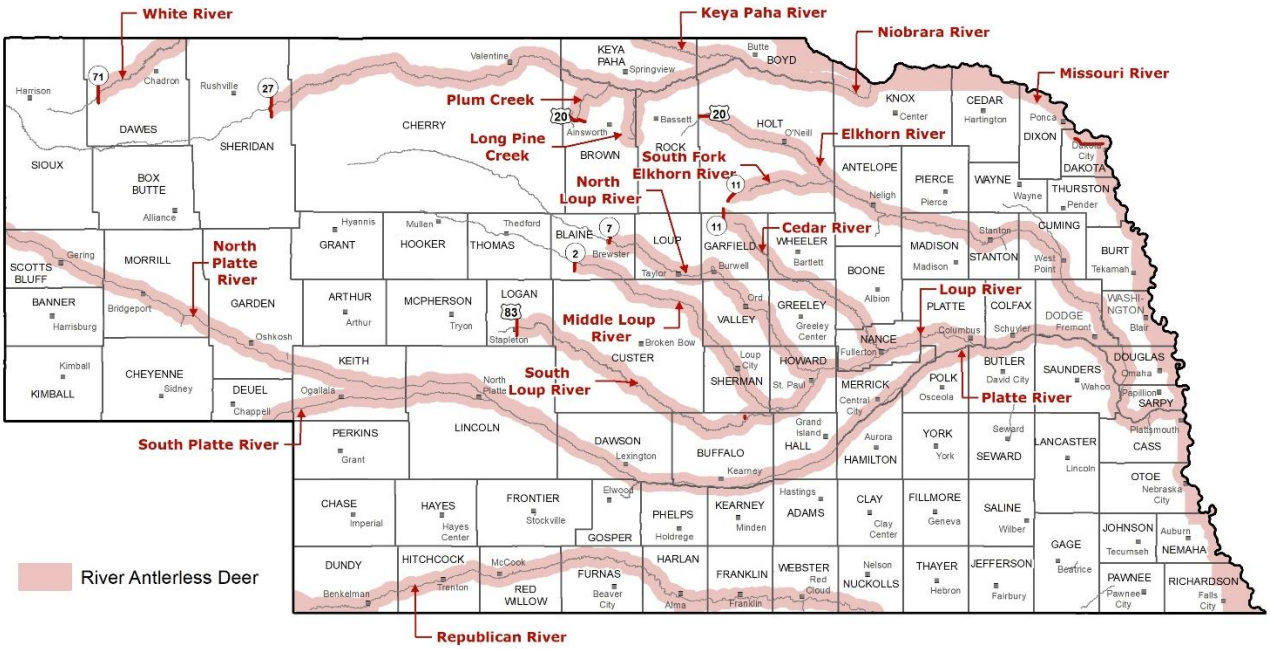
VI. Urban / Special Hunts

There are a limited number of park and refuge hunts that allow deer hunting in state parks that are normally closed to hunting. Total annual harvest ranges from 100-300.

Our "River Antlerless Unit" directs antlerless whitetail harvest to 10,000 sq. miles of river corridors where the majority of crop damage complaints occur. All permits are $14 and valid for two antlerless whitetails during the 137 day season. 12,000 permits for two antlerless WT were authorized. 9,038 permits were issued. 5,728 deer were harvested.

2019 RIVER ANTLERLESS UNIT

ALL FEDERAL AND STATE PUBLIC LANDS CLOSED TO RIVER ANTLERLESS PERMITS



VII. Regulation / Legislation Change

No major regulatory or statute changes in 2018. Minor alteration to definition of "Landowner" include expand qualification for limited landowner permits.

VIII. Management Assistance/Crop Damage

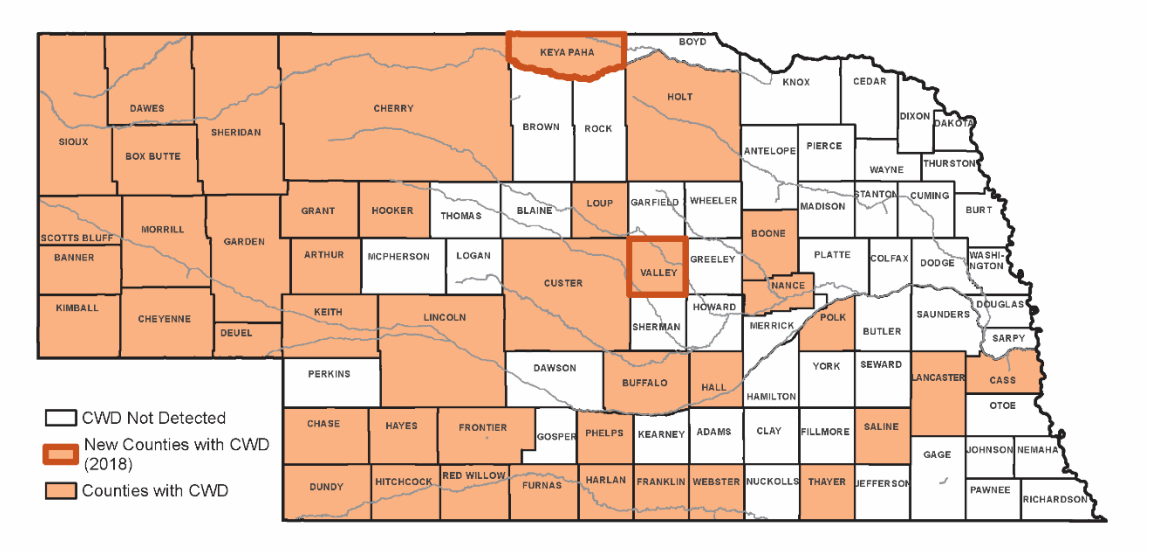
Landowner damage permits are given to landowners experiencing excessive crop damage. Most problems areas are associated with "defacto refuges" where hunting is limited on adjacent private land. Permits are free to landowners experiencing damage. Carcasses must be utilized for human consumption. Annual kill ranges from 50-500 statewide. Less than 100 were killed in 2018.

IX. Disease Issues

No significant losses were reported due to EHD, CWD or Meningeal worm in 2018.

In 2018, several cases of meningeal brain worm were documented and confirmed in mule deer in the central part of the state.

CWD has been documented present in Nebraska for nearly 20 years and is now verified in 42 of 93 counties. In 2018, 1,966 deer were sampled in six deer units in western Nebraska. CWD prevalence rate in age 2 and older bucks was 12.8% in Panhandle units. CWD prevalence in Southwest units was 8.6% in males and 3.3% in adult females. Counties where CWD has been found in free ranging deer are shown below.



X. Research

Population estimate of elk based on DNA in fecal samples was completed in 2017.

XI. Hot Topics

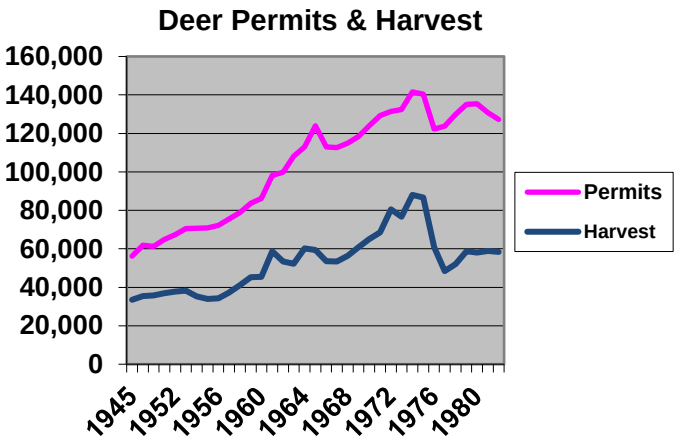
Crop depredation by whitetails continues to be an issue, however mule deer have been increasingly the culprit in many complaints. This has forced us to alter management strategies in some units.

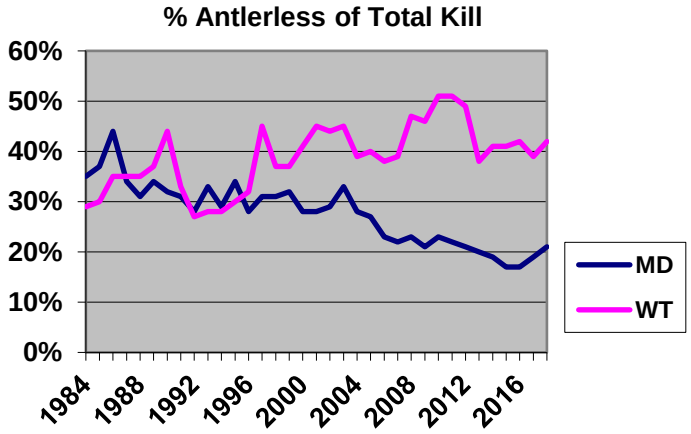
CWD and MBW continue to be issues.

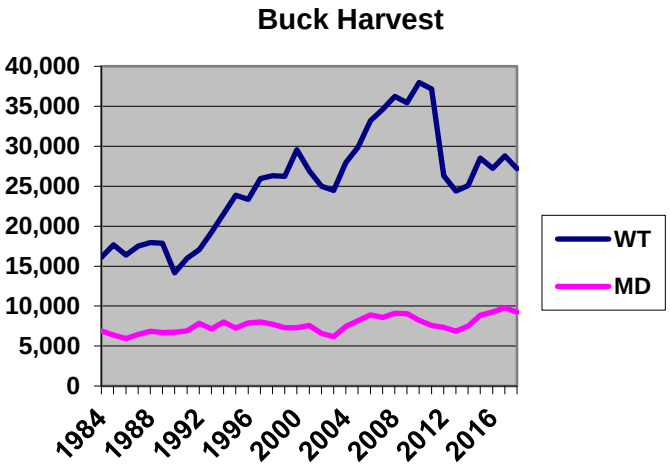
XII. Relevant Links

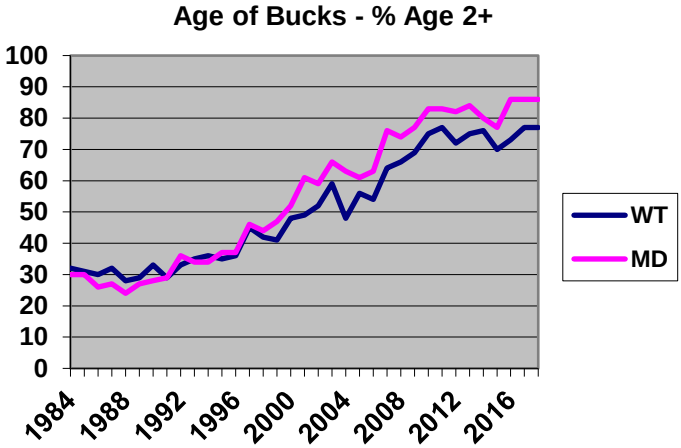
2019 Big Game Guide: http://digital.outdoornebraska.gov/i/1118605-big-game-guide-2019-web

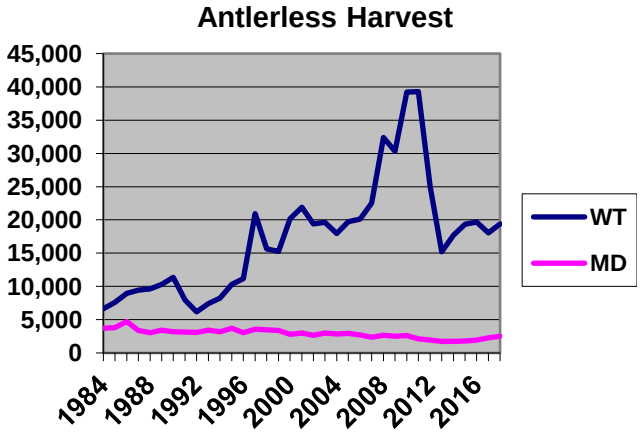
Nebraska Deer Season Statistics (1984-2018)











NORTH DAKOTA DEER POPULATION STATUS REPORT – 2019

43rd Midwest Deer Working Group Meeting – August 12-14, 2019
Abe Marin Lodge, Brown County State park, Nashville, Indiana

William (Bill) Jensen - Big Game Biologist
North Dakota Game and Fish Department
100 North Bismarck Expressway
Bismarck, ND 58501
Phone: 701-220-5031 / E-mail: bjensen@nd.gov

POPULATION STATUS

We use a series of population indices to set harvest rates. We do not attempt to estimate the statewide deer population. Due to recent hard winters, aggressive harvest management and habitat loss, deer numbers had been at their lowest levels since the early 1980s but are rebounding. This is reflected in the number of lottery licenses available for our deer-gun season.

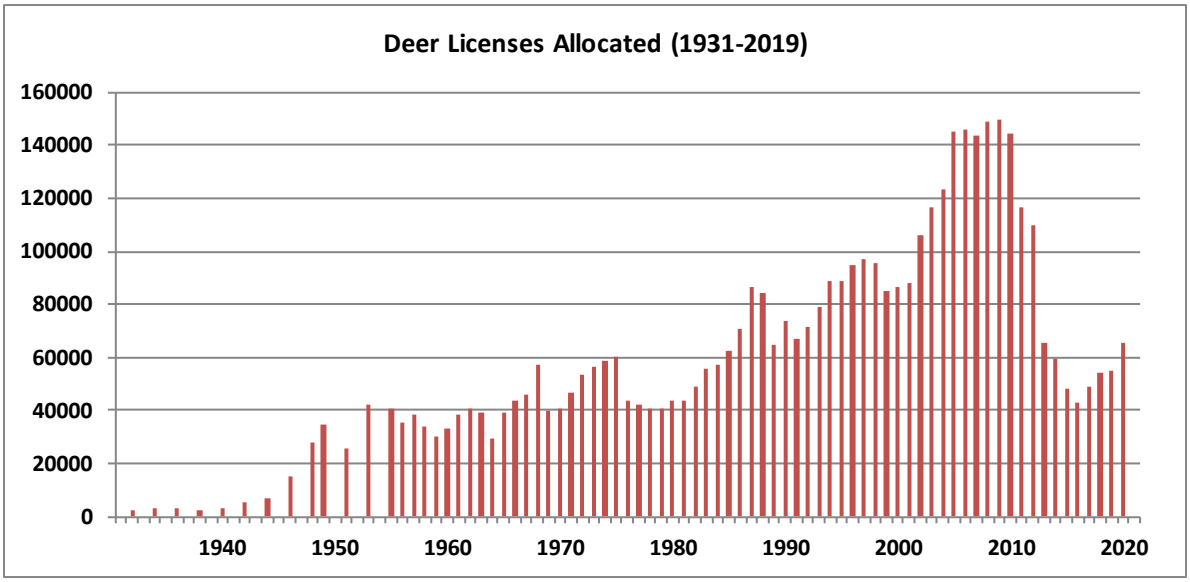


Figure 1. Summary of licenses allocated for the regular deer-gun season in North Dakota (11931-2019).

REPRODUCTION

During the 2018 regular deer-gun season hunters reported (statewide) a white-tailed deer buck:doe:fawn ratio of 0.34:1:0.53 (n=5285-15476-8127) during the opening weekend; in 2017 the ratio was 0.37:1:0.49. For mule deer the reported buck:doe:fawn ratio was 0.26:1:0.44 (n=2124-8313-3618) for the opening weekend; in 2017 the ratio was 0.32:1:0.41. Department aerial surveys for mule deer reported a buck:doe:fawn ratio in the North Dakota badlands of 0.43:1:0.84 (n=436-1077-906).

HARVEST

Summary of 2018 deer season are as follows. During the regular deer-gun season a total of 54,867 license were issued 55,150 licenses available. September youth deer seasons and regular season harvest (N=5,544 licenses issued; including 12-year-old antlerless white-tailed deer only season), muzzleloader (N=1,022 licenses issued), and archery season (N=28,824 licenses issued) harvest data and buck:doe:fawn ratios, by license type for those license holders that hunted.

Table 1. Summary of deer harvested, by license type, in North Dakota during the fall of 2018.

License Type	White-tailed Deer				Mule Deer			
	Antlered	**Antlerless**	**Total**	**Ratios (B/D/F)**	**Antlered**	**Antlerless**	**Total**	**Ratios (B/D/F)**
Regular Gun Season	15,764	9,723	25,487	2.31/1/0.42 (15,764/6,837/2,886)	3,747	2,116	5,863	2.28/1/0.29 (3,747/1,643/473)
Youth Season[1]	700	2,387	3,087	0.44/1/0.0.50 (700/1,588/799)	267	37	319	7.22/1/0.0.41 (267/37/15)
Muzzle-Loader	176	173	349	1.34/1/0.0.32 (176/131/42)				
Archery	5,695	2,232	7,927	2.37/1/0.42 (5,695/1,683/549)	751	256	987	4.24/1/0.33 (751/177/59)
Total	**22,225**	**14,515**	**36,850**	**2.18/1/0.42 (22,335/10,239/4,276)**	**4,765**	**2,409**	**7,169**	**2.57/1/0.29 (4,765/1,857/547)**

[1]Unsuccessful youth hunters may also hunt during the regular deer gun season.

License and Season Information

Table 2. Summary of descriptive information related to deer license types available in North Dakota during the fall of 2018.

Season	License Issued	License Description	License Cost	Season Dates
Youth Gun[1]	**5,544**	**12-13Antlerless WTD Statewide (limit of 1) 14 or 15 Any WTD Statewide Lottery on MD (Limit of 1)**	**$10 (Under 16)**	**14/09/2018 to 23/09/2017**
Archery	**28,824**	**Res. Any Deer Statewide**	**$30 Res. $250 Non Res.**	**31/08/2018 to 06/01/2019**
Regular Deer-Gun	**54,867**	**Lottery**	**$30 Res. $250 Non Res.**	**9/11/2018 to 25/11/2018**
Muzzleloader	**1,022**	**WTD Only Equals 2% of Regular Deer-Gun Licenses**	**$30 Res. Only**	**30/11/2018 to 16/12/2017**

[1]Unsuccessful youth hunters may also hunt during the regular deer gun season.

HUNTING INCIDENTS

North Dakota Game and Fish Department staff are not aware of any injuries or fatalities during the 2018 deer seasons.

REGULATION/LEGISLATION CHANGES

The 2019 North Dakota deer hunting season will include 65,500 licenses, an increase of 10,350 licenses from 2018. There will not be a concurrent season again in 2019 (hunters will be allowed only one license for the gun season).

All deer applications will be submitted on-line through the Game and Fish website or using the toll-free instant licensing phone number (non-gratis lottery applications only).

Management Notes:

Population and harvest data indicate the state's deer population is stable to increasing but still below management goals in most eastern hunting units. Consequently, there will be a moderate increase in deer licenses allocated in 2019 to increase hunting opportunities while continuing to encourage

[1] Unsuccessful youth hunters may also hunt during the regular deer gun season.

population growth. The statewide hunter success rate in 2018 was 64%, which was higher than 2017 (61%) but below the goal of 70%.
CWD-positive deer were recently detected in hunting units 3A1 and 3B1 and has consequently altered deer management strategies in those and surrounding units. The goal is to minimize the CWD prevalence rate and reduce the spread of the disease outside those two units; therefore, a more aggressive harvest strategy was applied in the northwestern part of the state.
High quality deer habitat is not as abundant as in the past, which has limited the potential for population recovery following severe winter conditions across the entire state during 2008/09-2010/11, northeastern part of the state during 2012/13 and 2013/14, and southeastern portion of the state in 2018/19. For example, deer numbers in hunting units 2E and 2C have not responded to more favorable winter weather conditions and reduced harvest, due in part to these hunting units having lost approximately 60% of CRP grass cover and nearly 400 acres of trees.
Biologists surveyed 31 of 32 hunting units that have winter survey blocks in February/March. Deer numbers were stable in Slope, Missouri River, Turtle Mountains, Badlands, and Souris Des Lacs Management Units; increasing in Coteau, Sheyenne-James, Pembina Hills, and Red River Management Units; and decreasing in Devils Lake Management Unit.
The 2019 badlands mule deer spring index decreased by 20% from 2018 but remains 14% above the long-term average. Mule deer densities in the badlands are above the long-term average with localized areas above landowner tolerance levels. A conservative management approach will continue for mule deer in the badlands for 2019; antlered licenses were increased by 150 and antlerless licenses were increased by 200. Mule deer densities increased by 34% in hunting unit 4A; therefore, antlerless mule deer licenses will be issued in hunting unit 4A for the first time since 2011.

During the 2018-2019 legislative session a bill was put forward to allow pneumatic rifles for big game hunting. In response the NDGF added language to the proclamation that allows the use of these guns. The proclamation reads as follows: "Pre-charged pneumatic air guns, charged from an external high compression source such as an air compressor, air tank or an external hand pump are legal for deer but must fire a projectile (excluding air bolts) of at least .35 caliber in diameter and at least 150 grains in weight with a minimum muzzle velocity of 600 feet per second."

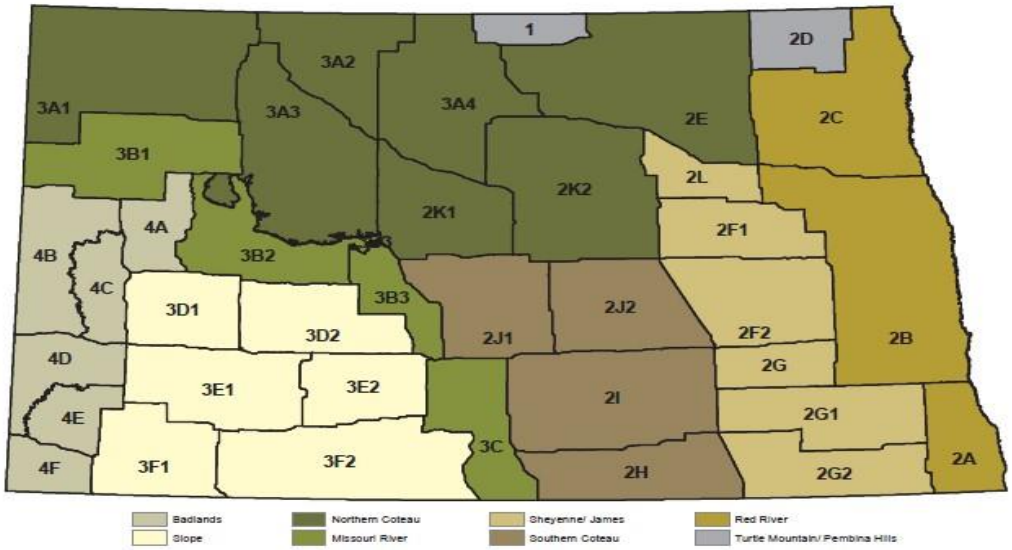


Figure 2. North Dakota deer hunting units and major management units.

* 65,500 licenses are available for the 2019 regular season, an increase of 10,350 licenses from 2018.
    - Any Antlered licenses increased by 3,150
    - Any Antlerless licenses increased by 4,100
    - Antlered white-tailed deer licenses increased by 700
    - Antlerless white-tailed deer licenses increased by 1,250
    - Antlered mule deer licenses increased by 450
    - Antlerless mule deer licenses increased by 700

* Antlerless mule deer licenses will be issued in hunting unit 4A (100).
* A total of 1,206 muzzleloader licenses will be available in 2019. The total is comprised of 603 antlered white-tailed deer licenses and 603 antlerless white-tailed deer licenses. This is an increase of 184 muzzleloader licenses from 2018.
* In 2019, there will be 305 "I" licenses available for the youth deer hunting season. This is an increase of 45 licenses from 2018. "I" licenses are limited in number for units 3B1, 3B2, and 4A-4F, and are valid for any deer. There are unlimited "H" youth deer hunting licenses that are valid for any deer statewide except mule deer in the above restricted units.
* A total of 607 nonresident any deer archery licenses are available in 2019. This is an increase of 105 any deer archery licenses from 2018. The number of non-resident any deer archery licenses will increase to 780 in 2020.
* Most licenses issued since 2011.

Urban/Special Herd Reduction Deer Seasons

Three special concurrent experimental deer bow seasons are proclaimed for portions of the City of Bismarck, and private land in Burleigh County located adjacent to the City of Bismarck. The private land in Burleigh County is described as follows: starting where the southwest boundary of the city limits of Bismarck joins the east bank of the Missouri River, then following the city limits of Bismarck easterly to the point where it meets the west bank of Apple Creek in the northeast one-quarter of Section 26, Township 138 North, Range 80 West, then following the west bank of Apple Creek in a general southwest direction to its junction with the north boundary of Apple Creek Wildlife Management Area (WMA) and then west and south along the WMA boundary to the Missouri River, then following the east bank of the Missouri River to the point of origin. This does not include the NDDOCR property referred to in Section 4(E).

Hunters who desire to hunt within the city limits of Bismarck must receive a trespass permit from the Bismarck Chief of Police (701-223-1212), prior to being issued up to three special deer bow licenses from the Game and Fish Director. Hunters will be restricted to those dates and locations specified on the trespass permit(s). No orange clothing is required when hunting within the Special Herd Reduction areas unless required by city officials within city limits. In addition, hunters may use their Deer Bow license during the Deer Bow season (1 September 2018 through 7 January 2019) after obtaining a trespass permit. In the area outside the city limits of Bismarck no trespass permit is needed. These licenses are available only at the North Dakota Game and Fish Department headquarters in Bismarck.

Deer Management Assistance/Crop Damage Harvest

Depredation Assistance Program - provides funding for activities used to alleviate/minimize damage to private livestock feed supplies caused by big game animals (manpower, technical assistance, temporary fencing, repellents, scare devices, and deer-proof hay yard fences). Payments will not be made for damage caused by wildlife. Since 2005 the department has been facilitating a program that couples producers that have chronic deer depredation problems with hunters interested in harvesting antlerless does. Interested hunters enter their contact information on our website. Landowners determine how many hunters they are willing to host. The predetermined number of hunters are randomly selected from the website and sent a letter with the phone number of a landowner wanting deer removed. Over the past decade the number of landowners in the program has gradually declined as deer depredation problems have been reduced and hunters have developed relationships with landowners.

RESEARCH

One of the North Dakota Game and Fish Department's goals has been to evaluate all long-term datasets. One of these datasets involves a comprehensive analysis of telemetry data collected on radio-collared female and neonate white-tailed deer that have been monitored in 20 counties spread across the northern Great Plains regions of Minnesota, North Dakota, and South Dakota since 2000. This analysis will allow us to address a wide variety of landscape scale questions regarding white-tailed deer biology and management. Between 1 April 2016 and 15 June 2018, post-doctoral student Dr. Eric Michel was hired through the University of South Dakota to analyze this dataset. A number of publications have resulted from this work (see Big Game Publications below).

New Research Projects Starting 2018

In 2018 two new research projects relating to white-tailed deer were started; they are as follows:

<u>A multi-project approach for monitoring and adaptively managing deer harvest in North Dakota.</u>

The NDGF has a long tradition of collecting harvest information from hunter surveys. These data can be used in the application of state-of-the-art advancements in estimating abundance. This would not only provide reliable population trends to supplement our winter aerial survey, but abundance estimates could be entered into an Adaptive Harvest Management framework to address the changing landscape for deer management. The first phase of this project has been contracted out to Dr. Mark Boyce (University of Alberta) and his post-doctoral student Dr. Mariana Reis.

The overall objectives of this project is to:

(1) Analyze the historical datasets to evaluate the reliability of population indices in current use, and identify the primary drivers influencing deer populations in the state,
(2) Develop an Optimal Harvest Model for deer management (University of Alberta),
(3) Develop a Removal Model to estimate population abundance (University of Montana),
(4) Develop a Statistical Population Reconstruction Model to estimate population abundance (University of Idaho), and
(5) Evaluate the strengths and weaknesses of each approach and determine the best way to move forward with an AHM approach to deer management.

The objectives of the University of Alberta's portion of the project is to:

(1) Evaluate the relative importance of various factors driving white-tailed deer and mule deer population growth and population demographics.

(2) Evaluate the use and reliability of population indices in current use for setting harvest rates.

(3) Develop an Optimal Harvest Model for deer management in the various hunting units and regions of North Dakota.

The following are secondary objectives:

(1) Evaluate the relative importance of changing habitat conditions over time on annual deer population demographics.

(2) Evaluate and develop a white-tailed deer resource selection and habitat suitability model for land managers. This will aid managers in identifying critical white-tailed deer habitats needed for long-term sustainability of white-tailed deer populations in North Dakota.

(3) Evaluate current and long-term harvest strategies for deer in the state.

In the coming year Dr. Josh Millspaugh (University of Montana) and his post-doctoral student, Dr. Michael Clawson, will work on developing a Statistical Reconstruction Model for North Dakota using these same dataset, plus auxiliary data such as recruitment and survival rates derived from the work on Drs. Jon Jenks and Eric Michel (see publications listed above). Additionally, Dr. Courtney Conway (University of Idaho), and his post-doctoral student Dr. Bryan Stevens, will work on the development of a Removal Model to provide a population

estimate. Once the three approaches have been completed, a review will be conducted to evaluate which method(s) used provides the best means for adaptive harvest management. This project is scheduled for completion in 2021.

Designing a mixed-mode survey for collecting hunter harvest data in North Dakota.

The NDGF estimates wildlife harvest using questionnaires sent to a random sample of hunters. Because of an observed decline in response rates to these questionnaires over the past decade, there is potential need to increase our response rates through electronic surveys as a supplement to our mail survey. We emphasize *supplementing* because mail surveys have tremendous value relative to other methods to collect data on hunter harvest. Additionally, research on the human dimensions of deer hunters in North Dakota indicate a segment of our sampling frame do not have access to internet. Depending upon the license type, this can range from seven to seventeen percent of the hunters. These would prefer to continue receiving paper surveys through the mail. Thus, the purpose of this research is to answer two broad questions that will help make our survey work more efficient and affordable. First, what is the most efficient way to carry out a mixed, mail-electronic survey (hereafter, mixed-mode analysis)? And second, what effect on statistical power to detect trends in harvest estimates can we anticipate under different combinations of sample size and response rate (hereafter, power analysis)?

A variety of strategies are available to carry out mixed-mode, mail-electronic surveys. The NDGF would like to evaluate two approaches that could be integrated simply into our existing hunter surveys. The objectives for the mixed-mode analysis are:

1) Survey four different segments of the NDGF deer harvest (muzzleloader, archery, regular deer-gun, and gratis deer-gun) over a 4-yr period.
2) Test two electronic survey approaches (i.e., mail surveys with an option to complete the survey online, and electronic surveys with mail follow-up), in addition to a separate control group.
3) Evaluate the response rates to each survey approach and develop recommendations for supplementing our existing mail surveys with electronic surveys.

The NDGF hypothesizes that there will be smaller response rates associated with electronic surveys. However, given the efficiency and affordability of electronic surveys, there may not be a loss of statistical power associated with harvest estimates if sample size can be increased easily. Accordingly, a series of simulation exercises are needed to explore tradeoffs between response rate and sample size. The objectives for the power analysis are:

4) Evaluate tradeoffs between sample size and response rate.
5) Evaluate precision of harvest estimates associated with simple point estimators and more complex harvest models that account for non-response error.
6) Develop a set of recommendations for sampling our hunters to balance precision of harvest estimates with cost of implementing surveys.

This work has been contracted out to Dr. Jason Boulanger, University of North Dakota. A master's student has been selected and will start in August 2018. This project is scheduled to be completed in 2022.

Big Game Publications (2018-2019)

Schaffer, B. A., J. A. Jenks, W. F. Jensen, and E. S. Michel (In Review). Evaluating migration strategies and estimating survival of adult female white-tailed deer in North Dakota, USA. Canadian Field-Naturalist.

Moratz, K. L., B. S. Gullikson, E. S. Michel, D. M. Grove, J. A. Jenks, and W. F. Jensen (In Review). Serological survey and pathogen exposure of adult female white-tailed deer in the western Dakotas. Prairie Naturalist.

Michel, E. S., B. S. Gullikson, K.L. Moratz, B. A. Schaffer, J. A. Jenks, W. F. Jensen. (In Press). Habitat selection of white-tailed deer fawns and their dams in the Northern Great Plains. Journal of Wildlife Management.

Nagy-Reis, M.B., M.A. Lewis, W.F. Jensen, and M.S. Boyce. (In Press). Conservation Reserve Program is a key element for managing white-tailed deer populations at multiple spatial scales. Journal of Environmental Management.

Hughes Burheim, E., J.A. Jenks, J.G. Lundgren, E.S. Michel, D.M. Grove, E.S. Michel, and W.F. Jensen. (2019). Effects of neonicotinoid insecticides on physiology and reproductive characteristics of captive female and fawn white-tailed deer. Science Reports.9:4534 | https://doi.org/10.1038/s41598-019-40994-9

Amor, J.M., R. Newman, W.F. Jensen, B.C. Rundquist, W.D. Walter, and J.R. Boulanger. 2019. Seasonal home ranges and habitat selection of three elk (*Cervus elaphus*) herds in North Dakota. PLoS ONE 14(22): e0211650. https://doi.org/10.371/journal.pone.0211650.

Moratz, K.L., B.S. Gullikson, E.S. Michel, J.A. Jenks, D.M. Grove, and W.F. Jensen. 2018. Assessing factors that influence white-tailed deer fawn survival in the Northern Great Plains. Wildlife Research. 45: 679-684. https://doi.org/10.1071/WR18032

Jensen, W.F., D.M. Grove, R.J. Herigstad, and W.J. Haase. 2018. Two-headed White-tailed Deer Fetus. The Prairie Naturalist. 50(2): 78-79.

Black, K.E., W.F. Jensen, R.A. Newman, and J.R. Boulanger. 2018. Motivations and Satisfaction of North Dakota Deer Hunters During a Temporal Decline in Deer Populations. Human-Wildlife Interactions. 12(3):427-443.

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EMERGING OR EVOLVING ISSUES

North Dakota Game and Fish Wildlife Disease Summary

The following was prepared by Charlie Bahnson, Wildlife Veterinarian, NDGF for the April 2019 MAFWA Wildlife Health Committee Meeting.

Chronic Wasting Disease

Background:

Between 2009 and 2017, CWD was documented in a total of 11 hunter harvested deer, all from hunting unit 3F2 in south central North Dakota (Figure 1). Surveillance in 2018 consisted of testing hunter harvested animals from the western third of the state ("hunter harvested"), as well as samples from free-ranging cervids from across the state that were road killed, exhibiting signs consistent with CWD, or died of unknown causes ("targeted surveillance").

2018 Surveillance Results:

Two positive, hunter harvested adult mule deer bucks were detected in 3F2, a finding consistent with previous years. An additional positive, hunter harvested adult mule deer buck was detected in the far northwest corner of ND, in hunting unit 3A1 (Table 1; Figure 2). In response to this finding, NDGF instituted carcass transportation restrictions for 3A1, and a baiting restriction for 3A1, 3A2, and portions of 3A3, to take effect in the 2019 Hunting Season.

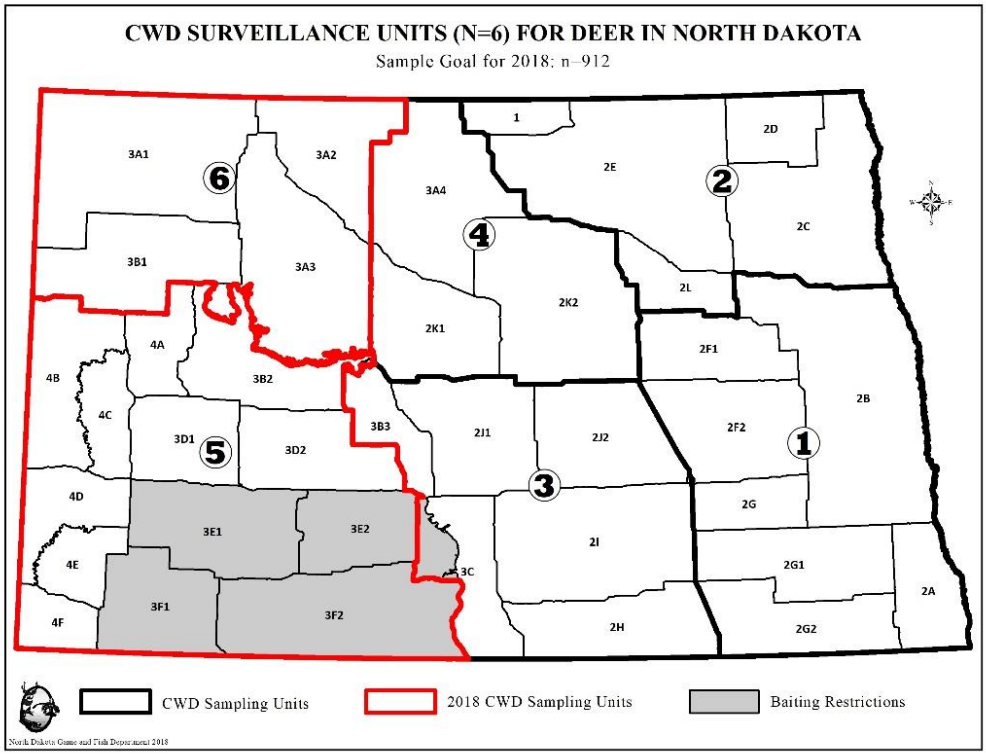


Figure 3. Map of North Dakota hunting units and 2018 Surveillance areas.

Table 3. Number of free-ranging cervids tested for CWD in 2018 in North Dakota.

Species	Hunter Harvested	Targeted Surveillance
White-tailed Deer	834 (0)[a]	25 (0)
Mule Deer	400 (3)	14 (0)
Elk	36 (0)	1 (0)
Moose	61 (0)	15 (0)
Total	1331 (3)	55(0)

[a] Number of animals tested (Number of positive detections)

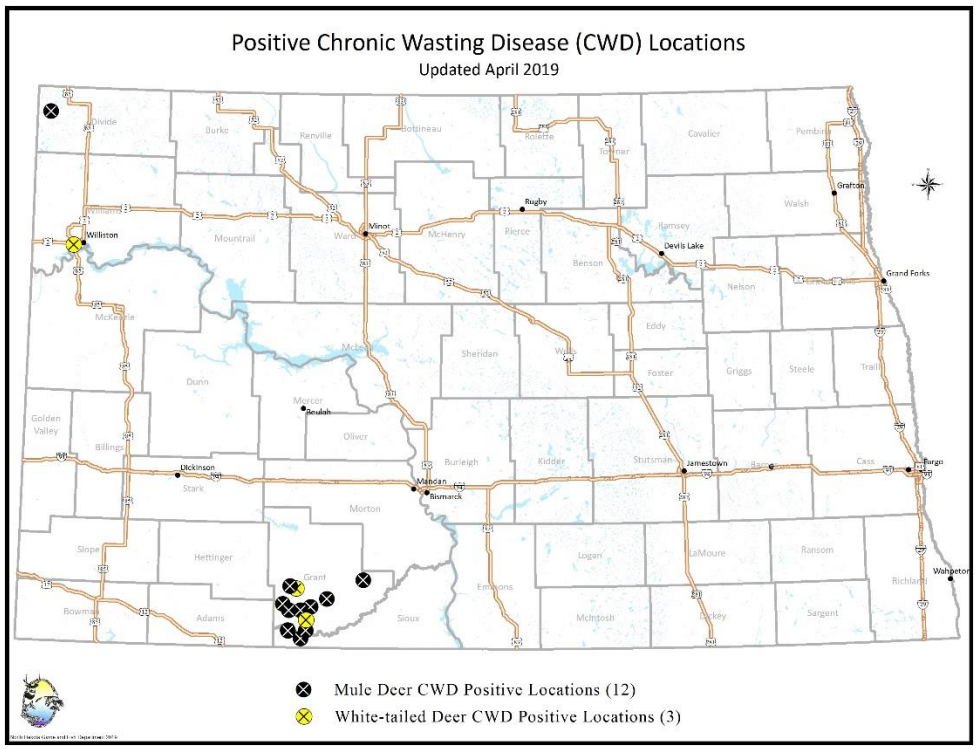


Figure 4. Map of CWD detections in North Dakota, 2009 - April 2019.

2019 Williston Deer: On February 20, 2019, a homeowner reported finding a dead deer in his yard, south of Williston, North Dakota. The carcass was transported to the Wildlife Health Lab in Bismarck, ND for necropsy. The animal was a 4.75-year-old, white-tailed doe that was emaciated. Positive CWD laboratory results were received on March 7, 2019. This detection was approximately 50 miles south of the positive mule deer harvested in November 2018. Impromptu aerial and on-the-ground surveys suggested that this deer was one of approximately 40 deer that frequented the neighborhood consisting of 1-2 acre parcels.

2019 Williston Deer Response: On the evenings of March 19 and 20th, NDGF removed 52 deer from the immediate area where the original case was confirmed. CWD was not detected in samples from any of the 29 adults, 8 yearlings, and 15 fawns. Hunting unit 3B1 will be included in baiting and carcass transportation restrictions for the 2019 Hunting Season.

Rabies

NDGF continued to assist the ND Department of Public Health with rabies surveillance in wildlife through submission of samples from diagnostic cases, road-killed animals, and trapper-harvested animals.

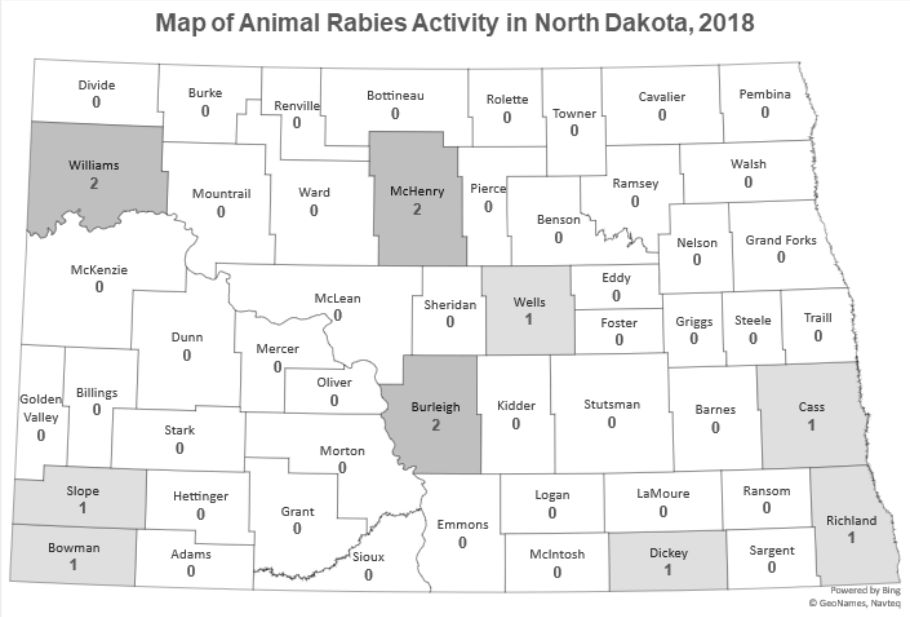


Figure 5. Locations of rabies detections.

Table 4. Rabies activity in North Dakota by Species

Species	Number Confirmed
Bat	3
Bovine	3
Cat	1
Dog	1
Skunk	4

Viral Hemorrhagic Septicemia

In 2018, 60 walleyes and 60 northern pike from Lake Sakakawea and 60 walleyes from Coe Lake were sampled for VHS testing. All samples were negative for VHS.

Hemorrhagic Disease

In September and early October 2018, NDGF received approximately 10 reports of acute mortalities in deer or pronghorn in Williams, McKenzie, Billings, Slope and Bowman Counties. Epizootic hemorrhagic disease, serotype 2 (EHDV-2) was isolated from a mule deer from McKenzie County, and a white-tailed deer from Bowman County. Virus isolation was attempted in tissues from two pronghorn from Bowman County but was unsuccessful.

Bovine Tuberculosis

In December 2018, the North Dakota Department of Agriculture confirmed the detection of bovine TB in a beef herd in Sargent County in Southeastern North Dakota. Approximately 12

animals were confirmed positive by NVSL and depopulation of the approximately 100 remaining animals was completed in March 2019. A source of the infection has not yet been determined. In collaboration with the USDA Wildlife Services, NDGF sampled 82 coyotes collected from the surrounding area; all tested negative for bovine TB.

RELEVANT LINKS

Department Contact Information:
North Dakota Game and Fish Department
100 North Bismarck Expressway, Bismarck, ND 58501-5095
Phone: 701-328-6300
E-mail: ndgf@nd.gov
Website: http://gf.nd.gov/

Midwest Deer and Turkey Study Group
Website: http://mdwtsg.org/

Clint McCoy, Deer Biologist
Mike Tonkovich, Deer Program Administrator

I. Current Harvest

The 2018-19 deer harvest was 172,049, about 7% less than the three-year average. The harvest decrease was unexpected considering other metrics have indicated population growth. A very poor firearms season (-14.5%) and declining hunter participation (18% decline in deer permit buyers since 2011) contributed to the 2018-19 harvest decline. Archers accounted for 46% of all deer harvested last year.

2018-19 Deer Harvest Summary

	Bucks[1]		Does		Buttons		Total		
	2018	3yr avg	2018	3yr avg	2018	3yr avg	2018	3yr avg	Diff (%)
Gun									
7-day	23,252	26,659	30,327	35,909	7,042	8,318	60,621	70,886	-14.5
2-day	3,194	3,351	5,341	6,156	1,101	1,398	9,636	10,906	-11.6
Youth	3,829	3,261	2,073	2,041	683	713	6,585	6,015	9.5
Total	30,275	33,272	37,741	44,106	8,826	10,430	76,842	87,807	-12.5
Archery									
Crossbow	26,114	25,214	21,689	21,004	4,346	4,491	52,149	50,709	2.8
Vertical Bow	13,081	15,243	11,993	13,644	1,875	2,258	26,949	31,146	-13.5
Total	39,195	40,458	33,682	34,648	6,221	6,749	79,098	81,855	-3.4
Muzzleloader	4,325	3,978	8,389	8,291	1,459	1,609	14,173	13,879	2.1
Total	74,517	78,469	80,763	88,076	16,769	19,038	172,049	185,584	-7.3

[1]All bucks ≥1.5 years old, including those reported as antlerless deer (antlers < 3 inches or shed bucks).

II. License and Season Information

A hunting license and either-sex or antlerless deer permit are required to hunt deer in Ohio.* Antlerless permits were only valid in 10 urban counties during the first nine weeks of the archery season (see 'Management Units'). Seniors born on or before 12/31/1937 and disabled veterans are eligible for free licenses and permits.

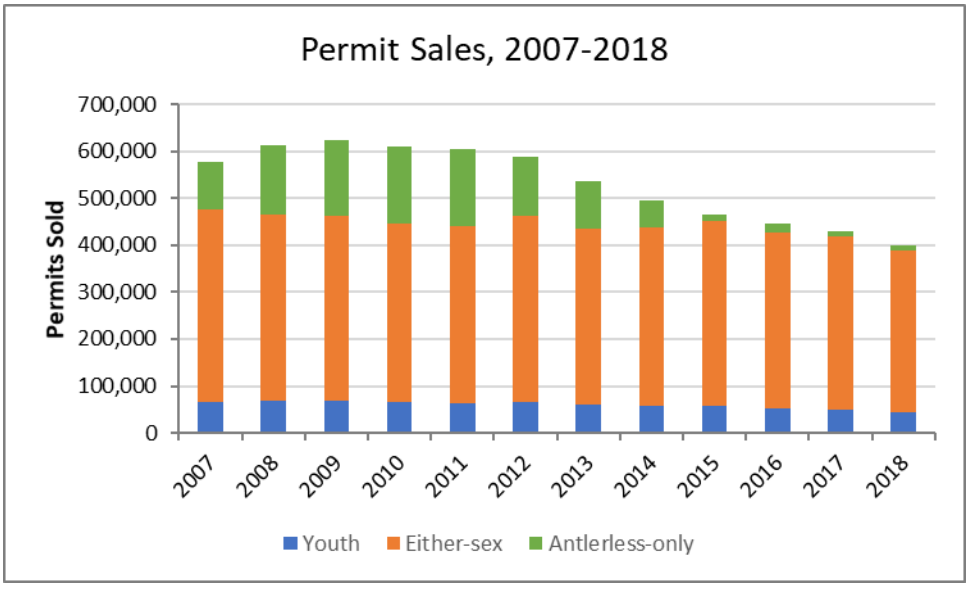
2018-19 License and Permit Fees

License/Permit	Resident	Nonresident
Adult Hunting License	$19	$141.50
Youth Hunting License	$10	$10
Senior License (66+)	$10	N/A
Adult Either-sex Deer Permit	$24	$41
Youth Either-sex Deer Permit	$12	$12
Senior Either-sex Deer Permit (66+)	$12	N/A
Antlerless Permit	$15	$15

*Landowners, spouse, and children are license and permit-exempt in Ohio. Grandchildren are license-exempt.

2018-19 Seasons

Archery	Sep. 29, 2018 - Feb. 3, 2019
Youth	Nov. 17 - 18
Gun	Nov. 26 - Dec. 2
Bonus gun	Dec. 15 - 16
Muzzleloader	Jan. 5 - 8, 2019

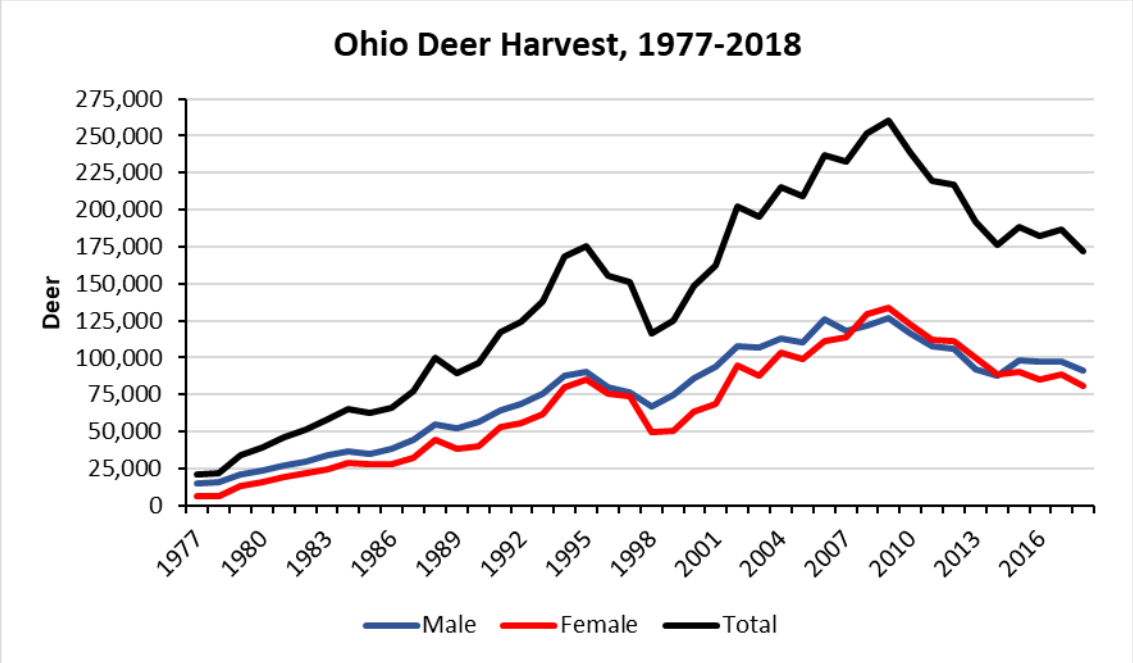


Approximate Number of Deer Hunters in 2017-18*

Type	Count
Adult Resident	196,000
Adult Nonresident	37,200
Youth Resident	34,100
Youth Nonresident	2,000
Reduced Cost Senior	19,300
Free Senior or Disabled Veteran	4,800
Total	293,700

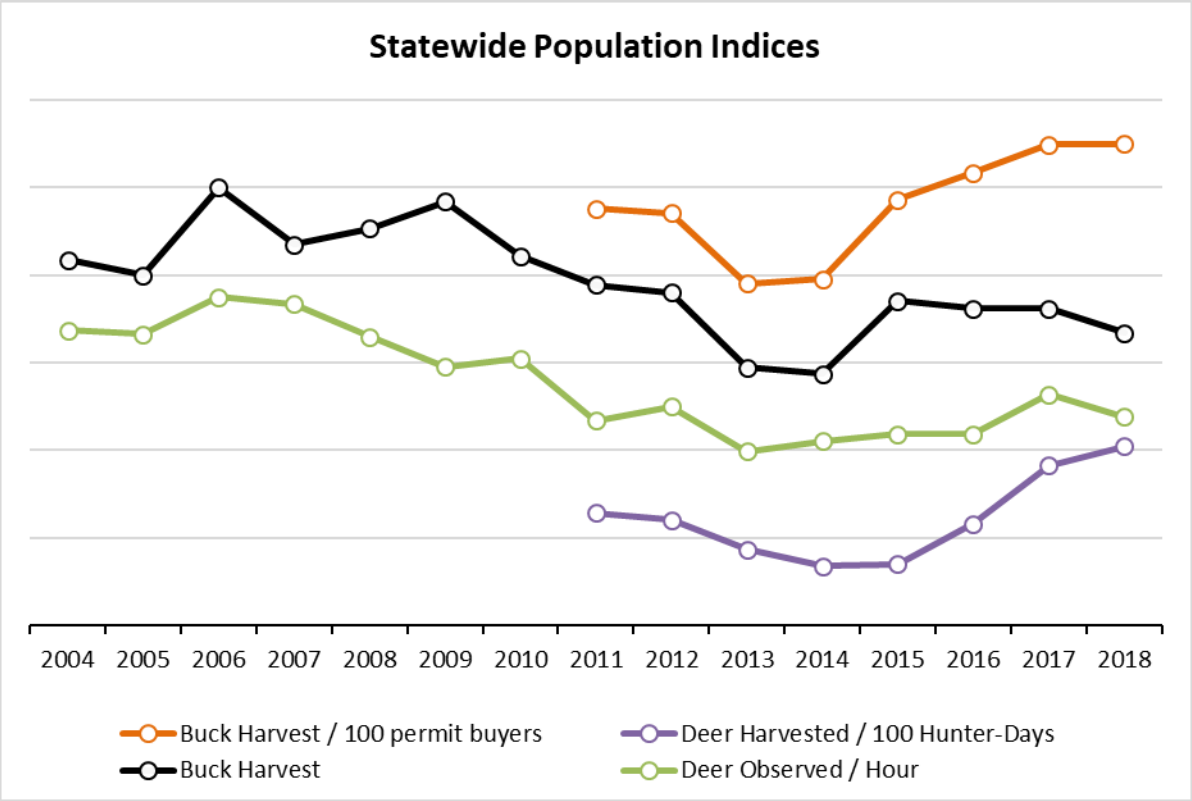
*Based on number of unique deer permit buyers. Does not include unknown number of landowners.

III. Historical Harvest

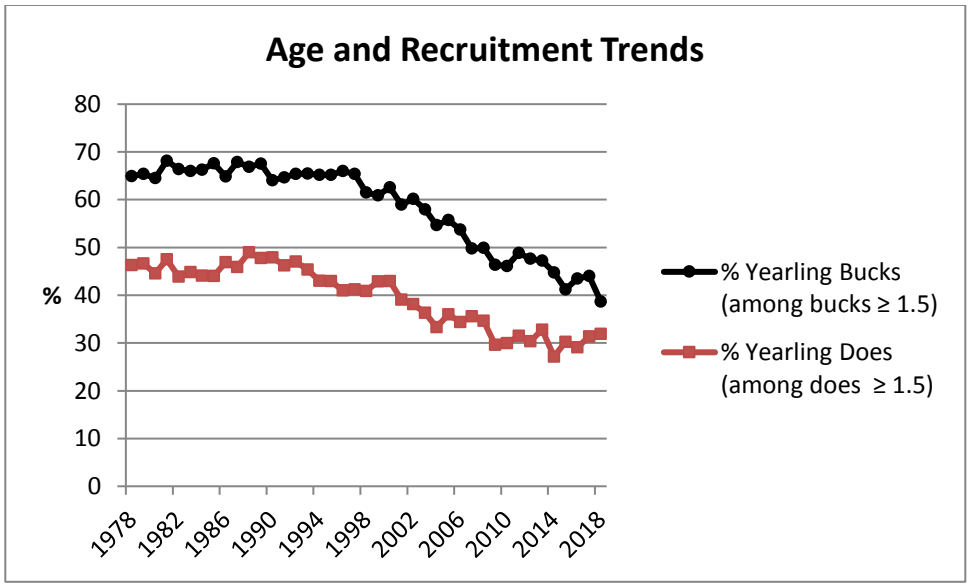


IV. Population Estimate/Trends

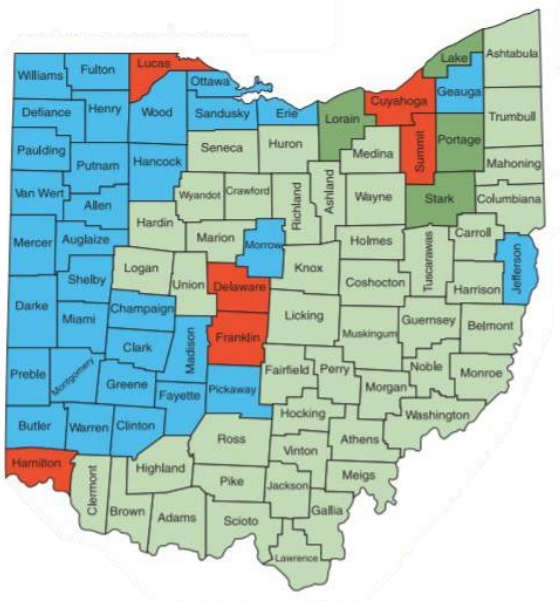
Population – Trend data suggest that our statewide population peaked in the mid- to late 2000s. With the introduction of the antlerless permit in 2007, significant progress was made in reducing deer populations to goal across much of the state. Recent focus across much of the state has shifted to allow limited herd growth – a population objective derived from the results of a 2015 survey of hunters and farmers (see 'Hot Topics – Goal Setting').



Demographics – The average age of antlered bucks in the harvest has increased steadily since the late '90s. The percent yearlings among does ≥ 1.5 has declined steadily since the late '80s, corroborating data from reproductive studies that show a decline in herd productivity.



V. Deer Management Zones: Each of Ohio's 88 counties is a deer management unit.



TWO DEER COUNTY	THREE DEER COUNTY	THREE DEER COUNTY	FOUR DEER COUNTY
A hunter may kill no more than two deer in a two deer county during the 2016-2017 season. Up to two either-sex permits. Antlerless permits are NOT valid.	A hunter may kill no more than three deer in a three deer county during the 2016-2017 season. Up to three either-sex permits. Antlerless permits are NOT valid.	A hunter may kill no more than three deer in a three deer county during the 2016-2017 season. Up to two either-sex permits and one antlerless permit. - OR - Up to three either-sex permits.	A hunter may kill no more than four deer in a four deer county during the 2016-2017 season. Up to three either-sex permits and one antlerless permit. - OR - Up to four either-sex permits.

VI. Regulation/legislation

2019-2020 Deer Regulation Changes

1. Allow hunters to transport deer or turkey to a residence or temporary lodging without having to physically attach a tag to the animal if the permit is properly filled out and the hunter remains with the animal.
2. Changed the name of the antlerless deer permit to "Deer Management Permit."
3. Simplified game check process by reducing 18-digit confirmation number to a 6-character alpha-numerical code.

2018-2019 Deer Regulation Changes

1. Separate harvest regulations for public land – limit of one antlerless deer, and none may be taken after the statewide firearms season ("buck-only" following 7-day gun season).
2. Complete ban on high-risk carcass parts, regardless of exporting state's CWD status.

Significant Legislation in 2019

1. 2019 Budget Bill
    a. Increased cost of adult either-sex deer and adult turkey permits from $24 to $31
    b. Increased cost of youth either-sex deer and youth turkey permits from $12 to $16
    c. Increased cost of adult non-resident turkey permits from $28 to $37
    d. All youth, regardless of residency, eligible for discounted youth permits.
    e. Attempted to acquire agency authority to raise fees incrementally, but this portion of the bill was ultimately removed before passing. Fee changes remain a legislative action.

VII. Urban/Special Hunts

Due to the success of their urban deer management programs, specifically in their metro parks, Lucas (Toledo), Montgomery (Dayton), and Hamilton (Cincinnati) counties ranked 5th, 6th, and 13th (out of 88), respectively, in public land deer harvest as a percentage of the county's total harvest. In the spring of 2016, citizens voted in favor of using bowhunters to help manage deer populations in six Cleveland suburbs: North Royalton, Broadview Heights, Parma, Parma Heights, Seven Hills and Strongsville. Potentially resulting from increased hunting access in these urban areas, hunters in Cuyahoga County reported harvesting 1,124 deer in the 2016-17 season – nearly a 30% increase over the prior season. Several additional cities in NE Ohio began culling operations recently (Lyndhurst, Bedford, and North Olmsted). The only national park in Ohio, Cuyahoga Valley National Park, also began deer control efforts in 2016. White Buffalo Inc. is conducting a sterilization project in conjunction with Cincinnati Parks in southwest Ohio. The project started in December of 2015 with 44 deer captured (41 females, 3 male fawns). An additional 10 females were captured in January 2017, 11 in January 2018, and 14 in year four of the project. All captured females were sterilized via ovariectomy, with two capture-related mortalities in year 1. Post-capture camera surveys estimated that 86% of the adult females in the study area were sterilized after year 1, 89% after year 2, and 91% after year 3, and 94% after year 4. The stated goal of the study is to document the lowest achievable deer density using only nonlethal control methods. The project is entering the 5th and final year of study.

VIII. Deer Management Assistance/Crop Damage

Landowners may be issued Deer Damage Control Permits (DDCP) at the time damage is occurring to kill deer during the dates and under the conditions specified on the permit. For most agricultural problems (row crop), these permits will be valid until August 15. Permits may be valid year-round to control damage at orchards, nurseries, inside municipalities, and airports. Except in the case of rub damage, permit holders are strongly encouraged to kill antlerless deer. The entire damage permitting procedure (aside from the initial field investigation) was moved to an online system in 2015 to improve efficiency. Compared to 2014 (the final year prior to the move to the electronic system) complaints have dropped 14%, the number of complaints resulting in issuance of permits has declined by 22%, and the number of deer reported killed on damage permits has dropped 40%. We received 968 complaints in 2018 and permits to kill deer were granted in 851 cases, resulting in a total disbursement of 6,116 permits. Under the new online system, damage permit recipients are supposed to "check" their kills, much like our hunters do during the hunting season. Permittees reported killing 2,540 deer (40% permit fill rate).

In addition to issuing permits for active damage, we also have a procedure for issuing permits to address public safety or biodiversity issues. These situations typically involve cities and park districts, and require the submission of a management plan (revised at 10 year intervals), a request for permits (number of tags requested and justification submitted annually), and an annual report of activities. In 2018, we used this procedure in 19 cases to issue 2,273 permits. These culling operations resulted in 1,945 deer killed (86% fill rate).

IX. Diseases - CWD

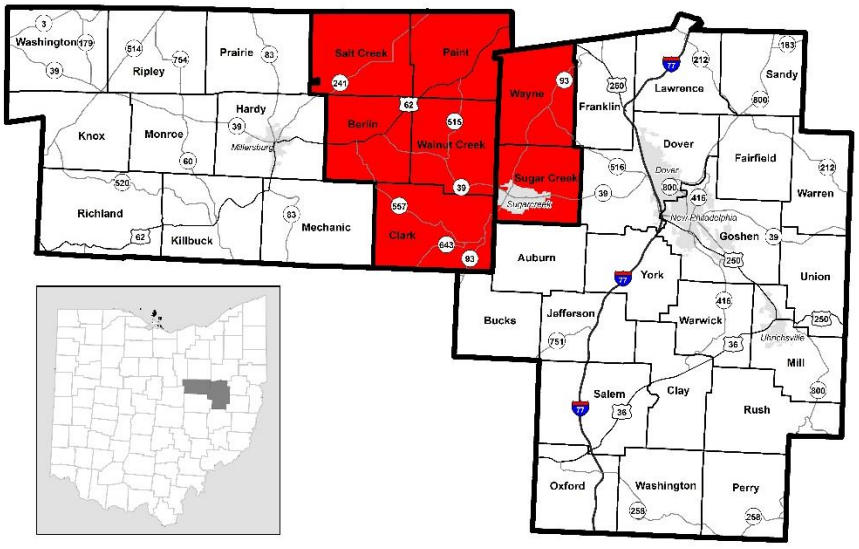
The Ohio Department of Agriculture (ODA) and the U.S. Department of Agriculture (USDA) are integral partners in all disease surveillance plans, and ODNR has worked with these partners to test over 20,000 free-ranging deer since 2002. To date, there has yet to be a wild, free-ranging deer test positive for the disease in Ohio. During routine surveillance of road-killed deer in 57 of Ohio's 88 counties, Division of Wildlife personnel collected 837, 824, 804, 779, and 894 deer in 2014-2018, respectively. In addition to roadkills, from 2014-2018, we tested 284, 1,051, 577, 733, and 1,754 deer, respectively, by various means (hunter harvest, targeted surveillance, taxidermists, etc.). CWD was not detected in any of the wild deer tested.

In October of 2014, a mature buck from a shooting preserve in Holmes County tested positive for CWD, becoming the first-ever CWD-positive deer in Ohio. The shooting preserve was depopulated in April of 2015, and testing revealed no additional CWD-positive animals. Subsequent testing of nearly 300 free-ranging deer in an 8-township area around the shooting preserve failed to detect any CWD-positive deer as well. However, in spring of 2015, two more positives were reported from a captive breeding pen in Holmes County. This herd was depopulated in June 2015, and 16 additional deer tested positive, bringing the grand total of positives in Ohio to 19 (all in captive herds). In response to these findings, the Division of Wildlife conducted targeted surveillance in the immediate vicinity of the infected facility during the summer of 2015. Staff collected 18 deer, including two that had escaped from captive facilities, with none testing positive for CWD.

Additionally, the focus area in 2015 was expanded to include two townships in southern Wayne County, and the 10-township focus area (~300 square miles) was declared a Disease Surveillance Area. This DSA designation was to remain in effect for a minimum of three years and the following regulations apply: 1) required submission of deer harvested within the DSA to Division of Wildlife inspection stations for sampling during the gun and muzzleloader seasons, 2) prohibit the placement of or use of salt, mineral supplement, grain, fruit, vegetables or other feed to attract or feed deer within the DSA boundaries, 3) prohibit the hunting of deer by the aid of salt, mineral supplement, grain, fruit, vegetables or other feed within the DSA boundaries, and 4) prohibit the removal of a deer carcass killed by motor vehicle within the DSA boundaries unless the carcass complies with the cervidae carcass regulations (see wildohio.gov for additional information on carcass regulations). Under the new rule requiring mandatory submission of deer harvested in the DSA, hunters presented 522, 370, and 506 deer for testing at inspection stations during the gun, bonus gun, and muzzleloader seasons in the 2015-17 seasons, respectively. Combining all methods of sample collection (roadkill, mandatory submission of hunter harvests during the gun seasons, voluntary submission of hunter harvests during the archery season, and targeted surveillance), 752, 563, and 657 deer were tested from the DSA in 2015-17, respectively.

The DSA established in 2015 expired on July 31, 2018. However, a new DSA has been established in response to another positive captive facility in eastern Holmes County. In September 2017, a buck was

killed in a shooting preserve in Guernsey County, less than a week after it arrived from a captive facility in eastern Holmes County. In January 2018, testing confirmed the buck was positive for CWD. The source herd in eastern Holmes County was depopulated in February 2018, with two additional deer testing positive for the disease, bringing the total positive cases in Ohio to 22 (all in captive herds).
In the 2018-19 deer season, 198 deer (all hunter-harvested) from the new DSA were tested for CWD. All but two of these were collected at mandatory inspection stations during Ohio's three firearms seasons.



X. Research

Deer Hunter Surveys

We have conducted deer hunter surveys annually since 2011 to quantify hunter effort, participation and success rates, gather hunter opinions on various hot-button topics such as baiting, leasing, and restrictions on public land access, and to evaluate several measures of hunter satisfaction. Further details and results can be found in the Deer Season Summaries in the 'Relevant Links' section.

Public Land Camera Survey

Deer regulations were adjusted for the 2018-19 season to encourage herd growth on state-owned or administered lands designated as public hunting areas. This decision was made for several reasons: 1) hunter feedback indicates low satisfaction with public land deer hunting experiences, 2) public land success rates are about half what they are on private land, 3) harvest data suggests that past regulations designed to grow deer populations did not have the same level of impact on public land as they did on private, and 4) aerial snow counts revealed very low deer densities on public land when compared to nearby controlled-access areas and surrounding private land. In addition to continued monitoring of

hunter attitudes and harvest data, an annual assessment of deer populations on public land is critical for evaluating the effectiveness of these new regulations.

For this reason, we began conducting camera surveys at 17 wildlife areas across the state in 2018. These surveys cover roughly a 1,000-acre portion of each wildlife area, contain 10-12 camera sites, are conducted over a two-week period in late August/early September, and will replicated annually for no less than three years.

XI. Hot Topics

Goal Setting

Our efforts from 2007-2013 to reduce populations were largely successful but caused concern among some of the hunting public. Many opposed to these reductions pointed to the dated population goals, which were based on a farmer attitude survey from 2000. Thus, we contracted with the National Agricultural Statistics Service (NASS) to conduct two separate surveys in the fall of 2015 – one for production landowners and one for deer hunters. We asked each group if there were too many, too few, or just about the right number of deer in the area they farm or hunt. With 50% of hunters responding "too few" and 29% of farmers reporting "too many" deer, survey results indicated a desire for slight population growth in most areas of the state. After three years of regulations designed to foster slow population growth, we have repeated this exercise in 2019 to see how far we have "moved the needle." The 2019 survey is being conducted by Ohio State University, with results expected later this year.

10-year Deer Management Plan

We have completed an internal draft of a 10-year Deer Management Plan. However, prior to finalizing the plan, a group of external stakeholders was assembled to undergo an engagement process to ensure that all stakeholder values, concerns, and objectives were considered in the final plan. This stakeholder engagement process consisted of five, two-day, workshops. Participants became familiar with deer management in Ohio, developed deer management options, evaluated trade-offs between options, and ultimately made recommendations to the Division of Wildlife. Throughout this process we have been seeking several improvements to our deer management program: a move from 88 counties to 26 DMUs, the use of antlerless allocations to control harvest rather than bag limits, a Deer Management Assistance Program, and a requirement for landowners to acquire a deer permit prior to hunting. A final report is linked in the 'Relevant Links' section, but in brief, participants voiced unanimous support for DMUs and majority support for antlerless allocations and DMAP. Additionally, stakeholders developed their own tools which included a need for Outfitter Licenses and a desire to maintain cohesiveness of the group by developing a Deer Stakeholder Advisory Committee. The DSAC would be an informal, voluntary, and self-funded "sounding board" with the purpose of liaising between constituents and the Division of Wildlife.

XII. Relevant Links

Ohio Deer Hunting Regulations

http://wildlife.ohiodnr.gov/hunting-trapping-and-shooting-sports/hunting-trapping-regulations/deer-hunting-regulations

Deer Season Summaries

2015-16 http://wildlife.ohiodnr.gov/Portals/wildlife/pdfs/publications/hunting/Pub%205304_DeerSummary_R0916.pdf

2016-17 http://wildlife.ohiodnr.gov/Portals/wildlife/pdfs/publications/hunting/Pub%205304_DeerSummary_2017.pdf

2017-18 http://wildlife.ohiodnr.gov/Portals/wildlife/pdfs/publications/hunting/Pub%205304_DeerSummary2018.pdf

2018-19 http://wildlife.ohiodnr.gov/Portals/wildlife/pdfs/publications/hunting/Pub%205304_DeerSummary_2019.pdf

Quality vs Quantity: A Closer Look at Deer Herd Condition Trends in Ohio

http://wildlife.ohiodnr.gov/Portals/wildlife/pdfs/hunting/OhioDeerHerdUpdate_Web.pdf

Stakeholder Engagement Process

- Home page
  http://wildlife.ohiodnr.gov/species-and-habitats/fish-and-wildlife-research/deer-stakeholder-process
- Final report
  http://wildlife.ohiodnr.gov/Portals/wildlife/pdfs/species%20and%20habitats/stakeholder/Final_Report_ODNR-DOW_Deer_Stakeholder_Engagement_Process.pdf

Ontario Midwest Deer Technical Committee Report 2019

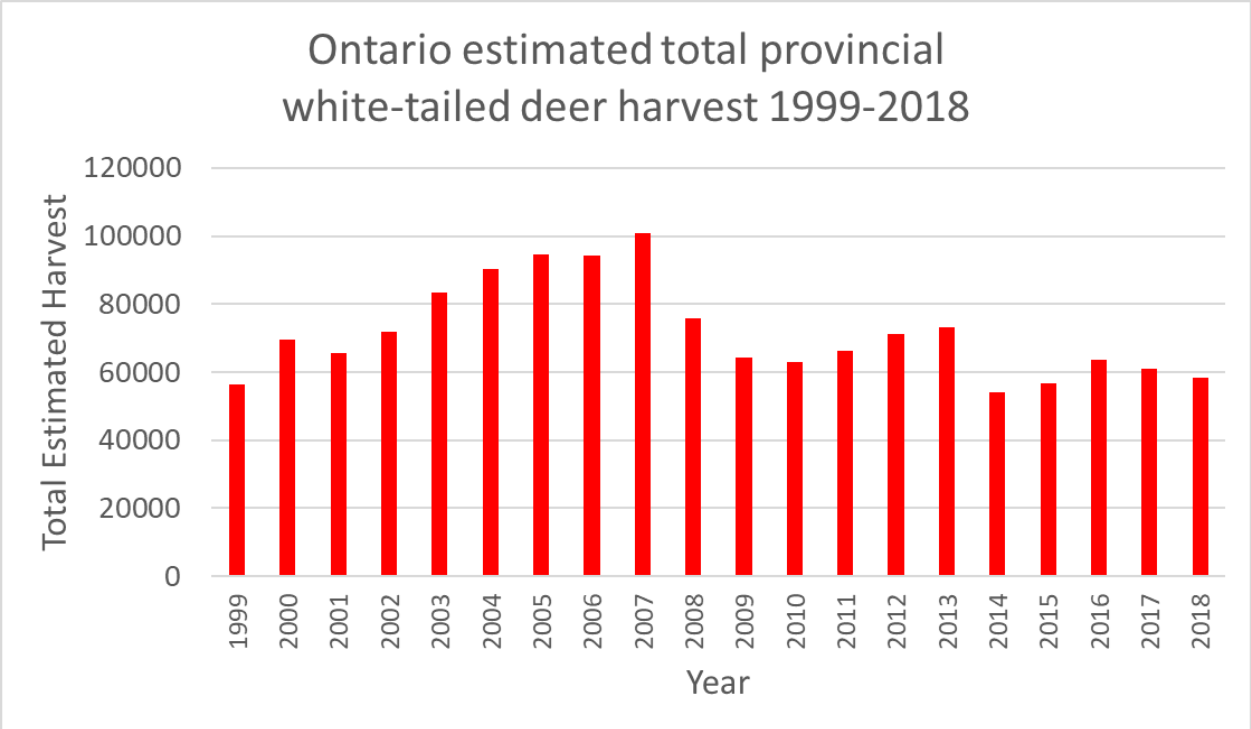
Prepared by Kyle Morrison

I. Current Harvest

During the 2018 deer hunting seasons, Ontario resident hunters harvested 58,333 deer. This represented a 4% decrease from 2017. *Note: some hunters were counted more than once.

Year	Active Resident Hunters*	Antlered Harvest	Antlerless Harvest	Total Harvest	% Change Total Harvest
2018	203693	33630	24703	58333	-4
2017	209221	35937	24945	60882	-4
2016	214313	39391	24196	63587	12
2015	193742	32360	24374	56734	5
2014	189394	28908	25013	53921	-26
2013	200629	41235	32065	73300	3
2012	194008	39188	31847	71035	7
2011	192468	35352	30776	66128	5
2010	193100	32662	30130	62792	-2
2009	199583	32835	31297	64132	-16
2008	197659	37907	37991	75898	NA

II. Historical Harvest

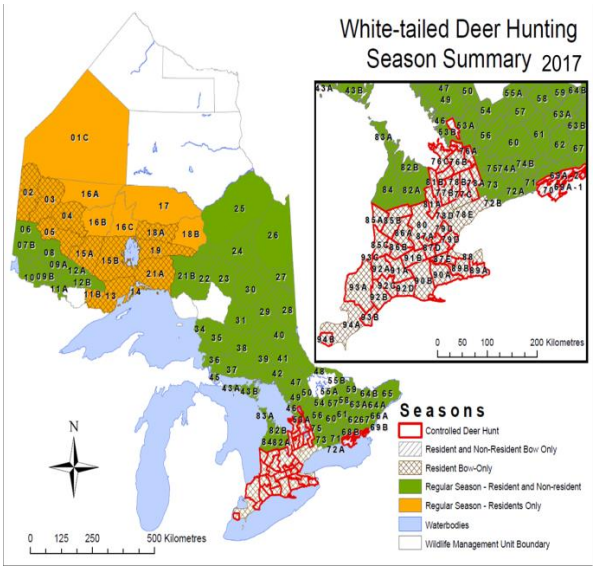


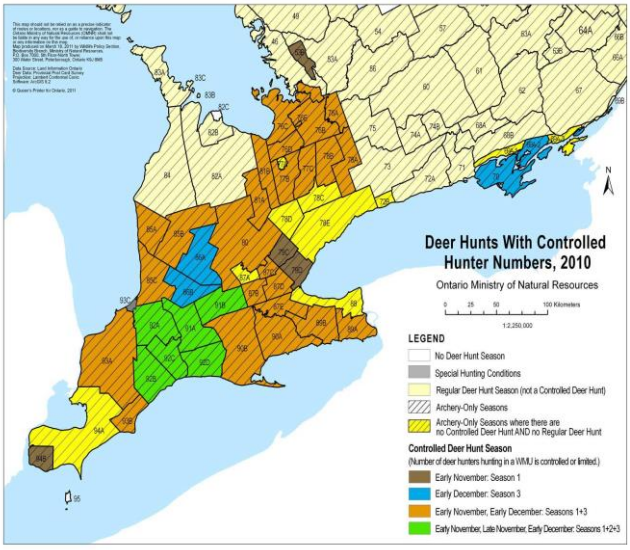
Ontario Midwest Deer Technical Committee Report 2019

Prepared by Kyle Morrison

IV. Deer Management Regions

Of the 151 Wildlife Management Units (WMU) in Ontario, deer can be hunted in 142.





Management Tools	Availability	Circumstances
Antlered Deer Tag (regular deer hunt)	Any hunter purchasing a deer licence can hunt an antlered deer anywhere with an open season	To allow all hunters an opportunity to hunt while protecting adult females and fawns
Antlerless Deer Tag (regular deer hunt)	Hunters enter a draw in order to hunt an antlerless deer in a specific WMU	To provide hunting opportunities for antlerless deer in specific WMUs when populations are stable or increasing
Controlled Deer Hunt (antlered or antlerless)	Hunters enter a draw to hunt in a specific season and WMU (generally throughout Southwestern Ontario)	To control the number of hunters to address trespass/safety concerns and to manage harvest levels
Additional Deer Tags	Hunters can purchase these for specific WMUs on a first come first served basis	To create additional hunting opportunities and where management objectives are to reduce deer populations

Ontario Midwest Deer Technical Committee Report 2019

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III. Population Estimate

Deer are not managed based on population estimates or densities. Rather, a relative index of population abundance (deer seen per hunter day) in combination with other social and climatic considerations are used for deer management recommendations.

Considerations	Southern Region (SR)	Northeast Region (NER)	Northwest Region (NWR)
Trends in Deer Abundance	Stable to increasing	Stable	Stable
Hunter/Harvest Trends 2017/18	Hunter demand high; harvest stable to increasing	Hunter demand increasing; harvests stable	Resident hunter numbers range from peak levels in some WMUs, to stable/decreasing in other WMUs. Resident harvest is low but increasing. Non-resident deer hunter numbers are low – stable and harvest is low
Predicted Fall Body Condition based on observed food availability	Good	Fair	Good
Winter Severity 2017/18	Severe in northern units	Severe	Severe
Non-hunt Information	Few crop damage complaints received Deer-motor vehicle collisions low and stable	Deer-human interactions increasing on Manitoulin Island	Urban deer population in Kenora, Dryden, Thunder Bay continue cause some public concern

V. Regulation/Legislation Changes

Modernizing Ontario's Approach to Licensing, Game Seals and Hunter Activity Reporting

In 2018 Ontario made a number of regulation changes to support the launch of a new licensing service. The changes took effect in early 2019 and include: a single licence summary document that can be printed from home; print-from-home tags; new requirements for how and when an individual must attach a tag to a harvested animal; and, a new requirement for all hunters holding a tag to report on their hunting activity and harvest. Other related aspects of the proposal include use of encrypted QR codes to assist with enforcement activities; the ability to track if hunters have completed their reports; email reminders of reporting deadlines; and, automatic consequences for not completing a mandatory report (e.g. prevent a hunter from purchasing a specific hunting licence the following year). The 2019 deer and moose hunting seasons will be the most significant test of Ontario's new licensing service and associated regulation changes.

VI. Urban/Special Hunts

No urban/special hunts in Ontario to report.

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VII. Deer Management Assistance Program

Ontario does not have a deer management assistance program.

VIII. Disease Issues

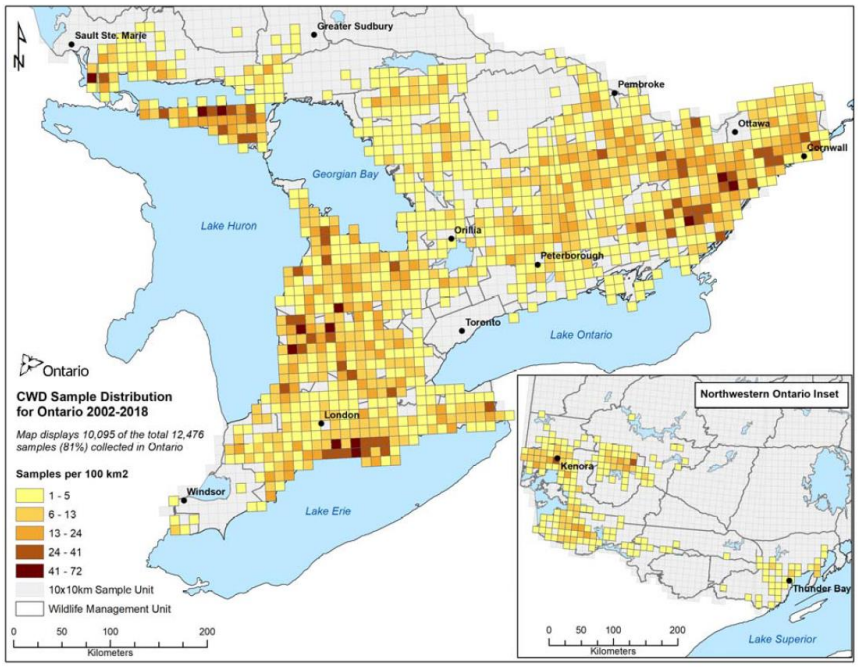
Epizootic Hemorrhagic Diseases

None reported in 2018 nor in 2019 as of September 12, 2019.

Chronic Wasting Disease

To date, no cases of CWD have been detected in wild deer populations in Ontario. The Ontario chronic wasting disease surveillance program completed its 16th operational year in 2018. There is typically a target sample size of 460 samples in each surveillance zone to allow for 99% confidence to detect CWD at a prevalence rate of 1%. Ontario's chronic wasting disease (CWD) surveillance 2018 program occurred in two zones; the originally selected zone in southwestern Ontario and in Wildlife Management Unit 65 in eastern Ontario due to a CWD detection in western Quebec. The Quebec cases occurred on a game farm, approximately 15 km from the Ontario- Quebec border (near Hawkesbury, Ontario). A total of 765 white- tailed deer (*Odocoileus virginianus*) and 1 red deer (*Cervus elaphus*) samples were collected and tested (308 white- tailed deer and 1 red deer sample from eastern Ontario and 457 white- tailed deer samples from the SW surveillance zone). CWD was not detected in any of the samples tested.

Since the CWD surveillance program began in 2002, 12,476 samples have been analyzed.



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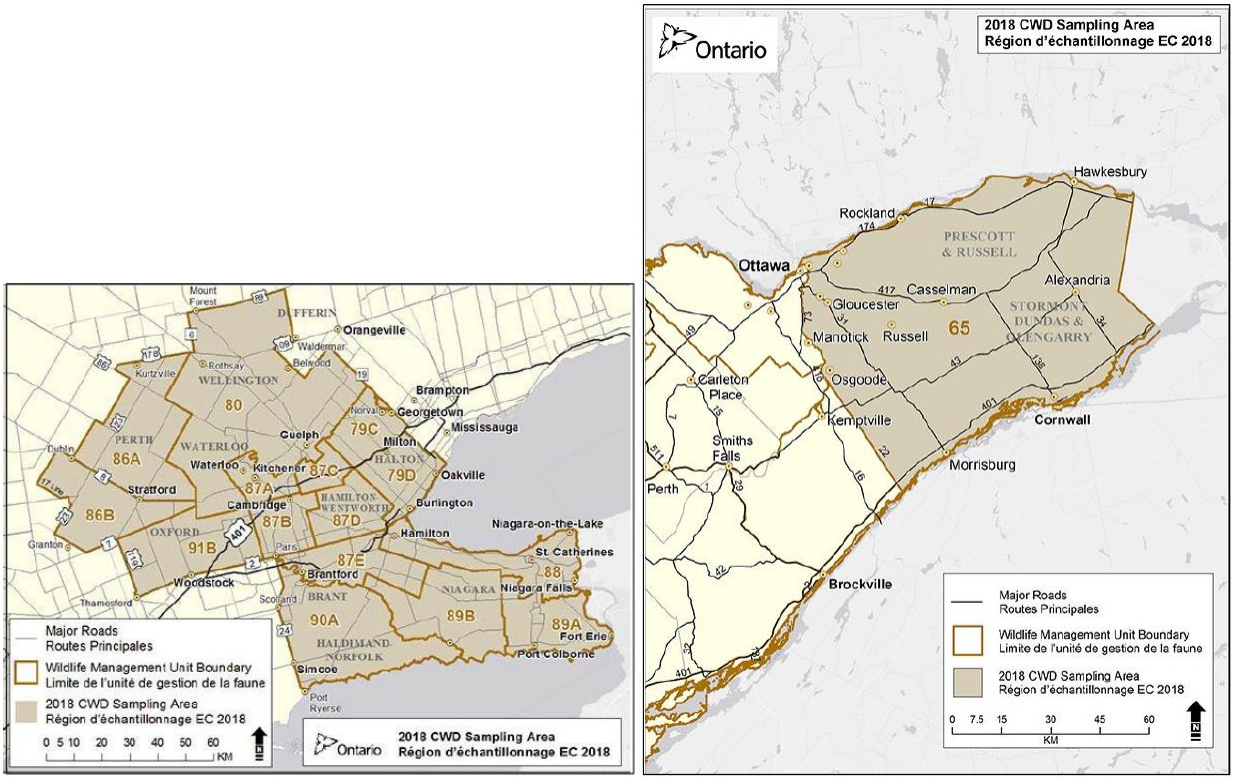
Based on the results of Ontario's CWD risk model, the 2018 CWD surveillance zones were in southwestern and southeastern Ontario.



Maps for 2019 CWD surveillance zones are not yet available.

IX. Research

During the spring and summer of 2018 Ontario conducted jurisdictional surveys of white-tailed deer monitoring methods and harvest management strategies and distributed results to NEDTC members and participating jurisdictions outside the NEDTC. The results informed the development of draft White-tailed Deer Population Objective Setting and Harvest Management Guidelines (https://ero.ontario.ca/notice/019-0159). The guidelines are intended to assist with improving consistency, transparency and alignment of deer population objective setting and harvest strategies.

X. Hot Topics

Ontario has proposed and consulted on an updated Chronic Wasting Disease Surveillance and Response Plan (https://ero.ontario.ca/notice/019-0154). The draft updated plan reflects current scientific knowledge, lessons learned from other jurisdictions, and the evolving roles of government agencies. If the proposed plan is approved, other actions, including potential legislative amendments to the Fish and Wildlife Conservation Act, 1997 may be required to support the plan.

XI. Relevant Links

- Draft White-tailed Deer Population Objective Setting and Harvest Management Guidelines - https://ero.ontario.ca/notice/019-0159
- Draft update to Ontario's Chronic Wasting Disease Surveillance and Response Plan - https://ero.ontario.ca/notice/019-0154
- White-tailed Deer Management Policy - https://www.ontario.ca/page/white-tailed-deer-management-policy-ontario
- Cervid Ecological Framework (2009) - https://www.ontario.ca/document/cervid-ecological-framework
- Fish and Wildlife Conservation Act, 1997 https://www.ontario.ca/laws/statute/97f41
- Ontario Hunting Regulation Summary - https://www.ontario.ca/document/ontario-hunting-regulations-summary

South Dakota Deer Program Report 2019
By: Andy Lindbloom, Andrew Norton, Lauren Wiechmann, Steve Griffin

I. Current Harvest

There were 50,594 limited quota resident deer licenses plus unlimited license types available in 2018 and 97,780 were issued. Nonresidents had 2,361 limited quota deer licenses plus unlimited license types available and 8,513 were issued. Statewide, there were a total of 106,293 licenses sold that represented a total of 120,002 tags, an increase in 2,905 licenses and 2,972 tags from 2017. A total of 69,255 individual hunters were issued deer licenses in 2018, up from 68,101 in 2017.

Hunter surveys were administered to a random sample of hunters for each unit within each season unless the numbers of hunters were low enough that all were sampled to obtain desired power based on expected response rates. Response rates ranged from 65% for Landowner Antlerless Deer to 84% for Custer State Park.

The projected statewide deer harvest was 51,926, nearly identical to 2017. This estimate included 27,211 whitetail bucks, 17,257 whitetail does, 5,947 mule bucks and 1,511 mule does. A slight increase in the number of licenses issued resulted in a 1% decrease in harvest success from 2017.

A decrease in white-tailed buck harvest along with increases in white-tailed doe, and mule buck and doe harvest accounted for the similar overall harvest from 2017. Both mule buck and doe harvest estimates increased slightly from 2017. Mule deer made up approximately 14% of the total harvest.

The 2018 overall statewide harvest success decreased to 43% from 44% in 2017. Harvest success ranged from 26% for Archery to 79% for West River Special Buck.

Respondents reported hunting an average of 5.17 days per hunter, which projects to a statewide total of 549,670 recreation days in 2018.

Average hunter satisfaction values (1=very dissatisfied to 7=very satisfied) varied between seasons and ranged from 4.46 for Waubay Refuge to 5.95 for West River Special Buck.

South Dakota Deer Program Report 2019

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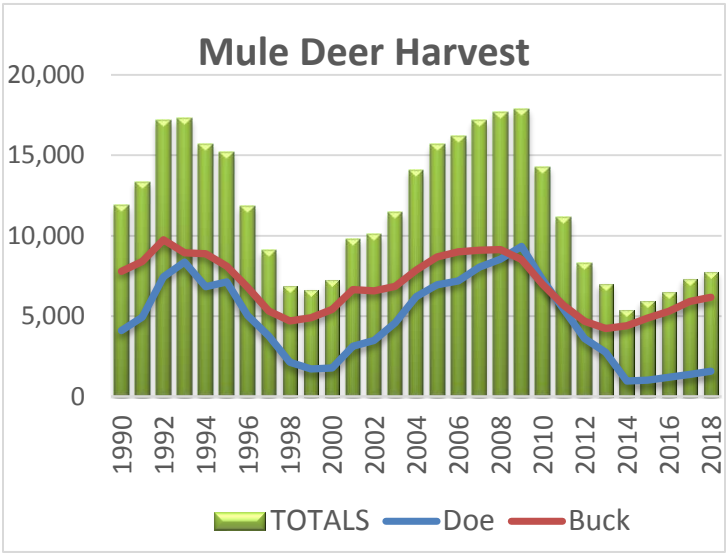
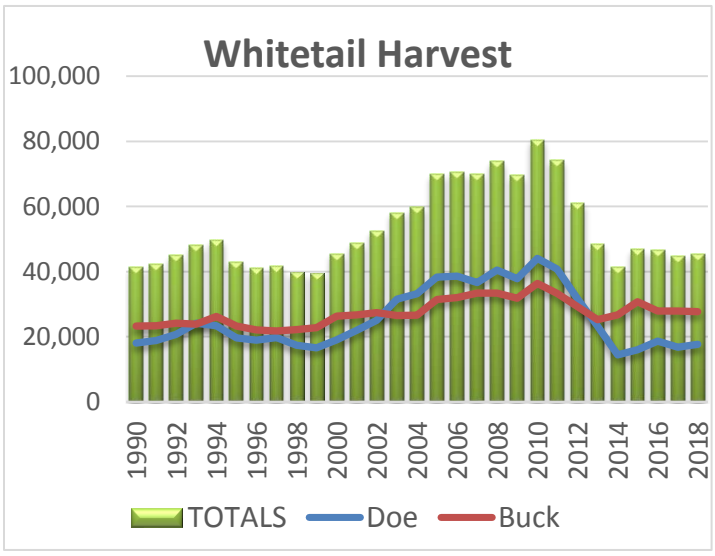


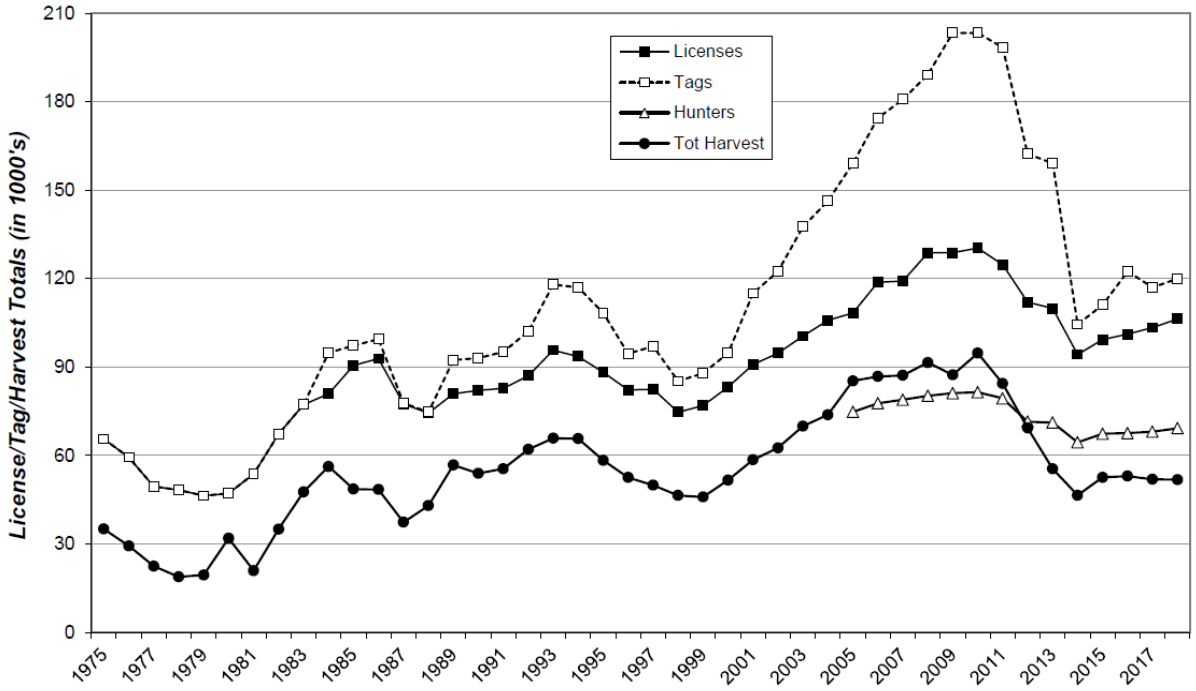


2018 Statewide Deer Harvest Projection Summary

last revised: 8 May 2019

SOUTH DAKOTA Harvest Statistic	Season	Archery	Apprentice Antlerless	Mentored Youth	Muzzleloader	Landowner Own Land Antlerless	West River	West River Landowner Own Land	West River Special Buck Unit	East River	East River Landowner Own Land	East River Special Buck Unit	Refuges: Sand Lake NWR	Refuges: Waubay NWR	Refuges: Lacreek NWR	Black Hills	Custer State Park	Grand Totals
Licenses/Tags																		
Resident Licenses																		
Available		Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	18,660	Unlimited	500	26,375	Unlimited	500	150	20	25	4,300	64	50,594
Sold		26,660	4,318	5,357	3,263	377	18,319	2,570	500	25,365	5,926	500	149	20	26	4,366	64	97,780
Resident Tags																		
Available		Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	21,980	Unlimited	500	31,625	Unlimited	500	150	20	25	4,300	64	59,164
Sold		26,660	4,318	5,357	3,263	377	21,534	4,150	500	29,828	9,598	500	149	20	26	4,366	64	110,710
Nonresident Licenses																		
Available		Unlimited	Unlimited	N/A	Unlimited	N/A	1,497	N/A	500	Leftovers	N/A	N/A	15	2	3	344	N/A	2,361
Sold		4,449	527	N/A	120	N/A	1,844	N/A	493	718	N/A	N/A	15	2	3	342	N/A	8,513
Nonresident Tags																		
Available		Unlimited	Unlimited	N/A	Unlimited	N/A	1,763	N/A	500	Leftovers	N/A	N/A	15	2	3	344	N/A	2,627
Sold		4,449	527	N/A	120	N/A	2,198	N/A	493	1,143	N/A	N/A	15	2	3	342	N/A	9,292
Total Licenses																		
Available		Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	20,157	Unlimited	1,000	26,375	Unlimited	500	165	22	28	4,644	64	52,955
Sold		31,109	4,845	5,357	3,383	377	20,163	2,570	993	26,083	5,926	500	164	22	29	4,708	64	106,293
Total Tags																		
Available		Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	23,743	Unlimited	1,000	31,625	Unlimited	500	165	22	28	4,644	64	61,791
Sold		31,109	4,845	5,357	3,383	377	23,732	4,150	993	30,971	9,598	500	164	22	29	4,708	64	120,002
Hunters		24,291	4,845	5,357	3,307	309	19,149	2,570	993	25,078	5,926	500	164	22	29	4,708	64	69,255
Recreation																		
Average Days Hunted		10.59	3.85	3.61	4.44	2.99	3.3	3.91	3.47	4.18	4.34	5.33	2.66	2.94	2	4.54	2.56	5.17
Total Days Hunted		257,132	18,671	19,347	14,688	3,531	63,282	10,061	3,448	109,022	25,733	2,665	436	65	58	21,367	164	549,670
ean Satisfaction Score		5.23	5.72	5.89	5.01	5.27	5.1	5.23	5.95	4.86	4.98	5.34	4.9	4.46	4.6	5.52	5.1	
Harvest																		
White-tailed Deer																		
Bucks		4,930	264	324	275	14	6,619	788	325	8,925	2,165	240	46	7	5	2,260	26	27,211
Does		1,902	1,823	2,011	808	153	2,845	425	0	5,399	1,206	11	16	6	0	643	10	17,257
Total		6,832	2,087	2,335	1,083	167	9,464	1,213	325	14,323	3,371	251	62	12	5	2,904	36	44,468
Mule Deer																		
Bucks		1,115	35	51	110	2	3,174	566	460	231	88	28	0	0	2	86	0	5,947
Does		141	377	439	14	5	234	190	4	58	36	1	0	0	0	13	0	1,511
Total		1,256	412	490	124	6	3,407	755	464	288	125	30	0	0	2	98	0	7,458
Total Deer Harvest																		
Bucks		6,045	299	375	385	15	9,792	1,353	785	9,156	2,253	268	46	7	7	2,346	26	33,158
Does		2,043	2,200	2,449	822	158	3,078	615	4	5,456	1,242	12	16	6	0	656	10	18,768
Total		**8,088**	**2,499**	**2,824**	**1,208**	**173**	**12,871**	**1,968**	**789**	**14,612**	**3,496**	**280**	**62**	**12**	**7**	**3,002**	**36**	**51,926**
Success		26%	52%	53%	36%	46%	54%	47%	79%	47%	36%	56%	38%	56%	23%	64%	56%	43%

South Dakota Combined Deer Licensing 1975-2018



II. 2018/2019 License and Season Information

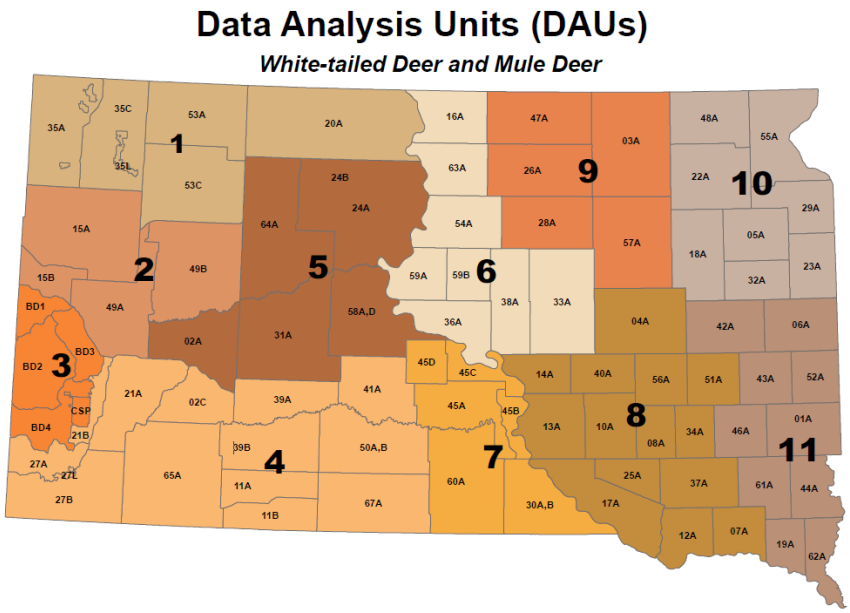
Season Information	Season Dates	Lic Type/Resident Fee	Lic Type/Non-Resident Fee
Apprentice Deer	Sept. 8, 2018 - Jan. 1, 2019	Antelope, Turkey or Deer / $5.00	N/A
Archery Deer	Sept. 1, 2018 - Jan. 1, 2019	1 Any Deer / $40.00 1 Doe Tag / $20.00	1 Any Deer / $286.00 1 Doe Tag / $80.00
Black Hills Deer	Nov. 1-30, 2018	1 Any Deer / $40.00 1 Any Whitetail / $40.00	1 Any Deer / $286.00 1 Any Whitetail / $286.00
Custer State Park Deer	Nov. 1-30, 2018, *Any Deer and Any Whitetail* Nov. 1-15, 2018, *Archery* Dec. 1-15, 2018, *Antlerless Whitetail muzzleloader*	Any Deer / $156.00 Any Whitetail / $156.00 Antlerless Whitetail Muzleloader/ $31.00	N/A N/A N/A
East River Deer	Nov. 17 - Dec. 2, 2018; Dec. 8 - 16, 2018, *Antlerless only*	1 Any Deer / $40.00 1 Any Deer + 1 Doe Tag / $50.00 1 Doe Tag / $20.00 2 Doe Tags / $30.00	1 Any Deer / $286.00 1 Any Deer + 1 Doe Tag / $336.00 1 Doe Tag / $80.00 2 Doe Tags / $120.00
West River Deer	Nov. 10 -25, 2018 Dec. 8 -16, 2018, *Antlerless only*	1 Any Deer / $40.00 1 Any Deer + 1 Doe Tag / $50.00 1 Doe Tag / $20.00 2 Doe Tags / $30.00	1 Any Deer / $286.00 1 Any Deer + 1 Doe Tag / $336.00 1 Doe Tag / $80.00 2 Doe Tags / $120.00
Muzzleloader Deer	Dec. 1, 2018 - Jan 1, 2019	1 Any Deer / $40.00 1 Doe Tag / $20.00 2 Doe Tags / $30.00	N/A 1 Doe Tag / $80.00 2 Doe Tags / $120.00
National Wildlife Refuge Deer	*Varies by refuge*	1 Any Deer / $40.00 1 Any Deer + 1 Doe Tag / $50.00 1 Doe Tag / $20.00 2 Doe Tags / $30.00	1 Any Deer / $286.00 1 Any Deer + 1 Doe Tag / $336.00 1 Doe Tag / $80.00 2 Doe Tags / $120.00
Special Buck (East River)	Nov. 17 - Dec. 2, 2018	1 Any Deer / $175.00	N/A
Special Buck (West River)	Nov. 10 - 25, 2018	1 Any Deer / $175.00	1 Any Deer / $560.00

III. Historical Harvest

Not reported.

IV. Population Trends

Mule deer and white-tailed deer herds are monitored frequently across their range in South Dakota. Survey efforts are completed to assess herd status and predict population trends in 8 DAUs for mule deer and 11 DAUs for white-tailed deer. Surveys conducted to evaluate deer populations include harvest surveys, aerial surveys, spotlight abundance surveys, herd composition surveys, survival monitoring, and population modeling. Growth rates in 2018 for mule deer ranged from a low of 0.98 in DAU 3 to a high of 1.17 in DAU 2. White-tailed deer growth rates were lowest in DAU 10 at 1.04 and highest in DAU 8 at 1.21. Projected growth rates for 2019 are pending further data analyses and model selection.



Data Analysis Units

SDGFP collects and analyses most biological data at the Data Analysis Unit (DAU) level. A DAU is defined as an aggregate of management units that is large enough to account for auto-correlated biotic and abiotic factors and processes that uniformly influence vital rates. Through a cooperative project with the University of Montana, a hierarchical cluster analysis technique was used to find similarity among units. The covariates used included factors aimed at describing the general biological potential of an area and included vegetative layer, agricultural layer, net primary productivity, canopy cover, fall and spring snowfall, temperature, and precipitation.

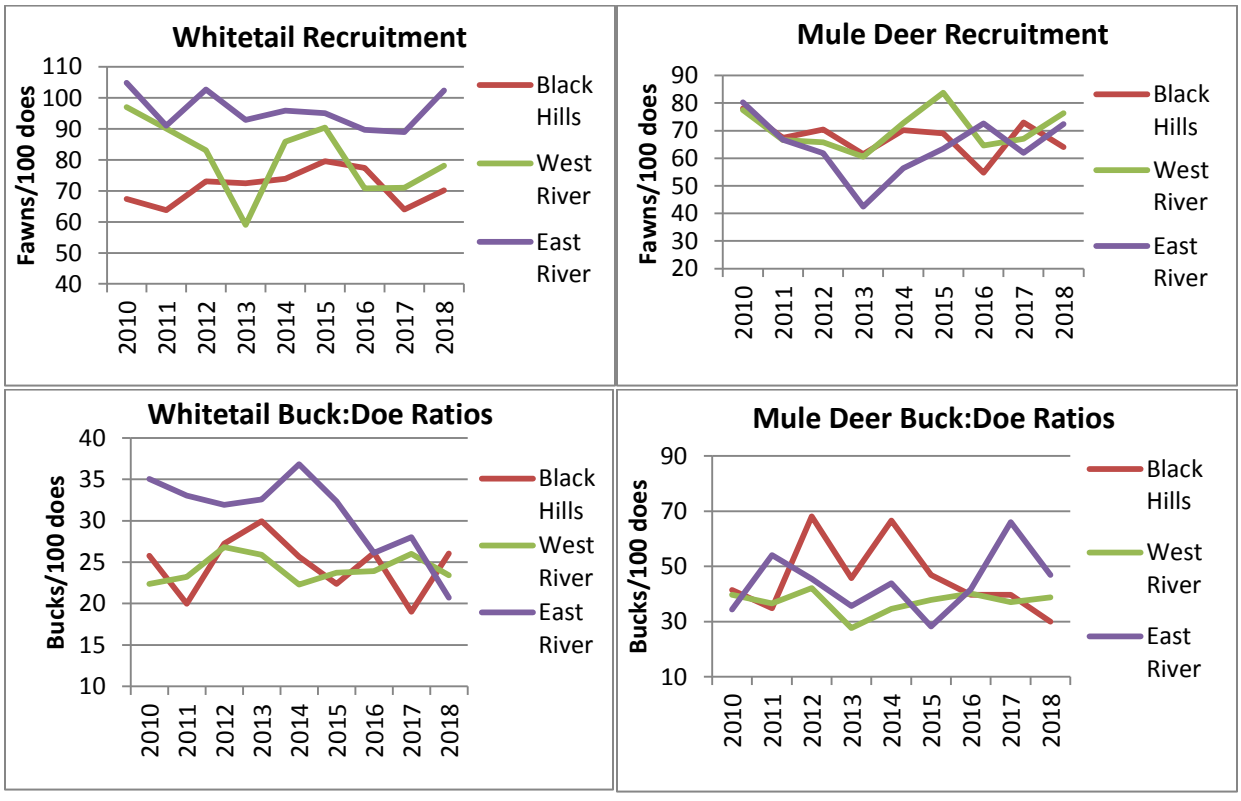
Herd Composition Surveys

Pre-season herd composition ground surveys are completed by driving roads or hiking in areas of known deer concentrations in September and October. Surveys are conducted opportunistically during daytime hours and are haphazardly distributed according to where deer observations can be completed. All deer herds that are observed in their entirety are classified to numbers of fawns, does, and bucks. Spatial data are also recorded for each observation in order to reduce double-counting occurrences.

Herd composition survey data are analyzed to assess sex and age ratios at several geographic levels, with estimates and trends evaluated for statewide, west river, east river, and DAU areas. Sex ratios are calculated as bucks:100 does. However, sex ratios warrant cautious interpretation and the greatest

utility for these data are in evaluations of trend over time and across areas. Age ratios are calculated as fawns:100 does and are used as an indicator of fall recruitment into the population.

In 2018, 10,173 white-tailed deer and 7,731 mule deer were classified throughout the state during the fall herd composition survey. Recruitment (fawn to doe ratios) and sex ratios, along with binomial confidence intervals were calculated for each statistic. Herd composition counts resulted in a statewide white-tailed deer average recruitment of 87 (95% CI: 83-90) fawns per 100 does and 23 (95% CI: 21-24) bucks per 100 does. Statewide recruitment for mule deer in 2018 averaged 75 (95% CI: 71-79) fawns per 100 does and 39 (95% CI: 37-42) bucks per 100 does. The approximate average recruitment over the last 5 years for statewide fawn to doe ratios for white-tailed deer and mule deer has been 86:100 and 71:100, respectively. Overall trends in statewide recruitment have been trending slightly downward in recent years, but may have started to increase in 2018. Overall, recruitment ratios in DAU 3 (Black Hills) for white-tailed deer have traditionally been lower than west and east river prairie areas of the state. Sex ratio datasets tend to have more variability, but 5 year statewide average buck to doe ratios have been 27:100 for white-tailed deer, and 39:100 for mule deer.



Aerial Surveys

Historically, numerous aerial surveys for white-tailed and mule deer have been conducted across South Dakota. However, non-systematic flights with no correction coefficient for missed individuals had limited use for management purposes, and as a result, sightability model development became a priority for the department in the late 1990s and early 2000s. SDGFP developed a model useful for fixed-wing aerial surveying of white-tailed deer populations in most management units in eastern South

Dakota (Robling 2011). Future aerial surveys will be conducted at the DAU level on a scheduled rotation when snow conditions exist. In February 2019, an aerial survey was conducted in DAU 9 (6,545 sq. mi.) in northeastern South Dakota. The entire DAU was surveyed by flying systematic transects spaced 1 mile apart, and the resulting white-tailed deer population estimate was 32,359 (95% CI = 31,078 – 34,824; SE = 899; detection probability = 0.9).

Spotlight Abundance Surveys

Spotlight road surveys are completed within the boundaries of the Black Hills DAU, where distance sampling models have recently been developed to estimate white-tailed deer abundance. Survey crews follow protocols established by Cudmore (2016). Sixty transect routes have been selected by General Randomized Tessellation Stratified sampling (Stevens and Olsen, 2004), with transect lengths varying from 3.5 km to 16 km. Surveys are conducted during the last two weeks of August. Observation data were analyzed using distance sampling methods (Thomas et al. 2010). The most recently completed spotlight survey in August of 2018 resulted in an abundance estimate of 59,478 (SE = 7,681) white-tailed deer in the Black Hills using a hazard ratio model fit to the distance data. Alternative models considered 2-strata and various covariates, none of which suggested a better fit than the hazard ratio model fit with all data pooled (i.e., intercept-only or null model). Future estimates of abundance using distance sampling from spotlight surveys will be compared with population reconstruction estimates obtained from harvest data and radio collared monitoring. Cost benefit analyses will be completed to evaluate the best survey technique to estimate abundance of white-tailed deer in the Black Hills.

Survival Monitoring

Annual rates of change within a deer population are influenced primarily by adult female survival and the number of female fawns that reach one year of age. Mule deer and white-tailed deer survival monitoring has been occurring within South Dakota since the 1960s. However, increased efforts to obtain statistically valid survival estimates within a defined analysis unit were initiated in 2016 and sample sizes of radio collared mule deer and white-tailed deer have increased significantly.

In 2019, valid sample sizes existed in 3 of the 9 mule deer DAUs and 5 of the 11 white-tailed deer DAUs. Helicopter net gun techniques were used to capture females (18+ months) and juveniles (5-18 months). Captured deer were fitted with a VHF or GPS radio collar, and blood sampled to evaluate body condition and to confirm pregnancy status during the winter months. Monitoring for a live/dead signal occurred within 16 days post capture and all mortalities (<16 days post capture) were labeled as capture-related mortalities, with the exception of vehicle mortalities. Monitoring then occurred one time each month between the 1st -15th for each collared individual. All mortalities were investigated to verify death of the animal via physical evidence. In most cases, cause-specific mortality was not identifiable with the exception of vehicle collisions and hunter harvest.

All capture, monitoring and mortality data were collected using hand held electronic devices through Survey123, an ArcGIS data collection application. Data were stored in a sequel server database and transferred through an application program interface (API) connection to a web interface (PopR) created by the University of Montana. Survival rates for each species, sex and age category were calculated within PopR using time-to-event interval censored models. Annual survival and harvest rates were then used for population modeling, resulting in abundance estimates and annual rates of change.

Recent statewide estimates of deer survival in South Dakota.

Species	Age	Sex	DAU	Mean	95% CI	*n*
White-tailed	Fawn[1]	Both	3	71%	62-80	101
White-tailed	Juvenile[2]	Both	3	47%	34-60	62
White-tailed	Juvenile[2]	Both	8	83%	75-90	108
White-tailed	Juvenile[2]	Both	9	76%	67-84	145
White-tailed	Juvenile[2]	Both	10	83%	74-90	110
White-tailed	Juvenile[2]	Both	11	81%	72-88	146
White-tailed	Adult[3]	Female	1	62%	35-85	31
White-tailed	Adult[3]	Female	3	82%	74-89	96
White-tailed	Adult[3]	Female	8	83%	76-89	119
White-tailed	Adult[3]	Female	9	82%	75-88	127
White-tailed	Adult[3]	Female	10	87%	80-93	107
White-tailed	Adult[3]	Female	11	85%	78-91	114
White-tailed	Adult[3]	Male	3	71%	62-80	108
White-tailed	Adult[3]	Male	9	66%	54-77	99
Mule Deer	Fawn[1]	Both	3	64%	53-75	68
Mule Deer	Juvenile[2]	Both	3	39%	27-52	58
Mule Deer	Juvenile[2]	Both	4	53%	44-63	143
Mule Deer	Juvenile[2]	Both	6	84%	76-90	144
Mule Deer	Adult[3]	Female	3	80%	72-87	101
Mule Deer	Adult[3]	Female	4	88%	82-93	128
Mule Deer	Adult[3]	Female	6	91%	85-95	119

[1] Fawn: June-Sept 30, 2018 (approximately birth - 4 months old)
[2] Juvenile: Oct 1, 2017-Sept 30, 2018 (approximately 4 – 16 months old)
[3] Adult: Oct 1, 2017-Sept 30, 2018 (approximately >16 months old)

Population Models

Through a collaborative effort with the University of Montana (UM), a deer modeling software package known as PopR was developed. This web-based application for analysis and management of population data includes Bayesian state-space integrated population models combining multiple sources of data into a single population projection model simultaneously fit to all data across time. IPMs consider multiple sources of uncertainty and provide prediction intervals on future population size. In addition, prior distributions based on Bayesian methods accommodate biological constraints on model parameters and can include additional information based on deer biology. PopR and the custom-developed IPM will be used for deer modeling in South Dakota.

The state-space model is divided into a population process and observation model. The population process model describes the unobserved biological change of the deer population through time using 2-sexes and 3 age-classes {fawns (0-4 months), juveniles (5-18 months) and adults (18+ months)}. Model structure is currently being evaluated based on biological variation and data available. The observation process models the sampling process using harvest reconstruction.

Model results include estimates of survival, reproduction, and abundance which account for and estimate uncertainty as a result of sampling (field data noise) and the biological process of interest. To predict how different tag recommendations may impact λ, change in harvest is assumed to be additive, and the potential number of animals added or removed from the population is derived from the previous 3-5 year average success rates for that tag type. This function allows wildlife managers to manipulate future harvest strategies to assess potential population-level effects.

Pre-season 2018 population estimates for white-tailed deer were 293,000 deer on the prairie and 55,000 in the Black Hills. Mule deer estimates in 2018 were 66,000 on the prairie and 3,000 deer in the Black Hills.

Winter Severity

Winter severity is an important metric contributing to survival of free ranging mule deer and white-tailed deer. Relating how climatic conditions impact deer survival has potential predictive value and can assist managers in determining if significant winter loss has occurred, impacting population growth rates. Currently, SDGFP utilizes mean monthly temperature and total monthly snowfall data from November through April as covariates for a linear model that quantifies a winter severity index (Bacannte and Woods 2010).

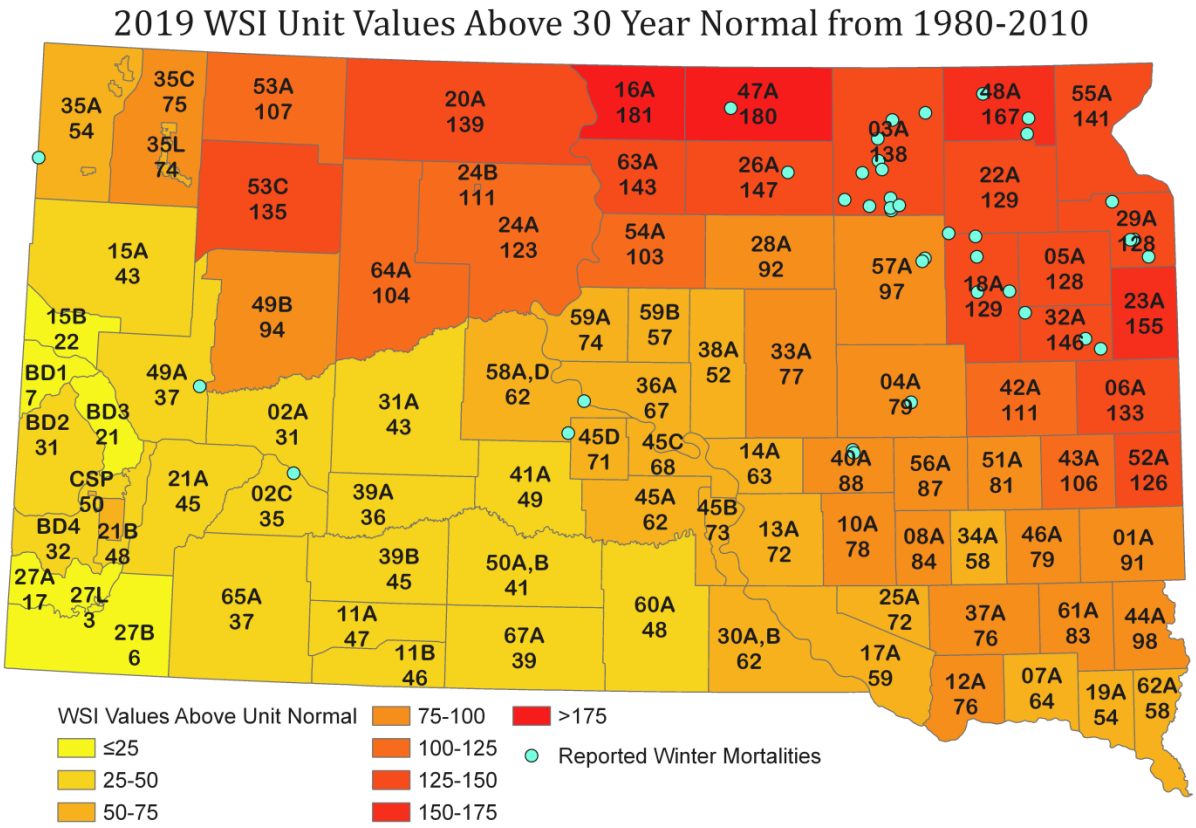
- Monthly WSI = (Mean monthly temperature * (-0.1) +1) * (Total monthly snowfall)
- Annual WSI Value = Sum (mean monthly WSI values (Nov + Dec + Jan + Feb + Mar +Apr))

Weather data are obtained through an annual data request via the National Oceanic and Atmospheric Administration (NOAA). Monthly summaries are archived in the Global Historical Climatology Network (GHCN) for weather stations across South Dakota and surrounding states. Monthly summary data from approximately 350 weather stations distributed across South Dakota and surrounding states are requested, received and downloaded. Program R is used to extrapolate weather data across all deer units using an inverse distance weighted interpolation (IDW) function. This method takes station values and fills in areas between stations using an inverse distance weighted average. The R package (Intamap) attempts to optimize the power value for the weights based on removing stations and cross validating. Winter severity indices are quantified at different hierarchical levels (i.e., statewide, DAU and deer unit) dependent upon shapefile boundaries. Monthly WSI values are summed together to calculate annual WSI.

Data analysis is on-going in order to determine how varying degrees of winter severity values impact deer populations. Juvenile and adult survival information from radio collared deer will be used to evaluate relationships with WSI across space and time. The occurrence of years with varying winter severity while statistically valid sample sizes of radio-collared deer are available is important for robust predictions of survival in areas where no radio collared deer are available.

South Dakota Deer Program Report 2019
By: Andy Lindbloom, Andrew Norton, Lauren Wiechmann, Steve Griffin

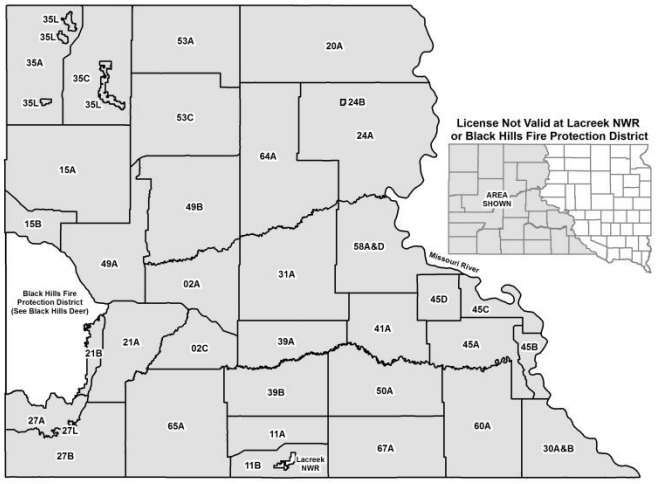
Over the last 2 year the winter was severe with hunting unit WSI values averaging 69 points above (min. = 17 points above; max = 108 points above) the 30-year average in 2017/18 and 106 points above (min. = 6 points below; max = 259 points above) the 30-year average in 2018/19.



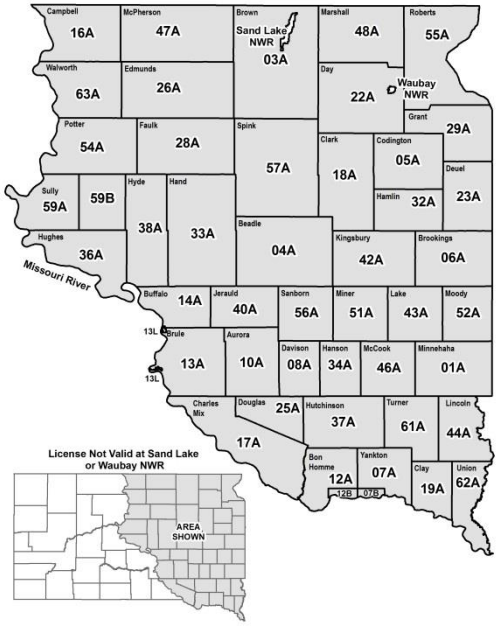
South Dakota Deer Program Report 2018
By: Andy Lindbloom and Chalis Bird

V. Management Units: Harvest units vary by season, shaded in gray below are the units for various deer seasons in 2018:

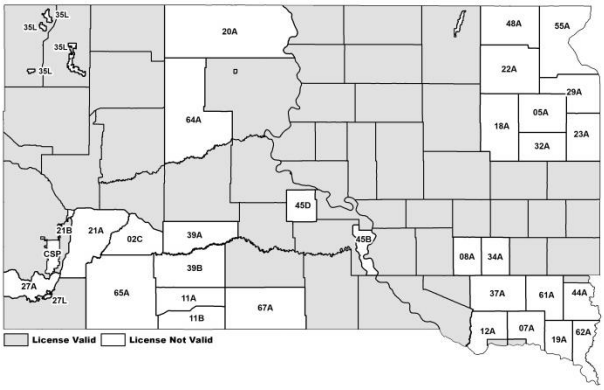
West River Deer Firearm Season:



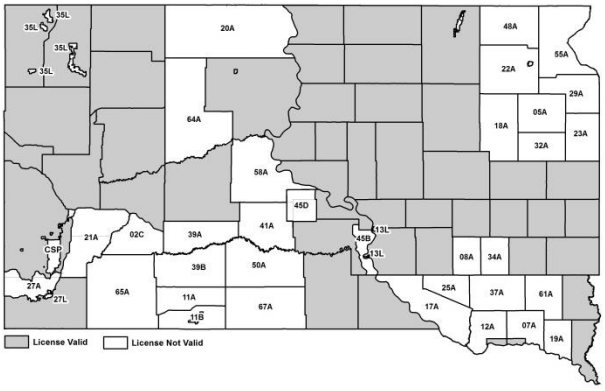
East River Deer Firearm Season:



Archery Antlerless Deer Season:

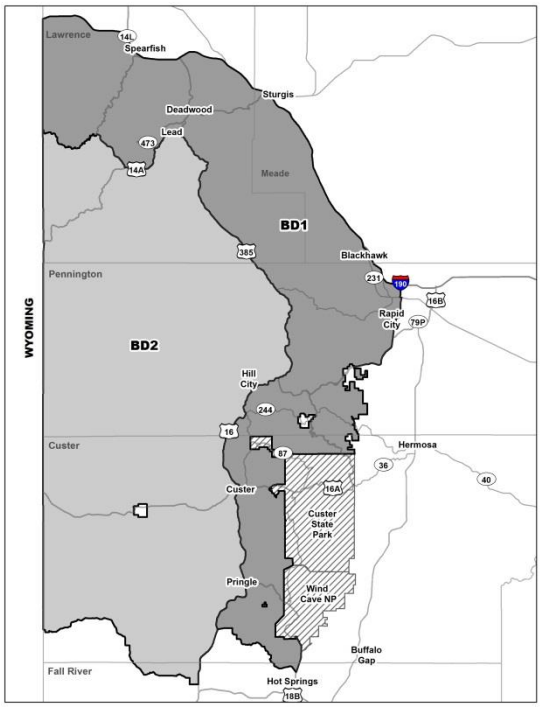


Muzzleloader Antlerless Deer Season:

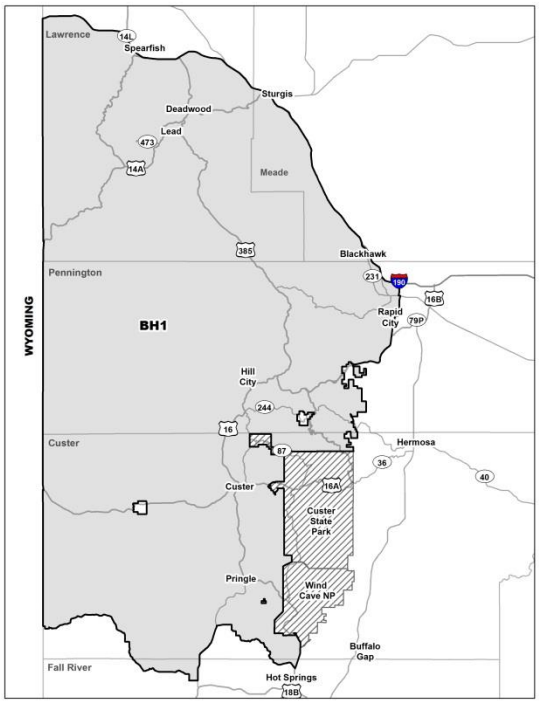


Black Hills Firearm Season:

Antlerless Whitetail



Any Deer Unit



VI. Regulation/legislation Changes

Several changes have occurred in 2019

- In March 2019, a new license application draw structure was approved allowing resident hunters to apply for only 2 of the six deer seasons (East River, West River, Black Hills, Muzzleloader, Refuge and Custer State Park, and Special Buck). Previously, a hunter could independently apply for all 6 seasons in the first draw.
- In June 2019, changes to archery deer hunting included a delayed archery opener for nonresidents hunting public land of October 1, a license application deadline for nonresident archers that want to hunt public land, and a limit to the number of archery hunters on the Custer National Forest (500 residents and 125 nonresidents)
- Additional private-land only antlerless firearm unit specific license types were created for the 2019 hunting season.

VII. Urban/Special Hunts

SDGFP in conjunction with the City of Sioux Falls administered a limited public archery hunt within the city limits of Sioux Falls. SDGFP management special specialists worked with Rapid City to address urban deer issues. More information can be found at https://gfp.sd.gov/access-permit/

VIII. Management Assistance/Crop Damage

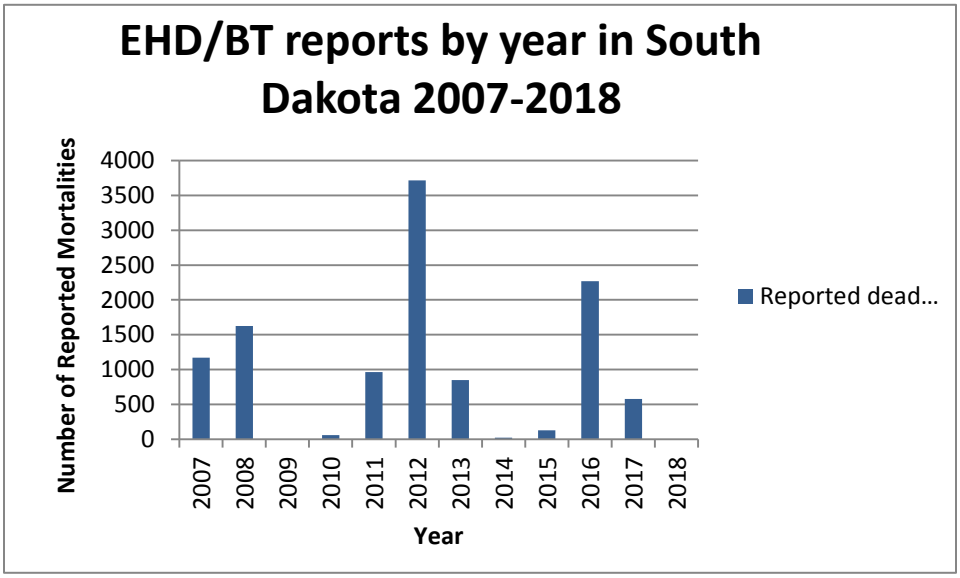
SDGFP employs 27 full-time Wildlife Damage Specialists (WDS) within its Wildlife Damage Management Program. These staff works directly with landowners and producers to reduce or alleviate wildlife damage such as livestock losses, damage to stored-feed supplies and hay, damage to growing crops, as well as damage to personal property.

Local deer populations and winter weather events greatly affect the demands for deer damage abatement services. The winter of 2018-19 was particularly severe in north-eastern South Dakota. These areas experienced extreme cold and deep snow through late-winter, which caused deer to congregate into large herds and move into farmyards for food and protection. Some areas experienced extreme deer damage to stored-feed supplies. The remainder of the state did not experience these harsh conditions for extended periods, and many of these other areas of South Dakota were at or below the management objectives regarding deer population. GFP spent considerable resources to address the deer damage issues across South Dakota.

More information on the SDGFP Wildlife Damage Management Program can be found at http://gfp.sd.gov/wildlife/wildlifedamage/default.aspx

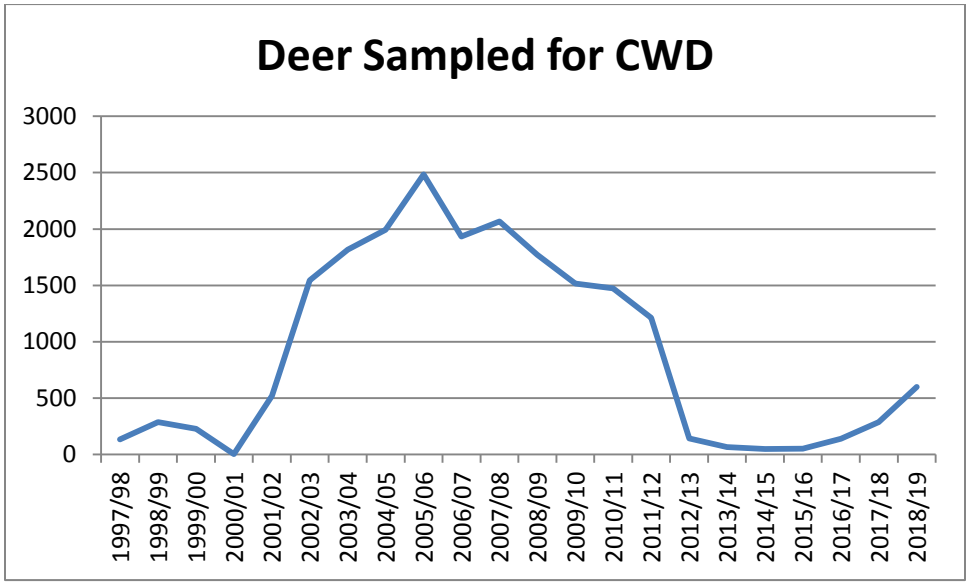
IX. Disease Issues / Updates

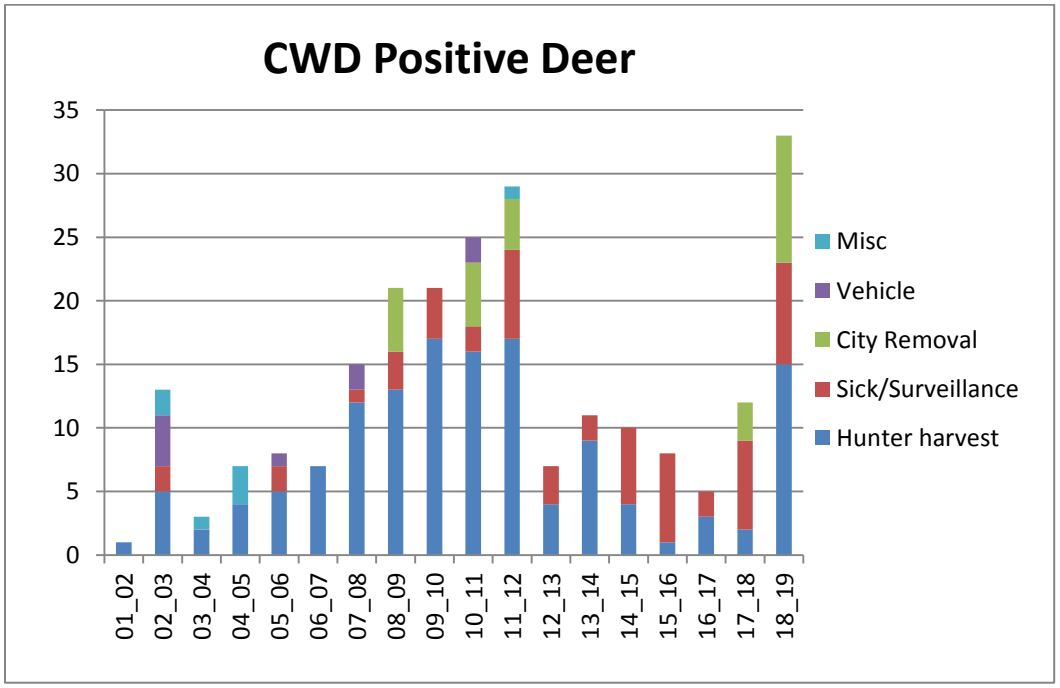
The State of South Dakota experienced no reported or documented mortality from Epizootic Hemorrhagic Disease (EHD) and/or Blue Tongue (BT). South Dakota Department of Game, Fish, and Parks (SDGFP) monitored for hemorrhagic disease starting in early summer and no reports were received.



South Dakota Deer Program Report 2018
By: Andy Lindbloom and Chalis Bird

Surveillance for chronic wasting disease (CWD) in South Dakota during the period of July 1, 2018 through June 30, 2019 resulted in the testing of 231 elk, 75 mule deer and 525 white-tailed deer, for a total of 831 samples. Test results indicate 22 white-tailed deer, 11 mule deer, and 16 elk were CWD positive. The total number of CWD positive animals discovered in SD since the first free ranging white-tailed deer was found in the fall of 2001 is now 450, including 213 elk, 91 mule deer and 146 white-tailed deer.





X. Research. Current deer research projects in South Dakota

Resource selection and population performance of mule deer and white-tailed deer in heterogeneous landscapes (University of Montana. Dr. Paul M. Lukacs, Ph.D student Anna Moeller).

Objectives:

1) Conduct an inventory of existing land cover data and perform a thorough land cover analysis at various deer management unit levels and quantify habitat types across South Dakota using satellite based data streams.
2) Measure and evaluate mule deer and white-tailed deer seasonal resource selection across multiple spatial scales (e.g., home range, management unit, and DAU).
3) Link mule deer and white-tailed deer population performance to availability and use/selection of habitat types in space and time.
4) Assess and evaluate mule deer and white-tailed deer body condition and vital rates (e.g., survival, recruitment, pregnancy rates) and correlations to weather (e.g., drought and winter severity), habitat availability/use/selection, and other factors.
5) Develop probability of use maps for both white-tailed deer and mule deer based on resource use, selection, and availability.
6) Assess habitat management strategies that could be useful to mitigate winter depredation problems.
7) Evaluate different land management strategies (e.g., livestock grazing, crop rotation, timber harvest) and how that relates to mule deer and white-tailed deer season of use/selection/avoidance, and population performance.

Estimating deer and elk abundance in complex topography (University of Montana. Dr. Paul Lukacs, M.S. student Augustus Geldersma).

Objectives:

1. Develop a sampling method for deer and elk in South Dakota.
2. Implement a dual-method approach to sampling including remotely triggered cameras as one of the methods.
3. Estimate abundance of deer or elk in each of the selected study areas.
4. Estimate herd composition of elk in the Black Hills.
5. Evaluate new methods using cost:benefit and comparison data analyses.

XI. Hot Topics

Changed Drawing Structure for Deer Hunting Licenses.

On March 1, the South Dakota Game, Fish and Parks (GFP) Commission unanimously approved a new deer license allocation proposal that allows a resident hunter to apply for two of the six deer seasons in the first draw. These seasons include: East River/Special Buck, West River/Special Buck, Black Hills, Muzzleloader, Refuge and Custer State Park. Special Buck license holders are limited to one additional application in the first draw as long as that application was not valid for the same season as their Special Buck license. Nonresident hunters are still eligible for eight percent of the allocation for West River, Black Hills and Refuge hunting seasons during the first drawing.

Created Private Land Only Firearm Licenses

Established West River Deer Units 15P, 27P, 45P and East River Deer Units 13P, 33P, 36P and 38P that offer antlerless whitetail deer licenses valid on private land only; all public lands within these units are closed, including Walk-In Areas.

Modified Archery Season Regulations

The 2019 archery season will begin on Oct. 1 for nonresidents hunting on public lands, including Walk-in Areas, Conservation Reserve Enhancement Program (CREP) and Controlled Hunting Access Program (CHAP) areas. The Sept.1 start date will remain unchanged for resident archers. The Sept.1 start date remains unchanged for nonresidents hunting on private lands.

The Commission also established an application deadline for 2019 of Aug. 1 for nonresident archery hunters to be eligible to hunt on public land. Any nonresident archery deer application received after Aug. 1, will be for a license valid on private land only. Licensee will not be able to hunt on Walk-In Areas, CREP or CHAP areas with this license if purchased after Aug. 1.

The Commission created 625 access permits (500 resident and 125 nonresident) for Unit 35L, which encompasses much of the Custer National Forest area in Harding County. Archers wanting to hunt in this unit will have to apply for one of these free access permits. Deadline for these free access permits is Aug. 1.

Chronic Wasting Disease

In August of 2019, the Commission proposed regulations to restrict the intra- and inter-state transportation of harvested cervids and cervid parts. Proposals are currently out for a 60-day public comment period, after which the commission will decide to approve, disapprove, or modify current proposal.

XII. Relevant Links

Information on deer hunting in South Dakota can be found at:
https://gfp.sd.gov/deer/

Rules and regulations for hunting in South Dakota can be found at:
https://gfp.sd.gov/pages/regulations/

Harvest Survey results and reports can be found at:
https://gfp.sd.gov/hunt-surveys/

South Dakota Deer Management Plan can be found at:
https://gfp.sd.gov/UserDocs/nav/deer-mgmnt.pdf

2018 WISCONSIN DEER STATUS REPORT

43rd Annual Midwest Deer & Wild Turkey Study Group
August 12-15, 2019, Nashville, Indiana

Beth Wojcik, Jennifer Stenglein, Brian Dhuey, Dan Storm, Kevin Wallenfang

1. CURRENT REPORTED HARVEST

The Wisconsin deer harvest numbers can be found online on the Wisconsin Department of Natural Resources (DNR) website at: http://dnr.wi.gov/topic/wildlifehabitat/harvest/deerharvest.html.

Total 2018 registered harvest reported by Wisconsin DNR was 335,243 deer (Table 1). Of the registered harvest, 48% were antlered and 52% were antlerless. Most of the harvest (66%) was from the 9-day gun deer season in November, followed by crossbow (14%) and vertical bow (12%) harvest (Table 1). The Great Lakes Indian Fish and Wildlife Commission provided deer registration from tribal members in the ceded territory of Wisconsin to total 447 antlered deer and 516 antlerless deer, which is deer harvest in addition to what is reported by Wisconsin DNR.

Table 1. Wisconsin's 2018 antlered, antlerless and total registered deer harvest by season.*

Season	Antlered	Antlerless	Total
9-day gun	106,038	113,675	219,715
Vertical bow	21,676	18,729	40,405
Crossbow	25,956	21,268	47,224
Youth hunt	3,559	4,299	7,858
Muzzleloader	2,802	4,106	6,908
Dec. antlerless**	32	9,421	9,453
Holiday antlerless**	12	3,668	3,680
Total	*160,075*	*175,166*	*335,243*

* Data accessed from http://dnr.wi.gov/topic/wildlifehabitat/harvest/deerharvest.html on 2019-07-31.
** Disabled hunters and members of the armed forces on leave may harvest antlered deer during antlerless-only seasons.

2. HISTORICAL HARVEST

During the 1960s and early 1970s, total harvest averaged about 85,000 annually (Fig. 1). Total harvest increased steadily during the late 1970s and 1980s, largely due to population growth in the farmland regions. A record harvest of approximately 615,300 deer was set in 2000 (tribal harvests not included). Harvest from 2001 – 2008 averaged about 446,000 deer annually, with about 63% of the harvest composed of antlerless deer. Total harvest decreased in 2009 – 2013 to approximately 345,000 deer annually and 56% of the harvest as antlerless deer. In 2014 – 2018 total annual harvest has averaged 317,235 deer and 51% of the harvest as antlerless (Fig. 1).

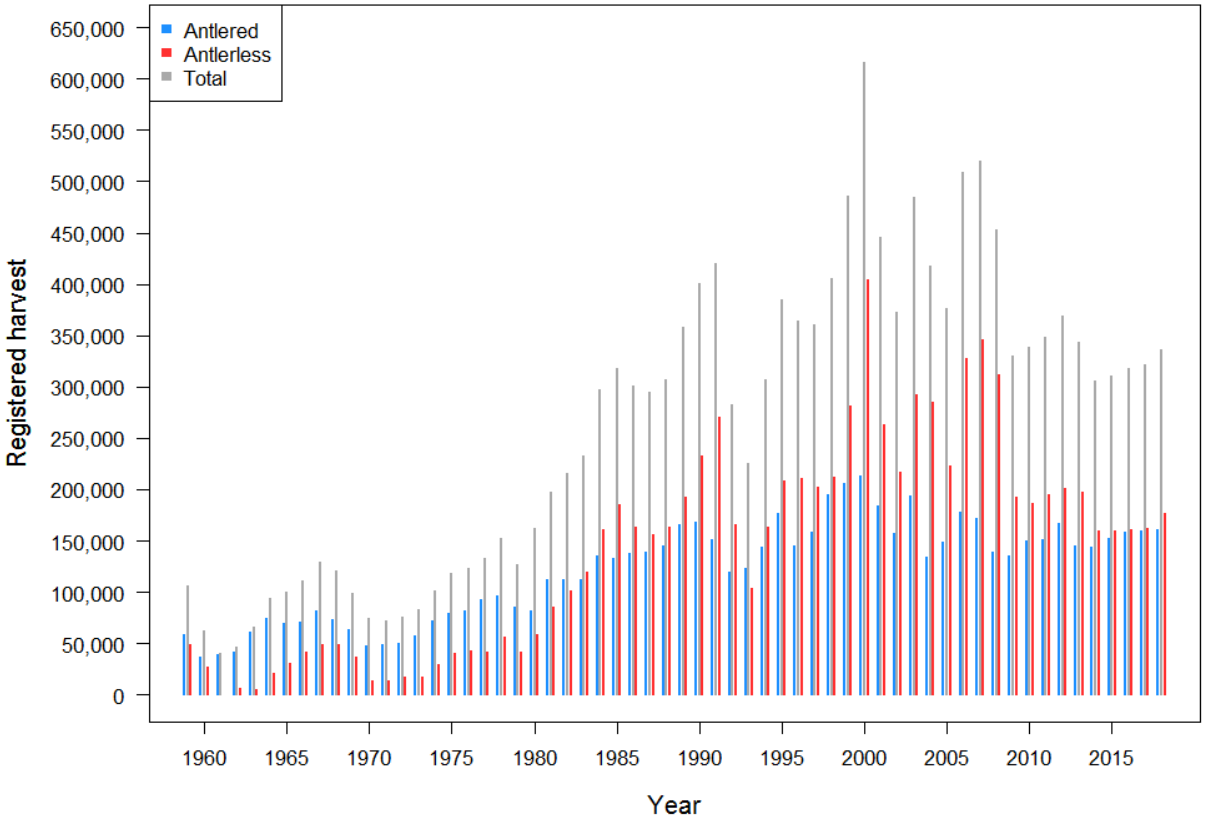


Figure 1. Wisconsin's registered harvest of antlered, antlerless and total number of deer, 1959-2018. This is not including tribal harvests.

The proportion of harvest taken by archers has increased since 1980 (Fig. 2). From 1980 – 1990, archery harvest accounted for 14% of total harvest, on average. From 1991 – 2008, archery harvest accounted for an average of 19% of total harvest. Since 2009, archery harvest accounted for an average of 27% of total harvest annually. Crossbows became legal for non-disabled hunters 65 years of age or older in 2002, and crossbows were killing deer at an unknown rate from 2002 – 2013 because their use was not tracked (crossbow kills were integrated into the vertical bow category). Since crossbows have been legalized for deer hunters of any age and ability level in 2014 and their use has been tracked, deer kills by crossbows have increased every year except 2018. The 2018 crossbow harvest was 4 kills below the 2017 total. In 2018 crossbows accounted for more of the deer harvest than vertical bows and with a wider margin between vertical and crossbow harvests than in 2017 (Table 1, Fig. 2).

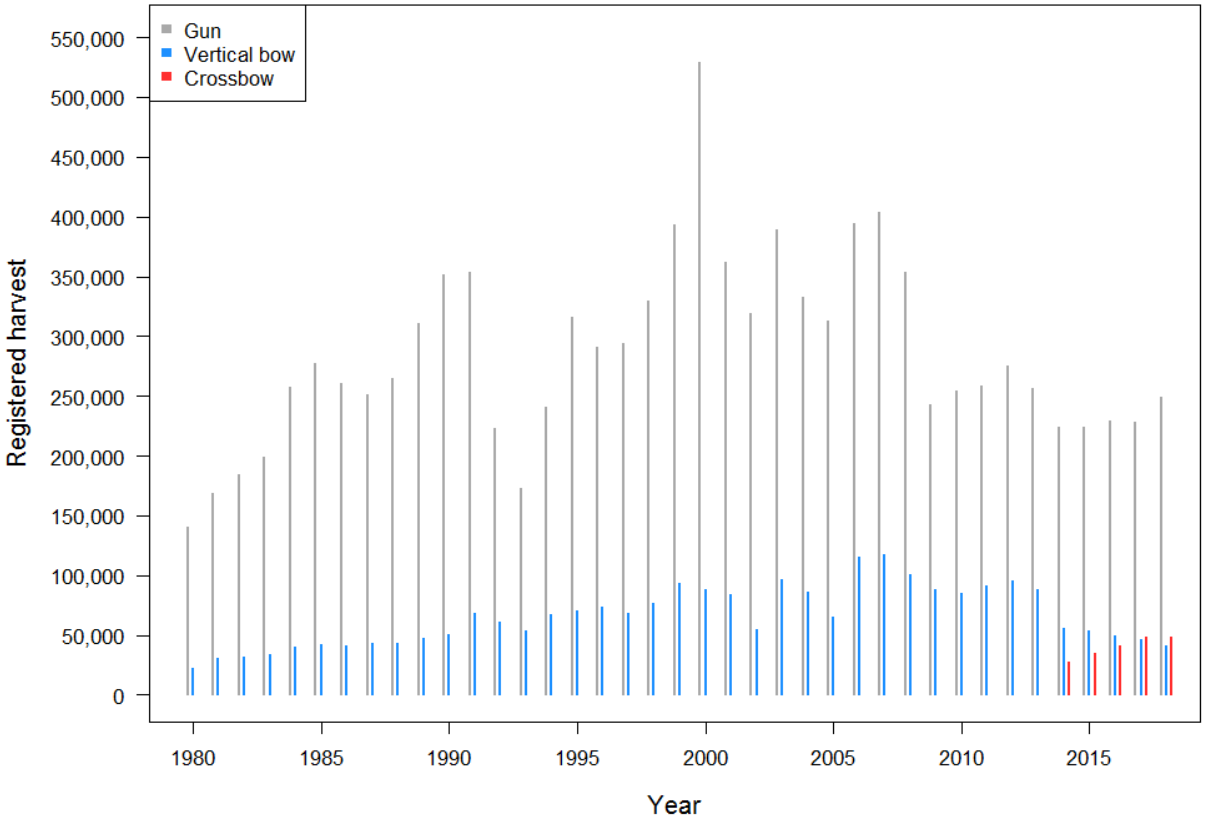


Figure 2. Wisconsin's registered harvest of deer by method of take, 1980 – 2018.

3. POPULATION ESTIMATES AND TREND

Population estimates for Deer Management Units (DMUs) were calculated using the Sex-Age-Kill (SAK) formula. Annual inputs to the SAK formula for each DMU are: 1) registered harvests of antlered and antlerless deer, 2) percentage of yearlings among harvested adult bucks, 3) percentage of yearlings among harvested adult does, 4) buck recovery rate, and 5) early fall fawn to doe ratios. The SAK formula was run in a Bayesian framework using a spatial smoothing model and uniform distribution inputs which led to estimates of uncertainty and 95% credible intervals around point estimates. More information and results can be found here: https://dnr.wi.gov/topic/WildlifeHabitat/documents/reports/wtaildeerpop2.pdf

Estimates of post-hunt deer populations during 2018 were made for 82 DMUs. Statewide, the 2018 post-hunt population estimate was approximately 1,510,400 deer (95% credible interval: 1,365,400 – 1,666,700) and the mean estimate was 10% higher than in 2017 (Fig. 3). Mean post-hunt population densities by DMU in 2018 ranged from 3-61 deer/mi^2 of land area and averaged 27 (95% credible interval: 25 – 30) deer/mi^2 of land area.

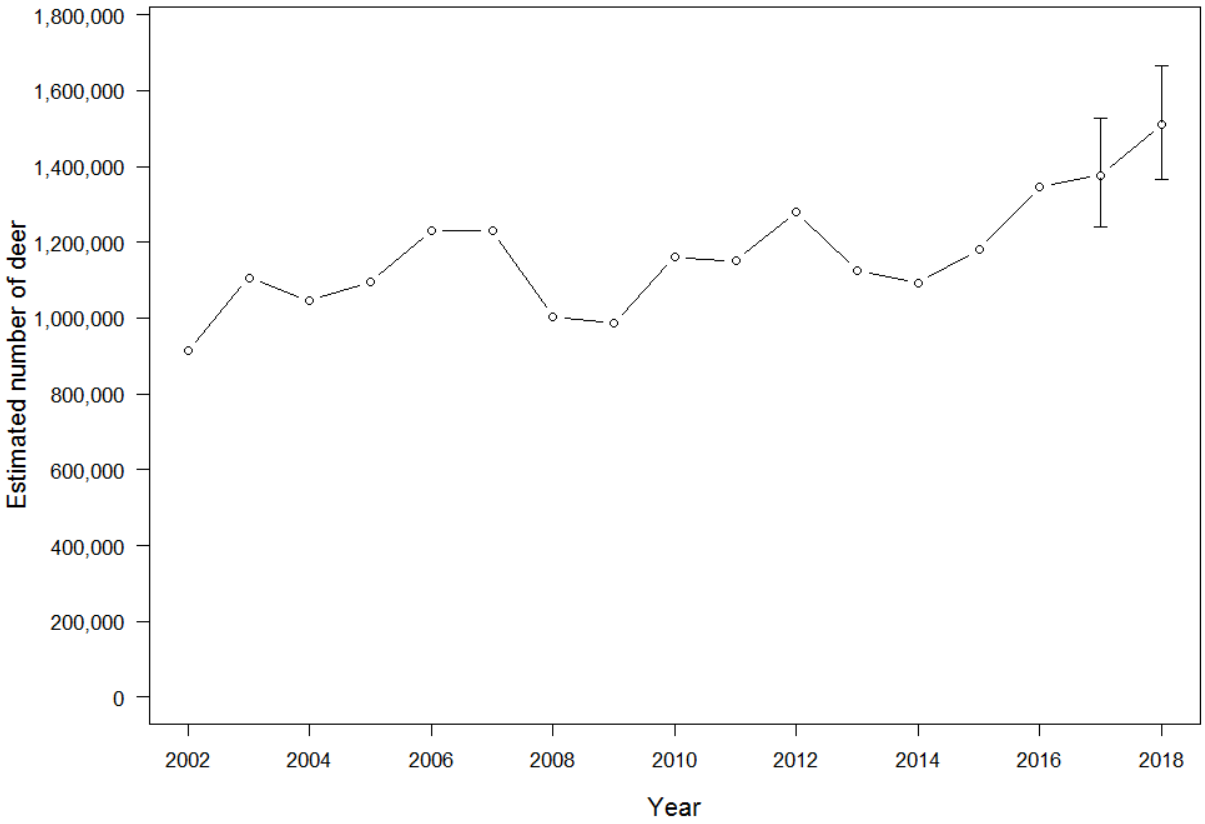


Figure 3. Wisconsin's statewide post-hunt population estimates for deer, 2002 – 2018. The population estimates in 2017 and 2018 are shown with a 95% credible interval.

Population objectives by DMU are recommended by County Deer Advisory Councils (CDACs) and approved by the Natural Resources Board (NRB) every 3 years. The first 3-year population objective period was 2014 – 2017 when population objectives replaced the use of yearly population size goals. CDACs met in Spring 2018 to recommend new population objectives for 2018 – 2020 (Fig. 4). Recommendations were approved for 47 (58%) DMUs to 'maintain', 19 (23%) DMUs to 'decrease', and 15 (19%) DMUs to 'increase' populations for 2018 – 2020 (Table 2).

Table 2. Number of DMUs with population objectives as recommended by CDACs and approved by the NRB 2018-2020.

Population Objective	Increase	Maintain	Decrease
DMUs	15	47	19

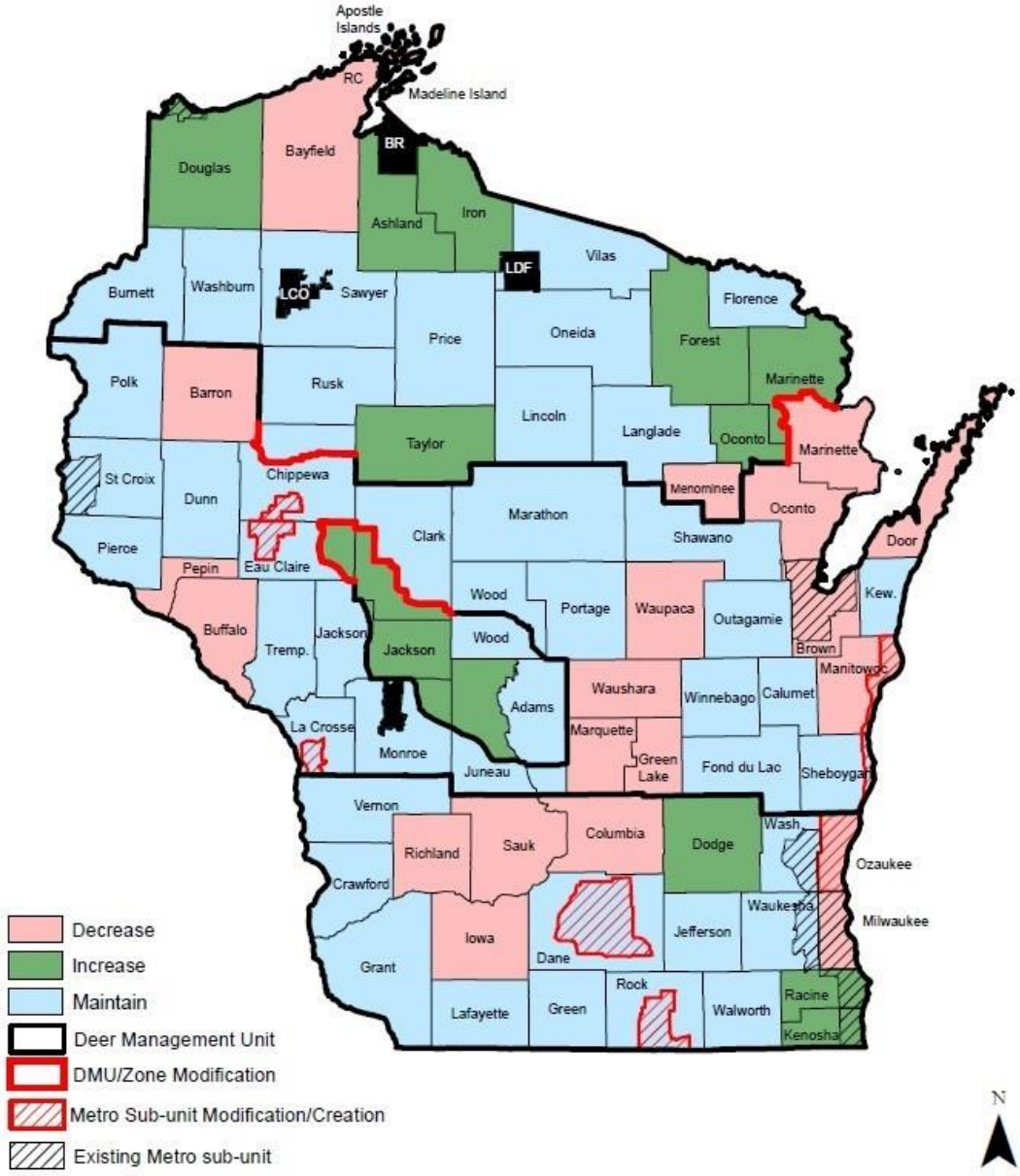


Figure 4. Deer population objectives as recommended by CDACs and approved by the Natural Resources Board for 2018 – 2020.

4. DEER MANAGEMENT UNITS AND ZONES

Since the implementation of the Deer Trustee Report recommendations in 2014, the state has been divided into four deer management zones (DMZ) from north to south and designated as, Northern Forest, Central Forest, Central Farmland, and Southern Farmland (Fig. 5). DMUs in these management zones are based on county boundaries inside the zone. Most counties are now their own management unit with a few exceptions for areas where DMZ's cross county

boundaries or tribal reservation boundaries were used to develop their own units. Metro areas within these new unit boundaries are now sub-units of the larger county management unit (Fig. 5).

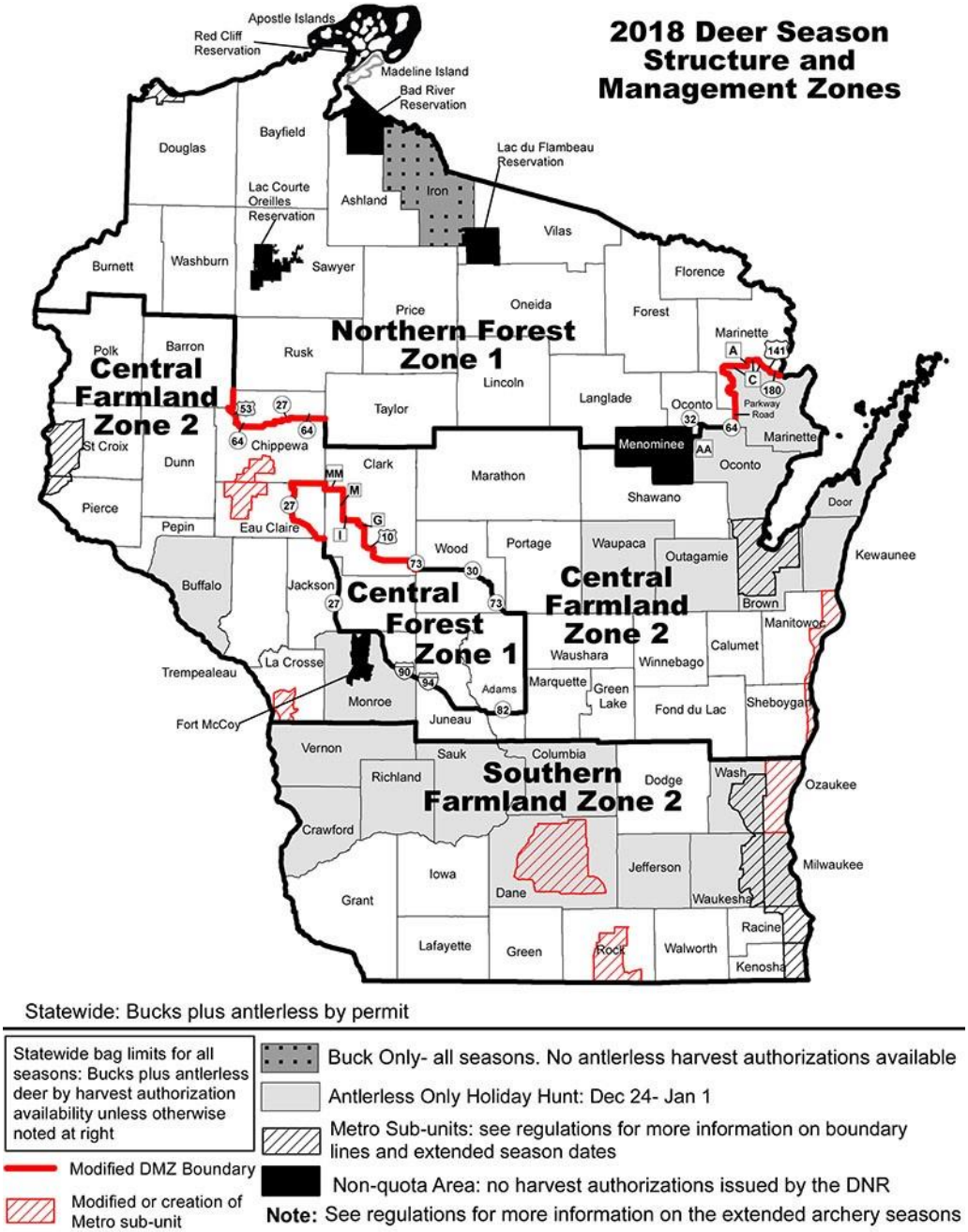


Figure 5. Wisconsin's deer management units, zones, boundary modifications and season structure, 2018.

Deer Management Zone and DMU boundaries were reviewed for the first time since their inception in 2014 by CDACs. Four CDACs recommended changes to the zone boundaries that were approved by the NRB (Fig. 5). The zone changes in Eau Claire, Clark and Marinette Counties were modifications of an existing zone boundary splitting each county into a forest and farmland portion. The zone change in Chippewa County was an addition and for the first time split Chippewa County into a forest and farmland portion. Eight CDACs recommended modifications or additions of metro unit areas that were approved by the NRB (Fig. 5).

5. LICENSE AND SEASON INFORMATION

A continuous bow and crossbow season ran from mid-September through early January. Firearm seasons included a statewide youth firearm deer season in October, a traditional 9-day firearm deer season in November, a 10-day statewide muzzleloader season, a statewide antlerless only 4-day hunt in mid-December, and in select units an antlerless only Holiday Hunt starting the day before Christmas (Fig. 5). More information can be found here ('Wisconsin deer hunting summary 2018'): https://dnr.wi.gov/topic/wildlifehabitat/reports.html.

All residents and non-residents are required to purchase a license to hunt deer in Wisconsin. There were 577,600 licensed firearm hunters, 208,060 licensed vertical bow hunters, and 171,993 licensed crossbow hunters in 2018. There were 24,852 fewer licenses sold in 2018 compared to 2017 for firearm and bow, but 8,330 more crossbow licenses (Fig. 6).

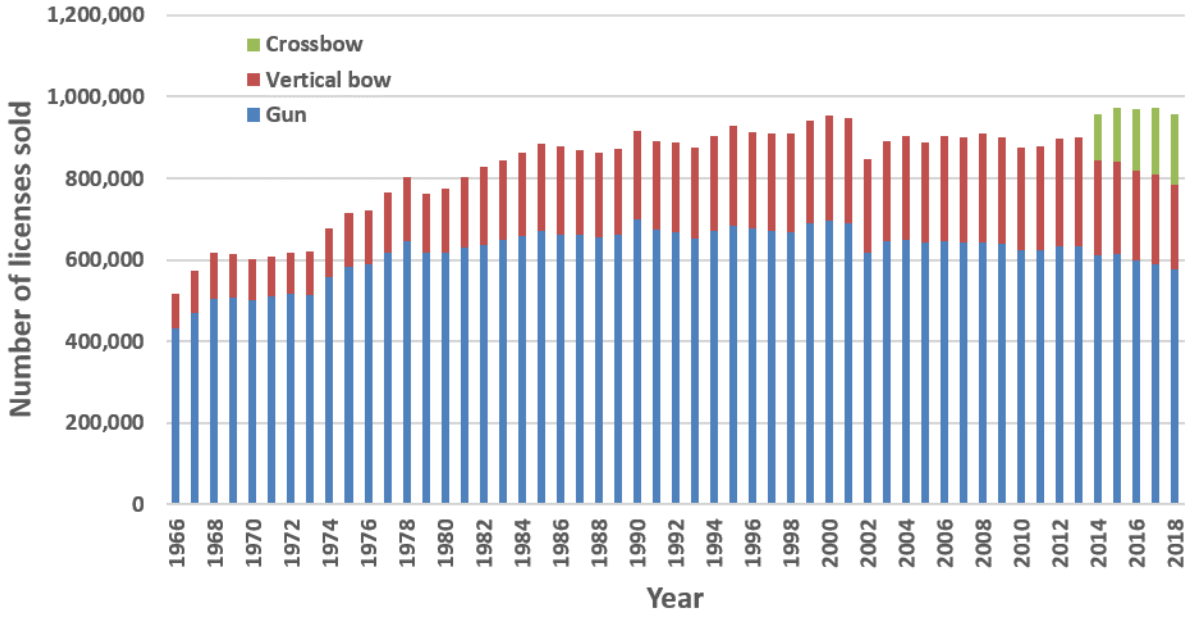


Figure 6. Wisconsin deer license sales, 1966 – 2018.

All hunters could harvest one buck statewide per weapon authority purchased. Bow and crossbow hunters that purchased an upgrade authority to use either weapon were only allowed to harvest one buck with either weapon per season. Free antlerless permit(s) were issued with each weapon authority purchased. The number of permits available for counties in the farmland

zones ranged from 0 to 5, depending on the DMU. There were 1,218,163 free farmland tags issued and 109,586 antlerless deer killed with those tags. Additional antlerless permits could be purchased for both the farmland and forested DMZ's. These permits were sold over-the-counter on a first-come, first-served basis at a cost of $12 each. There were 227,900 bonus antlerless tags available statewide, 139,513 were sold, and 34,115 antlerless deer were killed with those tags. Select metro sub-units had additional tags available both as free metro sub-unit tags and as bonus ($12/tag) tags. These tags were valid only in the portion of the unit that was defined as the metro sub-unit and were valid during any open metro season.

The deer license types and costs and season structure approved for the upcoming 2019 deer season were very consistent with the 2018 deer season (Tables 3 and 4). For the 2019 season (as in recent past seasons), one antlered buck may be harvested for each gun license and one antlered buck with an archery or crossbow license. One antlerless deer may be harvested per unused antlerless deer tag.

Table 3. Upcoming 2019 Deer License Types and Costs

License	Resident	Non-resident
Conservation Patron	$165	$600
Junior Conservation Patron (ages 12-17)	$75	$77
Purple Heart Conservation Patron	$10	$161
Sports	$60	$275
Junior Sports (ages 12-17)	$35	$36
Gun Deer	$24	$160
Youth Mentored Only (ages 10-11)	$7	$7
Junior Gun Deer (ages 12-17)	$20	$36
Archer (does not include furbearers)	$24	$160
Junior Archer (ages 12-17)	$20	$77
Crossbow	$24	$160
Junior Crossbow	$20	$77
Archer or Crossbow upgrade	$3	$3
First Time Buyer Archer or Firearm	$5	$79.75
Bonus Antlerless Deer Tag	$12	$20
Mentored Bonus Antlerless Deer Tag	$5	$5

Table 4. Upcoming 2019 Deer Season Structure

Season	Dates
Archery and Crossbow	September 14, 2019 – January 5, 2020
Archery and Crossbow Extended	September 14, 2019 – January 31, 2020
Archery and Crossbow Metro Subunits	September 14, 2019 – January 31, 2020
Youth Firearm	October 5 – 6, 2019
Hunters with Disabilities Firearm	October 5 – 13, 2019
November Firearm	November 23 – December 1, 2019
November and December Firearm Metro Subunits	November 23 – December 11, 2019
Muzzleloader	December 2 – December 11, 2019
December Antlerless only (all weapon types)	December 12 – 15, 2019
Antlerless only Holiday Hunt (all weapon types)	December 24, 2019 – January 1, 2020

6. REGULATION/LEGISLATION CHANGES

New in 2018 was the opportunity to hunt either sex during the January archery and crossbow season in counties with a Holiday hunt. Twelve counties offered this extended archery and crossbow season from September 15, 2018 to January 31, 2019.

The NRB approved recommendations from 69 of the County Deer Advisory Councils (CDACs) for the upcoming 2019 deer season at its May meeting. In 2 of the counties, the WDNR recommended changes to the CDAC recommendations, which included:

- In Buffalo County, WDNR recommended that the CDAC's recommended antlerless-only season not be adopted; buck plus antlerless season and all other season framework recommendations in Buffalo County were supported.
- In Monroe County, WDNR recommended that the CDAC's recommended 250 bonus antlerless tags be changed to 500 bonus antlerless tags.

The Natural Resources Board approved the WDNR's recommended changes from the CDAC recommendations in these 2 counties.

The 2019 deer season framework approved by the NRB differs from previous years:

- In 2019, no county is a buck only-unit.
- Twenty-nine counties in the Central and Southern Farmland Zones opted to offer a 9-day antlerless-only Holiday Hunt (December 24 – January 1).
- Twenty-two counties offered an extended, any-deer archery season so that the vertical bow/crossbow season extends from September 14, 2019 – January 31, 2020. This was the second year this extension was offered.
- CDACs in the farmland zones could offer a variable number of free farmland zone permits per license sold. Sixteen counties will offer 1 free permit, 23 counties will offer 2 free permits,8 counties will offer 3 free permits, 6 counties will offer 4, and 1 county each will offer 5 and 6 free permits per license. These permits are county and land-type (public or private land) specific.
- CDACs and WDNR recommended a total of 212,370 bonus antlerless permits for purchase 80% on private land, 20% on public land).

7. SPECIAL HUNTS

The special hunts have not changed in Wisconsin for 2019 and include the youth gun deer hunt (https://dnr.wi.gov/topic/hunt/documents/deeryouthhunt.pdf) and the gun deer hunt for hunters with disabilities (https://dnr.wi.gov/topic/hunt/disdeer.html). The Learn to Hunt program in Wisconsin continues to be popular for first time deer hunters (https://dnr.wi.gov/education/outdoorskills/lth.html). In urban areas, metro subunits have been established (Fig. 5). These units have an extended gun deer season that runs from November 23 – December 11, 2019 and an extended bow season that runs from September 14, 2019 – January 31, 2020.

Other hunting opportunities highlighted for 2019 include:

- Sandhill Outdoor Skills Center: Deer hunting is offered to youth and beginner adults who

complete a “Learn to Deer Hunt Workshop.” Contact Sandhill Outdoor Skills Center: Box 156, Babcock, WI 54413; phone 715-884-6331. Applications are due by June 30 of each year.

- Hunting on School Forest Land: School boards may decide to allow hunting in school forests. If a school forest is opened to hunting, seasons and regulations are consistent with the open and closed seasons for game on adjacent land.
- Fort McCoy Military Reservation: Find hunting information at www.mccoy.army.mil under “recreation opportunities” or by calling the permit sales office at 608-388-3337.

8. MANAGEMENT ASSISTANCE/CROP DAMAGE

Wisconsin's agricultural damage deer shooting program was in effect for 2018. In 2018, the Department issued 561 agriculture damage deer shooting permits in 65 counties. The number of deer shooting permits issued in 2018 increased from 2017 when 531 permits were issued in 65 counties. There are two types of deer shooting permits agriculture producers can choose from; permits that require the producer to allow public hunting access during the state deer hunting season, under this option producers are eligible for deer damage compensations; and permits that do not require the producer to allow public hunting access but producers are not eligible for deer damage compensation. Of the two permits types, 217 deer shooting permits were issued where public deer hunting access was required on property the producer owns or leases and 344 deer shooting permits were issued where public hunting access was not required on the property the producer owns or leases. Damage permits were primarily valid for harvesting antlerless deer using a firearm (occasional exceptions are made to harvest antlered deer or to use archery equipment for harvest). A total of 4,821 deer were harvested under authority of this program; nearly all (4,653) were antlerless.

The Deer Management Assistance Program (DMAP) provides habitat and herd management assistance to landowners interested in managing their property for deer and other wildlife; it is now in its sixth year.

9. DISEASE ISSUES/UPDATES

There has been one new county with wild deer Chronic Wasting Disease (CWD) detections since the 2017 report. CWD has been detected in wild deer in 26 of Wisconsin's 72 counties and 56 counties in Wisconsin are considered affected counties for being within 10 miles of any captive or free roaming deer that tests positive for CWD. These 56 counties do not all have bans on baiting and feeding of wildlife. In 2017, Wisconsin Act 41 amended Wisconsin Act 240 to limit the time during which the baiting and feeding of deer may be prohibited following a positive test for CWD or TB. Surveillance activities continued in the long-term monitoring areas in southern Wisconsin, and around outlying wild positives or where CWD positive captive cervid facilities have been identified. In 2018, a three-year rotation of surveillance was initiated for 19 counties in the west central region. Subsequent three-year periods will focus on the north and northeast regions of the state. Approximately 17,221 deer were tested during 2018, which was a 74% increase in the number of deer tested in 2017.

10. DEER RESEARCH UPDATE

The WDNR in cooperation with UW-Madison completed a research project to examine standardized roadside surveys for estimating late summer/early fall fawn to doe ratios. The results did not support changing procedures for the traditional roadside surveys because resultant fawn to doe ratios did not reflect county estimates and marginal observations may have been recorded. The results did provide useful information for survey times and sample size expectations to guide future Summer Deer Observations.

2018 was the third year of the Southwest Wisconsin CWD, Deer and Predator Study with the goals of determining the role of CWD, predation, hunter harvest, and habitat on deer population dynamics in southwestern Wisconsin. Since the beginning of the project there have been 548 deer, 32 bobcats and 69 coyotes collared and 351 volunteer landowners participating.

This was the third year of a 5-year a study to understand relationships between forests and deer health through DMAP partnerships. The main goal of this project is to improve our understanding of the linkages between habitat quality, deer health and population performance.

Snapshot Wisconsin, a statewide trail camera project to monitor deer, predators of deer, and other wildlife, has been operational with volunteers for over 3 years. As of July 2019, Snapshot Wisconsin had 1,706 enrolled volunteers monitoring 2,108 trail cameras that have captured >30 million photos. Snapshot Wisconsin entered phase 2 in August 2018 when it expanded into all counties of Wisconsin and opened enrollment for volunteers interested in placing cameras on public land. During 2019, Snapshot Wisconsin will target recruitment of volunteers in counties with less than 25% camera host occupancy.

11. HOT TOPICS

Aging data – In 2018, field staff aged 15,168 adult deer at meat processors and an additional 9,673 through CWD surveillance sampling. There were 3% more adult deer aged in 2018 than 2017 (n = 14,760), and 2% fewer than 2016 (n = 15,418).

Deer Hunting Accidents – There were 6 non-fatal accidents during the 2018 deer season; five accidents occurred during the 9-day deer gun season. One accident occurred during the muzzleloader season.

12. RELEVANT LINKS

WDNR Deer Hunting Webpage: http://dnr.wi.gov/topic/hunt/deer.html

WDNR Deer Harvest Summary: http://dnr.wi.gov/topic/wildlifehabitat/harvest/deerharvest.html

WDNR Deer Hunting Regulations Booklet: http://dnr.wi.gov/files/PDF/pubs/wm/WM0431.pdf

WDNR Big Game Harvest Summary:

https://dnr.wi.gov/topic/hunt/documents/harvestsummary.pdf

WDNR Chronic Wasting Disease Webpage:

http://dnr.wi.gov/topic/wildlifehabitat/regulations.html

Common health issues for Wisconsin deer: https://dnr.wi.gov/topic/wildlifehabitat/disease.html

Deer Management Assistance Program (DMAP):

http://dnr.wi.gov/topic/wildlifehabitat/DMAP.html

County Deer Advisory Councils (CDACs): http://dnr.wi.gov/topic/hunt/cdac.html

WDNR Deer Research Webpage:

http://dnr.wi.gov/topic/wildlifehabitat/research/whitetaileddeer.html

Southwest Wisconsin CWD, Deer and Predator Study:

http://dnr.wi.gov/topic/research/projects/dpp/

Snapshot Wisconsin: http://dnr.wi.gov/topic/research/projects/snapshot/

WDNR Wildlife Survey Reports Webpage: http://dnr.wi.gov/topic/wildlifehabitat/reports.html

Appendix 6: MDWTSG State Wild Turkey Reports

ILLINOIS WILD TURKEY POPULATION STATUS REPORT – 2019

43rd Midwest Wild Turkey Working Group Meeting – August 12th-14th, 2019
Abe Martin Lodge at Brown County State Park – Nashville, IN

Luke Garver – Wild Turkey Project Manager
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
217-782-4377 / luke.garver@illinois.gov

POPULATION STATUS

The Archery Deer Hunter Survey (ADHS) offers an economical and statistically robust means of monitoring the relative abundance of several species of terrestrial mammals (Hamilton et al. 1989). Illinois first administered the ADHS in 1991 as part of a study funded by Federal Aid in Wildlife Restoration (Ver Steeg and Warner 1997). ADHS continues to provide the most reliable, and in some cases, the only information about trends in relative abundance of bobcat, coyote, red fox, and gray fox. It also provides a way to compare trends from ADHS to results of other methods used to monitor squirrel, white- tailed deer, and wild turkey. Data are collected by archery deer hunters who volunteer to keep standardized daily logs of their efforts (number of hours afield) and wildlife observations from 1 October through 14 November.

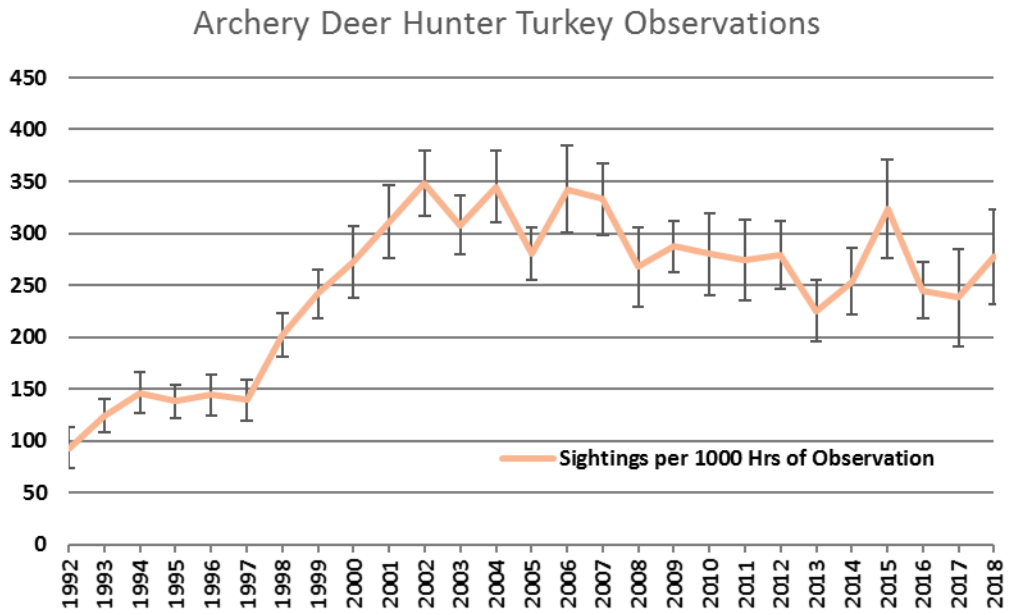


Fig. 1 – Turkey Sightings Reported in the IL Archery Deer Hunter Survey

REPRODUCTION

Data for the 2019 Wild Turkey Brood Survey is currently being collected and evaluated. Survey postcards are mailed to approximately 2700 participants annually, requesting reports of observations of turkeys during June, July, and August. Historical data collected includes total number of hens and poults counted during each observation, date, county, size of poults, and a general estimation of the number of turkeys compared to the previous year.

The Brood Index (BI) is calculated by dividing the total number of poults observed by the total number of hens observed. Solitary hens are included in the calculation. BI is aggregated statewide and by IDNR Administrative Region. In 2017 the BI was the lowest on record and marked the second consecutive year of low indices. However, results for the 2018 survey indicated much better production with a statewide ratio of 2.21.

For 2019, we redesigned the brood survey cards sent out to cooperators. The new format is more intuitive for survey participants and allows us to collect consistent with the methods used by multiple other states. Going forward we will report data for July and August for better comparison amongst other states and regions collaborating on brood data collection.

Preliminary data indicate very poor production this year. Likely the result of torrential rain and historic flooding across much of the state.

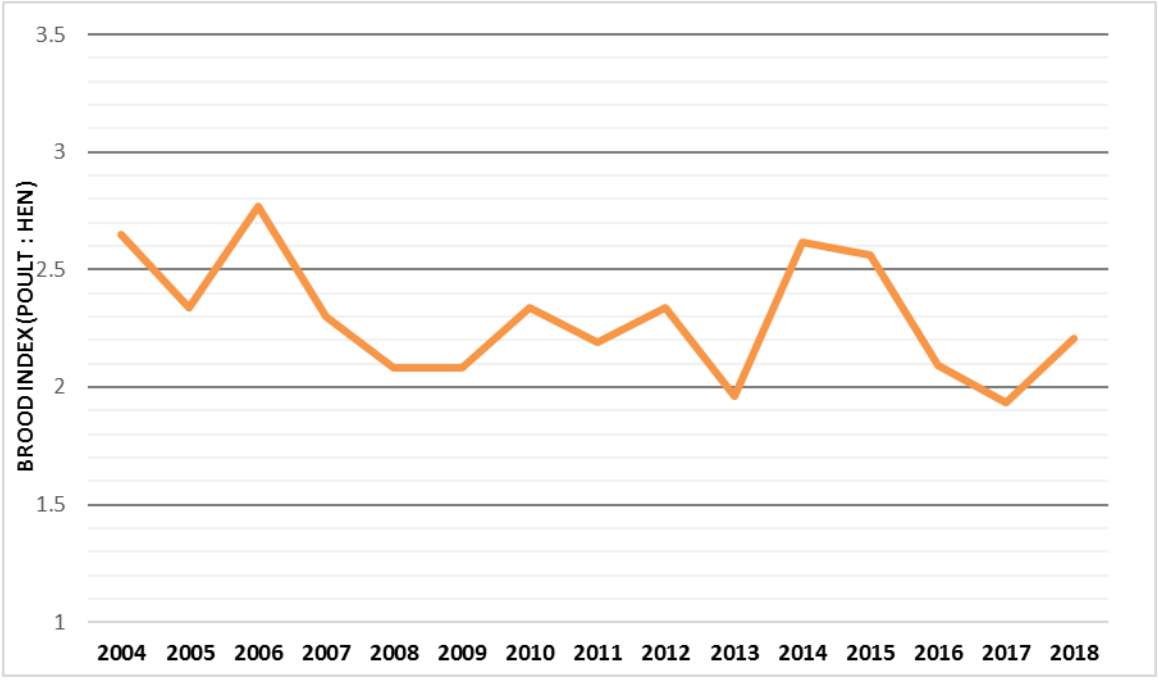


Fig. 2 – Statewide Brood Index (BI)

HARVEST

2019 Spring Turkey Season

Turkey hunters in Illinois harvested a preliminary statewide total of 15,189 wild turkeys during the 2019 Spring Turkey Season. This year's total compares with the statewide turkey harvest of 13,494 in 2018. The statewide preliminary total includes the Youth Turkey Season harvest of 1,364 birds, compared with the youth harvest of 1,143 turkeys in 2018. The statewide record total was set in 2006 when 16,569 turkeys were harvested.

Spring turkey hunting was open in 100 of Illinois' 102 counties. The 2019 season dates were April 8-May 9 in the South Zone and April 15-May 16 in the North Zone. The Youth Spring Turkey Season was March 30-31 and April 6-7, statewide.

Turkey hunters this spring took a preliminary total of 6,607 wild turkeys during all season segments in the South Zone, compared with 5,507 last year in the south. The North Zone preliminary harvest total this year was 8,582 wild turkeys, compared with 7,987 in northern counties in 2018.

The top five counties for spring wild turkey harvest in the South Zone in 2019 were Jefferson (480), Randolph (383), Marion (328), Union (310), and Pope (310). The top five North Zone counties for spring turkey harvest this year were Jo Daviess (541), Fulton (402), Pike (381), Hancock (344), and Adams (331).

Fig. 3 – Spring Season Counties and Zones

Table 1 – 5-year Trend in Permit Sales

Permit Type	2015	2016	2017	2018	2019
Landowner Permits	17,324	17,697	17,395	14,563	21,889
Special Hunt Area-specific Permits	2,367	2,463	2,466	2,381	2,374
County-specific Permits	45,147	43,806	43,977	48,568	49,032
Youth Permits	4,039	4,747	5,571	5,253	4,993
TOTAL	68,877	68,713	69,409	70,765	78,288

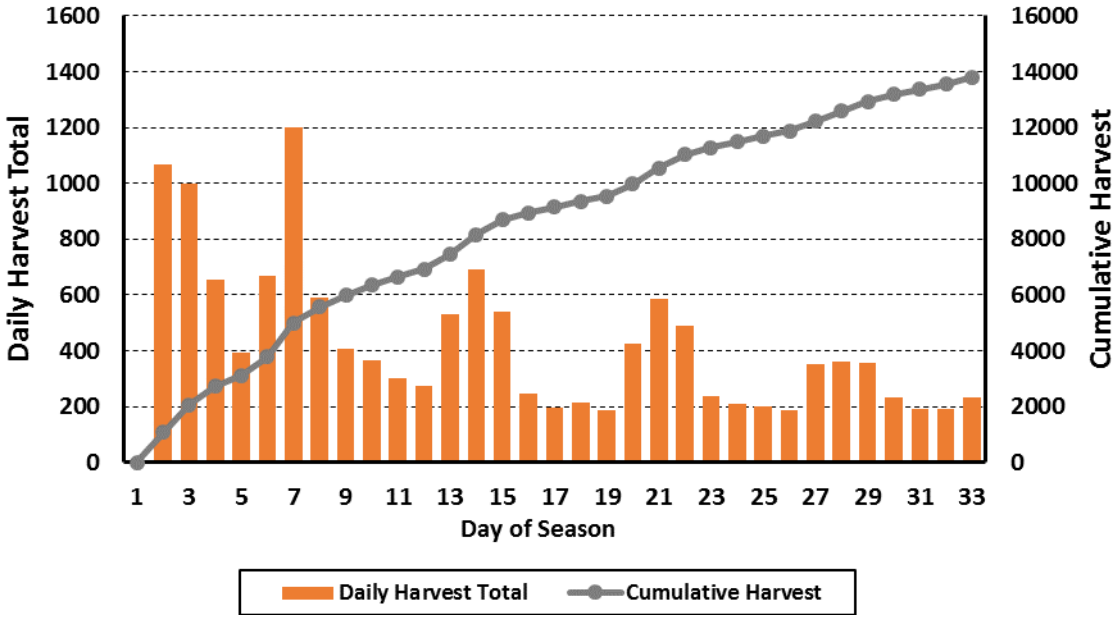


Fig. 4 – 2019 Spring Season Daily Total and Daily Cumulative Harvest

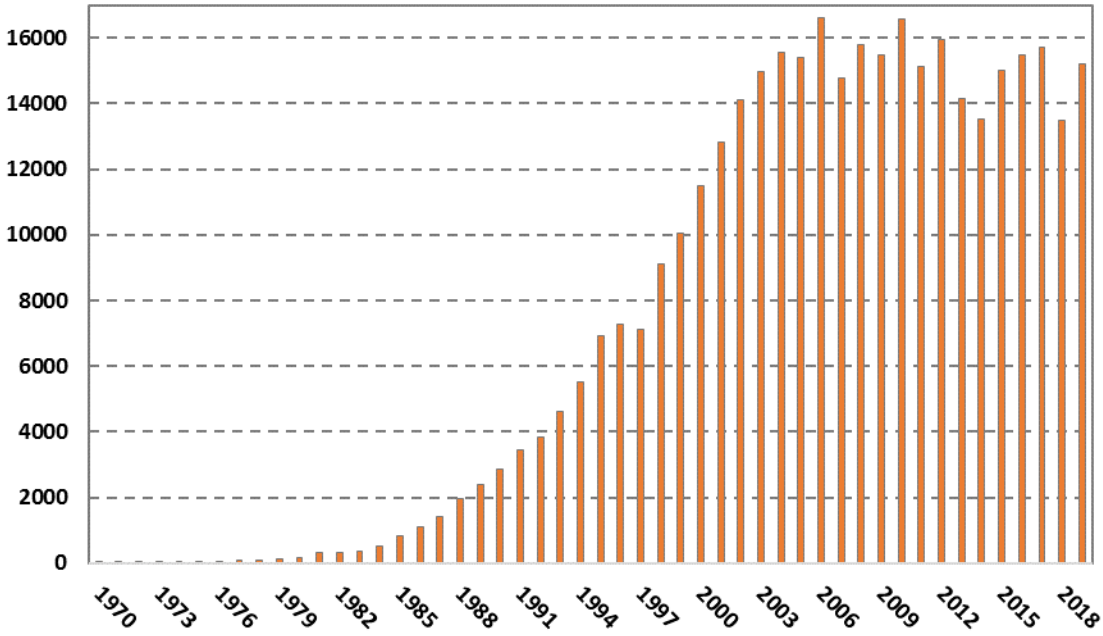


Fig. 5 – Historical Wild Turkey Spring Season Harvest

2018 Fall Turkey Season

Hunters in Illinois harvested a preliminary 1,058 wild turkeys during the 2018 Fall Turkey Season, combining both the Fall Gun and Archery Seasons. The 2018 total compares with the statewide turkey harvest of 1,038 in 2017.

The preliminary 2019 Fall Gun Season total harvest total was 320 compared with the previous year's total of 353. The 2018 season dates were October 20st – 28th and hunting was open in 56 of Illinois' 102 counties. The top counties for harvest this year were Jo Daviess (28), Wayne (21), Jefferson (20), Marion (19), Knox (13). Sex ratio of harvest was 60% females and 40% males.

The record harvest was set in 2005 when 1,218 birds were harvested. This year 1,444 regular Fall Gun Season permits were sold compared to 1,746 last year and 4,968 sold in 2007, the highest total on record.

The preliminary 2018 Fall Archery Season harvest total 738 compared with the previous year's total of 688. The season dates were October 1st, 2018 – January 20th, 2019 and ran concurrently with the Archery Deer Season. Archery turkey hunting is permitted in all 102 Illinois counties. The top five counties for the Fall Archery Season harvest were Jefferson (22), Cass (21), Macoupin (20), Marion (20), and Pike (19). Sex ratio of harvest was split evenly at 50% each male and female.

Fig. 6 – Fall Gun Season Counties

The record harvest was set in 2015 when 849 birds were harvested. This season 23,297 permits were sold compared to 24,943 for the 2017-2018 season.

HUNTING INCIDENTS

The first turkey hunting incident since 2014 was reported in 2018. A hunter reported being "peppered" by 2 or 3 pellets. The injuries were minor, and no medical treatment was sought or administered.

Table 2 – Illinois Hunting Incident Reports

Year	Firearm Related	Injury	Self-Inflicted	Season
2018	Yes	Minor	No	Spring
2014	Yes	Major	No	Spring
2013	Yes	Major	Yes	Spring
2013	Yes	Major	No	Spring
2012	Yes	Minor	No	Spring
2011	Yes	Major	No	Spring
2011	Yes	Minor	Yes	Spring
2011	Yes	Minor	No	Spring
2011	No	Major	Yes	Spring
2011	No	Major	Yes	Fall

REGULATION/LEGISLATION CHANGES

For the 2019 Spring Season we revised the shot size limits to allow shot smaller than #7.5. This was in response to requests to evaluate shot sizes from our NWTF state chapter and following review by both our Division of Wildlife Resources and Division of Law Enforcement.

The upcoming Fall Gun season will have permits available OTC following the two lotteries, similar to the system we put in place for the Spring Season last year.

RESEARCH

Wild Turkey Responses to Forest Management
PhD Student: Christine Parker; PI: Jeff Hoover
Illinois Natural History Survey
University of Illinois

Overview

Lack of disturbance has led to the degradation of Illinois forests and open woodlands. As with forests throughout the Midwest, these historically oak-dominated systems are transitioning into closed-canopy forests that are dominated by shade-tolerant species such as maples. Much of this transition has been attributed to the exclusion of both anthropogenic and natural fires from contemporary landscapes (Abrams and Nowacki 2008). Beyond encroachment of shade-tolerant native species, the understory layers of many Midwestern forests and open woodlands have become encroached with exotic species such as honeysuckle (Lonicera spp.) or buckthorn (Rhamnus spp.). These large-scale alterations of forest and woodland ecosystems have adversely

impacted numerous conservation-priority wildlife species that have historically depended on relatively open oak-dominated systems, including red-headed woodpeckers, whip-poor-wills, and wild turkeys.

Aside from being potential indicators of ecosystem health, wild turkeys are an economically important game species. Accordingly, considerable research attention has focused on understanding broad-scale habitat associations of turkeys and estimating demographic parameters. Forests or woodlands with mature trees are known to provide habitat that is preferred by turkeys for parts of their annual cycle (Miller et al. 1999), but turkeys have extensive and seasonally variable home ranges (e.g., <1 to 32 km2; Thogmartin (2001), Badyaev et al. (1996a)). The importance of different habitat components is likely seasonally dependent, with food availability and safety from predators being important year-round, but with quality nesting and brood-rearing habitat being important during spring and summer. Aspects of vegetation structure and composition, including understory density, are known to influence nest-site selection and reproductive success (Badyaev 1995, Badyaev et al. 1996b, Locke et al. 2013), but quantitative information on important habitat characteristics during other stages of the annual cycle is generally lacking. Beyond influencing habitat use, the structure and composition of vegetation may influence the frequency and distance of movements, quantities negatively associated with survival (Hubbard et al. 1999). However, despite the numerous links between vegetation structure and aspects of wild turkey habitat use and demography, information on turkey responses to management actions is generally lacking. One additional factor, black flies (Simulidae), may play a role in limiting wild turkey reproductive success, particularly in western Illinois. While black flies have been documented reducing breeding success in some bird species (Smith et al. 1998, Solheim et al. 2013, Franke et al. 2016), their effect on wild turkey populations is unknown.

To better understand the response of wild turkeys to forest management activities and black flies, the objectives of Segment 4 of the Wild Turkey Responses to Forest Management research project were to:

1) Use micro-GPS telemetry to examine the effects of forest management, habitat and landscape features, and black flies on wild turkey habitat use, survival and reproductive success, with an added emphasis on western Illinois sites;

2) Use micro-GPS telemetry, accelerometer data, and insect surveys during the breeding season to document potential effects of black flies on hen turkey incubation behavior, hen and nest mortality, and poult survival associated with up to 60 wild turkey hens (split among study areas);

3) Use these results to inform/modify stand- and landscape-level forest and open woodland management plans and actions to benefit turkey populations in Illinois.

EMERGING OR EVOLVING ISSUES

In coordination with the Illinois Natural History Survey at the University of Illinois, IDNR is surveying resident and non-resident Illinois turkey hunters for a Hunter Satisfaction Survey. A variety of topics will be presented to constituents. The goal will be to gather information regarding turkey hunter demographics, preferences, and opinions for or against alterations to Illinois' current season structure. Surveys

RELEVANT LINKS

Illinois Department of Natural Resources:
https://www.dnr.illinois.gov

Illinois Wild Turkey Hunting:
https://www.dnr.illinois.gov/hunting/Pages/TurkeyHunting.aspx

Wild Turkey Spring Season Annual Reports:
https://www.dnr.illinois.gov/conservation/wildlife/Pages/TurkeySummaryReports.aspx

INDIANA WILD TURKEY STATUS REPORT

43rd Midwest Deer & Wild Turkey Study Group Meeting
August 12-14, 2019,
Brown County State Park
Nashville, Indiana

Steven E. Backs, Wildlife Research Biologist
Division of Fish and Wildlife,
562 DNR Rd., Mitchell, IN 47446
TX: 812 849 4586 (ext 222); Fax 849-6013
Email: sbacks@dnr.in.gov

WILD TURKEY HARVESTS

Fall Season Results, 2018-19

The 14th modern day fall wild turkey hunting season in Indiana was held with statewide early and late archery only portions (October 1-16, 2018 and December 8-January 6, 2019; 46 days) and one combined shotgun and archery portion (12 days from October 17-28) in ten northern Indiana counties and 43 west-central and southern Indiana counties (Table 1). Hunters harvested 512 wild turkeys, 30 (+6%) more than the 482 birds harvested in 2017-18. An estimated 8,898 hunters participated in the 2018-19 fall turkey season with an estimated 6% hunter success. The combined shotgun and archery portion of the season accounted for 61% of the harvest. Archery hunters accounted for 65% of the total harvest with lifetime permit holders taking the highest proportion (46%) of the birds (Table 2).

Adult birds made up 81% of the harvest with a juvenile to adult ratio of 1:2.5 (Table 3). Adult females composed the largest proportion (38%) of the harvest, followed by adult males (33%). The proportion of adults in the fall harvest is relatively high and likely reflects a combination of low summer brood success, hunter selection for larger adult birds, and age determination errors. Ninety-three percent of the harvest occurred on private land with 4% and 2%, respectively, on Federal and State lands. No counties had harvests ≥ 20 birds compared to five in 2016-17, but 16 counties harvested ≥ 10 birds. Compared to 2017-18 fall harvest, 44 counties had increased harvests, 32 decreased, 16 indicated no change, and 79 counties harvested ≥ one bird.

Despite the inclusion of 3 more counties (Elkhart, Kosciusko, and Noble) into the combined archery and firearms portion of the 2018-19 fall season, there was only a 6% increase in the harvest and the 30 bird increase came from across the fall hunting range and the entire season (Table 4 and Figures 1 and 2). Hunter interest and success in fall turkey hunting is often influenced by the relative level of the preceding summer's brood production which has been declining in Indiana, especially and along river drainages in southern and west-central Indiana since 2005, coinciding with the inception of fall turkey hunting in Indiana. Overall, interest in fall turkey hunting in Indiana continues to remain relatively low compared to the spring season.

Table 1. Fall wild turkey harvest by portion of the season - Indiana, 2018-19.

	Portion of the fall wild turkey season						
	Early archery [a]		Combined shotgun & archery [b]		Late archery [c]		Total
	No.	%	No.	%	No.	%	No.
Turkeys Harvested	132	26%	313	61%	67	13%	512

[a] Early archery only portion of fall turkey season. Dates 1-16 October 2018 (16 days); fall archery hunting open statewide (92 counties).

[b] Combined shotgun and archery portion: Dates: 17 October - 28 October (12 days); 46 counties in south and ten counties in the north.

[c] Late archery only portion 8 December 2018 - 6 January 2019 (30 days); statewide. Total days of archery opportunity for fall season = 46.

Table 2. Fall wild turkey harvest by permit type - Indiana, 2018-19.

Type of Permit	Harvest by Permit	% of Harvest	No. Licenses Sold by Season End Date[a]	Differences in Licenses Sold from Prior Year (%)
Resident Fall Turkey	185	36%	3,024	-124 (-4%)
Non-Resident Fall Turkey	6	1%	43	+15 (+54%)
Comprehensive Lifetime	237	46%	42,046 [b]	---- [b]
Comprehensive Youth	31	6%	28,512	-1,720 (-19%)
Landowner/active military	53	10%	Exempt	Exempt
Harvest Subtotal	512			

[a] Apprentices licenses included in respective license type totals.

[b] Comprehensive lifetime hunt and hunt & fish licenses as of 2018. Value represents the number of lifetime license holders who could potentially hunt.

Table 3. Age and sex structure of the fall wild turkey harvest - Indiana, 2018-19.

	Juvenile [a]		Adult [b]		Total	
	No.	%	No.	%	No.	%
Male	53	10.4%	171	33.4%	224	43.8%
Female	93	18.2%	195	38.1%	288	56.3%
Total	146	28.5%	366	71.5%	512	
					Juvenile : Adult	1 : 2.5

[a] Juvenile were birds estimated to be < 6 months old.

[b] Adults were birds estimated to be ≥ 14 months old.

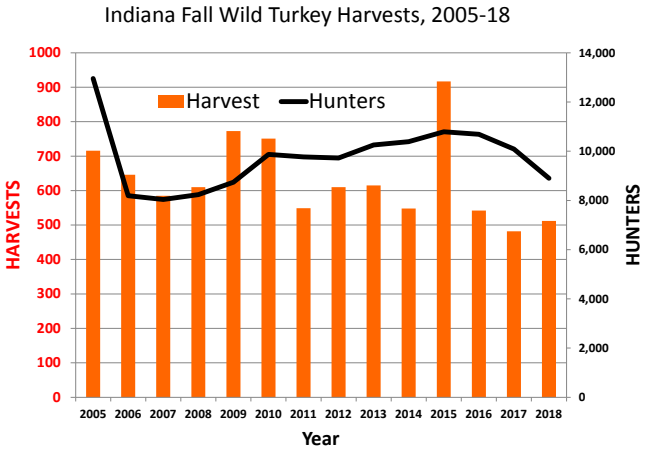
Table 4. Indiana Fall Wild Turkey Season Summaries, 2009-2018.

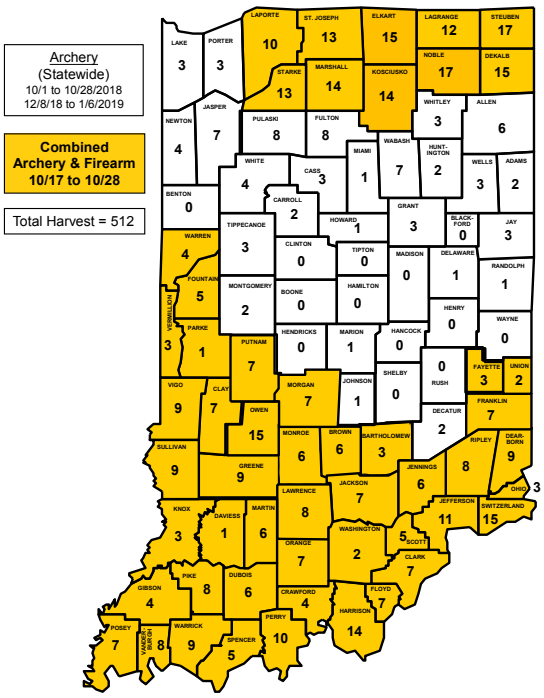
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Annual Harvest	773	751	549	610	615	548	917	542	482	512
Counties Open to Archery Hunting Only	74	92	92	92	92	92	92	92	92	92
Days of Archery Only	20	61	65	52	45	56	50	50	47	46
Counties Open to Shotgun and Archery	34	43S/7N	43S/7N	43S/7N	43S/7N	43S/7N	43S/7N	43S/7N	43S/7N	43S/10N
Days of Combined Shotgun and Archery	5	12S/5N	12S/5N	12S/5N	12S/5N	12S/5N	12	12	12	12
Statewide Fall/Spring Ratio in %	6%	6%	5%	5%	5%	5%	8%	4%	4%	4
County F:S Ratios (range of values)*	0-17%	0-12%	0-25%	0-25%	0-25%	0-63%	0-50%	0-20%	0-25%	0-43%
No. Resident Fall Licenses Sold	2,054	2,591	2,476	2,411	2,824	2,890	3,488	3,572	3,148	3,148
Estimate of Fall Turkey Hunters**	8,742	9,869	9,767	9,725	10,256	10,390	10,789	10,688	10,088	8,898
Estimate of Fall Hunting Success	9%	8%	6%	6%	6%	5%	8%	5%	5%	6%

* High side of range related to counties with low spring harvests e.g., 1 fall/4 spring

** Estimate based on rough extrapulation of prior particiaption rates of lifetime license holders, youth hunters resident and nonresidents permitees, and an estimated exempt landowners/active military.

Figures 1 and 2

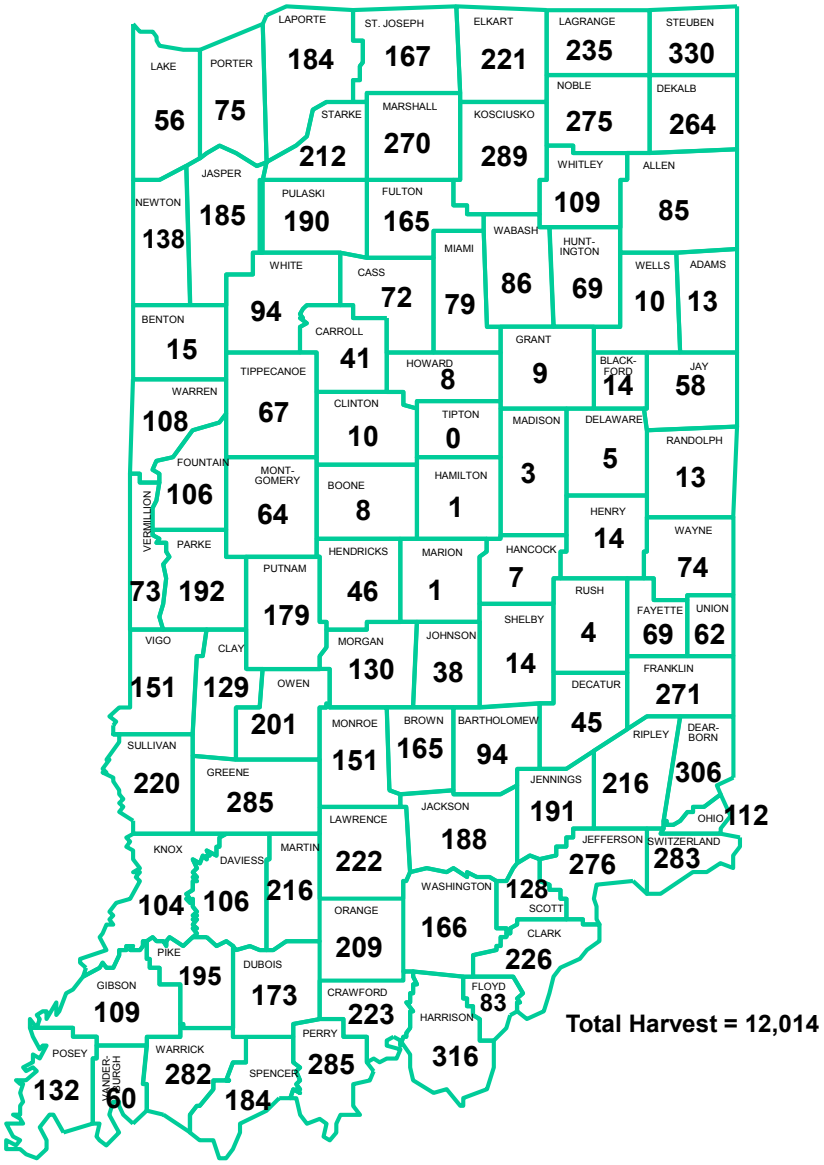




Spring Season Results - 2019

Hunters harvested 12,014 wild turkeys during the 50th spring wild turkey season as reported to the "Check-IN-Game" harvest reporting system (99% on-line and 1% tele-check) with at least one wild turkey harvested in 91 of 92 counties. The 2019 harvest was a 6% increase (708) over the 2018 harvest of 11,306. There were 24 counties with harvests ≥ 200 birds compared to 22 in 2018. Overall, 61 counties showed increased harvests, 21 decreased, and 10 experienced no change in turkeys harvested.

Distribution of 2019 Spring Turkey Harvest



A total of 988 (8% of harvest) was taken during the youth-only weekend (4/20 & 4/21/2019) with 59% of the regular season harvest (11,026 birds) occurring during the first five days of the 19-day season and 39% occurring on the three weekends. Approximately 65% of the harvest occurred by 10 am, 75% by noon, 12% from noon to 5 pm, and 13% occurring from 5 pm to sunset. Resident spring turkey licensees harvested 47% of the birds, followed by Lifetime (30%), Youth (12%), license exempt Landowners/Military (7%), and Non-Resident spring turkey licensees (4%). The harvest primarily occurred on private land (92%), followed by State lands (5%), Federal lands (3%), and Military (0.7%).

Male gobblers made up 98.2% (12,014) of the harvest with 1.8% (218) bearded hens. The age structure of the harvest was 18% juvenile gobblers (1 year old birds; "jakes"), 39% 2-year-olds, and 43% 3-year olds (Table 5; Figure 3). The 18% juvenile proportion was a slight improvement of the record low of 13% in 2017 and 15% in 2018. The age structure reflected the variation in brood production from 2014-2018 and the greater vulnerability of adult gobblers to harvest. Summer brood production in 2016 was extremely poor in many regions of the state, especially in the south with a slight improvements in 2017 and 2018. The shift toward older gobbler age classes in

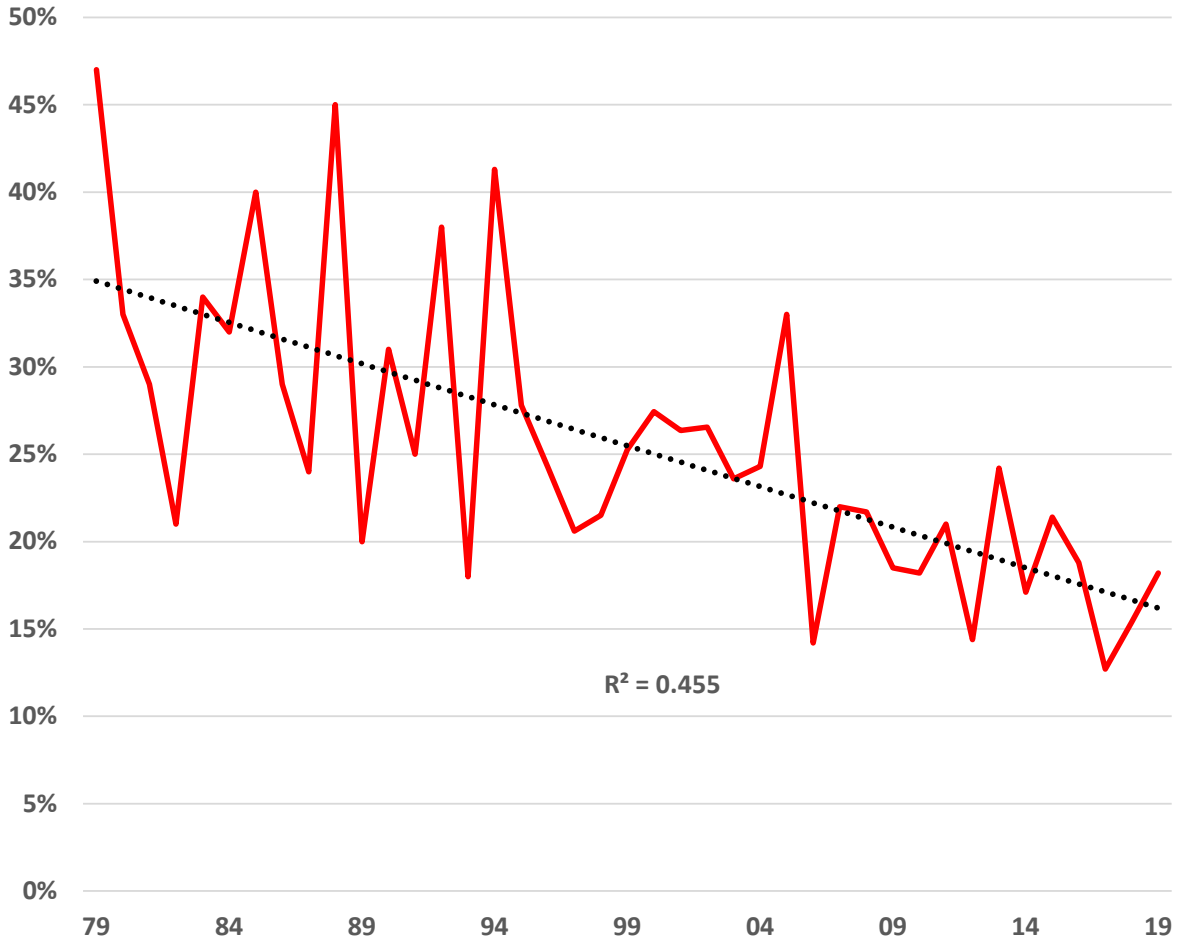
Indiana's spring harvests began about 10-12 years ago, when summer brood production levels dropped off from the higher mean levels during the wild turkey restoration era (1956-2004 in Indiana) to a "new normal" post restoration characterized by reduced brood productivity and declining or stabilized spring harvests. The mean proportion of juveniles in Indiana's spring harvest from 1988-2005 was 28% and has since declined substantially to a mean of 18% ($F_{1,30} = 19.0$; $P = 0.0001$).

Table 5. Age structure of Indiana's spring gobbler harvests, 1988-2019.

	Reported	Age Class Percentages and Mean Weights (lbs) *					
Year	Harvest	1Yr	Wt.	2Yr	Wt	3+Yr	Wt
1988	905	45%	15.4	39%	20.7	16%	21.8
1989	1,359	20%	15.5	63%	20.7	17%	22.2
1990	1,505	31%	15.2	41%	21.0	28%	21.9
1991	2,318	25%	15.5	53%	21.1	22%	22.2
1992	2,531	38%	15.1	43%	20.8	19%	22.2
1993	3,500	18%	15.9	60%	20.9	22%	22.4
1994	3,741	41%	15.2	37%	21.2	22%	22.4
1995	4,706	28%	15.6	55%	20.6	18%	22.1
1996	4,859	24%	15.6	53%	21.6	23%	22.7
1997	5,790	21%	15.7	56%	21.5	24%	22.7
1998	6,384	22%	15.5	51%	21.1	28%	22.5
1999	6,548	25%	15.5	49%	21.1	26%	22.6
2000	7,822	27%	15.2	44%	20.7	28%	21.9
2001	9,975	26%	15.7	50%	20.1	24%	22.1
2002	10,575	27%	15.7	47%	21.3	27%	22.5
2003	10,366	24%	15.3	49%	21.3	28%	22.4
2004	10,765	24%	15.8	49%	21.4	27%	22.8
2005	11,159	33%	14.9	44%	20.9	23%	22.3
2006	13,193	14%	14.5	67%	20.7	19%	22.1
2007	11,163	22%	15.5	42%	21.5	26%	22.6
2008	12,204	22%	16.0	52%	21.7	26%	22.9
2009	12,993	19%	16.0	51%	21.7	30%	22.9
2010	13,742	18%	15.6	54%	21.4	28%	22.6
2011	11,669	21%	15.6	48%	21.3	31%	22.4
2012	12,655	14%	15.9	52%	21.1	34%	22.3
2013	11,374	24%	16.1	38%	21.8	38%	23.2
2014	10,872	17%	15.4	53%	21.7	30%	24.4
2015	11,853	21%	16.6	46%	22.0	33%	23.4
2016	12,081	19%	---	42%	---	39%	---
2017	13,069	13%	---	39%	---	48%	---
2018	11,306	15%	---	38%	---	47%	---
Previous 10 Year Means	**12,239**	**18%**		**46%**		**36%**	
2019	12,014	18%	---	39%	---	43%	---

* Starting in 2016, age determination based primarily on spur length with secondary verification, if needed, using beard length class. Weights collected at check stations 1988-2015 were discontinued with implementation of web/telephone based "Check-IN-Game" system in 2016. Age class percentages based on harvested male turkeys only; legally harvested female turkeys generally make up <2% (range 1.3 to 2.0%) of harvest.

Figure 3. Proportion of Subadult Wild Turkeys in Indian Spring Harvests, 1979-2019



All regions had proportional increases in harvests ranging from 1% in the West-central to 25% in East-central Indiana (see bottom of Table 6). The overall statewide harvest increased 6% over 2018. As noted, the proportion of juveniles in the statewide harvest increased slightly to 18% statewide and is still considered below normal, reflecting the cumulative impacts on 12-14 years of consecutive years of poor production in some regions due to above normal precipitation during the early brood period, generally from Memorial Day through the 4th of July. The lower proportion of juveniles in the recent spring harvests raises some concern for future hunter success and satisfaction, although there was some improvement in 2019, albeit still below the mean prior to 2005. The lower production is evident in the lower proportion of 2-year old birds in subsequent harvests; the 39% 2-yr-olds in 2019 is lower proportion than the previous 10-year mean of 48% ($P \geq 0.05$).

Two-year-old gobblers are the most active gobbler cohort and generally the most vulnerable to harvest, so the change in the age structure will likely have a negative impact on hunter success and satisfaction subsequent years, unless turkey production improves. More importantly the lower proportion of juveniles in spring harvest age structure also suggests a comparable decrease in the proportion of the more productive adult hen cohorts in future years that could influence production and statewide populations levels for several years, even if weather and habitat conditions are conducive to poult survival.

Table 6. Regional spring turkey harvest parameters and age structure in Indiana, 2008-2019.

	Region (% Forest Cover)						
	N (11%)	**EC (6%)**	**WC (23%)**	**SC (47%)**	**SE (32%)**	**SW (19%)**	**State (19%)**
2007							
Harvest	1,758	51	2,104	2,919	2,831	1,500	11,163
% of Total Harvest	16%	0.5%	19%	26%	25%	13%	---
Juvenile %	32%	38%	23%	18%	18%	22%	22%
Hunt Range (SqMi)*	9,625	5,793	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.18	0.01	0.43	0.58	0.76	0.44	0.34
2008							
Harvest	2,166	60	2,233	3,172	3,057	1,516	12,204
% of Total Harvest	18%	0.5%	18%	26%	25%	12%	---
Juvenile %	34%	25%	22%	19%	18%	18%	22%
Hunt Range (SqMi)	9,625	5,793	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.23	0.01	0.46	0.64	0.83	0.45	0.37
2009							
Harvest	2,561	61	2,072	3,314	3,233	1,752	12,993
% of Total Harvest	20%	0.5%	16%	26%	25%	14%	---
Juvenile %	27%	22%	16%	25%	25%	14%	19%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.27	0.01	0.43	0.66	0.87	0.52	0.40
2010							
Harvest	3,088	94	2,021	3,406	3,340	1,793	13,742
% of Total Harvest	23%	0.7%	15%	25%	24%	13%	---
Juvenile %	25%	28%	20%	15%	14%	17%	18%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.32	0.02	0.42	0.68	0.90	0.53	0.42
2011							
Harvest	2,589	77	1,739	2,902	2,800	1,562	11,669
% of Total Harvest	22%	0.7%	15%	25%	24%	13%	---
Juvenile %	25%	27%	24%	20%	19%	16%	21%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.27	0.01	0.36	0.58	0.76	0.46	0.36
2012							
Harvest	3,007	110	2,008	3,069	2,868	1,593	12,655
% of Total Harvest	24%	0.9%	16%	24%	23%	13%	---
Juvenile %	22%	20%	15%	11%	11%	12%	14%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.31	0.02	0.41	0.61	0.77	0.47	0.39
2013							
Harvest	2,834	106	1,742	2,669	2,592	1,431	11,374
% of Total Harvest	25%	1%	15%	24%	23%	13%	---
Juvenile %	25%	31%	29%	22%	22%	24%	24%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.29	0.02	0.36	0.53	0.70	0.42	0.35
2014							
Harvest	2,733	142	1,658	2,510	2,517	1,312	10,872
% of Total Harvest	25%	1%	15%	23%	23%	12%	---
Juvenile %	22%	28%	18%	14%	15%	15%	17%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.28	0.02	0.34	0.50	0.68	0.39	0.33
2015							
Harvest	3,297	167	1,742	2,712	2,485	1,450	11,853
% of Total Harvest	28%	1%	15%	23%	21%	12%	---
Juvenile %	28%	24%	24%	18%	18%	17%	21%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.34	0.03	0.36	0.54	0.67	0.43	0.36
2016							
Harvest	3,727	215	1,855	2,574	2,390	1,320	12,081
% of Total Harvest	31%	2%	15%	21%	20%	11%	---
Juvenile %	20%	22%	18%	18%	18%	19%	19%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.39	0.03	0.38	0.52	0.65	0.39	0.37
2017							
Harvest	4,068	216	1,974	2,901	2,486	1,424	13,069
% of Total Harvest	31%	2%	15%	22%	19%	11%	---
Juvenile %	17%	21%	12%	8%	12%	10%	13%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.42	0.03	0.41	0.58	0.67	0.42	0.40
2018							
Harvest	3,825	191	1,756	2,162	2,142	1,230	11,306
% of Total Harvest	34%	2%	16%	19%	19%	11%	---
Juvenile %	15%	20%	17%	15%	16%	15%	15%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.40	0.03	0.36	0.43	0.58	0.36	0.35
Previous 10-Year (2009-18) Means							
Harvest	3,173	138	1,857	2,822	2,685	1,487	12,161
% of Total Harvest	26%	1%	15%	23%	22%	12%	---
Juvenile %	22%	24%	19%	17%	17%	16%	18%
Hunt Range (SqMi)	9,625	6,178	4,854	4,994	3,705	3,380	32,738
Harvest/SqMI	0.33	0.02	0.38	0.57	0.72	0.44	0.37
2019							
Harvest	**3,911**	**238**	**1,775**	**2,486**	**2,259**	**1,345**	**12,014**
% of Total Harvest	**33%**	**2%**	**15%**	**21%**	**19%**	**11%**	**---**
Juvenile %	**18%**	**27%**	**22%**	**15%**	**16%**	**16%**	**18%**
Hunt Range (SqMi)	**9,625**	**6,178**	**4,854**	**4,994**	**3,705**	**3,380**	**32,738**
Harvest/SqMI	**0.41**	**0.04**	**0.37**	**0.50**	**0.61**	**0.40**	**0.37**
2018 to 2019 Differences							
Change in Harvest	86	47	19	324	117	115	708
Percent change in Harvest	2%	25%	1%	15%	5%	9%	6%

* Square miles of open hunting range; does not include closed areas (e.g., Henry County in 2007-2008) or large unhuntable parks and municipal areas.

The North region (the largest region) accounted for 33% of the harvest with the Southeast region having the highest harvest/mi^2 (0.61/mi^2). The North region harvests continue to grow while the southern regions, with a generally older populations and higher proportions of forest cover, have leveled off at lower harvest levels but still have higher harvest levels per mi^2 of hunting range (Figure 5 and 6).

Figure 5. 2019 Spring wild turkey harvest and age structure by region.

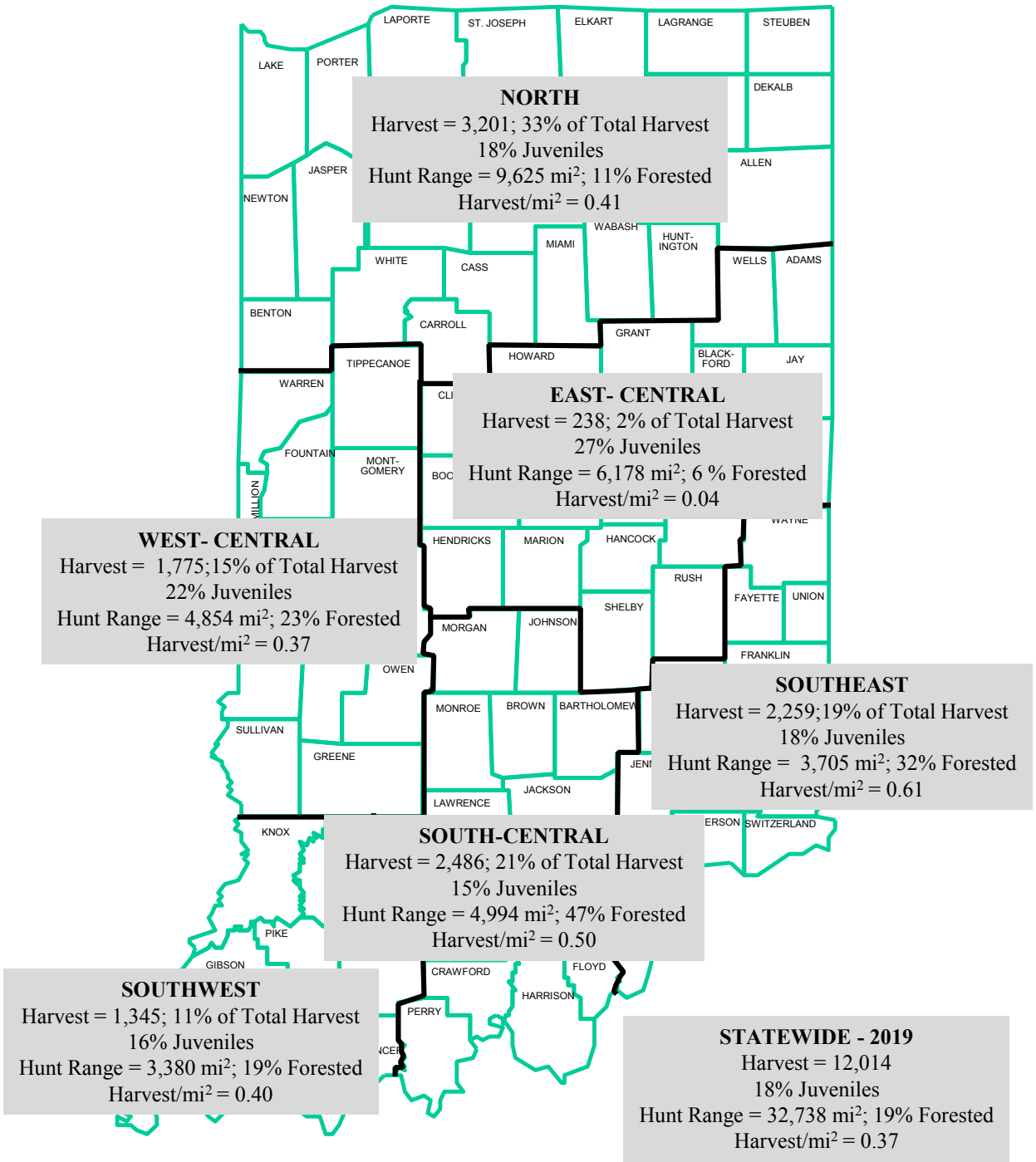
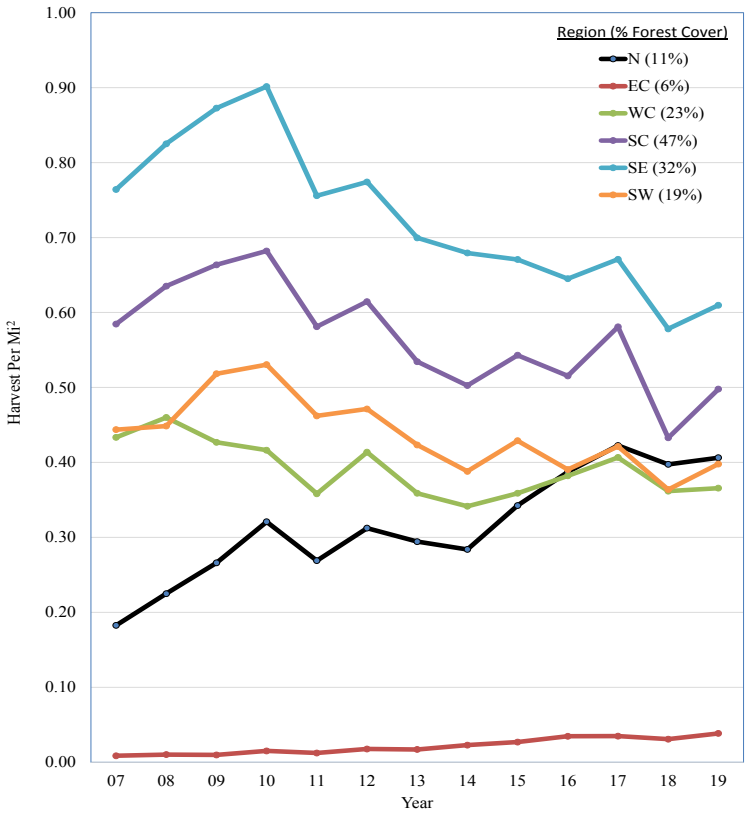


Figure 6. Indiana Regional Spring Wild Turkey Harvests Per Square Mile, 2007 to 2019



Annual statewide spring harvests have generally stabilized since the peak harvest in 2010 (13,742) with totals during the previous decade generally ranging from 11,000 to 12,000 birds and 55,000 to 61,000 hunters in the field experiencing success rates from 18 to 22% (Figure 7). The 2019 spring harvest appeared to be another up and down oscillation around a new normal mean level following restoration that is lower than previously observed during the accelerated population growth of the restoration years with the 5-year mean trend in harvests and hunter success leveling off around 12,000 birds and 20% respectfully (Figure 8). Relative hunter success and harvest levels, however, may not accurately reflect trends in wild turkey abundance unless hunter effort is taken into account.

Figure 7. Indiana Spring Turkey Seasons

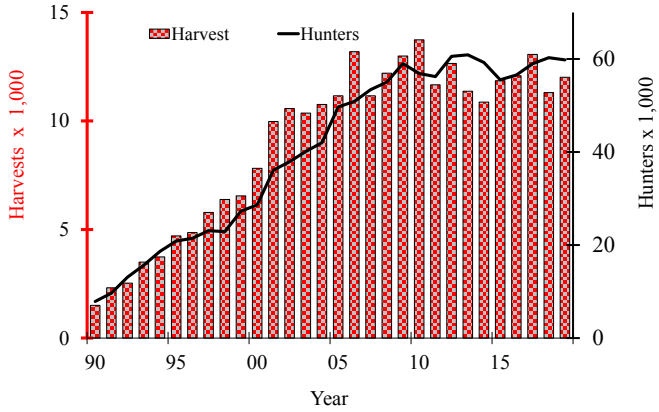
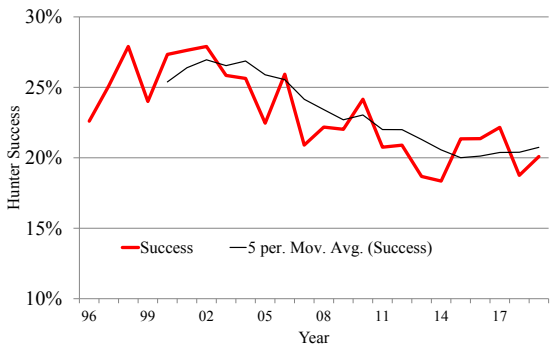


Figure 8. Estimated Indiana Spring Turkey Hunter Success



Reasons for the 6% increase in the 2019 spring harvest over the 2018 harvest, is likely the slight uptick in summer production since 2016 even though the lower long term production trends are overall still below the production

levels observed earlier in the restoration era. Fortunately, Indiana spring harvests appear to have leveled off or stabilized around 12,000 birds over the past 5 years. Whether this is a sustainable harvest level, remains to be seen. The general decline in production that has occurred the last 10-14 years in Indiana has also occurred throughout the eastern United States as wild turkey populations stabilized during the post-restoration era with subsequent declines in harvests to levels below peak years. The greatest declines in Indiana wild turkey populations have occurred in the southern half of the state where the restoration work was generally completed earlier than the northern half of the state. The apparent increased sensitivity or influence of annual summer production in recent years on subsequent spring turkey harvests creates a level of uncertainty about sustainable harvest levels and management strategies in the future. While the higher proportion of adult gobblers in recent spring harvests is likely welcomed by hunters, the continued low proportion of juveniles in the spring harvests raises concerns about future harvest trends and hunter success unless there is a significant upswing in production for several consecutive years.

LICENSE AND SEASON INFORMATION

Complete rules, regulations and licensing information: http://www.in.gov/dnr/fishwild/2344.htm

Fall Season (2019)

Dates: Early Archery Oct. 1-27; Combined Shotgun/Archery Oct. 16-27; Late Archery Dec. 7 – Jan. 5, 2020.
Hunting Range: All counties open to archery hunting, 50 counties open to firearm (40S/10N).
Bag Limit: 1 bird of either sex no matter what portion of the fall season.
Licenses: Res. $25 + $6.75 game bird stamp; Non-Res. $120 + $6.75 game bird stamp
Res. Comprehensive Youth $7; Non-Res. Youth $25.
Exempt: landowners hunting on own land (no acreage requirement)/active military on leave.
Shooting Hours: “all-day” ½ hour before sunrise to sunset.
Various types of apprentice license options available.

Spring (2020)

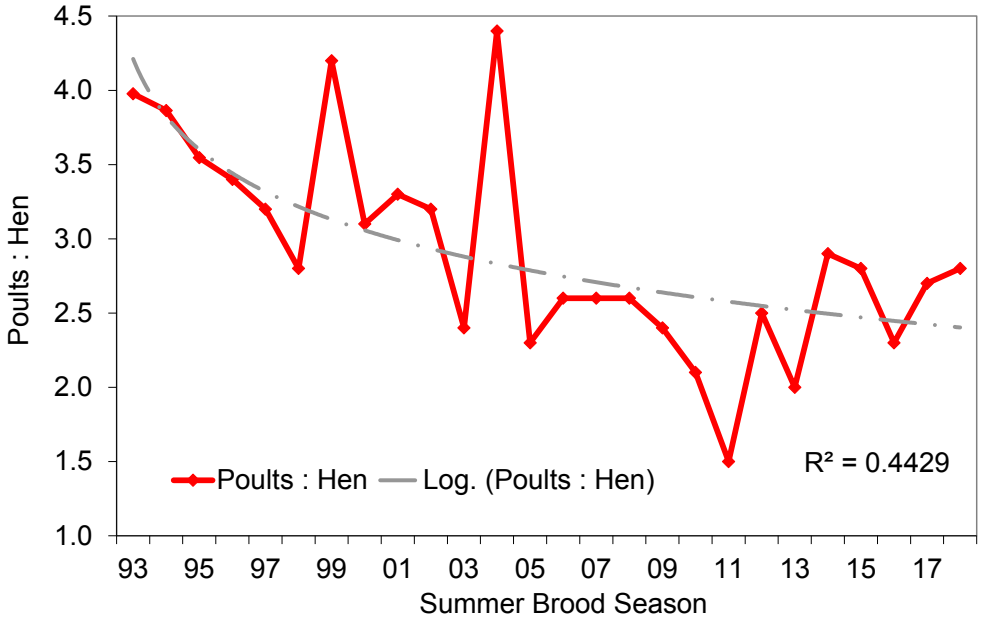
Regular Season April 22 – May 10, 2020; Youth Weekend April 18-19, 2020.
Hunting Range: Statewide
Bag Limit: one bearded or male turkey.
License Fees: Separate licenses required for spring and fall seasons except for Comprehensive Youth. Same prices as fall season above.
Shooting Hours: “all-day” ½ hour prior to sunrise to sunset except DFW properties close at noon in spring.

PROPULATION TRENDS

Summer Brood Survey – 2018

In 2016, a new web-based brood reporting system was initiated using a "caspio ™" on-line data entry software platform (https://www.caspio.com/). This system allowed both natural resource agency personnel and interested members of the public to submit observations of wild turkey hens and poults during the July-August brood survey period. An effort to increase participation of obtaining turkey brood reports across the state was made 2018. Data collection was restricted to July and August, observation reports were limited to those of adult hens (with and without broods), poults, and county where observed. Inclusion of illustrative pictures of wild turkey broods with reporting instructions will hopefully improve brood reporting accuracy.

In the third year, 2018, there was a 30% decrease in the number of observations and 56% decrease in the number of participants, lower than the initial 2016 web-based survey. The 2018 statewide mean wild turkey production index was 2.8 poults:hen (*PI* = total poults:total adult hens), with 75% of the hens observed with at least one poult. The 2018 *PI* was 4% higher than the 2.7 *PI* in 2017, but not different from 2.5 *PI* of the previous five years (2013-2017; $\alpha = 0.05$). Since 1993, the average PI has progressively declined, reaching a lower level indicative of a post-restoration, stabilizing turkey population (see Figure below). Annual fluctuations in the PI around the long term average are expected, indicating a relatively stabilized population that has settled to a new level, reflective of suitable habitat and climatic conditions across the landscape. Climatically, the spring/early summer of 2018 had above normal precipitation in southern Indiana, marking the 13th consecutive year of above normal precipitation in this region during the early brood rearing periods of June-July. Regional inferences from the 2018 summer production survey are still limited due to the scarcity and the uneven distribution of brood observations across the state.

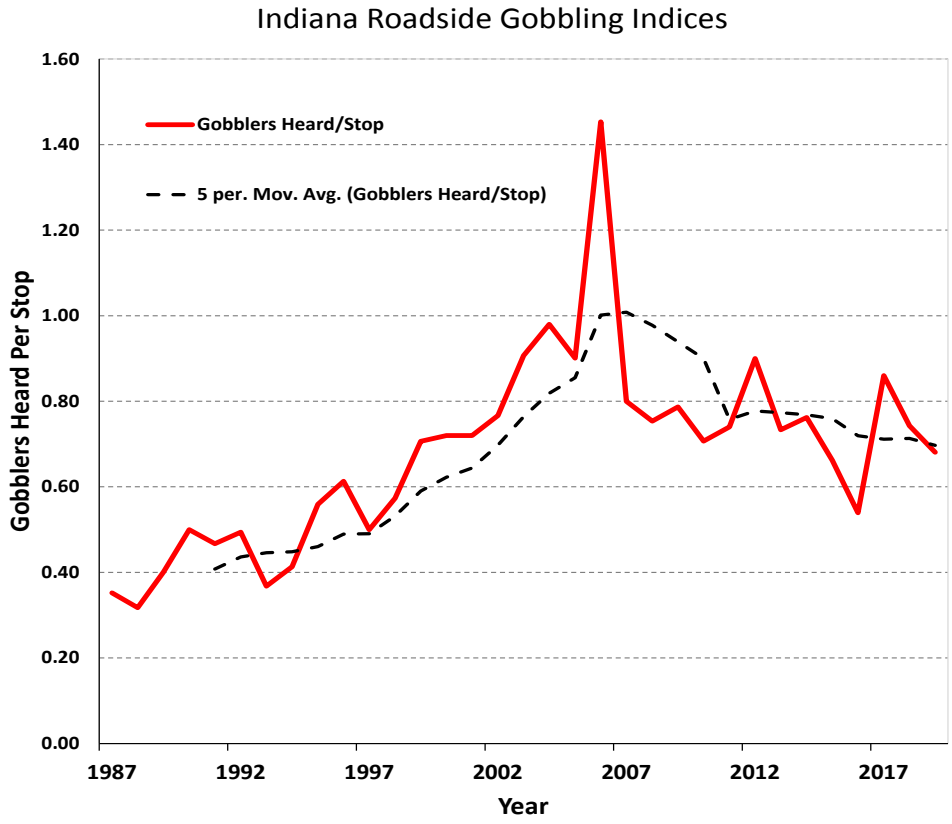


Roadside Gobbling Counts- 2019

Roadside gobbler counts are conducted annually from late March to April to determine relative abundance of wild turkey populations in the areas surveyed. The number of male wild turkeys heard gobbling along 14 roadside routes from 2-20 April 2019 was 0.68 gobblers per stop (*GI*), 11% less than the 0.74 heard in 2018. The 5-year moving average showed a general increase from 1987 to 2006, followed by a general decrease since the 2006 peak. The

2019 statewide gobbling index of 0.68 was within the confidence interval (*CI* = 0.56-0.86; *P* < 0.05) of the 5-year mean *GI* of 0.71.

Although roadside gobbling counts are not accurate indicators of annual trends in wild turkey populations, they do provide long-term (i.e., ≥5 years) trends and information to compare regional areas relative to one other. Local weather conditions during the survey period can contribute to the annual variability of survey results. Annual variations may also reflect the proportion of vocal 2-year-old gobblers in the population rather than actual population trends in the immediate area. The substantial increase in the 2006 gobbling index is a prime example of where the record high summer brood production in 2004 became quite evident with a large cohort of vocal 2-yr-old gobblers (see Figure below). The long-term trend, based on a 5-year moving average, shows a general increase from 1987 to 2006, followed by a general decrease, likely reflecting a similar general long term downswing in the summer brood production. The 2019 gobbling index of 0.68 was within the confidence interval (*CI* = 0.56-0.86; *P* < 0.05) of the 5-year mean *GI* of 0.71.



Regulation Changes

Federal Arms and Ammunition Company submitted a formal petition June, 2018 to the Indiana Natural Resource Commission to allow #8 and #9 size shots that meet their product's weight specifications of 15grams/cubic centimeter or greater and allow the use of 28 and 410 gage shotguns, all currently not legal under Indiana regulations. The petition was placed into the Division of Fish and Wildlife's normal 2-year regulation process "Got-IN-Put" that started in the fall 2018 and involves public input and comment. In the interim, we are revisiting the recommendations of the National Wild Turkey Hunter Safety Task Force of the 1990's and related materials as it relates to potential wild turkey crippling loss and the potential severity of injuries to humans in accidental or mistaken for game shootings. This re-examination will likely include shots of various compositions and how they relate to the intent of current shot size regulations. The Indiana Natural Resources Commission is expected to include the entire wildlife rule package at the September or November, 2019 meetings.

Crop or Nuisance Issues

Crop depredation complaints in row crops continue to diminish each year. Reports of "perceived crop damage" complaints by wild turkeys are occasionally received by district biologists during deer or goose damage investigations. Nuisance complaints are more common than crop complaints on a year to year basis; most nuisance complaints involve "backyard" situations and wildlife feeding. General recommendations are to remove food sources, apply abatement techniques, and/or allow fall hunting. Nuisance take permits for taking nuisance wild turkeys are only issued if the situation involves a "human health and safety issue" and if prescribed abatement techniques have failed.

Disease Issues

No notable disease issues related to wild turkeys to report. One issue being examined is the relatively recent occurrence of "buffalo gnats" that are suspected of being a potential mortality factor with young wild turkey poults. The gnats, actually an unidentified species of Blackflies (Genus *Simulium*), have become a problematic issue with the public, backyard poultry producers, and turkey hunters, especially along the riverine corridors or regions of the state subject to frequent flooding during the brood period. https://extension.entm.purdue.edu/publications/E-251.pdf Blackflies have been implicated in the mortality of Barn Owl owlets, cranes (sandhill and whooping), and bluebirds in Indiana and elsewhere.

Research

Summation of 50 years of Spring Harvests as it relates to the restoration history and major land cover components; abstract submitted and accepted to produce publication for 12th National Wild Turkey Symposium in June, 2021. Several other companion manuscripts planned related to Indiana wild turkey restoration and population census techniques.

Relevant Links

Complete results of turkey population and harvest surveys found at: http://www.in.gov/dnr/fishwild/3352.htm

IOWA WILD TURKEY POPULATION STATUS REPORT – 2019

43th Midwest Wild Turkey Working Group Meeting – August 12-14, 2019
Brown County State Park, Nashville, Indiana

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POPULATION STATUS

Iowa continues to have robust turkey populations in areas with good turkey habitat. Being the transition from Eastern deciduous forest to tall grass prairie means Iowa's turkeys are not evenly distributed across the state. A large portion of Iowa's woodlands are found in the eastern and southern 1/3 of the state. These habitats range from the driftless region of northeast Iowa to the oak/hickory timber of the south. Much of the turkey habitat in the central and western parts of the state is relinquished to woodlots and riparian areas (Figure 1). A noticeable exception is along the western Loess Hills border region.

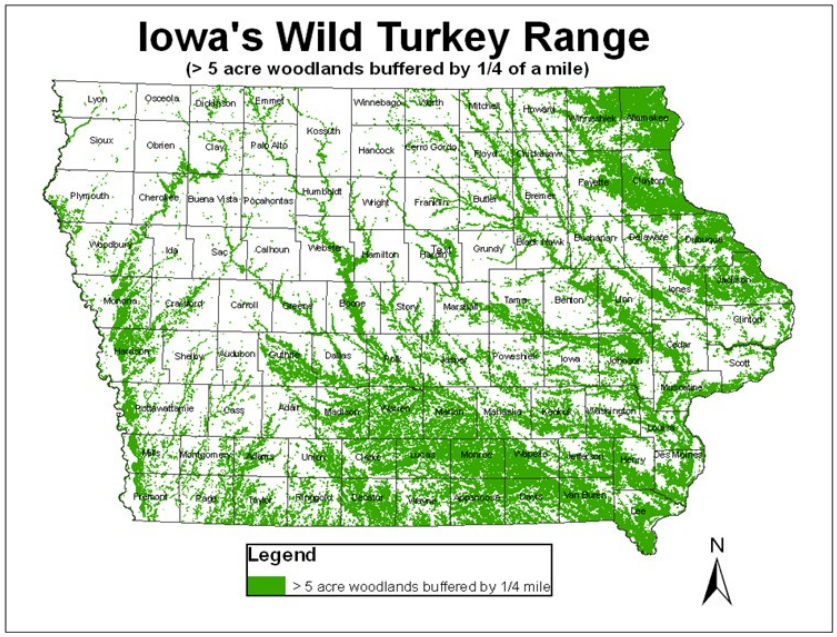

Figure 1. Iowa's wild turkey range (5 acre and greater woodlands buffered by ¼ mile).

The wild turkey population most likely peeked in the early 2000's as indicated by the number of license holders and the harvest (Figure 2). Current estimates place Iowa's wild turkey population at approximately 120,000 birds. This is down significantly from historical projections.

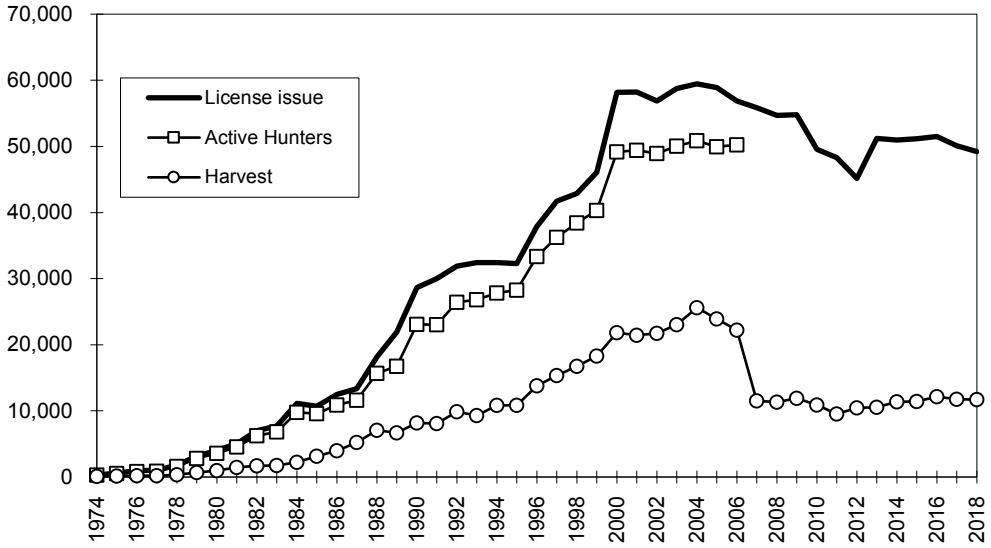

Figure 2. Iowa spring turkey hunting statewide estimates1974-2018. Active hunters unknown after 2006 due to survey changes. Harvest estimation methods changed from mail surveys to mandatory reporting in 2007.

The Iowa bow hunter survey (Figure 3) along with the July/August brood survey (Figure 4) are the two techniques that allow for the direct estimation of wild turkeys by observation. Both allow for regional population trend information to be gathered.

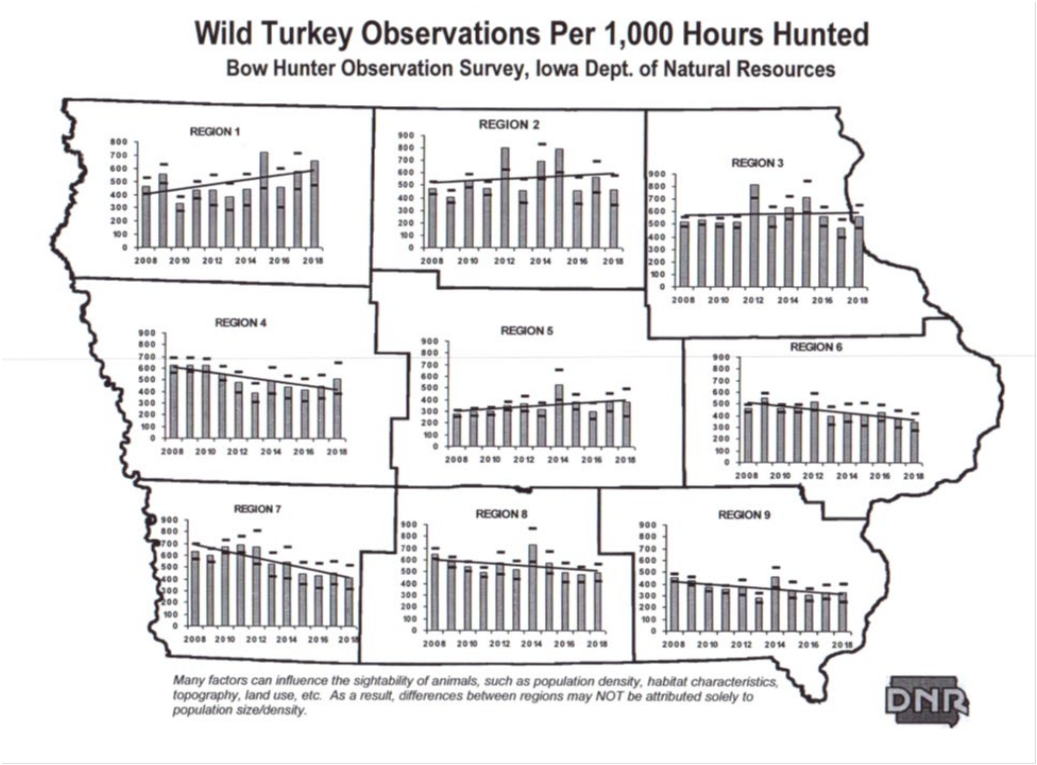

Figure 3. Annual Bowhunter Observation Survey for Wild Turkey

REPRODUCTION

The Iowa Department of Natural Resources has conducted a July/August wild turkey brood production survey since 1976. In 2014 the traditional rural mail carrier survey was replaced with a bimodal survey that uses postcards and a web based survey. Postcards are mailed to department personnel as well as selected turkey hunters in each of the 9 agricultural regions. Observers then record their sightings by month and day and return the postcard at the end of the survey (July1-August31). Each person has a unique identifier so they can choose to enter their data via the Iowa DNR web page instead of by traditional mail. Other citizen scientists are encouraged through press releases and known email addresses to also survey wild turkeys and report via the web as a guest observer. This information is then compiled into a statewide (Figure 4) and regional (Figure 5) information.

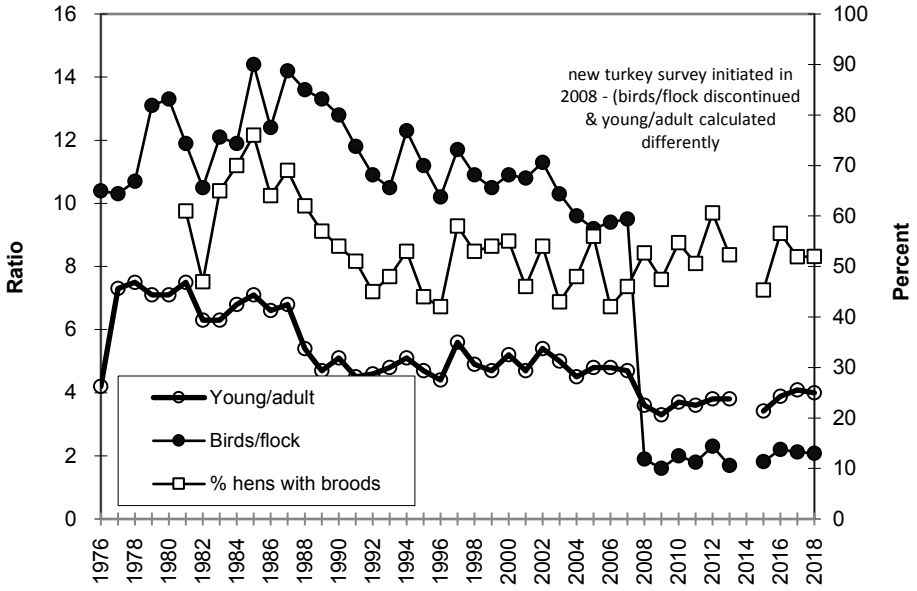

Figure 4. Iowa Turkey Brood Survey Statewide Results 1976-2018

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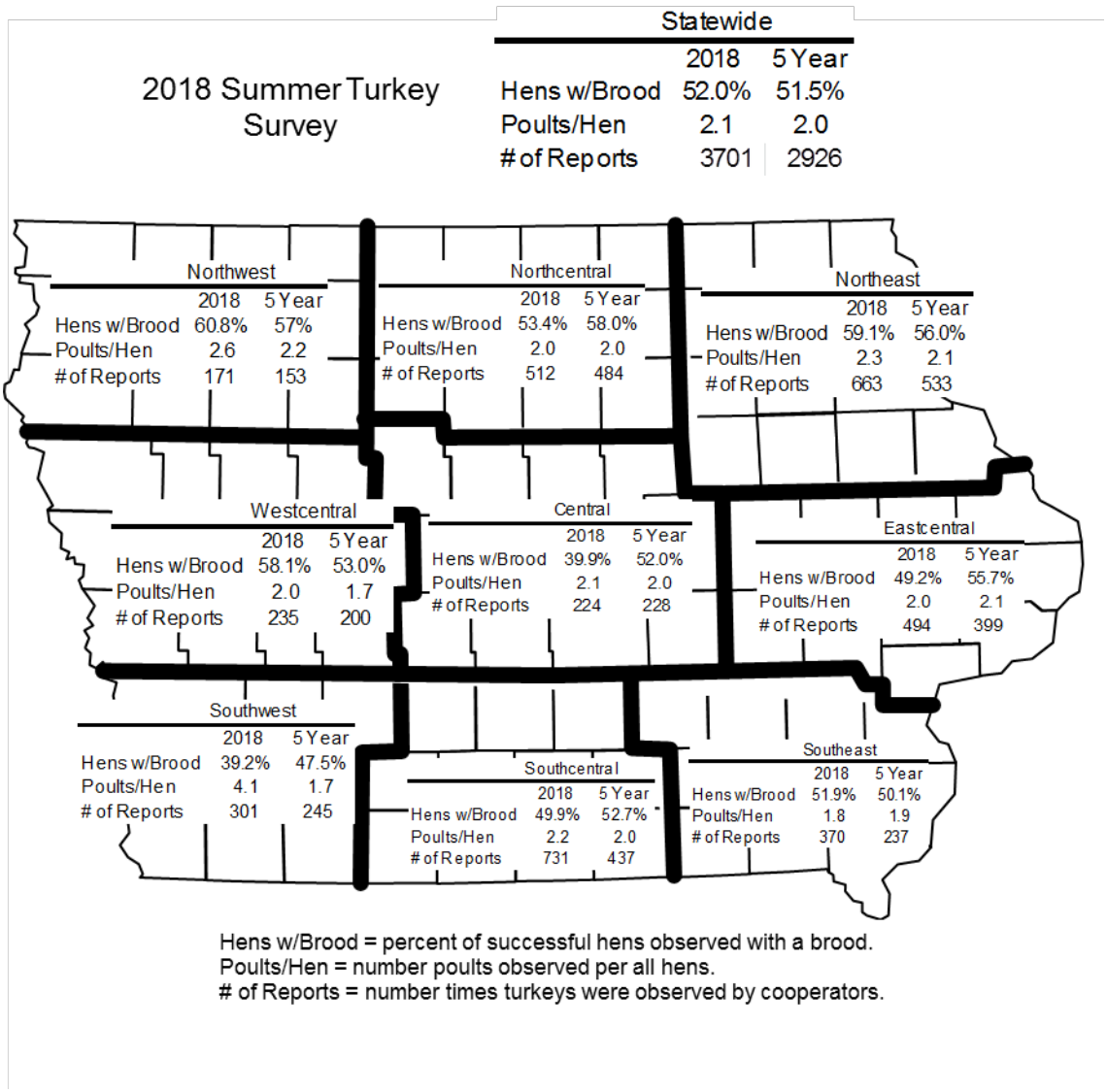


Figure 5. Regional Wild Turkey Production Data.

2018 saw no overall statewide change in the number of hens with poults. Poults/per all hens observed ratio was 2.1. Poults per successful hen was recorded at 4.0 statewide. This data split across the 9 agriculture regions (Fig 5) with 4 zones higher than 2017 and 5 lower. The Central and Southwest zones showing the greatest increase from 2017 in poults per successful hen, but also showing poor brood success. The bowhunter survey information from 2018 (Fig. 3.), indicates trends of poorer reproduction across much of the state. Higher values in the Northwest may be indicative of smaller riparian habitats and multiple counts of the same turkeys. Greater acreage of CRP exists in the southern portion of the state which provides additional nesting and brooding cover.

HARVEST

NOT AVAILABLE FROM Electronic Licensing System of Iowa (Go Outdoors)

2018 Fall Season

Data was not available for a recount of the fall 2018 turkey hunting season. Fall hunting continues to be a minor part of turkey hunting in Iowa. This year's gun season ran from October 16th to November 30th (47 days). Fall bow season is concurrent with deer bow season and starts on October 1st and ran through November 30th. It started back up after the deer gun season on December 17th and ran until January 10th. About half of the licenses issued are to landowners and success rates are typically around 7%. The harvest again decreased this year to an all time low of 413, down 21% from 2017 (524). Nonresidents have not been permitted to hunt fall turkeys in Iowa since 1990. Residents must apply for limited number of licenses by picking a zone when fall hunting (Fig.7). Zone 8 (Northcentral) having the least amount of tags has been the only zone selling all tags in the past few years (150 tags). Dogs are legal to use for turkey hunting during the fall season, although we have never surveyed our fall hunters to see how/when or if they hunt with dogs.

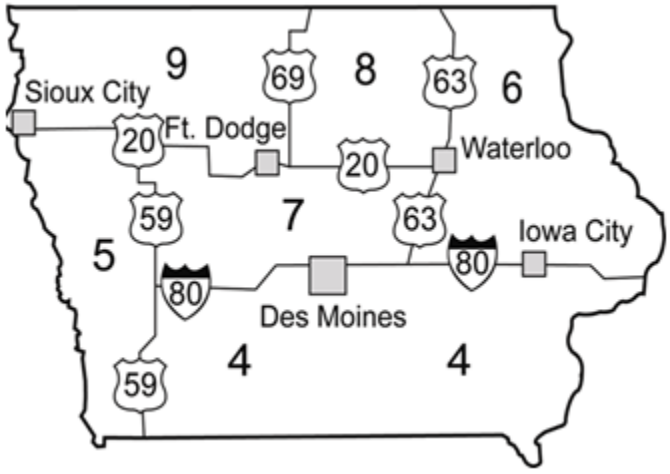


Fig. 7 Iowa Fall Resident Hunting Zones

2019 Spring Turkey Season

No data available at this time.

Iowa's 46th modern spring hunting season recorded an estimated 11,387 turkeys harvested. This was the 31st year the entire state was open to spring turkey hunting. The 38-day season (5 April through 12 May, 2019) was partitioned into 5 separate seasons: a 3-day youth-only season, and 4

regular seasons (4,5,7 and 19-days). The 5 season format, with unlimited license quota for all the periods provides opportunities for all hunters while spreading pressure out across the State. Archery season runs concurrently with the gun seasons. A bow only tag is valid from the first day of the first regular season through the last day of the fourth season. Resident gun hunters average around 23% success. Turkeys were harvested in 98 of Iowa's 99 counties. Registered harvest was 11,387 birds down slightly from 2018 (11,701). This may have been due to the implementation of a new vendor for electronic registration. Some people expressed difficulty with the new system and this may have prevented some from completing the required steps.

This was the 30th spring that nonresidents were allowed to hunt turkeys in Iowa. Nonresidents report a higher success rate for spring gobblers than do residents (40+ %). Nonresidents are partitioned across the state to spread out perceived hunting pressure. Link 1

HUNTING INCIDENTS

There were no reported turkey hunting related injuries during the spring 2019 season. Iowa continues to have very little incidence of accidents during either the spring or fall seasons. Most injuries reported have been self-inflicted due to poor gun handling.

REGULATION/LEGISLATION CHANGES

There were three rule changes that went into place during the spring turkey hunting season. The most controversial was the reduction of the youth season back to the original 3 days (from 9) before the regular season start. Youth season tags are valid in all seasons until filled, by Iowa law. This gives a youth license holder 38 days to fill their tag. Iowa has had a floating start date to the first season for many years. This year was the first year of a hard start date of the 2nd Monday in April. This was in an effort to provide consistency for hunters. Previously the start of the first season was the Monday closest to the 15th of April. The 3rd rule change was related to shot size. With the advent of additional shot sizes. Iowa placed brackets on allowable shot. Previously shot sizes were specific in the rules. Now shot (lead or nontoxic) between the sizes of 4-8 can be used to hunt turkeys. We did eliminate the use of sizes of 2 and 3 nontoxic shot as in previous years with this rule change.

RESEARCH

Iowa received its first confirmation of lymphoproliferatve disease from a bird located in Warren County (central part of the state) in 2018. Legs from 80 spring 2019 harvested birds were collected as a pilot effort for testing of the LPDV virus. Iowa State University has enrolled a graduate student to do the testing starting this fall. We will attempt to collect additional samples with the fall 2019 season and again in the spring 2020 season.

With increased complaints of "urban" turkeys we are discussing the potential of marking birds to look at movement and habitat usage in urban areas. Also the behavior of translocated "urban" birds to a wild landscape. This is part of the writing of a nuisance turkey plan.

EMERGING OR EVOLVING ISSUES

In an effort to provide more places to hunt this year the Iowa DNR private lands biologist have enrolled approximately 162 areas totaling over 22,000 acres of private lands that are available as walk in hunting areas. This program is in the fifth year. Known as IHAP this program continues to gain in popularity. Iowa has also initiated an interactive map that shows all public lands available for hunting. (Link 2)**.**

Legislation was proposed to eliminate the purchase of land by nonprofits and public entities (Cities, Counties, State). The legislation was amended several times and now only targets the usage of a state revolving fund by nonprofits to purchase land to be donated to the DNR (paraphrasing). It did not make it through the 2018 session, but will most likely emerge again this year.

We will be analyzing hunter age and success data as related to season structure. The reduction of the youth season provided some controversy. Legislation was brought forward to eliminate all turkey hunting until the youth season is extended back to 9 days. It will most likely erupt again this legislative season.

Iowa has a new director of the DNR.

RELEVANT LINKS

Link 1 **http://www.iowadnr.gov/Hunting/Nonresident-Hunting**
Link 2 **http://programs.iowadnr.gov/maps/huntingatlas/default.html**

MISCELLANEOUS

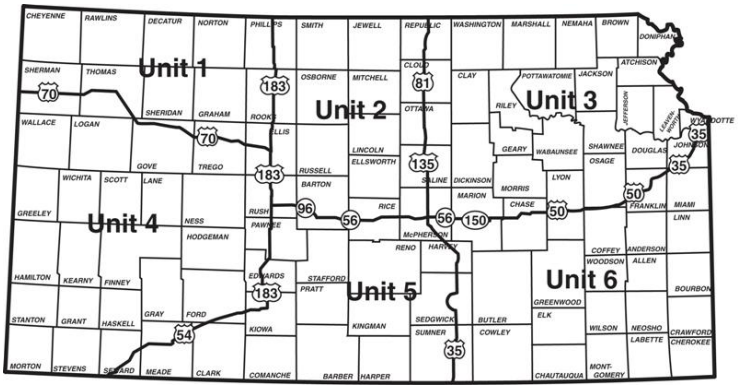
Iowa provide turkeys to 2 States in 2018. South Dakota received 45 turkeys. Twenty turkeys were successfully transferred to Texas last winter. We have one more year of commitment to both South Dakota and Texas. All transferred turkeys have been part of our depredation program. None have been taken from public hunting areas.

KANSAS WILD TURKEY POPULATION STATUS REPORT – 2019

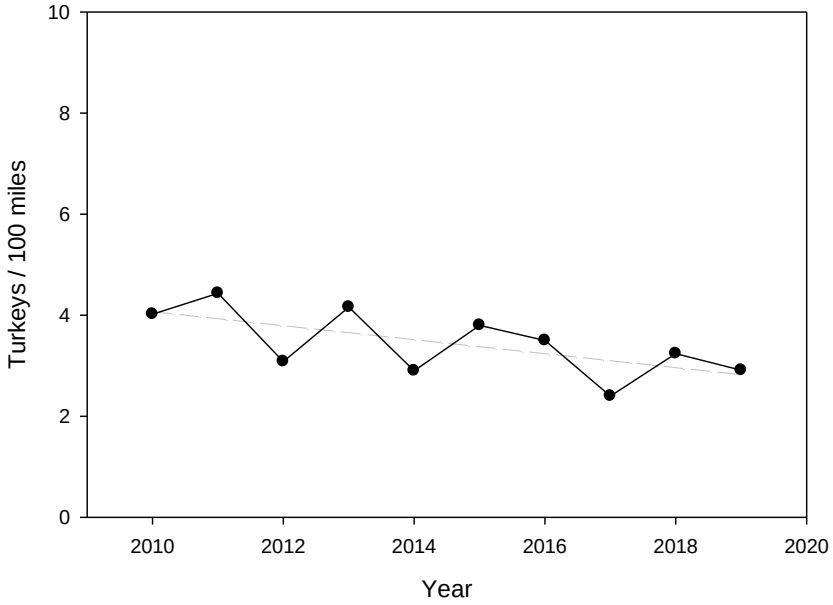
Midwest Wild Turkey Working Group Meeting – August 13-14, 2019
Brown County State Park, Nashville, Indiana

Kent Fricke – Small Game Coordinator
Kansas Department of Wildlife, Parks and Tourism
1830 Merchant Street
Emporia, Kansas 66801
(620) 342-0658 / kent.fricke@ks.gov

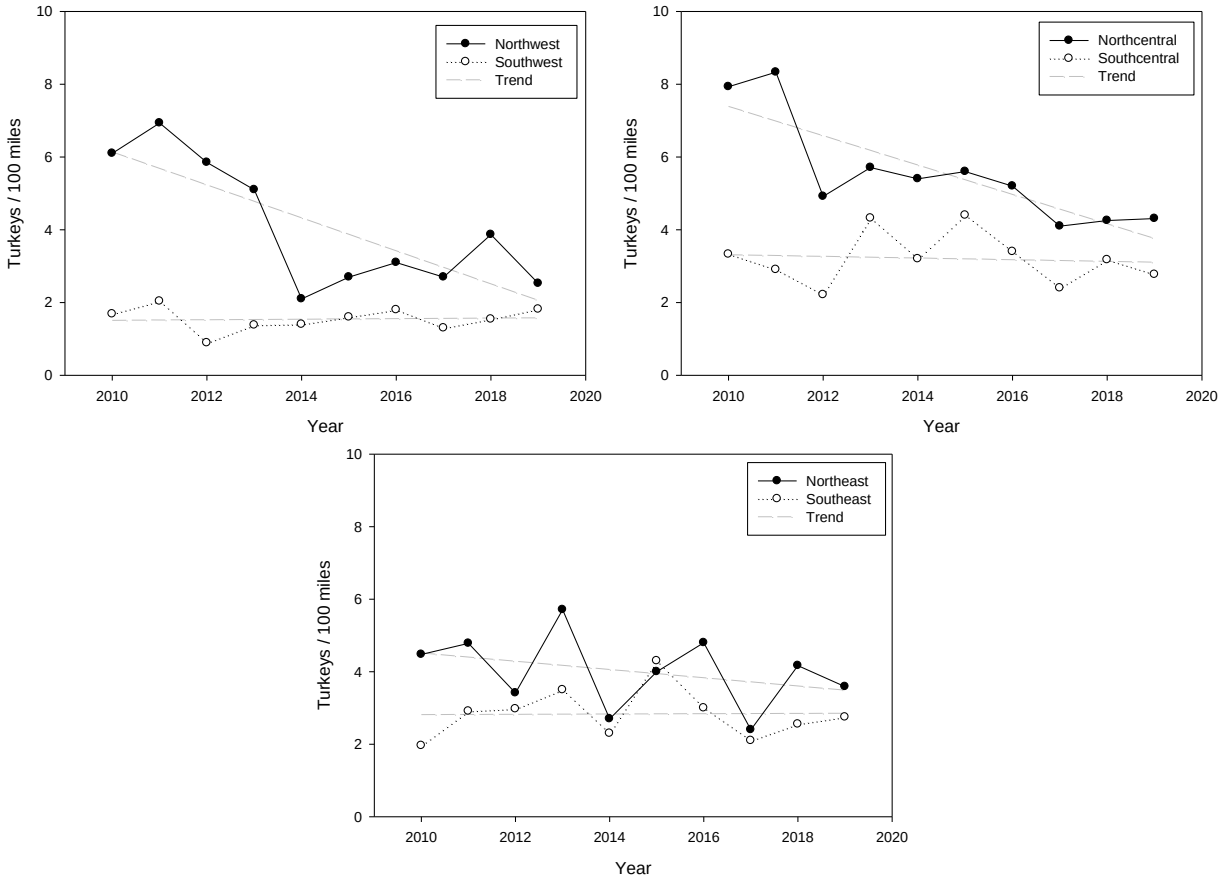
Kansas Management Units (Unit 4 closed to hunting in fall, with limited draw permits in spring)



POPULATION STATUS

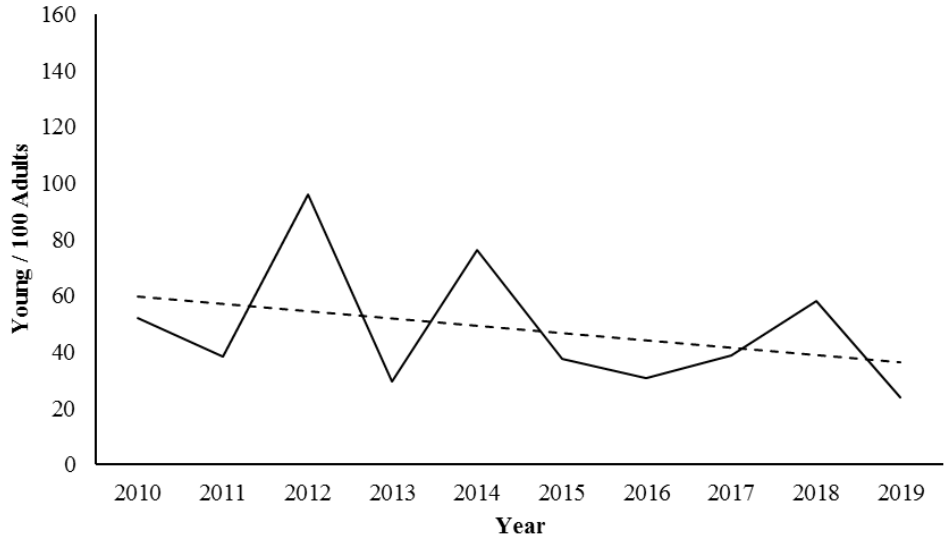


Statewide spring turkey index for Kansas, based on spring (April) rural mail carrier survey, 2010-2019.

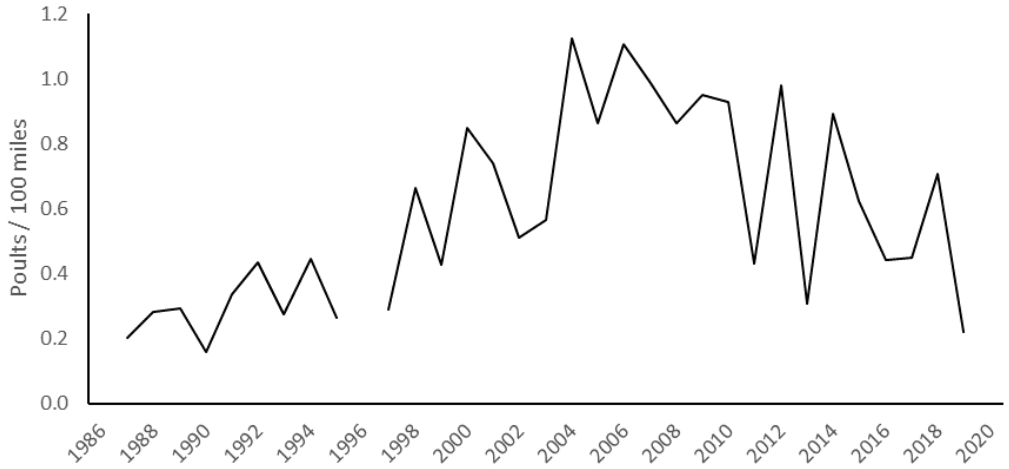


Regional spring turkey indices for Kansas, from spring (April) rural mail carrier survey, 2010-2019.

REPRODUCTION



Statewide production index for Kansas, based on summer (July) rural mail carrier survey, 2010-2019. The 2019 estimate is 8% below the previous 5-year average, and 20% below the previous 10-year average.



Average poult observations, based on summer (July) rural mail carrier survey, 1987-2019.

HARVEST

Kansas License and Sales Information (Fall 2018 and Spring 2019)

		Fall 2018		Spring 2019	
Residency	Permit Type	Cost ($)*	Number Sold	Cost ($)*	Number Sold
Resident	General Permit	22.50	2,959	27.50	11,535
	Game Tag	12.50	0	17.50	5,081
	Combo**	--	--	37.50	2,420
	Youth Permit	7.50	444	7.50	2,840
	Youth Game Tag	7.50	0	7.50	808
	Youth Combo	--	--	12.50	657
	Landowner / Tenant Permit	12.50	986	15.00	2,812
	Landowner / Tenant Combo	12.50	--	20.00	615
Non-Resident	General Permit	32.50	941	62.50	11,301
	Game Tag	22.50	0	32.50	7,901
	Combo**	--	--	87.50	2,057
	Youth Permit	12.50	67	12.50	795
	Youth Game Tag	12.50	0	12.50	475
	Youth Combo	--	--	22.50	152
	Tenant Permit	--	78	32.50	248
	Tenant Combo	--	--	45.00	48

* Hunters must also buy an annual small game license (resident = $27.50, non-resident = $97.50, and non-resident youth = $42.50).

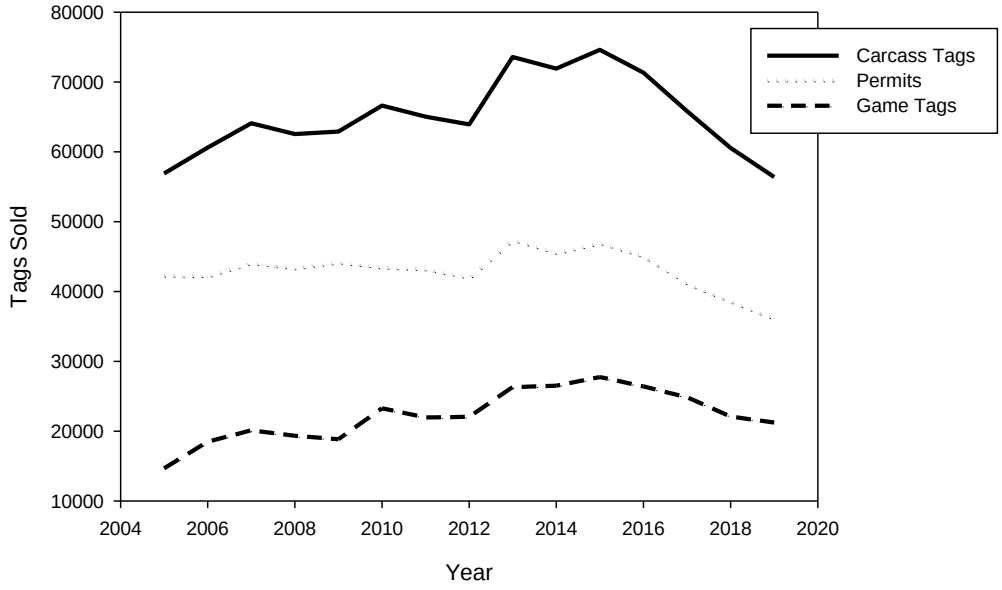
** Combos include initial permit and one game tag (2 permits, total). Combos are available for purchase only through March 31.

Kansas Turkey Season Dates

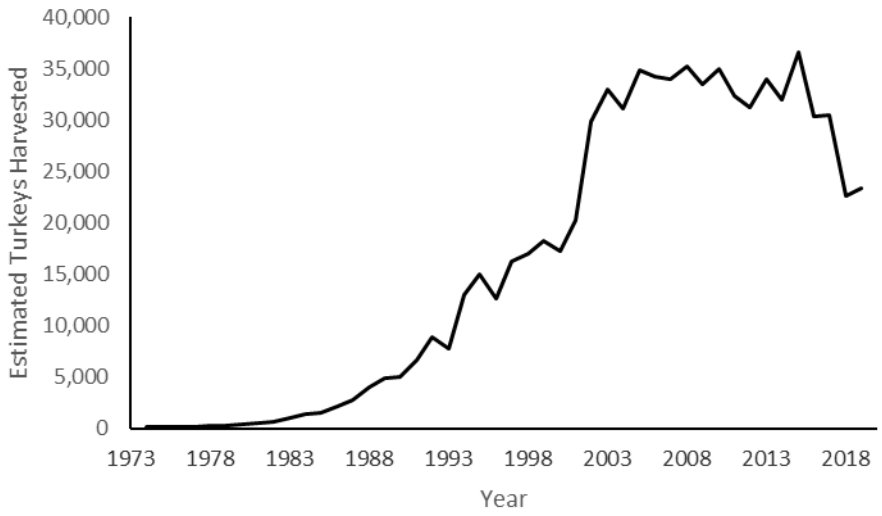
Season	Fall 2018	Spring 2019
Youth / Disabled	--	April 1-16
Archery	--	April 9-16
Any Legal Weapon	October 1-November 27,	April 17-May 31
	and December 10-January 31	(includes firearm)

2019 Spring Turkey Season

	Spring		
Year	Permits & Game Tags	Total Harvest	Success (%)
2014	71,903	31,988	55
2015	74,609	37,264	55
2016	71,320	30,298	47
2017	65,818	30,441	51
2018	60,545	22,639	43
2019	56,388	23,296	47



Total spring turkey permit and game tag sales, 2005-2019.



Spring turkey harvest, 1974-2019.

2018 Fall Turkey Season

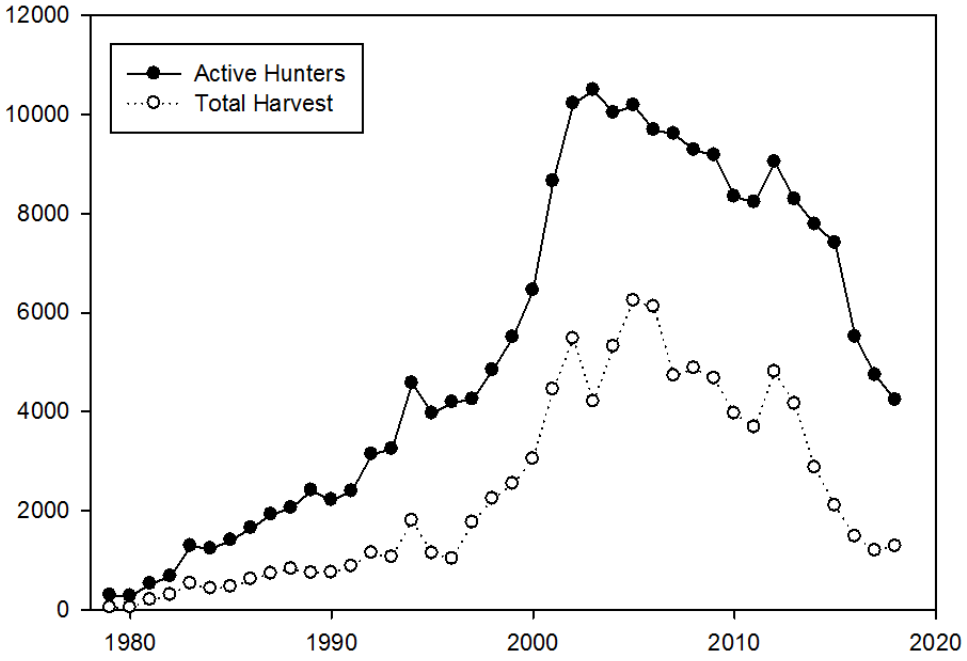
Fall Turkey Harvest Comparison: 2017 v 2018

Weapon / Sex	2017	2018	% Difference
Estimated Total Harvest	1,183	1,275	7.8
Adult Males	551	630	14.3
Juvenile Males	204	195	-4.4
Adult Females	377	405	7.4
Juvenile Females	51	45	-11.8

Fall Turkey Hunter Success Rates: 2018

	Fall			
Year	Permits & Game Tags	Total Harvest	Hen Harvest (%)	Success (%)
2014	13,064	2,862	37	33
2015	12,134	2,093	36	26
2016	8,741	1,471	22	26
2017	6,262	1,183	36	25
2018	5,475	1,275	35	30
2019	--	--	--	--

* No Game Tags were available in Kansas during the Fall 2018 season.



Estimated number of turkeys harvested statewide in Kansas during the fall season, 2009-2018.

HUNTING INCIDENTS

12 April 2017. Crawford County. Private land. The shooter (age 35) and the two victims (ages 31 and 33) were hunting turkeys on property they had leased specifically to hunt turkeys in Kansas. The shooter was dropped off at one location and the two victims continued to hunt a different location. After a short time, the victims called the shooter to inquire if he had seen or heard any turkeys yet and the shooter informed them that he was watching turkeys at that very moment. The call was ended right then with no further information being exchanged. Approximately 40 minutes later the shooter heard turkeys directly south of him, so the shooter changed locations which included crossing a fence onto another property that the group did not have permission to hunt. Unknown to the shooter, the two victims had changed locations and were now on the same property that they did not have permission to hunt. All the hunters were wearing camouflage clothing and had turkey fans affixed to the barrels of their shotguns. All continued to call while moving closer to what they thought were calling turkeys. The shooter saw a turkey fan and fired at the fan without identifying his target. When the shooter approached the location where he had seen a turkey, he discovered the two victims on the ground. After much effort the victims were moved to a location where they could be evacuated by medical personnel. The victims were life watched to several hospitals before they could be treated. Both victims received multiple pellets in the face, head, shoulders, arms and chest areas. Pellets were in the eye and spinal column areas and produced severe, even debilitating injuries. The shot was taken at close range. The shooter and both victims were hunter education certified outside of Kansas.

12 May 2018. Ellsworth County. Private land. The shooter (age 67) and the victim (age 67) were hunting turkeys together. The hunters were on private land they had permission to hunt and had decided to split up with the shooter hunting on the south side of the creek running through

the property and the victim to hunt the north side of the creek. The turkeys flew down from the roost on the south side of the creek and moved away from the shooter while continuing to gobble. The shooter moved position towards the gobbling turkeys anticipating getting a shot. Meanwhile, the victim made the decision to cross the creek and hunt on the side the shooter was hunting while employing a turkey fan for concealment and as a decoy, all without informing the shooter. The shooter saw a turkey fan and thought it was the tom turkey he was calling to. The shooter approached to 60 yards of the fan and then fired one shot at the fan. The victim immediately stood up and the shooter realized what had happened. The victim was transported to a local hospital and treated for a gunshot wound. The shooter was using a 10-gauge shotgun and the victim had 12 size BB steel shot lodged in his middle upper back, back of the head, left upper arm, left side of the face and the left ear lobe. Only 1 BB was removed from the skin and the rest were left. The victim was wearing a camo shirt, camo hat, a camo face mask, and blue jeans and was using a turkey fan to hide behind. Neither the shooter nor the victim was hunter education certified because of age.

REGULATION/LEGISLATION CHANGES

No regulations have changed in the past year.

RESEARCH

Staff is beginning an analysis for attaining historic population estimates for statewide and unit populations through statistical population reconstruction.

EMERGING OR EVOLVING ISSUES

The Kansas Wild Turkey Adaptive Harvest Strategy continues to receive scrutiny within the Department and with the Commission.

RELEVANT LINKS

Hunting regulations, Walk-in Hunting Access atlas, and other Kansas turkey information: ksoutdoors.com/Hunting/What-to-Hunt/Turkey

MISCELLANEOUS

No nuisance or damage complaints were reported in the past year.
No disease issues were reported in the past year.

KENTUCKY WILD TURKEY POPULATION STATUS REPORT – 2019

43rd Midwest Deer and Wild Turkey Study Group Meeting – June 11-14, 2019
Brown County State Park – Nashville, Indiana

Zak Danks, Wild Turkey & Ruffed Grouse Program Coordinator
Kentucky Department of Fish and Wildlife Resource
1 Sportsman's Lane
Frankfort, KY 40601
502-892-4544 / zak.danks@ky.gov

POPULATION STATUS

The wild turkey population in Kentucky is 300,000-400,000 based on spring harvest as an index to abundance, assuming hunters harvest 10% of the population during the spring season and report about 65% of the harvest. Turkey populations are stable and provide good hunting opportunity in most counties (86 of 120), although declining trends in 21 counties (18%) have hunters concerned in light of population declines in other states.

REPRODUCTION

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has conducted a summer brood survey since 1984. Staff and volunteer participants record turkeys seen incidentally during routine travels in July and August. We ask participants to records observations hens, poults, males, and turkeys for which sex cannot be determined. We calculate a poult per hen (PPH) ratio to index overall productivity, the percentage of hens with poults to indicate nesting success, a poults per brood (PPB) ratio to index poult survival, and a gobbler to hen ratio to indicate gobbler carry-over after spring hunting. Since 2017, we have followed the Southeast Wild Turkey Working Group's standardized protocol for recording and analyzing turkey observations. In 2018 we began using Survey 123 by ESRI to facilitate the reporting of turkey observations via mobile phone and webpage in addition to traditional paper forms.

For the 2018 brood survey we received 789 distinct observations of turkeys, 506 (64%) of which were collected via the Survey123 app or website (Fig. 1). The total number of turkeys observed (4,478) was 51% less than in 2017 (9,481). However, survey indices for overall productivity, nesting success, and poult survival appear to have been better despite lower sample sizes and thus wider confidence intervals (Table 1 vs. Tables 2 and 3). The statewide PPH ratio of 2.01 (1.83-2.21 95% C.I.; Fig. 2, Table 1) was 66% higher than in 2017 (1.34, 1.25-1.45 95% C.I.) and 17% higher than the 5-year average (1.7). The percentage of hens with a brood (69%, n = 512, Table 1) was 35% higher than in 2017 (51%, n = 1,287). The statewide PPB of 3.67 (3.42-3.93 95% C.I., Table 1) was 11% higher than in 2017 (3.32, 3.16-3.49 95% C.I.). Regionally, PPH was higher in central and east regions (both 2.0) than in the west (1.8). Only the gobbler to hen ratio was lower (0.45 statewide, n = 624) in 2018 compared to 2017 (0.58, n = 1,741) and did not differ by region (Table 1).

We were not able to track the number of individual participants using the app in 2018; doing would have required user log-ins, which would have been cost prohibitive. Thus, we do not

know whether the decrease in total turkeys observed reflected fewer turkeys on the landscape (which would be counter to observed PPH) or simply less participation in the survey (agency public outreach was better in 2017).

HARVEST

Spring Turkey Season

Harvest reporting by phone (Telecheck) or internet (My Profile) is mandatory for all turkey hunters. A spring turkey permit is required of resident and nonresident hunters over age 15 in addition to a statewide hunting license, which allows 2 turkeys with visible beards per season and 1 per day. Landowners are license-exempt. Resident Sportsman's, Senior, and Disabled license types include spring and fall turkey permits along with permits for other game. Youths 12-15 must purchase a youth permit allowing 1 turkey, or resident youths may purchase a youth sportsman's license allowing 2 turkeys. Shotgun, muzzleloading shotgun, bow, and crossbow are legal implements. Since 2001, youth season has run for 2 days beginning on the Saturday closest to 1 April. Since 2006, the regular season has run for 23 consecutive days beginning the Saturday closest to 15 April.

Statewide, the 2019 reported harvest was 29,495 bearded birds (Fig. 3, 4; Table 4). This includes harvest during youth weekend (April 7-8) and the regular season (April 13-May 5). Compared to 2018, harvest increased 8% statewide and in 80 of 120 counties. Most of the increase was in the western two-thirds of the state (Fig. 5, Table 4). Better weather led to a higher harvest on opening weekend compared to 2018 and the average since the Spring season structure has been unchanged (Fig. 6). Harvest ranged from 66-679 per county (0.2-1.4 turkeys killed per mi^2) with 6 counties topping 500 turkeys killed (Table 5). Jakes accounted for 13% of the harvest. Ten public hunting areas had harvests of over 26 birds (Table 6), although turkeys harvested on public lands accounted for only 5% of the statewide harvest.

Fall Turkey Season

Fall turkey hunting in Kentucky included an archery season concurrent with archery deer season (September 3–January 16), 2 one-week-long shotgun seasons (October 22–28 and December 3–11), and 2 crossbow seasons (October 1–16 and November 12–December 31). A fall turkey permit is required of residents and nonresidents in addition to a standard hunting license, except for landowners. Fall season bag limit is 4 turkeys, only 2 of which may be taken during shotgun seasons regardless of weapon used, and only 1 of which may be a male bird with a beard length ≥3 inches.

Reported fall harvest (2,369) was up 27% compared to last fall, reflecting 2018's better hatch (Fig. 7). However, interest in fall turkey hunting appears to have decreased over the past decade, and fall harvest is on par with the early years of Kentucky's statewide fall season (early 2000s).

EMERGING OR EVOLVING ISSUES

Post-season survey: In 2018 we began a post-season survey of spring turkey hunters to track hunter effort along with harvest as recommended by the Midwest Turkey Consortium.
Health assessment of hunter-harvested wild turkeys: 36 hunter-harvested turkeys were collected during the spring 2018 turkey season. No significant conditions were diagnosed. See appendix.

Figure 1. Locations of turkey observations from a brood survey in July and August, 2018. Main map shows locations collected via the Survey123 mobile phone app or website. Inset map summarizes observations by county.

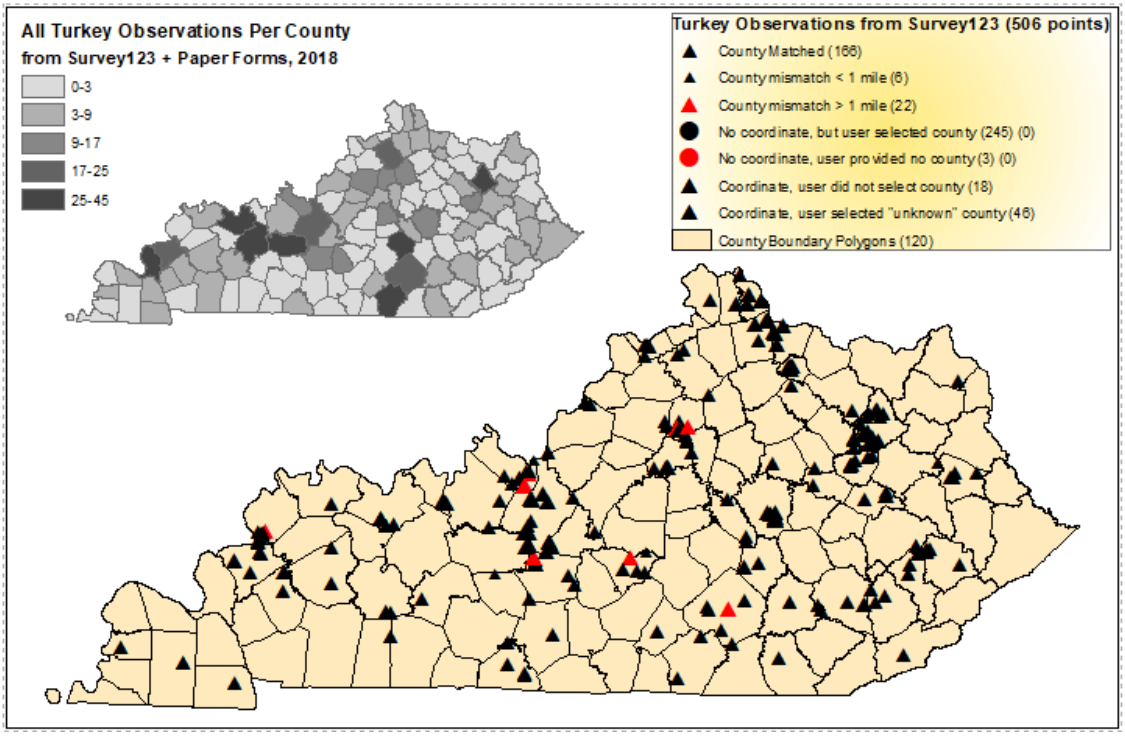


Figure 2. Poult-per-hen (PPH) ratios from brood surveys in Kentucky conducted July and August, 1984-2018. Three-year moving average shown.

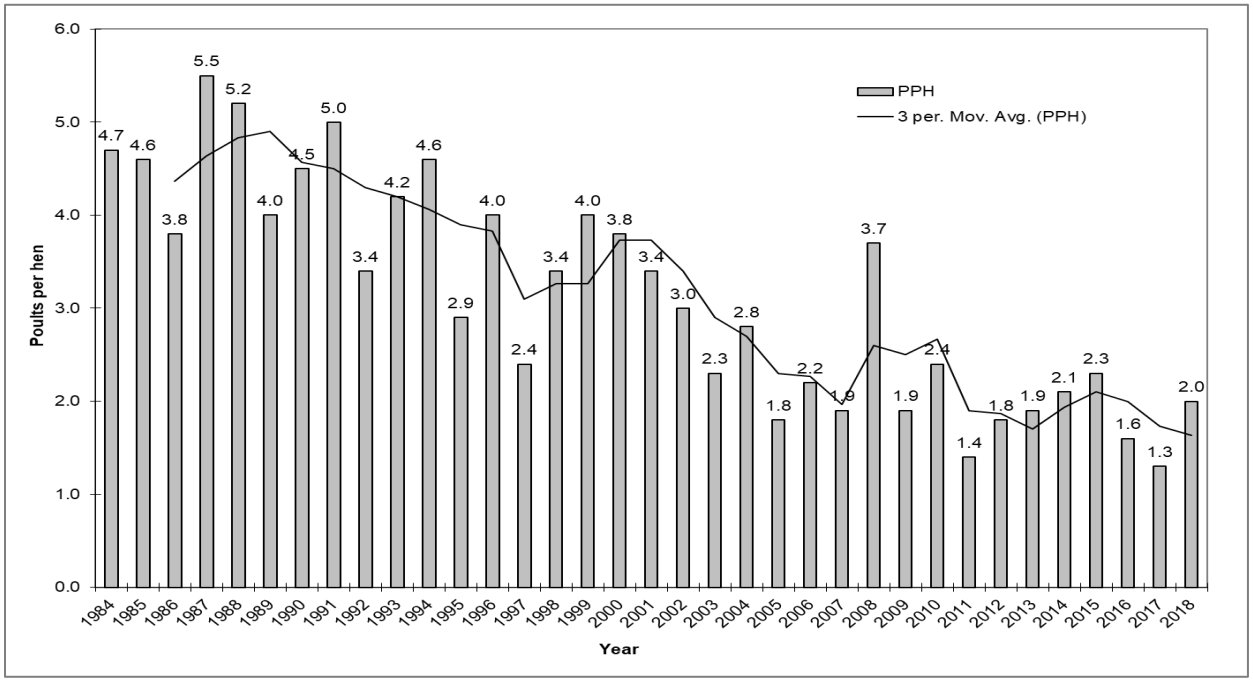


Figure 3. Spring turkey harvest in Kentucky, 1978–2019.

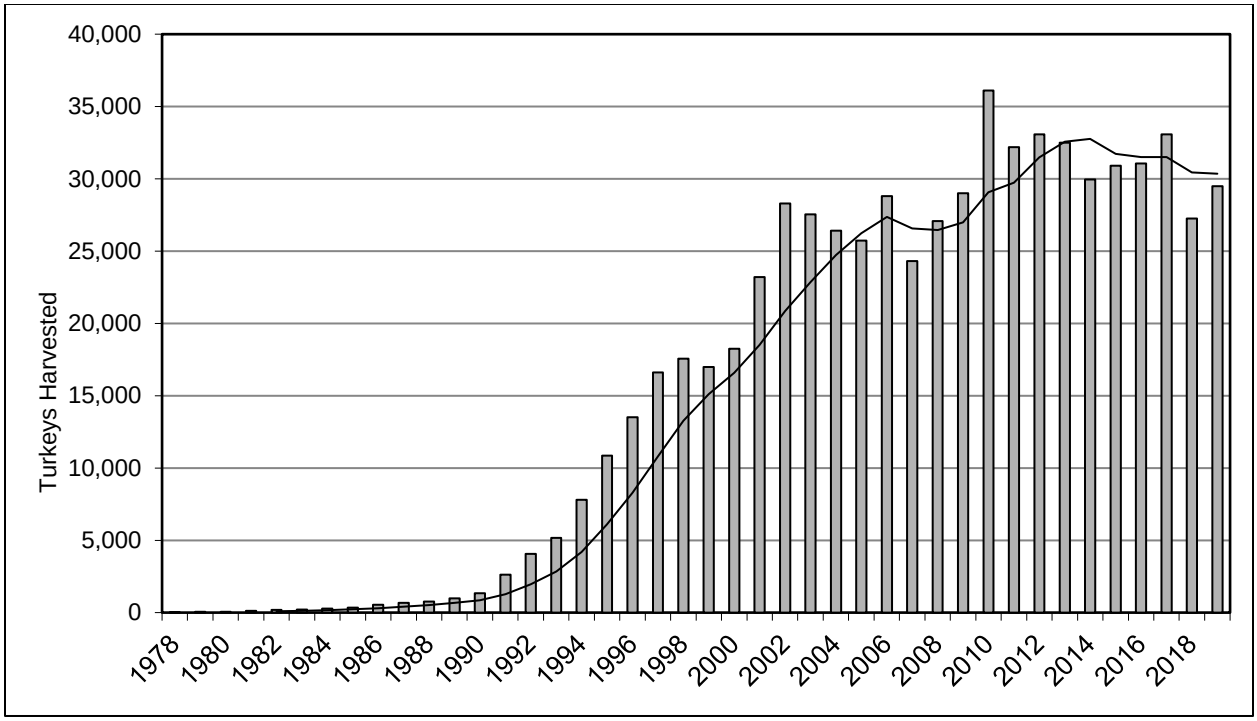


Figure 4. Spring turkey harvest totals by county, 2019. KDFWR Commission Districts shown.

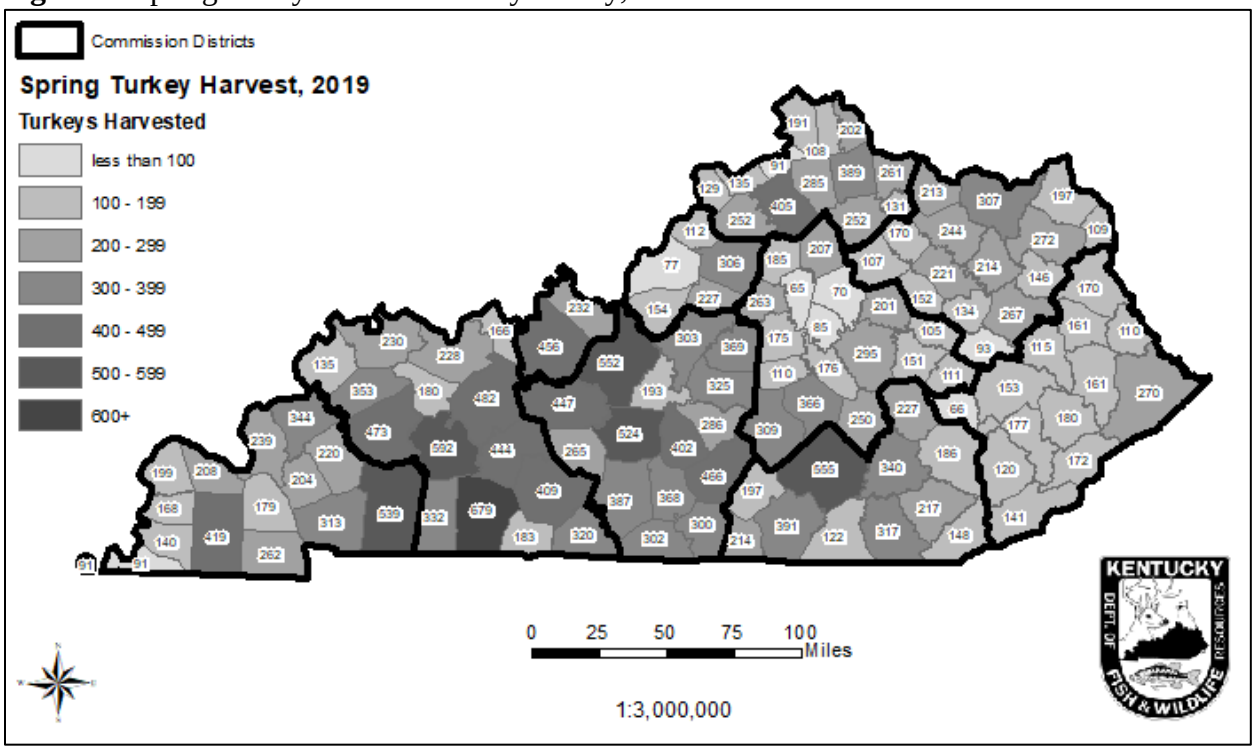


Figure 5. Percentage change in spring turkey harvest by county from 2018 to 2019. KDFWR Commission District shown.

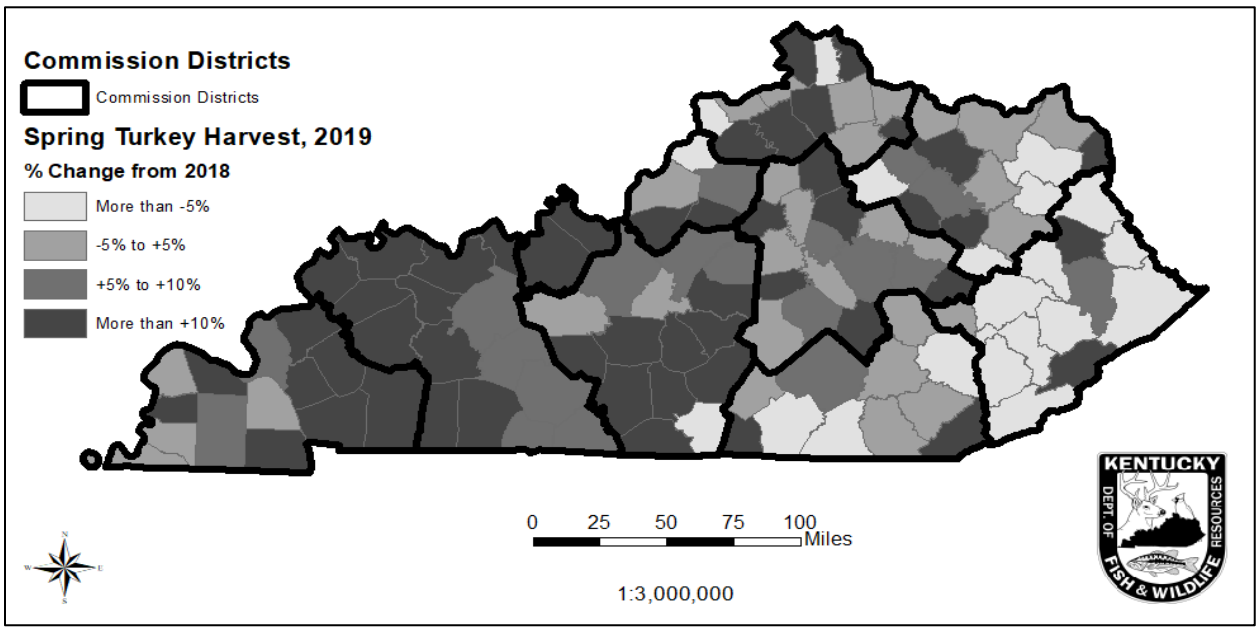


Figure 6. Spring turkey harvest by day of regular season. Daily totals for 2019, 2018, and the average since the regular season has been 23 days (2006).

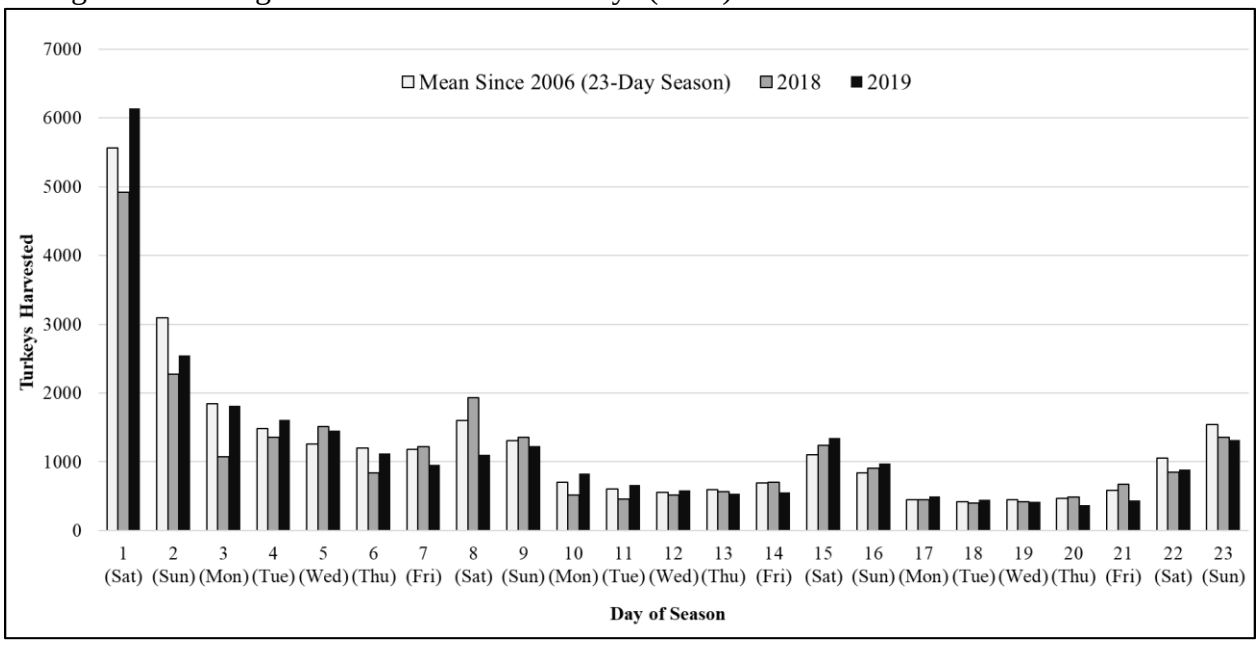


Figure 7. Fall turkey harvest and reproduction (Poult Per Hen index) in Kentucky, 2000-2018.

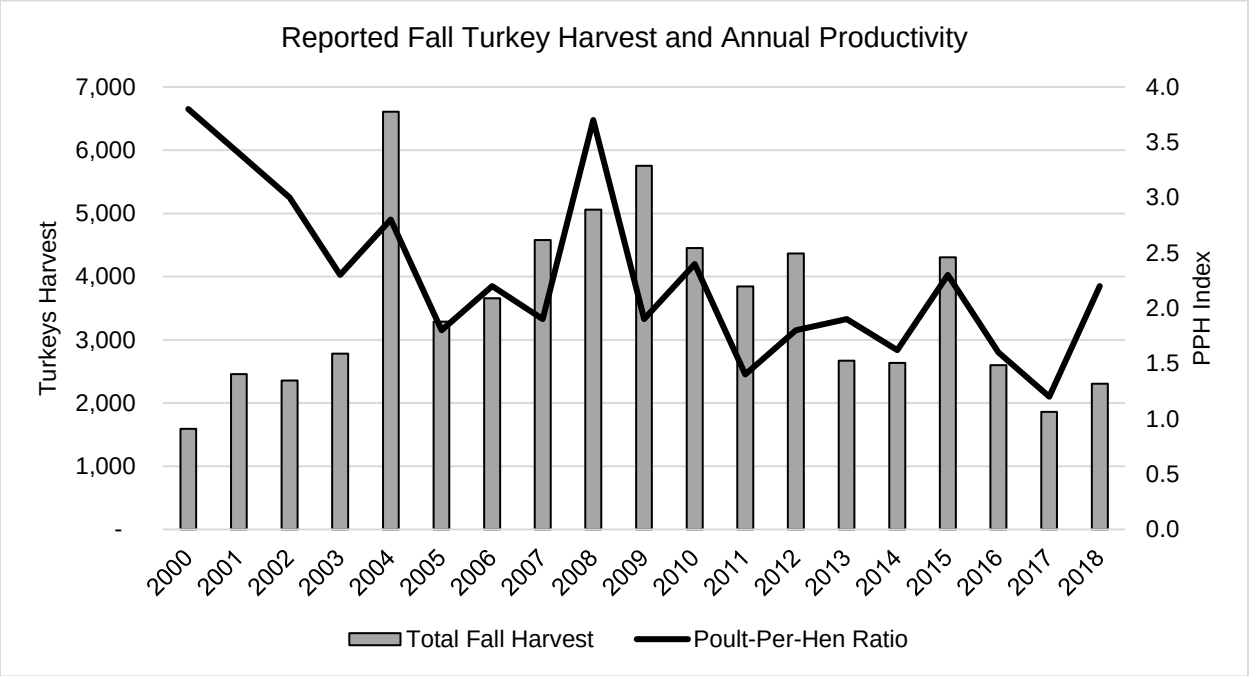


Table 1. Results from Kentucky's wild turkey brood survey, 1 July – 31 August, 2018.

Region	Hens	Poults	Males	Unidentified	Total Turkeys	PPH[a] (95% CIs)	PPB[b] (95% CIs)	% Hens w/ Brood[c] (n[d])	Male:Female Ratio[e] (n[f])
Central	583	1,211	249	11	2,054	2.08 (1.84-2.33)	3.55 (3.28-3.85)	68.8 (244)	0.43 (295)
East	306	638	128	9	1,081	2.09 (1.70-2.56)	3.60 (3.12-4.14)	78.1 (121)	0.42 (145)
West	353	621	157	3	1,134	1.77 (1.38-2.19)	3.79 (3.21-4.41)	60.6 (128)	0.44 (155)
Statewide[g]	**1,287**	**2,585**	**583**	**23**	**4,478**	**2.01 (1.83-2.21)**	**3.67 (3.42-3.93)**	**68.8 (512)**	**0.45 (624)**

[a]Poults-per-hen (calculated by bootstrapping the sample).
[b]Poults-per-brood (calculated by bootstrapping the sample).
[c]Percentage of hens that were observed with ≥1 poult during survey.
[d]Number of observations where ≥1 hen was observed.
[e]Total number of males observed during survey divided by total number of females observed during survey.
[f]Number of observations where ≥1 hen or ≥1 male was observed during survey.
[g]May include observations in which region was not indicated in data file.

Table 2. Results from Kentucky's wild turkey brood survey, 1 July – 31 August, 2017.

Region	Hens	Poults	Males	Unidentified	Total Turkeys	PPH[a] (95% CIs)	PPB[b] (95% CIs)	% Hens w/ Brood[c] (n[d])	Male:Female Ratio[e] (n[f])
Central	1,653	2,153	1,072	8	4,886	1.31 (1.16-1.45)	3.77 (3.53-4.01)	44.2 (691)	0.65 (941)
East	586	720	370	5	1,681	1.23 (1.04-1.41)	2.58 (2.29-2.91)	58.0 (258)	0.63 (363)
West	876	1,293	385	4	2,558	1.48 (1.29-1.67)	3.11 (2.84-3.39)	58.0 (333)	0.44 (431)
Statewide[g]	**3,141**	**4,216**	**1,837**	**28**	**9,222**	**1.34 (1.25-1.45)**	**3.32 (3.16-3.49)**	**51.1 (1,287)**	**0.58 (1,741)**

[a]Poults-per-hen (calculated by bootstrapping the sample).
[b]Poults-per-brood (calculated by bootstrapping the sample).
[c]Percentage of hens that were observed with ≥1 poult during survey.
[d]Number of observations where ≥1 hen was observed.
[e]Total number of males observed during survey divided by total number of females observed during survey.
[f]Number of observations where ≥1 hen or ≥1 male was observed during survey.
[g]May include observations in which region was not indicated in data file.

Table 3. Results from Kentucky's wild turkey brood survey, 1 July – 31 August, 2016.

Region	Hens	Poults	Males	Unidentified	Total Turkeys	PPH[a]	PPB[b] (n[c])	% Hens w/ Brood[d]	Male:Female Ratio[e]
Central	441	692	144	0	1,247	1.68	3.88 (101)	49.4	0.35
Eastern	386	601	379	0	1,366	1.56	4.22 (83)	45.3	0.98
Western	276	438	91	0	805	1.59	3.23 (77)	55.1	0.33
Statewide[f]	**1,074**	**1,735**	**614**	**0**	**3,423**	**1.62**	**3.80 (262)**	**49.4**	**0.57**

[a]Poults-per-hen (Total number of poults observed during survey divided by total number of hens observed during survey).
[b]Poults-per-brood (Number of poults divided by number of hens for each observation where ≥1 hen and ≥1 poult was observed; PPB is the mean of all individual observations).
[c]Number of observations where ≥1 hen and ≥1 poult was observed.
[d]Percentage of hens that were observed with ≥1 poult during the survey.
[e]Total number of males observed during survey divided by total number of females observed during survey.
[f]May include observations in which region was not recorded on survey card.

Table 4. 2019 Kentucky spring turkey harvest compared to last season, averages for periodic intervals, and the rate of change in harvest annualized over the past 10 years.

Turkeys Harvested 2019		% Change from :			
		2018	5-year Avg. (2015-2019)	10-year Avg. (2010-2019)	Avg. Since 23-Day Season (2006-2019)
Total Spring Harvest	***29,495***	***+8%***	***-3%***	***-7%***	***-2.8%***
1st District	3,525	+15%	+0%	+0%	+0.1%
2nd District	5,206	+17%	+2%	-4%	-0.8%
3rd District	1,564	+9%	-5%	-11%	-2.8%
4th District	5,489	+13%	+5%	+0%	-0.9%
5th District	2,831	+7%	-7%	-9%	-2.4%
6th District	3,124	+8%	-4%	-8%	-1.6%
7th District	2,210	-3%	-13%	-17%	-3.1%
8th District	2,846	+5%	-4%	-2%	-1.6%
9th District	2,700	-2%	-12%	-14%	-2%
Bluegrass Region	6,251	+7%	-4%	-7%	-3.3%
Green River Region	8,932	+16%	+2%	-5%	-1%
Northeast Region	4,025	+6%	-5%	-4%	-1.7%
Purchase Region	3,525	+15%	+0%	+0%	+6.3%
Southeast Region	6,762	+1%	-9%	-13%	-7.5%

Table 5. Top 10 Kentucky counties for 2019 spring turkey harvest (total reported kill) and harvest density (reported kill per square mile of county land area).

Ranked by Harvest				Ranked by Harvest Density			
County	**Harv-est**	**Harvest / Mile^2**	**% Change from Last Spring**	**County**	**Harv-est**	**Harvest / Mile^2**	**% Change from Last Spring**
Logan	**679**	1.22	+28%	Green	402	**1.39**	+17%
Muhlenberg	**592**	1.23	+16%	Pendleton	389	**1.38**	0%
Pulaski	**555**	0.82	+9%	Robertson	131	**1.31**	+32%
Hardin	**552**	0.88	+10%	Anderson	263	**1.29**	+12%
Christian	**539**	0.74	+35%	Campbell	202	**1.27**	+21%
Hart	**524**	1.25	+24%	Metcalfe	368	**1.26**	+11%
Ohio	**482**	0.81	+9%	Hart	524	**1.25**	+24%
Hopkins	**473**	0.85	+14%	Bracken	261	**1.25**	-5%
Adair	**466**	1.13	+20%	Muhlenberg	592	**1.23**	+16%
Breckinridge	**456**	0.78	+11%	Washington	369	**1.23**	+6%

Table 6. Top 10 Kentucky public hunting areas for 2019 spring turkey harvest.

Public Hunting Area	Harvest	% Jakes	Acreage	Acres per Turkey
Daniel Boone National Forest	371	8.9%	638,529	1,721
Peabody WMA	178	13.5%	45,679	257
Fort Knox Military Reservation	125	13.6%	109,000	872
Land Between The Lakes	89	6.7%	107,594	1,209
Green River Lake WMA	67	11.9%	21,037	314
Taylorsville Lake WMA	41	24.4%	9,417	230
Clay WMA	39	33.3%	8,953	230
Clarks River NWR	31	9.7%	9,500	306
West Kentucky WMA	30	13.3%	6,425	214
Big Rivers WMA & State Forest	27	22.2%	7,574	281

MICHIGAN WILD TURKEY POPULATION STATUS REPORT – 2019

43rd Midwest Wild Turkey Working Group Meeting – August 12-14, 2019
Brown County State Park – Nashville, Indiana

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POPULATION STATUS

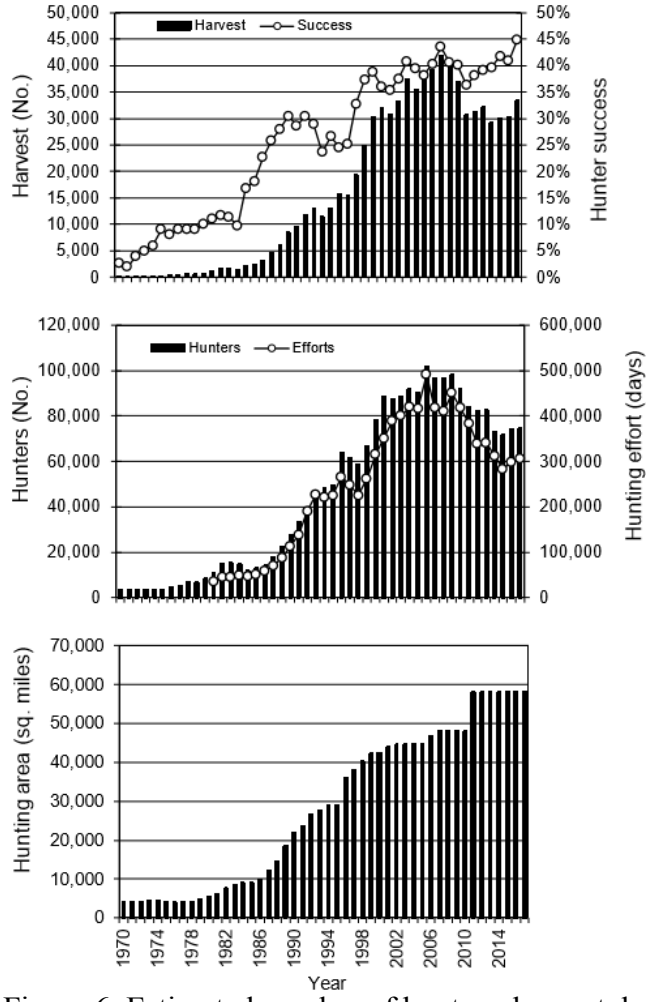

Figure 6. Estimated number of hunters, harvest, hunting efforts, hunter success, and area open to hunting during the Michigan spring turkey hunting season, 1970-2017. Estimates of hunting effort generally were not available before 1981.

Our goal is to maintain or reduce turkey populations to meet social and agricultural carrying capacities.

REPRODUCTION

Average reproduction for this year.

HARVEST

2017 Spring Turkey Season

A survey of turkey hunters was conducted following the 2017 spring hunting season to determine turkey harvest and hunter participation. In 2017, about 74,450 hunters harvested about 33,433 turkeys. Statewide, 45% of hunters harvested a turkey. Nearly 73% of the hunters rated their hunting experience as excellent, very good, or good in 2017. About 92% of the hunters reported they experienced no or only minor interference from other hunters. Compared to 2016, hunter numbers and hunting effort did not change significantly statewide in 2017; however, harvest increased significantly by 10%. In addition, hunter success increased significantly (41% in 2016 versus 45% in 2017) and hunter satisfaction increased significantly (70% in 2016 versus 73% in 2017).

2017 Fall Turkey Season

A survey of turkey hunters was conducted following the 2017 fall hunting season to determine turkey harvest and hunter participation. Overall, 28,557 people purchased 30,306 licenses in 2017 (versus 28,877 people purchased 30,664 licenses in 2016, and 29,337 people purchased 30,657 licenses in 2015). The number of licenses sold in 2017 decreased 1% from both 2016 and 2015. 17,524 hunters purchased 19,186 licenses in 2017, which was nearly 3% fewer licenses sold than in 2016 but nearly the same number of licenses sold in 2015 (18,088 hunters purchased 19,770 licenses in 2016, and 17,906 hunters purchased 19,261 licenses in 2015). Most license buyers (96%) purchased a single hunting license in 2017. During the 2017 fall hunt, an estimated 14,479 hunters harvested about 4,305 turkeys. Hunter numbers decreased significantly by 5% from 2015, but their hunting effort did not change significantly. The 2017 harvest did not change significantly from 2015 (4,751 turkeys were harvested in 2015). Hunter success was 27% in 2017 (versus 29% success in 2015). About 60% of the hunters in 2017 rated their hunting experience as excellent, very good, or good (versus 61% satisfaction in 2015). Hunting success and hunter satisfaction in 2017 did not change significantly from 2015.

HUNTING INCIDENTS

No hunting incidents have occurred.

REGULATION/LEGISLATION CHANGES

We are in the turkey regulation cycle. No new changes have been made as of yet.

RELEVANT LINKS

https://www.michigan.gov/dnr/0,4570,7-350-79136_79608_81526---,00.html

MISCELLANEOUS

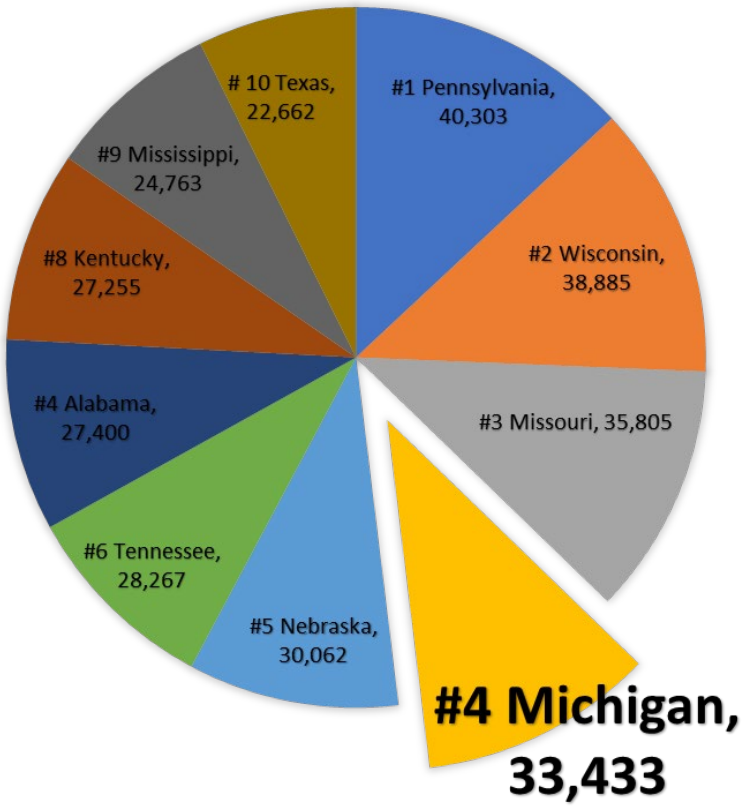

Figure 1. Turkey harvest for spring harvest for the top harvesting turkey states. Michigan ranks 4th.

MINNESOTA WILD TURKEY POPULATION STATUS REPORT – 2019

43rd Midwest Wild Turkey Working Group Meeting – August 13–14, 2019
Brown County State Park – Nashville, IN

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POPULATION STATUS

Minnesota currently conducts no formal population assessments for wild turkey. Hunters are required to register ALL harvests and as such, hunter harvest and success rates are currently used to monitor wild turkey populations across the state and within individual permit areas (but see research section below).

Like many other mid-western states, the current turkey population in Minnesota is the result of years of restoration work. No restocking efforts have taken place in Minnesota since winter 2008/09. Wild turkeys remain common in the core areas of the state (central and southeastern Minnesota). Wild turkeys continue to expand their range in Minnesota, particularly in the Northeast region.

REPRODUCTION

Minnesota currently conducts no formal assessment of wild turkey reproduction but will be piloting a brood survey beginning in 2020 (see research section below) which will follow the standardized brood survey protocol approved by the National Wild Turkey Technical Committee in 2019.

HARVEST

Summary of Season Structure

The fall turkey season was 30 days in length (29 September – 28 October) and allowed for an unlimited number of hunters to take one wild turkey of either sex in one of 12 hunter declared permit areas (501-512, Figure 1). Fall permits for youth hunters were valid statewide (i.e., no restrictions on permit area); all other hunters were restricted to a declared permit area.

There were no major changes to the spring turkey season structure in 2019. The spring turkey season was 45 days in length (17 April – 31 May) and allowed hunters to take one bearded wild turkey (tom, jake, or bearded hen). The spring turkey season was divided into six distinct time periods (A-F) with permits valid during a specified time period and permit area (501-512; Figure 1). A restricted number of permits were available through a lottery system in each permit area during time periods A and B (A: 17-23 April, and B: 24-30 April). Permits not sold during the

lottery process were available for over-the-counter surplus sales. Permits for the remaining time periods (C: 1-7 May, D: 8-14 May, E: 15-21 May, F: 22-31 May) were available over-the-counter in unlimited quantities in each permit area. Hunters possessing a permit unfilled during time periods A-E were permitted to hunt during the final time period (F) in their respective permit area. Permits for archery and youth hunters were valid the entire season and statewide (i.e., no time period or permit area restrictions).

2018 Fall Turkey Season

Permits Issued

Permits issued to hunters decreased 12% from 7,650 permits in 2017 to 6,719 permits in 2018 (Table 1, Figure 2), and was 10% below the 10-year average (7,488 permits issued). Youth permit sales accounted for 21% of total license sales during the fall 2018 season which was similar to 2017.

Harvest

There were 834 harvested turkeys registered during the fall 2018 season which decreased 18% from 1,015 harvested turkeys registered in 2017 and was 29% below the 10-year average (1,181 harvested turkeys registered) (Table 1; Figure 2). A hunter success rate of 12% in 2018 was similar to 2017 (13%), and was 23% below the 10-year average (16.1%) The greatest number of permits were issued in permit areas 507, 508, and 501 (Table 2). These three permit areas also had the highest registered harvest (Table 2). Statewide, females (hens) represented 56% of the total harvest while juvenile males (jakes) and mature males (toms) represented 15% and 28% of the total harvest respectively (Table 2).

2019 Spring Turkey Season

Permits Issued

There were 46,424 permits issued during the spring 2019 season, including 8,901 general lottery and landowner permits, 15,664 surplus over-the-counter permits, 10,032 youth permits, and 11,792 archery permits (Table 3). The total number of permits purchased increased 2% in 2019 from 2018 but was 13% below the 10-year average (39,724 permits issued) (Table 4). Youth permit sales comprised 22% of total permit sales while archery permits accounted for 25% of total permit sales (Table 3). These percentages were similar to 2018 (Table 4) and may indicate archery and youth permit sales are leveling after regulation changes in 2016 which allowed archery and youth hunters to hunt statewide during any time period. Purchase of lottery permits increased 2% from 2018; however, lottery permit applications remained under-subscribed in many permit areas. Surplus permits issued in 2019 were similar to 2018. The greatest number of regular gun permits were issued in permit areas 507, 501, and 508 (in descending order; Table 5). Permit areas 507 and 501 represent the core turkey range in Minnesota. Permit area 508 represents an area of potentially expanding opportunity as this permit area was expanded in 2016 to include the entire north-central and northeastern regions of Minnesota. Permit sales for the first non-lottery time period (C) were the highest statewide, followed by lottery time periods A and B, respectively (Table 6).

Harvest

Hunters registered 10,699 turkeys (Tables 3, 4, 5, & 7), which was 6% below the 10-year average (11,372 turkeys, Figure 3, Table 4). Although harvest remained the highest in the core turkey range in permit areas 507 (2,821 turkeys) and 501 (2,237 turkeys), harvest in permit area 508 (1,623 turkeys) continued to surpass 503 (1,139 turkeys) for the third year in a row (Table 5). Youth (1,835 turkeys), lottery (3,171 turkeys), and archery (1,721 turkeys) harvest each increased 4% from 2018 whereas surplus harvest (3,966 turkeys) decreased 6% from 2018 (Table 3). These trends may be attributable to weather conditions (see below).

Weather Summary

Winter 2018-2019 was mild through mid-January 2019. Historically low and persistent sub-zero temperatures occurred in the final week of January and multiple snowfall events in February and March blanketed much of the core turkey range with deep snow exceeding 6 inches from mid-February through mid-March. Prolonged periods of deep snow can impede the ability of adult turkeys to locate food resources which are critical for maintaining optimal body condition and may impact overwinter survival. Spring weather was wet and cold across much of the turkey range with multiple rain events throughout the spring hunting season. Lingering snow and colder than normal temperatures likely delayed nesting activities and vegetation "green up" was later than normal. Cold and wet weather conditions may have impacted hunter participation and effort, and therefore harvest, in some areas.

Table 1. Permits available, number of applicants, permits issued, registered harvest, and hunter success rates for the ten most recent fall wild turkey seasons in Minnesota, 2009-2018.

Year	Permits available	Applicants	Permits issued	Registered harvest	Hunter success (%)[a]
2009	9,330	7,738	5,019	1,163	23.2
2010	10,430	6,869	6,607	1,353	20.5
2011	10,430	3,538	5,382	953	17.7
2012[b]	Unlimited	N/A	10,628	1,752	16.5
2013[b]	Unlimited	N/A	8,060	1,137	14.1
2014[b]	Unlimited	N/A	8,236	1,216	14.8
2015[b]	Unlimited	N/A	8,109	1,213	15.0
2016[b]	Unlimited	N/A	8,469	1,176	13.9
2017	Unlimited	N/A	7,650	1,015	13.3
2018	Unlimited	N/A	6,719	834	12.4

[a] Total hunter success (all permits issued divided by registered harvest). Success rates not adjusted for non-participation or un-registered harvest.

[b] Permits issued, registered harvest, and derived hunter success (%) was reviewed and adjusted to address inconsistencies in data query and previous reporting.

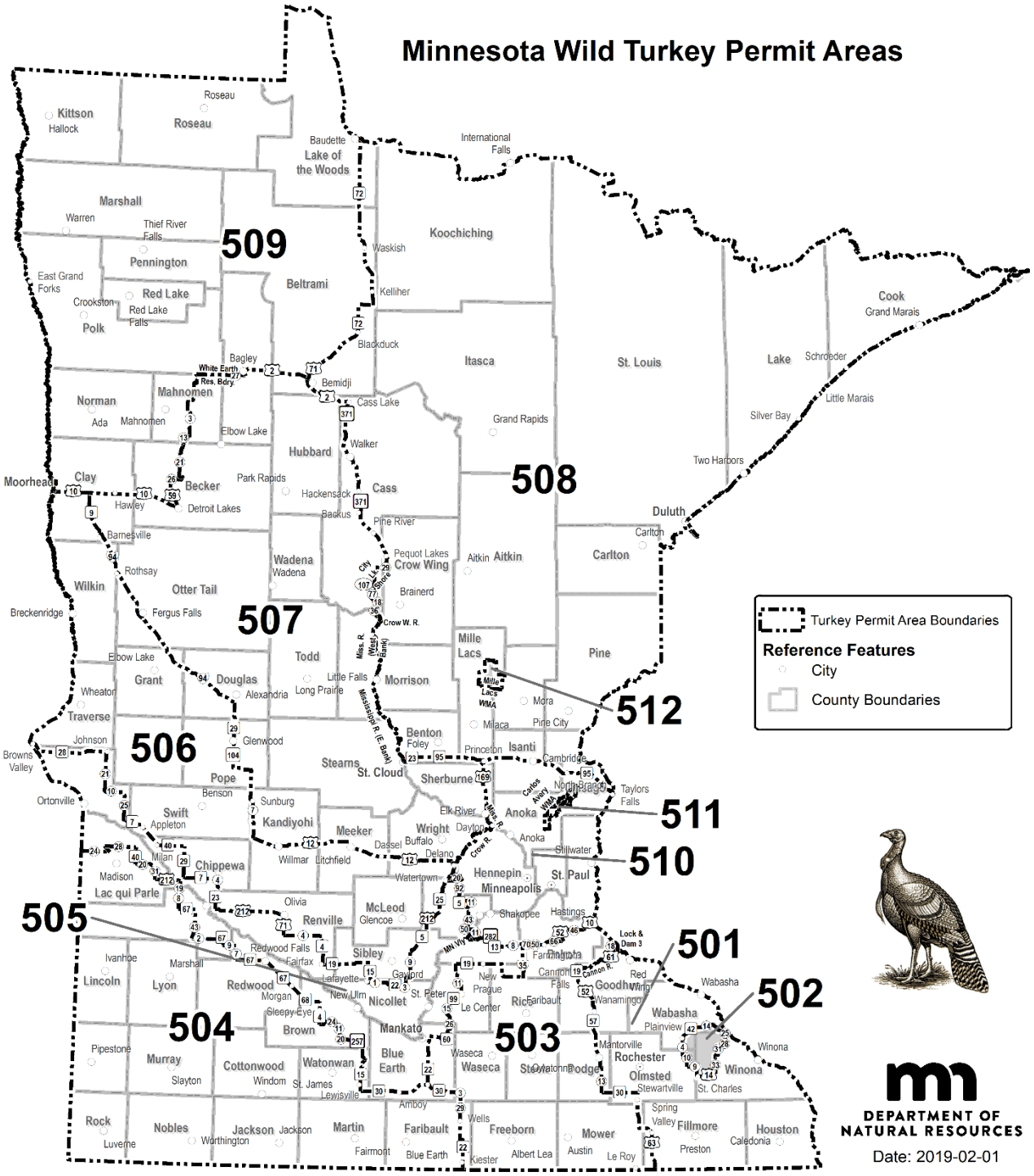

Figure 1. Permit areas open for hunting, fall 2018 and spring 2019 wild turkey seasons in Minnesota.

Table 2. Permits issued, registered harvest by sex, total registered harvest, regular harvest, and hunter success rates during the 2018 fall wild turkey season in Minnesota.

Permit area	Regular permits issued[a]	Toms[b]	Jakes[b]	Hens[b]	Total registered harvest[b]	Regular harvest[c]	Regular success rates (%)[d]
501	730	32	12	52	96	86	11.8
502	64	0	2	3	5	5	7.8
503	515	21	5	39	65	55	10.7
504	119	2	4	4	10	10	8.4
505	267	12	5	18	35	31	11.6
506	185	9	2	14	25	23	12.4
507	1,386	81	43	175	299	264	19.0
508	1,162	41	32	96	169	147	12.7
509	162	9	9	24	42	27	16.7
510	586	34	11	37	82	74	12.6
511	65	1	0	3	4	4	6.2
512	68	1	0	1	2	2	2.9
TOTAL	**5,309**	**243**	**125**	**466**	**834**	**728**	**13.7**

[a] Youth permits were not included as there is no declared permit area (valid in all permit areas). No separate license type for archery hunters was available so archery hunters are reflected in regular permits issued.

[b] Total harvest for all license types.

[c] All firearm and archery harvest, excluding youth.

[d] Overall youth success rate was 7.5% in 2018; unable to quantify by permit area as youth permits were valid in all permit areas).

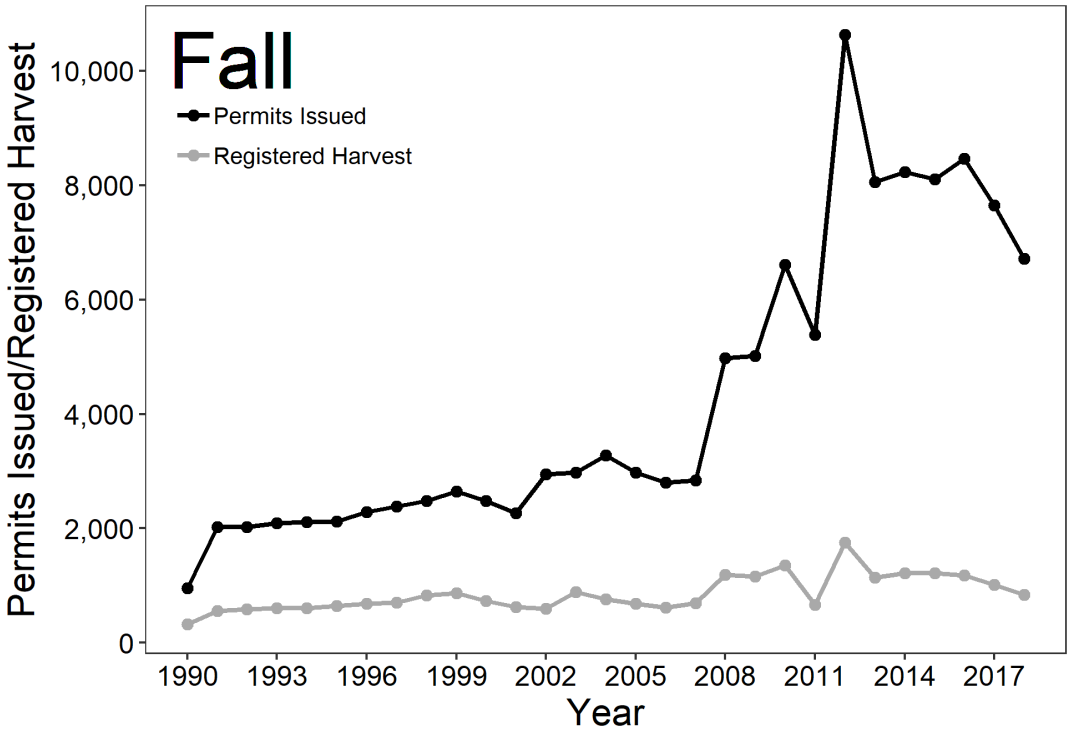

Figure 2. Permits issued and registered harvest for fall wild turkey seasons in Minnesota, 1990-2018.

Table 3. Total permits issued, harvest, and success rate by permit type during the spring 2019 wild turkey season in Minnesota.

	Total permits issued	Harvest	Success (%)[a]
Lottery	8,901	3,171	35.6
Surplus	15,664	3,966	25.3
Youth	10,032	1,835	18.3
Archery	11,792	1,721	14.6
Military	35	6	17.1
Total	46,424	10,699	23.0

[a] Success rates not adjusted for non-participation.

Table 4. Permits available, permits issued, registered harvest, and hunter success rates for the ten most recent spring wild turkey hunting seasons in Minnesota, 2010-2019.

	Permits				Harvest	
Year[a]	Available	Issued[b]	Issued (%)	Archery permits issued	Registered harvest	Success (%)[c]
2010[d]	55,982	46,548	83.0	2,910	13,467	27.2
2011[d]	Unlimited	43,521	N/A	2,462	10,055	21.9
2012[d]	Unlimited	38,155	N/A	3,325	11,276	27.2
2013[d]	Unlimited	40,430	N/A	3,885	10,321	23.3
2014[d]	Unlimited	42,134	N/A	4,760	11,425	24.4
2015[d]	Unlimited	40,824	N/A	4,930	11,694	25.6
2016[d]	Unlimited	38,895	N/A	10,132	12,277	25.0
2017[d]	Unlimited	37,882	N/A	11,043	11,803	24.1
2018[d]	Unlimited	34,214	N/A	11,200	10,706	23.6
2019	Unlimited	34,632	N/A	11,792	10,699	23.0

[a] Youth hunt data included.

[b] Permits issued to archery hunters were not included to facilitate comparison to previous years.

[c] Total hunter success (registered harvest divided by all permits issued). Success rates not adjusted for non-participation or un-registered harvest.

[d] Permits issued, derived issued %, registered harvest, and derived hunter success (%) were reviewed and adjusted to address inconsistencies in data query and previous reporting.

Table 5. Regular (non-youth) firearm permits issued, registered harvest, and hunter success during the 2019 spring wild turkey season in Minnesota.

Permit area	Regular permits issued[a]	Total registered harvest[b]	Regular gun harvest[c]	Regular gun success rates (%)[d]
501	5,927	2,237	1,747	29.5
502	533	149	110	20.6
503	2,801	1,139	828	29.6
504	623	253	160	25.7
505	1,859	749	571	30.7
506	895	332	191	21.3
507	6,036	2,821	1,792	29.7
508	3,546	1,623	1,013	28.6
509	354	250	115	32.5
510	1,801	1,060	573	31.8
511	123	48	24	19.5
512	102	38	19	18.6
TOTAL	**24,600**	**10,699**	**7,143**	**29.0**

[a] Permits issued for the archery, youth, and the Camp Ripley disabled veterans hunt were not included.

[b] Total harvest for all license types.

[c] All lottery, military, and surplus permit harvest, excluding youth and archery licenses.

[d] Regular gun success (regular gun harvest divided by regular permits issued). Success rates not adjusted for non-participation or un-registered harvest.

Table 6. Permits available and issued by license type and time period for the spring 2019 wild turkey season in Minnesota.

Time period	Permits available	General lottery[a]	Surplus	Youth	Archery
A: 17-23 April	7,010	5,117	781	Not applicable – Youth and archery permits were valid during all time periods.	
B: 24-30 April	7,010	3,801	1,997		
C: 1-7 May	Unlimited	6	7,241		
D: 8-14 May	Unlimited	9	2,984		
E: 15-21 May	Unlimited	2	1,860		
F: 22-31 May	Unlimited	1	801[b]		
Total	**Unlimited**	**8,936**	**15,664**	**10,032**	**11,792**

[a] Includes landowner and military permits.

[b] Number of surplus licenses sold for this time period. Actual number of hunters is unknown because all unsuccessful hunters from previous time periods were permitted to hunt in the final (F) season.

Table 7. Total harvest by time period during the spring 2019 wild turkey season in Minnesota.

Time period	Total harvest	Harvest (%)
A	3,608	33.7
B	2,436	22.8
C	2,306	21.6
D	897	8.4
E	537	5.0
F	915	8.6
Total	**10,699**	**100**

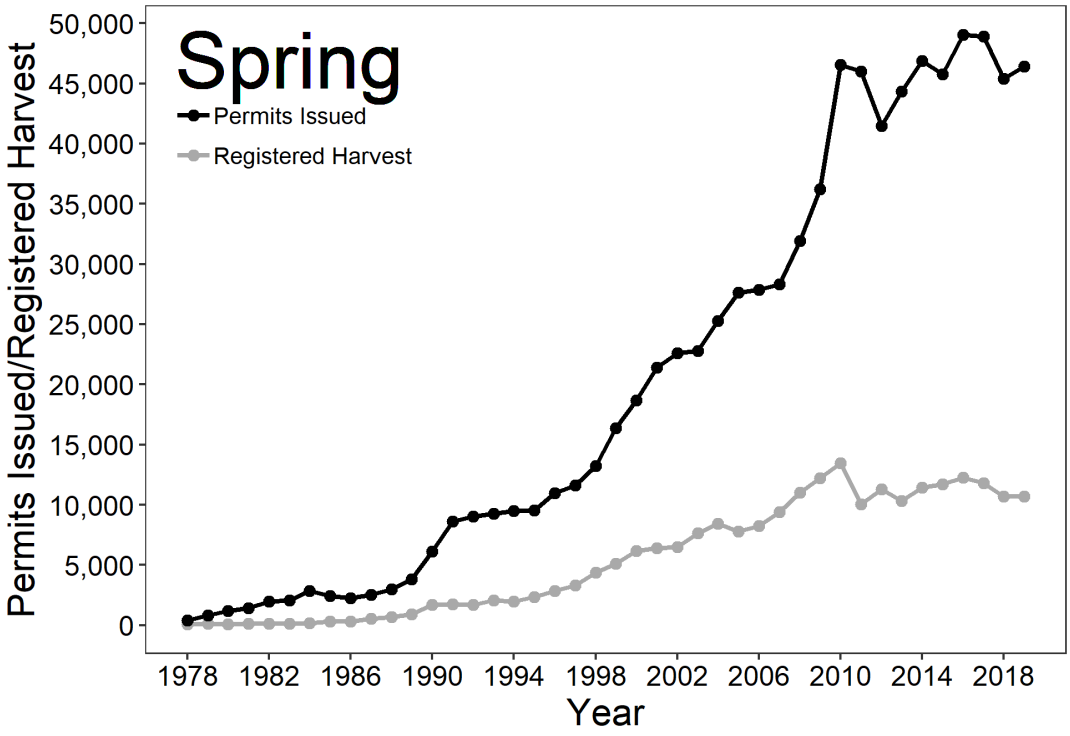

Figure 3. Permits issued and registered harvest for spring wild turkey seasons in Minnesota, 1978-2019.

REGULATION/LEGISLATION CHANGES

There is continued interest among wildlife managers and hunters to liberalize wild turkey hunting opportunities for sportspersons in Minnesota. Due to this interest, public input was sought in 2019 for five potential wild turkey regulation changes. Those questions were:

1. Should the requirement that wild turkey hunters use shotguns 20 gauge or larger be eliminated?
2. Should wild turkey hunters be allowed to hunt in any permit area during their respective season or time period, except in the three permit areas composed mostly of public hunting land?
3. Should the fall wild turkey season be extended to include the month of November?
4. Should the fall wild turkey bag limit be increased to two birds in the metro area (PA 510)?
5. Should spring wild turkey licenses for the A and B seasons be sold over the counter before and during the open season?

Generally, respondents to the survey (n=2,170) were supportive of all questions. However, there was the least support for extending the fall season into November (question 3) and the most support for eliminating the A & B season lottery process in the spring (question 5). Results from the survey will be used in the regulation recommendation and season setting process.

In 2019, the Minnesota state legislature did expand the definition of a legal firearm to include "any shotgun or muzzleloading shotgun 10 gauge or smaller using fine shot no. 4 or smaller diameter shot" (97B.722).

RESEARCH

Beginning in 2020, Minnesota will pilot two surveys in an effort to better understand wild turkey productivity and harvestable population abundance trends and distribution. Specifically, a brood survey which will rely on opportunistic observations by citizen scientists, will document wild turkey broods. This survey will be used to assess and monitor wild turkey productivity trends. Additionally, a post-season hunter effort and harvest survey will be used to estimate the abundance of male wild turkeys prior to the hunting season. This survey is intended to serve as a monitoring tool and will provide quantitative data to inform season setting and regulatory decisions.

A deer hunter observation survey, on-going since 2017, asks experienced (purchased a license for the past 3 years) archery deer hunters to record observations of several species of interest, including wild turkey. The observation period for this survey is September 16-November 3. Data from this survey may have value as an index of turkey abundance across the state.

EMERGING OR EVOLVING ISSUES

In early 2019, the wildlife section of the Minnesota Department of Natural Resources re-instated an internal wild turkey committee with representatives from each DNR region including area wildlife managers, wildlife research staff, and enforcement officers. The objective of this committee is to discuss potential regulation or season setting changes and discuss any other issues pertinent to wild turkey management in Minnesota.

Wild turkeys in urban settings continue to gain attention from the public, mainly in the form of nuisance complaints. City municipalities continue to work with wildlife managers to reduce human-wildlife conflicts and to secure depredation permits when deemed necessary after completing a required Wild Turkey Management Plan for their specific municipality. Public tolerance of turkeys in urban areas will likely continue to be an issue for wildlife managers.

RELEVANT LINKS

General information about wild turkey hunting in Minnesota:
http://www.dnr.state.mn.us/hunting/turkey/index.html
Wild Turkey hunting regulations:
http://files.dnr.state.mn.us/rlp/regulations/hunting/2016/full_regs.pdf#page=6
Wild Turkey management in Minnesota (and links to recent harvest reports):
http://www.dnr.state.mn.us/turkey/index.html?tab=2#detailTabs
Wild Turkey document archive (older harvest reports, etc.):
http://www.dnr.state.mn.us/hunting/turkey/archive.html#Maps

MISSOURI WILD TURKEY POPULATION STATUS REPORT – 2019

43rd Midwest Deer and Wild Turkey Study Group Meeting – August 12-14, 2019
Abe Martin Lodge at Brown County State Park – Nashville, Indiana

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POPULATION STATUS

After reaching peak abundance in the early 2000s, Missouri's wild turkey population declined by about 25% at the statewide scale during the mid-to-late 2000s. From 2000-2010, the poult-to-hen ratio (PHR) from the Missouri Department of Conservation's (MDC) brood survey exhibited a 7% annual declining trend. Production was considerably better during 2011, 2012, and 2014. However, during the past four years, production has been especially poor. The statewide PHR during 2016 and 2017 were tied for the lowest on record since the survey was initiated in 1959, and the PHR during 2018 was only slightly better than these record-low years (Figure 1).

Spring harvest data suggest turkey numbers have declined at the statewide scale during the past five years (2014–2018) and are currently about 35% below the population peak. In northern Missouri (Northwest and Northeast turkey productivity regions; Figure 2), turkey numbers reached a peak in the early-to-mid 2000s before declining by 40-50% following several years of poor production. Although turkey numbers in the Northeast region increased following improved production in 2011 and 2014, the region has experienced poor production during the last several years. Turkey numbers in the Northeast region are currently stable and remain about 45–50% less than the population peak. Turkey numbers are currently declining in the Northwest region and remain about 50% below peak numbers.

Turkey numbers in the Lindley Breaks and Union Breaks regions, in central and east-central Missouri, are currently stable based on the five-year spring harvest trend. Turkey abundance in these regions currently ranges 30–35% below the population peak that occurred in the early-to-mid 2000s. The five-year turkey abundance trend is also stable in the Mississippi Lowlands region of southeastern Missouri. Unlike other regions, turkey numbers in the Mississippi Lowlands increased during the 2000s, influenced by regional translocations that occurred during the winter of 2006–2007.

During the early 2000s, turkey numbers in southern Missouri experienced the same peak in abundance as northern populations; however, the decline that followed was not of the same magnitude, with regional numbers declining by approximately 25–30%. Although production was generally higher during the next several years following 2010, poor production in recent years has reduced regional turkey numbers. As a result, turkey numbers in the Ozarks East and West, Ozark Border, and West Prairie regions currently ranges 25–35% below peak numbers.

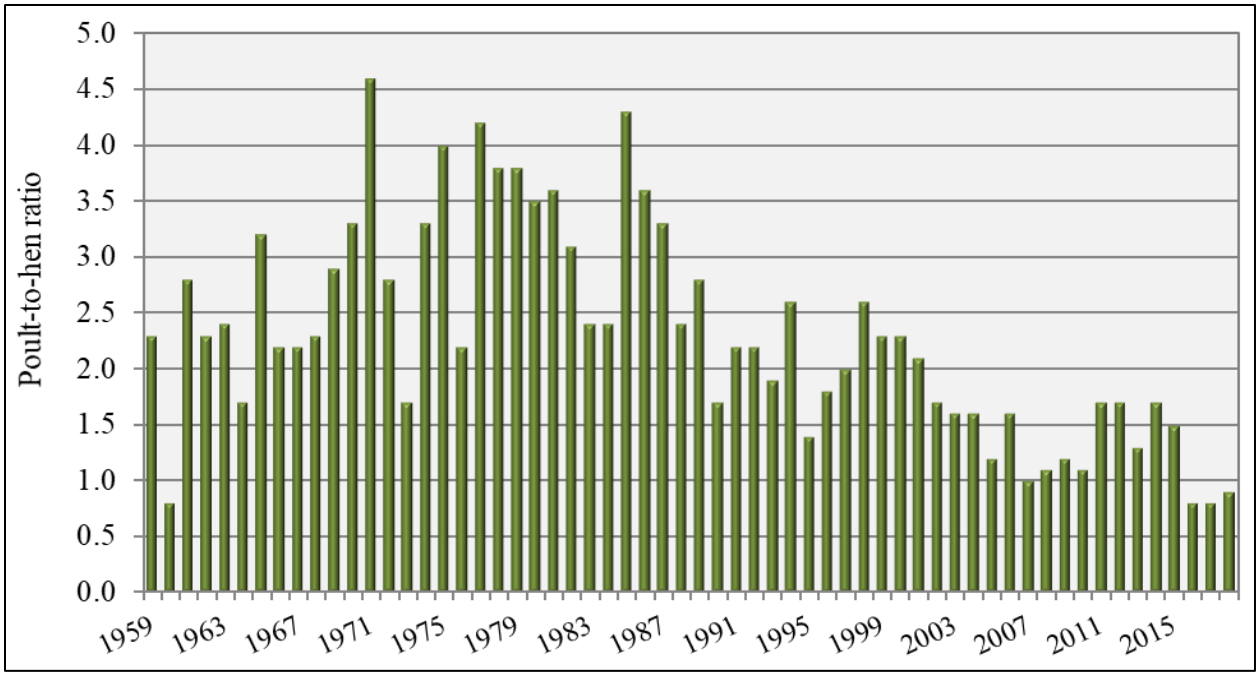


Figure 1. Statewide poult-to-hen ratios derived from the Missouri Department of Conservation's wild turkey brood survey conducted in June, July, and August 1959-2018.

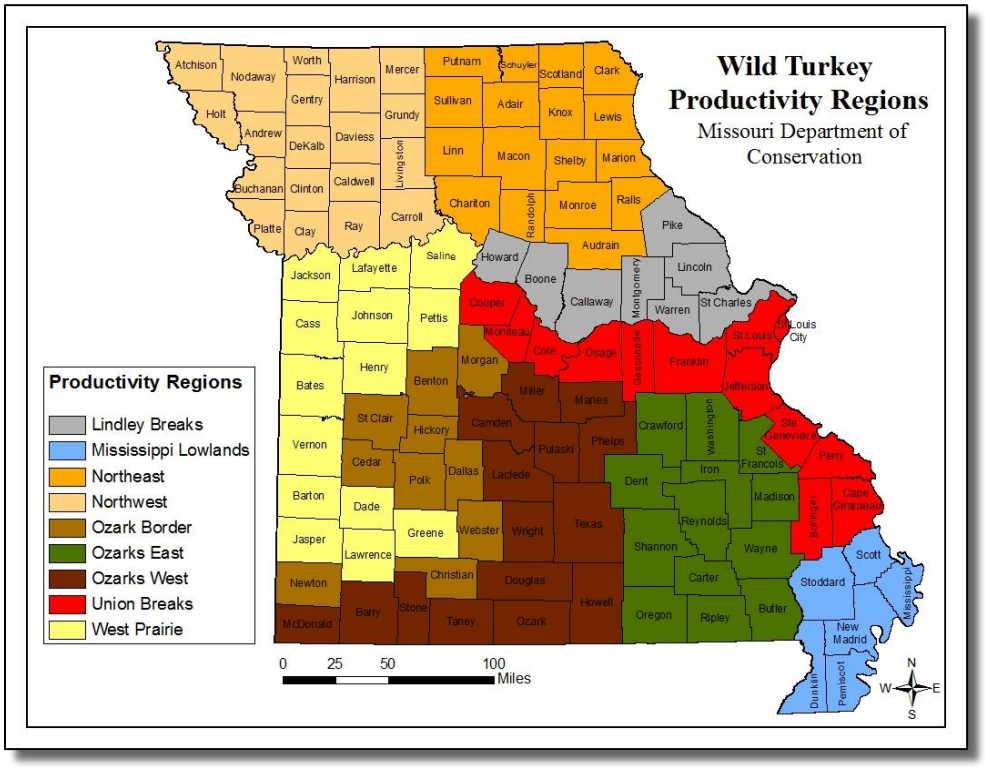


Figure 2. Turkey productivity regions in Missouri. Regions consist of counties grouped by similar land cover composition.

REPRODUCTION

The MDC has been conducting a turkey brood survey annually since 1959. Turkey observations are recorded at the county-level and analyzed by turkey productivity region (Figure 2), which are counties grouped by similar land cover composition. Observations of more than two hens per brood are not included in PHR calculations.

At the statewide scale in 2018, 36% of hens were observed with a brood (Table 1). The percentage of hens observed with a brood ranged from 25% in the Ozarks West region to 46% in the Northwest region. Statewide, the average brood size was 3.5 poults. Average brood size ranged from 3.4 in the West Prairie region to 4.2 in the Lindley Breaks region. The 2018 statewide PHR of 0.9 was 13% higher than the 2017 ratio, 25% less than the five-year average, 31% less than the 10-year average, and 40% less than the 20-year average (Table 2). Among turkey productivity regions, PHRs ranged from 0.7 in the Ozarks West region to 1.4 in the Northwest region.

Table 1. Wild turkey brood survey data by turkey productivity region (Figure 2). Data were obtained from Missouri's wild turkey brood survey conducted in June, July, and August 2018.

Productivity Region	% Hens w/ Poults	Average Brood Size	Poult-to-Hen Ratio	Gobbler-to-Hen Ratio
Lindley Breaks	42%	4.2	1.3	0.47
Mississippi Lowlands	41%	3.9	1.2	0.54
Northeast	43%	3.9	1.3	0.59
Northwest	46%	4.0	1.4	0.64
Ozark Border	36%	3.5	0.8	0.81
Ozarks East	28%	3.7	0.8	0.66
Ozarks West	25%	3.9	0.7	0.64
Union Breaks	38%	3.7	0.9	0.49
West Prairie	37%	3.4	0.8	0.84
Statewide[a]	**36%**	**3.8**	**0.9**	**0.63**

[a]Statewide totals include observations where region was not recorded on the survey card.

Table 2. Index (poult-to-hen ratio) of Missouri wild turkey production listed by turkey productivity region (Figure 2). Data were obtained during the 2018 turkey brood survey and are compared to previous years. For each interval value, the percent change indicates how the 2018 index compares to the previous year or the average for periodic intervals.

Productivity Region	2018 Index	1-year (2017) Change	5-year (2013–2017) Change	10-year (2008–2017) Change	20-year (1998–2017) Change
Lindley Breaks	1.3	+63%	+8%	-7%	-24%
Mississippi Lowlands	1.2	No change	No change	-20%	-45%
Northeast	1.3	+18%	No change	No change	-13%
Northwest	1.4	+8%	No change	+8%	-13%
Ozark Border	0.8	+14%	-27%	-33%	-47%
Ozarks East	0.8	No change	-43%	-50%	-56%
Ozarks West	0.7	+17%	-42%	-42%	-53%
Union Breaks	0.9	No change	-25%	-31%	-40%
West Prairie	0.8	+33%	-20%	-27%	-43%
Statewide[a]	**0.9**	**+13%**	**-25%**	**-31%**	**-40%**

[a]Statewide totals include observations where region was not recorded on the survey card.

HARVEST

2018 Spring Turkey Season

During the 2018 youth spring season, hunters harvested 1,723 turkeys. This harvest total represented a 58% decrease from the 2017 youth season and was 59% less than the previous five-year average. The large decline in harvest can be attributed mostly to the unseasonably cold weather that blanketed the state during the two-day hunt, which reduced permit sales and hunter participation. Hunters harvested 39,242 turkeys during the 21-day regular spring turkey season. The regular season harvest was 13% less than the harvest total in 2017. The total 2018 spring harvest, including both the youth and regular seasons, was 35,805 (Figure 3). This harvest total was 17% less than the 2017 harvest and 23% less than the previous five-year average. Counties with the highest total spring harvest were Franklin (760), Texas (732), and Laclede (657) (Figure 4).

Permit sales for the 2018 spring turkey season (97,051; excluding no-cost landowner permits) were 4% less than in 2017 (Figure 3). Spring turkey permit sales in 2018 included 88,774 (91%) resident permits and 8,277 (9%) non-resident permits. An additional 38,175 no-cost permits were distributed to resident landowners. The total number of spring turkey hunters in Missouri in 2018 was 129,882, which was 5% less than in 2017. The total number of hunters does not equal the permit sales total because some hunters purchase a permit in addition to receiving a no-cost landowner permit.

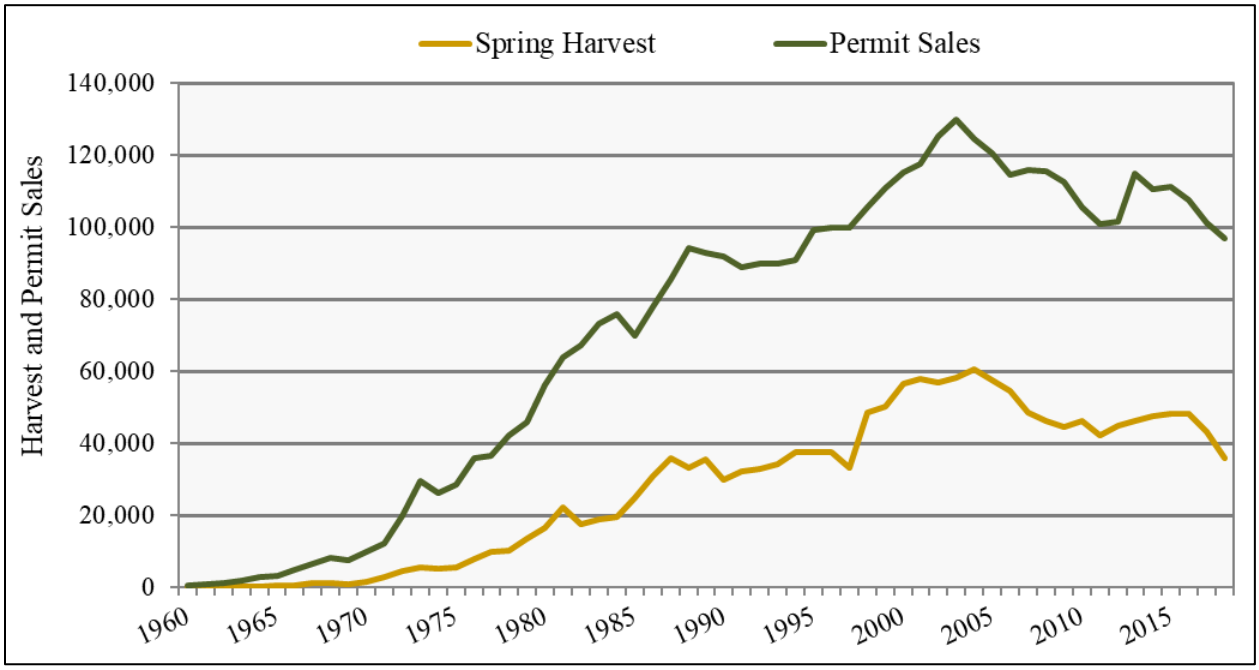


Figure 3. Number of wild turkeys harvested during the spring season (youth and regular season) in Missouri, and the number of turkey hunting permits sold for the spring season, 1960-2018. Permit sales do not include no-cost landowner permits.

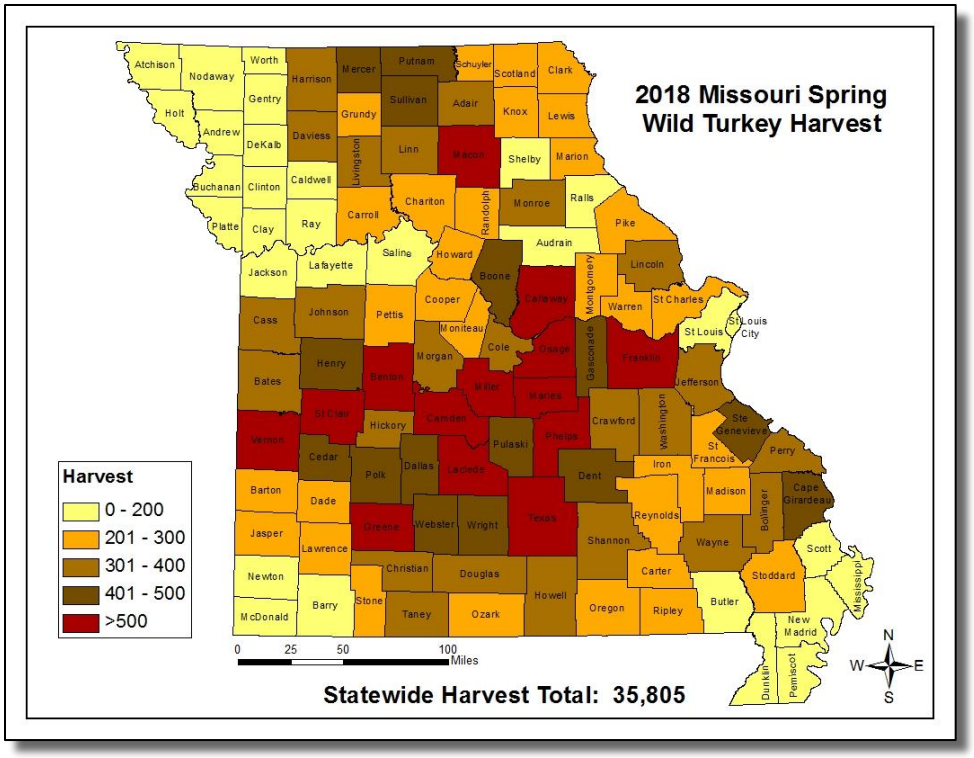


Figure 4. Total (youth and regular season) spring wild turkey harvest in Missouri, 2018.

2018 Fall Turkey Season

The 2018 fall firearms turkey harvest total of 2,169 was 25% less than the 2017 harvest total and 56% below the previous five-year average (Figure 5). Most of the fall firearms harvest occurred in southern Missouri (Figure 6). The top three harvest counties were Greene (57), Henry (48), and Laclede (47) (Figure 6).

Fall firearms turkey permit sales in 2018 increased slightly (< 1%) from 2017 (Figure 5). Of the 10,262 permits sold, 10,039 (98%) were purchased by Missouri residents and 223 (2%) by nonresidents. Fall firearms turkey hunting in Missouri has generally been declining in popularity since the late 1980s when over 50,000 permits were sold, and more than 28,000 turkeys were harvested during the 14-day season.

Declining turkey numbers during the mid-to-late 2000s, and in recent years, have likely reduced hunter participation in the fall firearms turkey season. Additionally, the increasing popularity of the fall archery deer and turkey season is likely to be partially responsible for the declining interest.

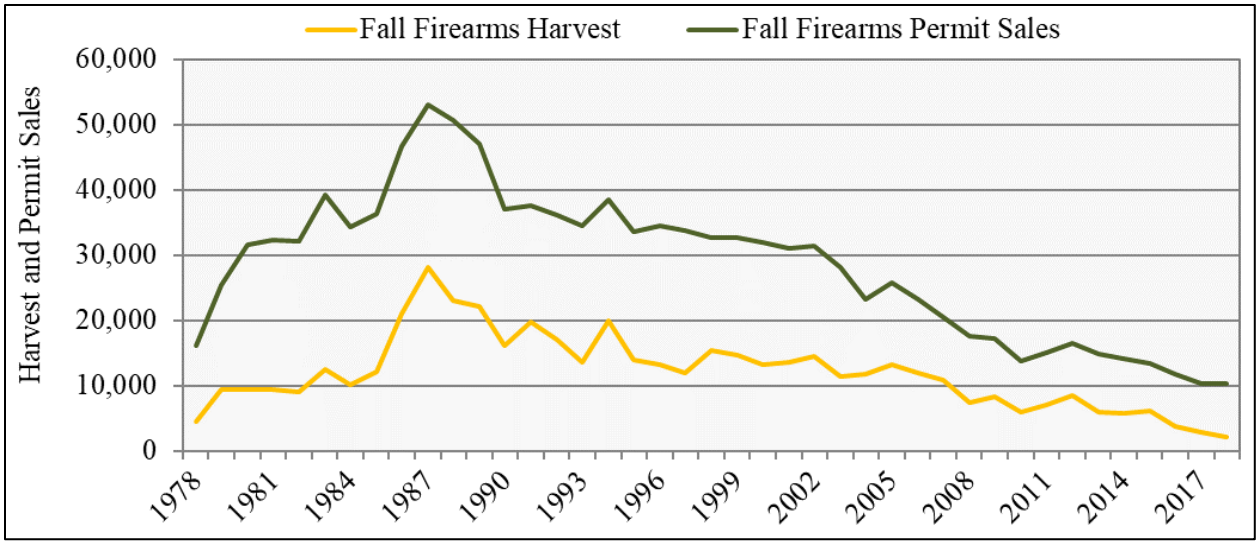


Figure 5. Number of wild turkeys harvested during the fall firearms turkey season in Missouri, and the number of fall firearms permits sold, 1978-2018. Permit sales do not include no-cost landowner permits.

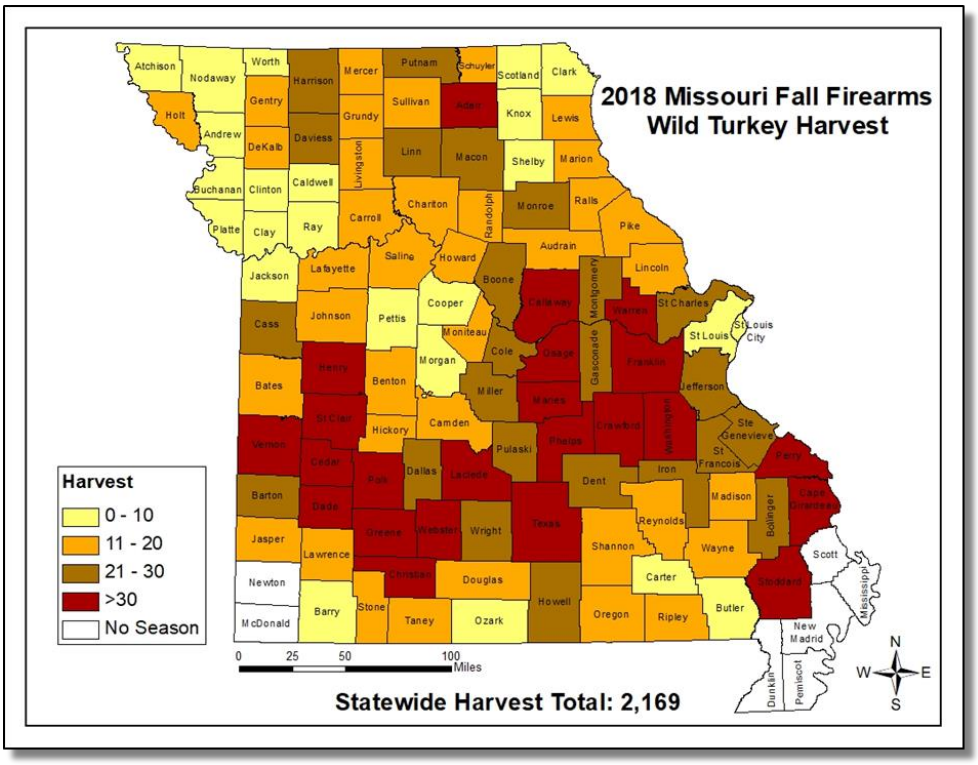


Figure 6. Missouri fall firearms wild turkey harvest, 2018.

Hunters harvested 2,095 turkeys during the 2018 fall archery deer and turkey season (Figure 7, Figure 8). The 2018 archery turkey harvest total was 14% less than the 2017 harvest total and was nearly 20% less than the previous five-year average. The top three harvest counties were Callaway (54), Franklin (43), and Monroe (37) (Figure 8).

Unlike the fall firearms turkey harvest, which has shown a declining trend since the late 1980s, the fall archery harvest increased until the mid-2000s (Figure 7). Since 2005, archery turkey harvests have fluctuated substantially on an annual basis, while exhibiting a declining trend the last several years.

Although archery permit sales were relatively stable from the mid-1990s through the mid-2000s, sales have since shown an increasing trend (Figure 9). In 2018, 123,882 archery hunting permits were sold—the highest number since the season's inception. Of the archery permits sold in 2018, 112,071 (90%) were purchased by Missouri residents and 11,811 (10%) by non-residents.

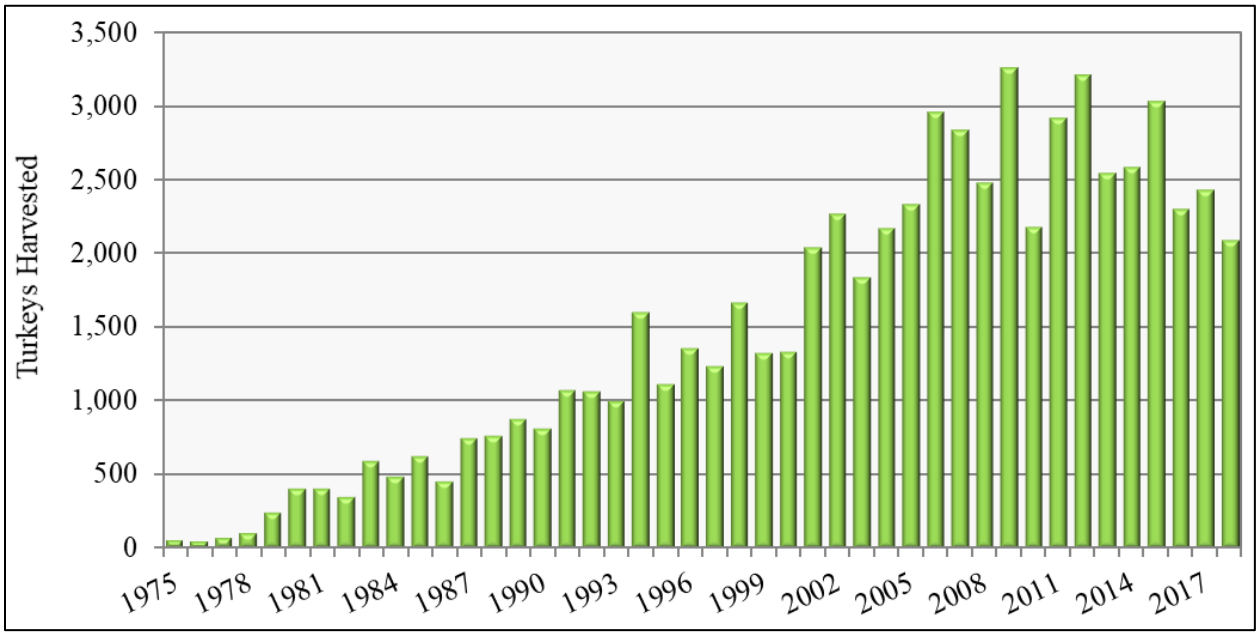


Figure 7. Missouri fall archery wild turkey harvest, 1975-2018.

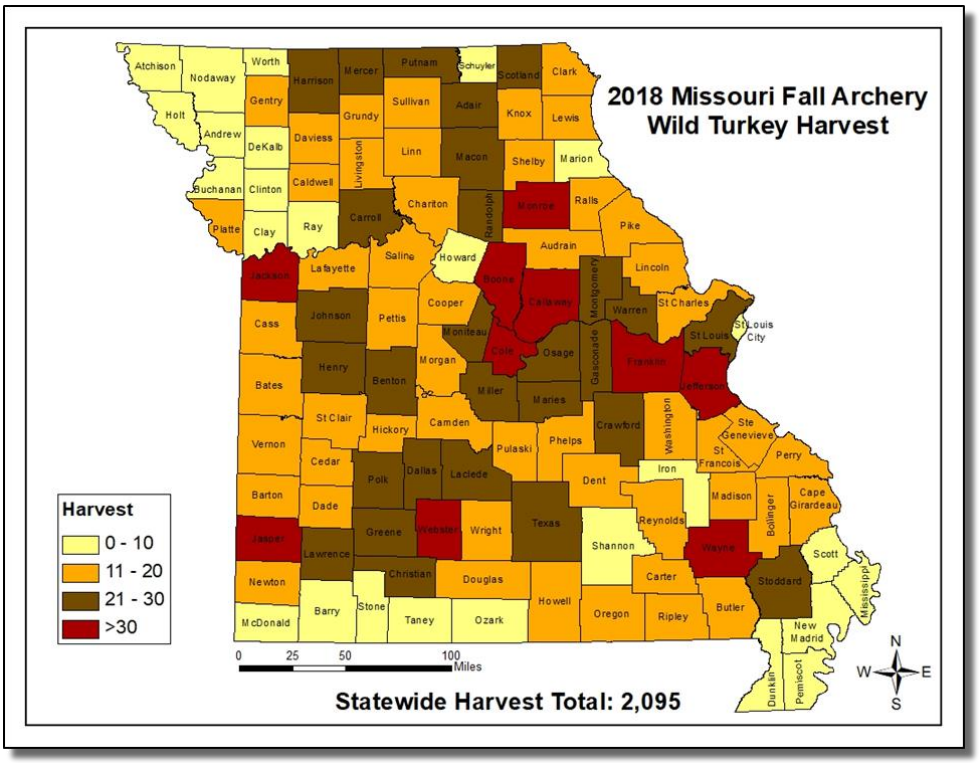


Figure 8. Missouri fall archery wild turkey harvest during the 2018 season.

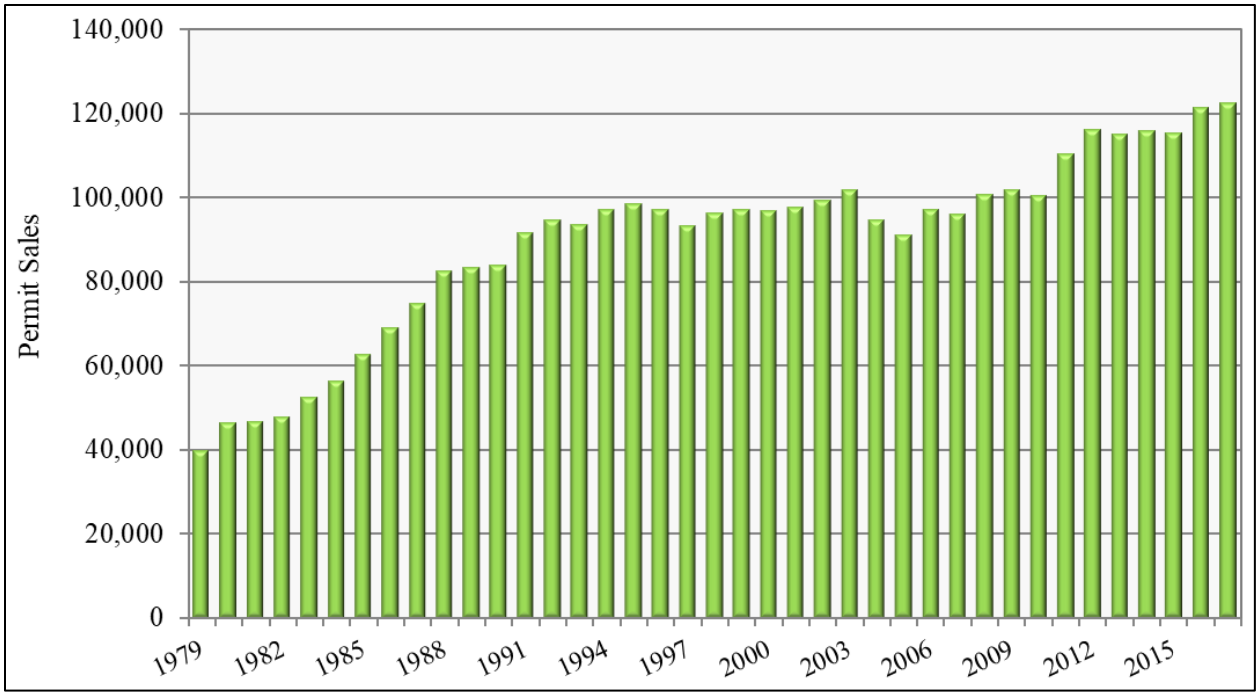


Figure 9. Missouri archery deer and turkey permit sales, 1975-2018. Permit sales do not include no-cost landowner permits. Prior to 1979, hunters purchased archery deer and turkey permits separately.

HUNTING INCIDENTS

There were two non-fatal hunting incidents during the 2018 spring turkey season. The number of spring turkey hunting incidents in Missouri has declined considerably over the course of the last three decades. During the late 1980s, more than 30 incidents occurred annually for every 100,000 permits sold. During the last five hunting seasons, the average number of incidents per 100,000 permits sold is 3.2 (Figure 10).

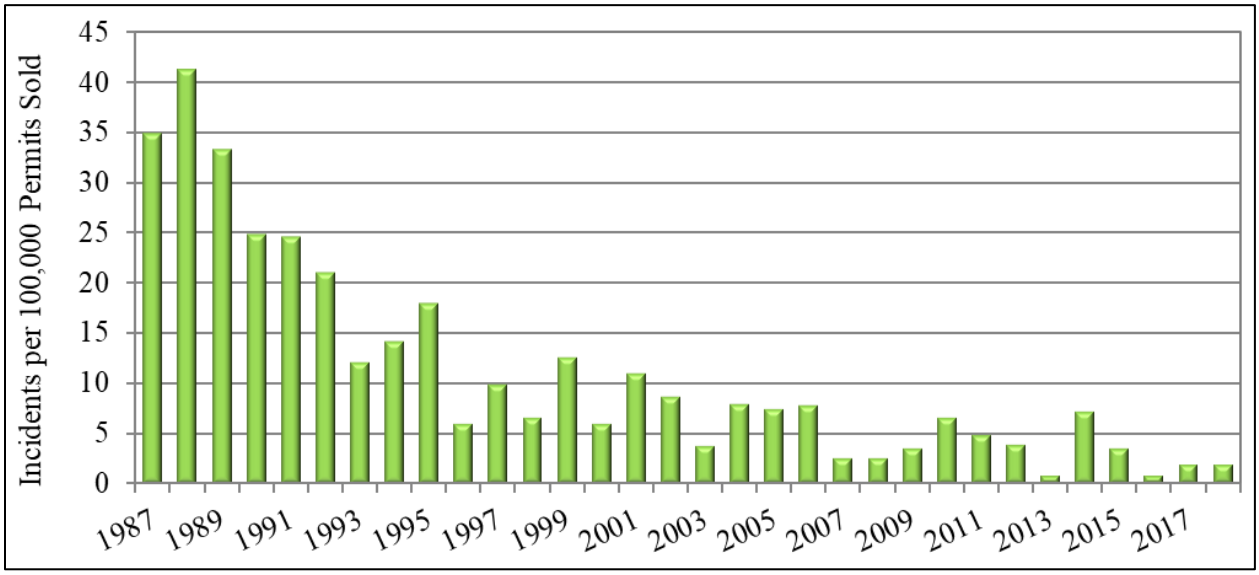


Figure 10. Number of hunting incidents during the spring turkey season in Missouri per 100,000 permits sold, 1987-2018.

REGULATION/LEGISLATION CHANGES

Other than changes to some conservation area and managed turkey hunts, no turkey hunting regulation changes occurred in 2018.

RESEARCH

Regional Turkey Population Monitoring for a Coordinated Harvest Management Strategy

In 2013, the MDC began a seven-year research project in partnership with the University of Missouri, University of Washington, and the National Wild Turkey Federation. The project involves five years of field-work capturing, marking, and radio-tracking turkeys in four northern Missouri counties. Data will be used to develop statistical population reconstruction (SPR) models, which the MDC's Wild Turkey Management Program will use to estimate turkey abundance, survival rates, harvest rates, recruitment, and population growth rate. The field work portion of the project was completed in mid-March of this year, and data analysis is currently underway.

Research objectives include:

1. Developing a regional turkey SPR model, which in addition to estimates of natural survival and harvest rates, will provide abundance and population growth rate.
2. Developing a user-friendly SPR modeling software program for future analysis of age-at-harvest and auxiliary data for turkeys and other harvested species in Missouri.
3. Estimating sex and age-class-specific seasonal and annual survival rates and cause-specific mortality rates.
4. Estimating age-class-specific harvest rates of male turkeys during the spring hunting season.
5. Estimating sex and age-class-specific harvest rates of turkeys during the fall hunting season.
6. Estimating reproductive parameters of female turkeys.

RELEVANT LINKS

- Missouri Department of Conservation (https://mdc.mo.gov)

NEBRASKA WILD TURKEY POPULATION STATUS REPORT – 2019

43rd Midwest Wild Turkey Working Group Meeting – August 12-14, 2019
Abe Martin Lodge at Brown County State Park, Nashville, Indiana

Luke Meduna – Big Game Program Manager
Nebraska Game and Parks Commission
2200 N 33rd
Lincoln, Ne 68503
402-471-5442 / luke.meduna@nebraska.gov

POPULATION STATUS

Population trend of wild turkeys in Nebraska is collected through surveys completed by Rural Mail Carriers across Nebraska. Surveys are completed in April, July and October. Reported below are the results of the July 2019 survey along with the statewide results of the 3 surveys combined.

Table 1. Wild turkey indices by pheasant management region from the 2019 July Rural Mail Carrier Survey. Carrier means are weighted by miles traveled per carrier.

	Mean turkeys per 100 miles & 90%	Percent Difference from:		
Region	Confidence Limits	2018	Mean 2014-2018	Mean 2009-2019
Central	1.61 (1.07-2.15)	16	19	-14
Northeast	0.75 (0.47-1.03)	-11	-14	-20
Panhandle	0.58 (0.00-1.47)	-29	-9	-17
Sandhills	2.32 (1.07-3.57)	27	49	-21
Southeast	0.83 (0.57-1.10)	-1	-11	-26
Southwest	3.82 (2.57-5.07)	38	43	22
Statewide	1.39 (1.13-1.65)	12	10	-12

Figure 1. Regional and statewide time series (2000-2018) of wild turkey abundance indices from the July Rural Mail Carrier Survey.

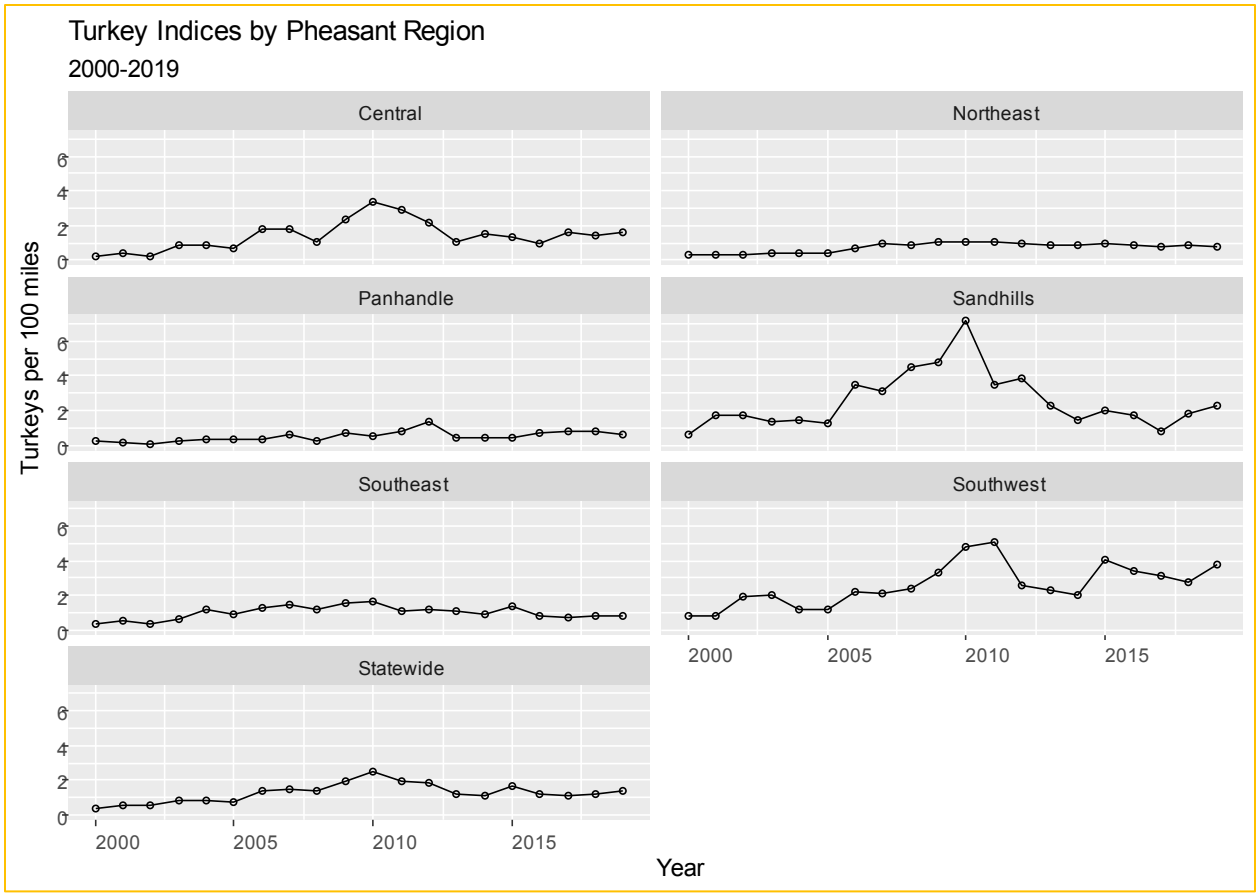
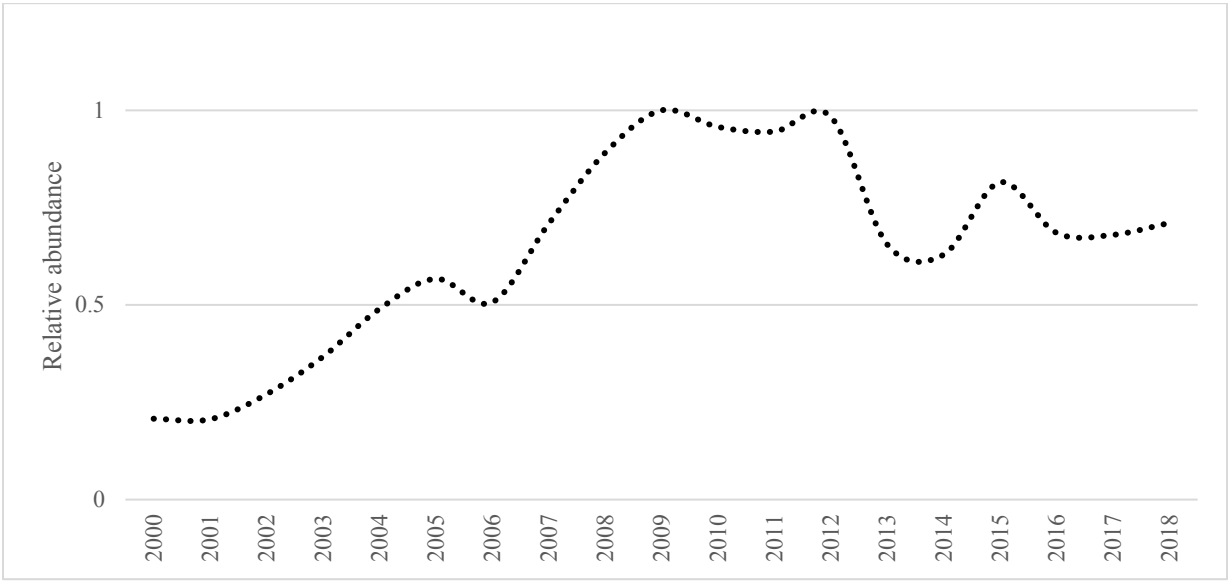


Figure 2. Statewide combined Rural Mail Carrier Survey (2000 – 2018).



REPRODUCTION

Turkey brood surveys have not be conducted in Nebraska since the early 2000's. Following the adoption of the southeast methodology by the NWTF Technical Committee in 2019, the NGPC decided to implement turkey brood surveys in summer 2019. NGPC Wildlife and Parks staff were given direction/option to participate in the survey. Nebraska NWTF members were also invited to participate in the survey to increase sample size and engage NWTF membership with NGPC management activities. Survey data can be submitted via standard paper forms and a web survey form on the agency website.

HARVEST

2018 Spring Turkey Season

Results. Permit sales for the spring 2018 season (n = 30,062) were 9.3% lower than spring 2017 sales (n = 33,174; Figure 1). Of permits sold, 4,004 (13.3%) were youth permits and 26,058 were statewide regular permits. Youth permits sales were 17.0% lower than in 2017 (n = 4,822), and statewide regular permit sales were 8.1% lower than in 2017 (n = 28,352). Of all unique permit buyers (n = 23,347), 77.4% bought only one permit, 16.4% bought two permits, and 6.2% bought three permits. Estimated total turkey harvest for the spring 2018 season was 17,731 turkeys. Of these, 1,430 were harvested on youth permits and 16,301 were harvested on regular statewide permits (Table 1, Figure 2). Overall, harvest was 13.2% lower during the spring 2018 season compared to spring 2017. Success during the spring 2018 season was 61.3%, with youth success lower at 37.2% and regular permit holders' success higher at 64.7% (Figure 3). Table 2 summarizes the 2018 spring season results.

TABLE 2. Spring turkey season harvest and success, 2012-2018.

		Year						
Type	Statistic	2012	2013	2014	2015	2016	2017	2018
Shotgun/	Permits	29,541	30,760	28,854	28,724	28,899	28,352	26,058
Regular	Harvest	18,884	19,040	16,707	17,378	20,143	18,569	16,301
	Success	65.9%	61.9%	57.9%	60.5%	69.7%	67.5%	64.7%
Youth	Permits	5,979	6,144	5,576	5,416	4,932	4,822	4,004
	Harvest	2,535	2,402	2,253	2,616	1,993	1,862	1,430
	Success	42.4%	39.1%	40.4%	48.3%	40.4%	41.5%	37.2%

FIGURE 3. Spring turkey permit sales, 1964-2018.

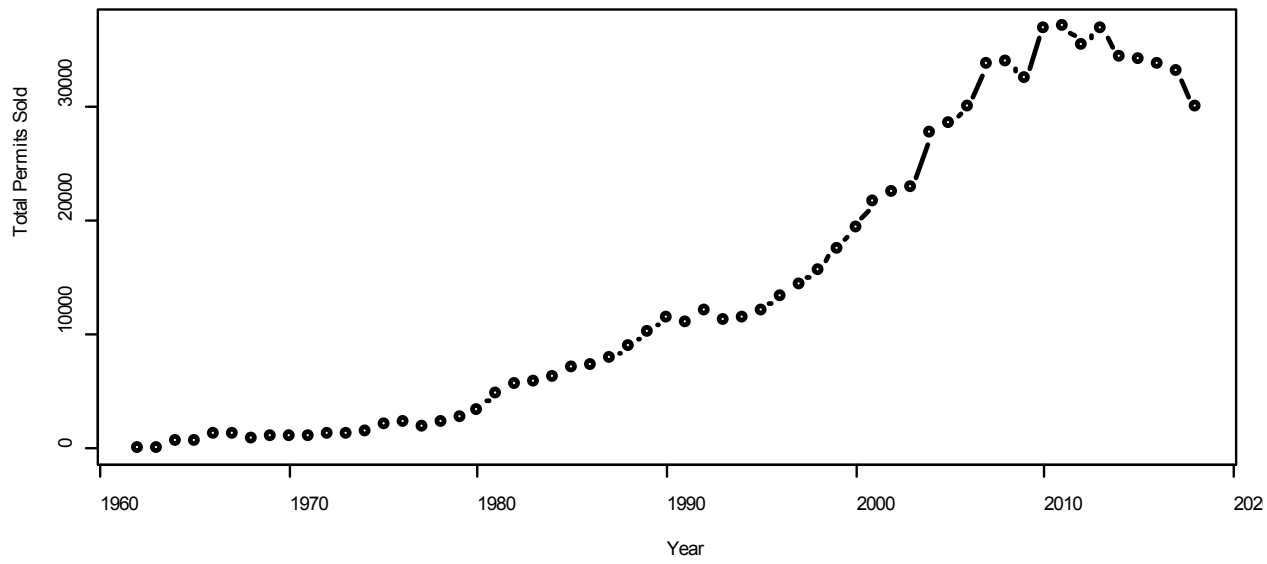


TABLE 3. Summary of spring 2018 turkey hunter survey responses and estimated harvest.

Residency	Permit Type	Permits Sold	Survey Permits	Reported Harvest	Success Rate	Estimated Harvest
Resident	Youth	2,789	392	128	32.6%	911
	Regular	13,678	2,124	1,134	53.4%	7,303
	Sub-Total	16,467	2,516	1,262	50.2%	8,214
Non-resident	Youth	1,215	321	137	42.7%	519
	Regular	12,380	2,994	2,176	72.7%	8,998
	Sub-Total	13,595	3,315	2,313	69.8%	9,517
	Total	30,062	5,831	3,575	61.3%	17,731

FIGURE 4. Spring turkey harvest, 1964-2018.

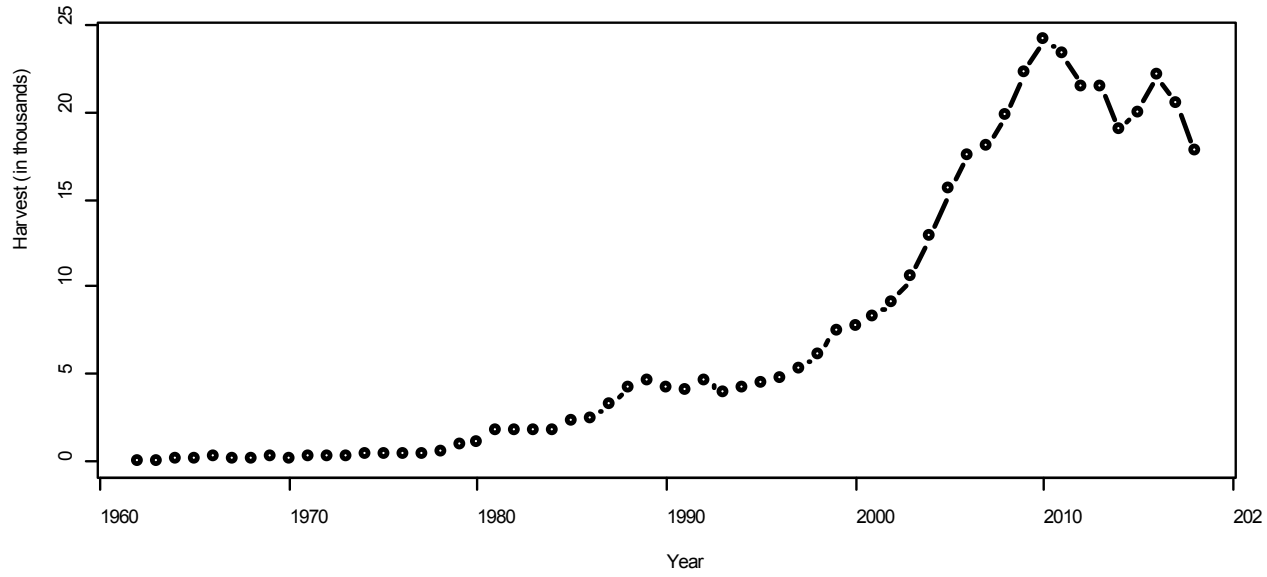
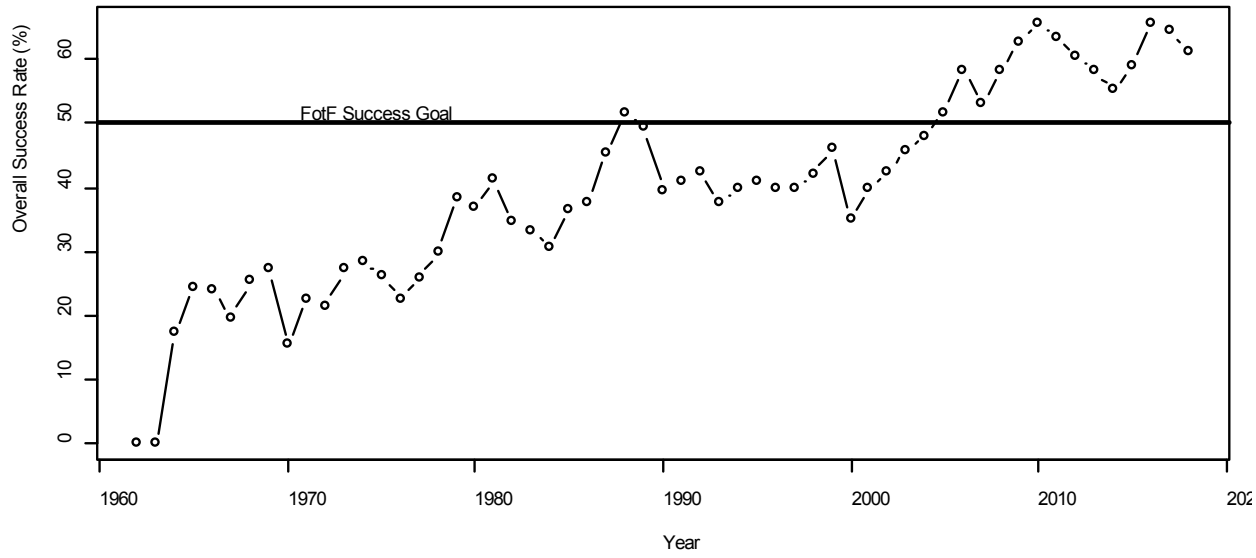


FIGURE 5. Spring turkey hunter success rate, 1964-2018. The horizontal line represents the success-rate goal established in the Focus on the Future plan (50% success).



2018 Fall Turkey Season

Results. Permit sales (n = 5,977) for fall 2018 were 12.9% lower than for the fall 2017 turkey season (n = 6,863, Figure 1). Of permits sold for the fall 2018 season, 18.2% were youth permits (n =1,088) and 81.8% were regular or landowner permits (n= 4,889). Comparison of demographic information (residency, sex, age) between permit buyers, survey sample, and survey respondents indicated that the email sample was representative of all permit buyers, but respondents were biased slightly towards non-residents and older permitees (Table 1). Estimated total fall 2018 harvest was 3,255 turkeys (Table 2, Figure 2), with youth harvesting 384 turkeys and regular/landowner permit holders harvesting 2,871 turkeys. Overall, harvest was 7.5% lower for the fall 2018 compared to fall 2017. Overall success rate

was 54.5% for permit holders (Table 2, Figure 3). Reported success rates for residents was 52.1% and for non-residents was 73.7% (Table 3). Table 3 summarizes the 2018 season harvest results.

TABLE 4. Comparison of demographic factors among all permit buyers, permit holders sampled, and survey respondents for the fall 2018 turkey hunter survey.

Demographic Factor		Permit Buyers	Permits Sampled	Respondents
	Sample Size	5,977	3,938	670
Residency	Resident	87.8%	86.3%	82.2%
	Non-resident	12.2%	13.7%	17.8%
Sex	Male	93.1%	93.7%	94.7%
	Female	6.9%	6.3%	5.3%
Age	Median	43	44	53
	Mean	41.5	42.8	48.2
	% Youth Permits	18.2%	15.0%	17.0%

TABLE 5. Fall turkey season harvest and success, 2011-2018.

		Year							
Type	Year	2011	2012	2013	2014	2015	2016	2017	2018
Shotgun	Permits	11,482	12,449	10,836	10,175	9,744	8,589	6,863	5,977
	Harvest	8,405	8,362	6,748	7,003	6,336	4,868	3,520	3,255
	% Success	73.2	67.2	62.3	68.8	65.0	56.7	51.3	54.5

TABLE 6. Summary of fall 2018 turkey hunter survey responses and estimated harvest.

Residency	Permit Type	Permits Sold	Surveyed Permits	Reported Harvest	Reported Success Rate	Estimated Harvest
Resident	Youth	925	110	39	35.5%	328
	Regular	4,299	554	307	55.4%	2,382
	Sub-total	5,224	664	346	52.1%	2,710
Non-Resident	Youth	163	26	9	34.6%	56
	Regular	590	111	92	82.9%	489
	Sub-total	753	137	101	73.7%	545
	Total	5,977	801	447	55.8%	3,255

FIGURE 6. Fall turkey permit sales, 1962-2018.

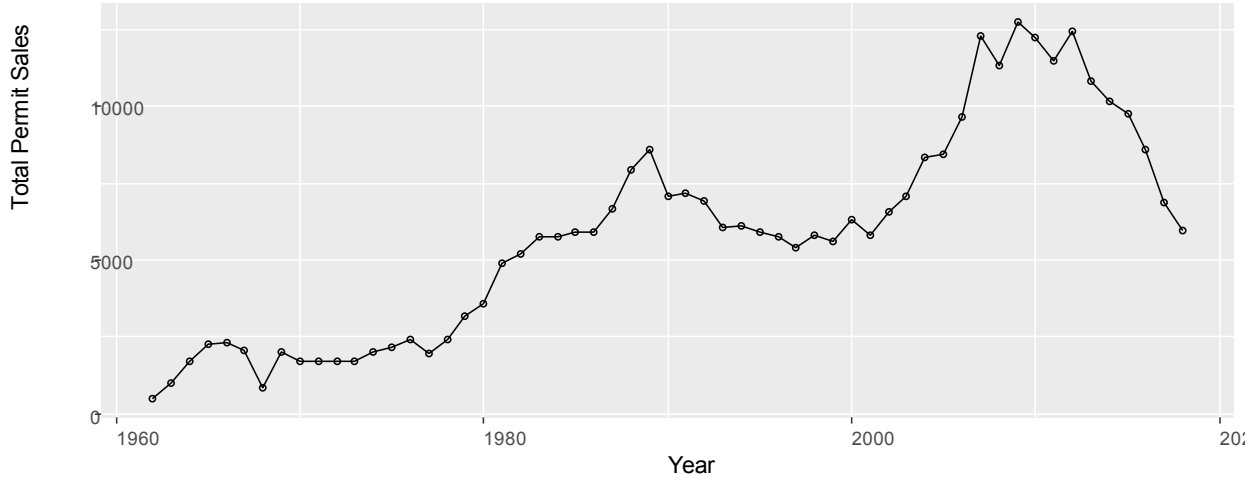


FIGURE 7. Fall turkey season harvest estimates, 1962-2018.

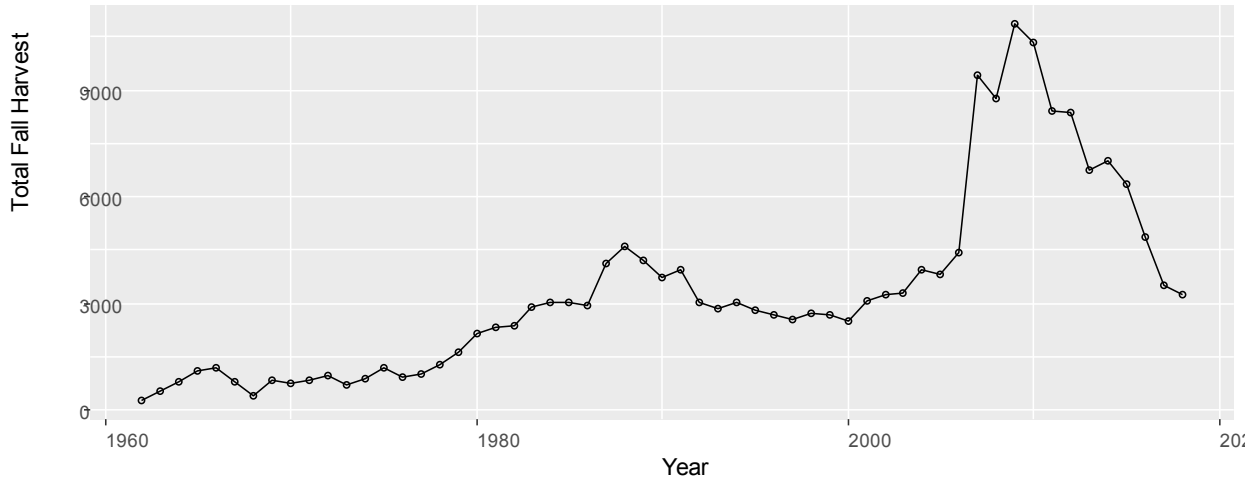
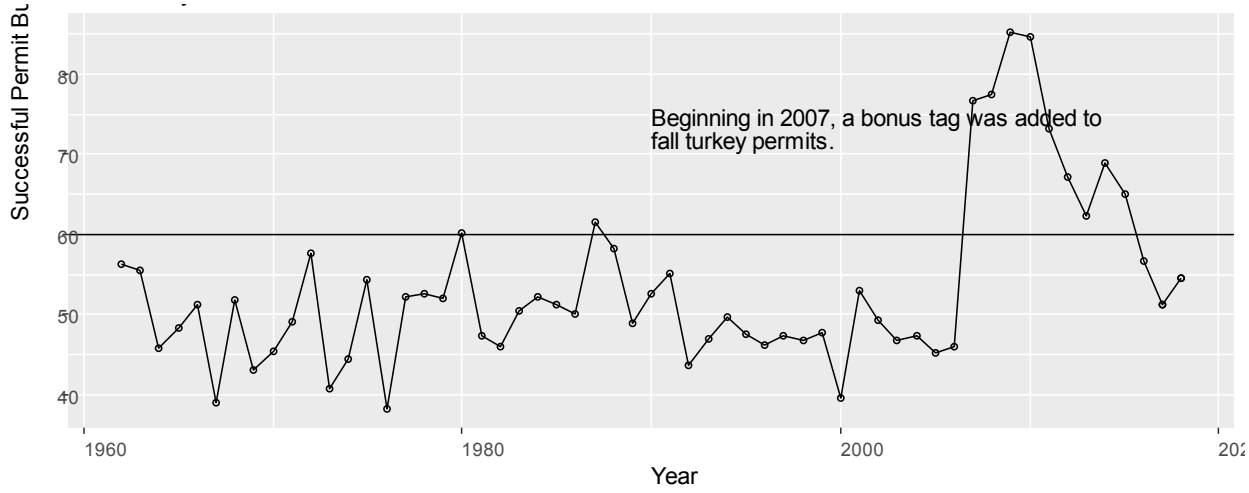


FIGURE 8. Fall turkey hunter success rate, 1962-2018. Horizontal line represents the success rate goal established in the Focus on the Future strategic plan.



HUNTING INCIDENTS

None to report

REGULATION/LEGISLATION CHANGES

No major changes in 2018.

RESEARCH

Currently, the University of Nebraska is finishing up a study on turkey genetics and purity of subspecies across Nebraska and the region.

EMERGING OR EVOLVING ISSUES

None to report.

RELEVANT LINKS

2019 Turkey Guide: http://outdoornebraska.gov/guides/

NORTH DAKOTA WILD TURKEY POPULATION STATUS REPORT – 2019

MWDT Working Group
Abe Martin Lodge, IN

RJ Gross – Upland Game Biologist
North Dakota Game and Fish Department
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Bismarck, ND, 58504
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POPULATION STATUS

The Department uses several population techniques to obtain trends on our wild turkey population. We have a landowner survey that is sent to most landowners who have turkeys wintering on their land. Our district biologists and game wardens annually record observations of wild turkey hens, broods and poults on standardized pheasant brood routes during July and August. We also have our field staff collect incidental turkey brood data from June 1 to September 1.

REPRODUCTION

The 2018 brood survey showed a decrease in the total number of adult turkeys observed (25%) and an increase in average brood size (48%) from 2017. The number of poults per adult hen was up 56% and number of broods was down 19% from 2017. Age ratio is standing at 1.77 poults per adult (Table 1). As of now, brood surveys are being conducted for the 2019 count.

HARVEST

2019 Spring Turkey Season

The state uses twenty-two hunting units during the spring season. These units include all of North Dakota's 53 counties. During the spring of 2018, the entire state was open for wild turkey hunting except for unit 21 in the southwestern part of the state. This area has been closed for the past ten spring hunting seasons because of low turkey numbers in this unit.

Licenses are issued by weighted lottery after the number of gratis licenses is deducted from the total available. Only residents are eligible to apply for spring licenses, although one spring license is provided to the NWTF for auction. The 2018 Spring Wild Turkey Proclamation provided the Outdoor Adventure Foundation with three turkey licenses, valid in any open unit, for the 2018 spring season. In accordance with N.D.C.C. 20.1-04-07(1) (c)), these two licenses shall be issued to a qualifying youth who has cancer or a life-threatening illness.

First time spring turkey hunters age 15 or younger can receive one spring license valid for the regular hunting season for any open unit. As in the fall season, we provide only a one time period for hunting wild turkeys in the spring. You choose your weapon from shotguns, muzzle loading rifles, handguns and bow/arrows.

In spring 2019, the season opened April 13 and closed May 19 (36 days). Only one bearded or male wild could be harvested. A total of 7,293 applications (increase of 1.6%) were received for the 6,025 permits that were available. Of the 6,489 permits issued, 409 went to landowners, 294 to youth and 5,786 to regular turkey hunters.

Data from the spring hunter harvest questionnaire showed that 4,326 of the license holders (76%) hunted. Hunters harvested 1,876 wild gobblers (up 4.4 percent from 2018) for a hunter success of 39.5 percent (Table 2, Figures 1 & 2).

2018 Fall Turkey Season

The state is divided into twenty-two hunting units and these areas include all 53 counties of North Dakota's (Figure 3). During the fall of 2018, twenty of 22 counties were open for wild turkey hunting. Unit 47 in the central part of the state and unit 21 in the southwest were closed.

Licenses are issued by weighted lottery after gratis licenses are deducted from the total available. Only North Dakota residents are eligible to apply in the first lottery. If licenses remain after the first lottery, then nonresidents can apply.

North Dakota has no specific youth hunting season for wild turkeys in the fall. We also do not have a specific bow season for turkeys. We provide a one time period for hunting wild turkeys in the fall, and you can choose your weapon from shotguns, muzzle loading rifles, handguns and bow/arrows. During the fall of 2018, the season was held from October 6, 2018 through January 6, 2019. There were 3,710 permits available and 3,345 were issued (173 gratis and 3,172 general permits). This was an increase of 205 permits available (6 percent) over 2017.

From the wild turkey questionnaire, it was determined that 2339 license holders (70 percent) hunted during the fall. Hunters harvested 966 wild turkeys for a success of 41.3 percent (Table 3, Figures 4 & 5). A summary of the fall hunting statistics for ND since 1958 can be found in Table 3. Figure 4 is a graph of fall harvest statistics from 1980 – 2018. Data regarding sex and age of the harvest was determined by a voluntary sample of wing tips and breast feathers sent in by hunters, but data was still being compiled as of writing this report.

Figure 1. Spring harvest statistics for wild turkeys in North Dakota, 1980 - 2019.

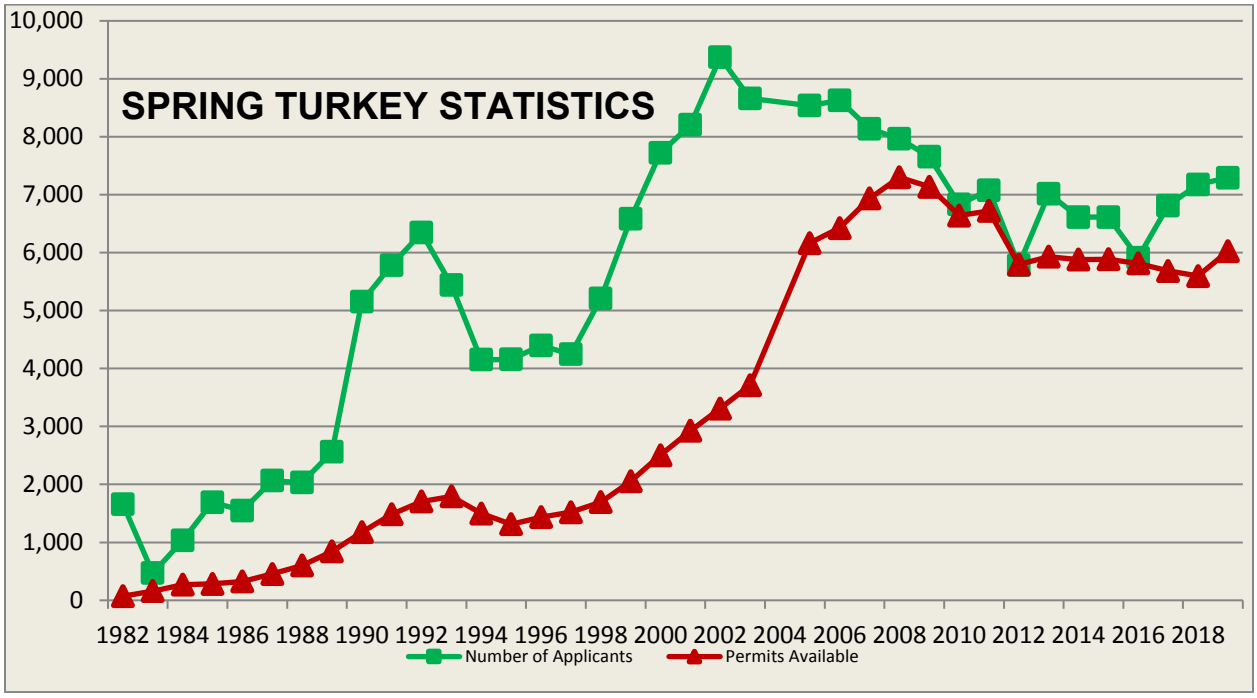


Figure 2. 2019 Spring wild turkey harvest of number of hunters and bag.

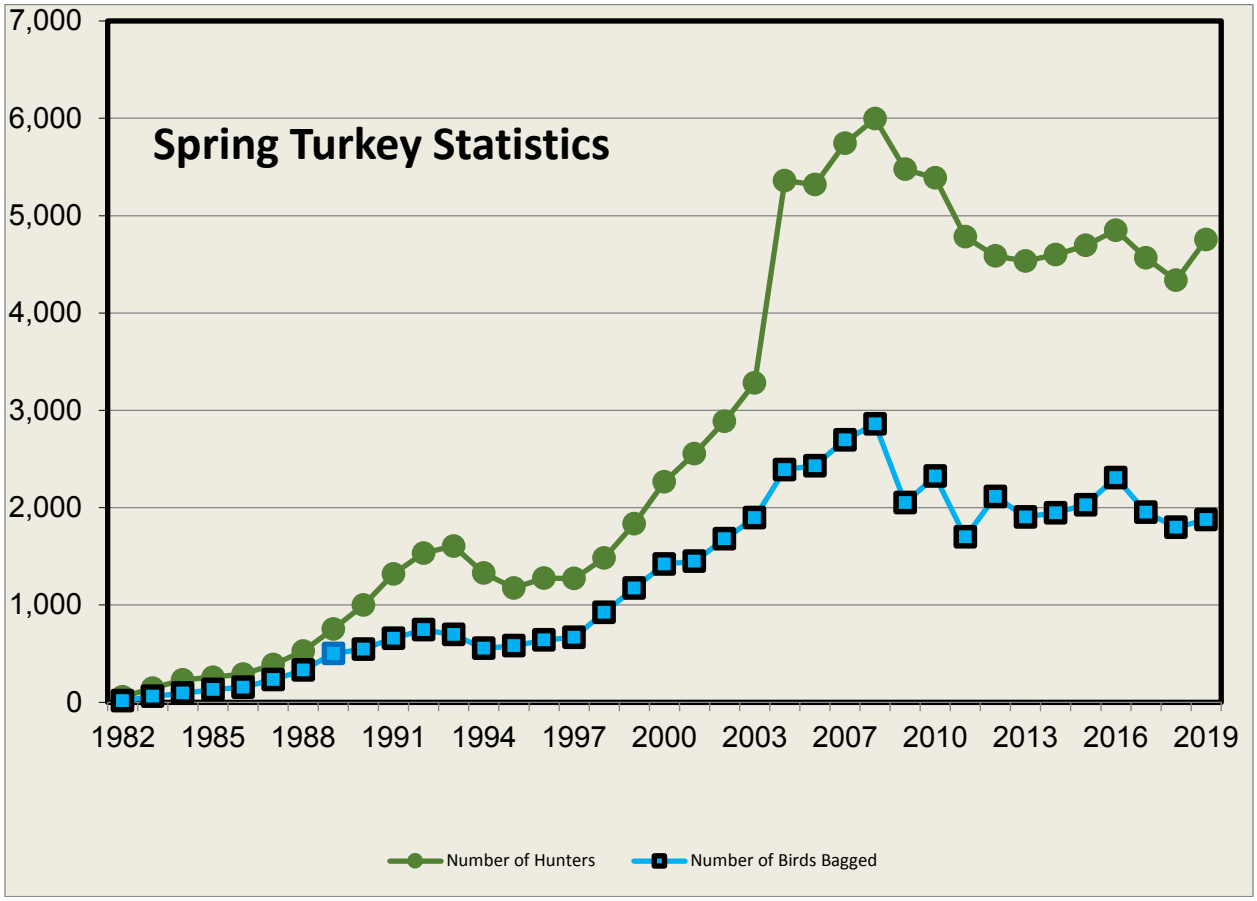


Figure 3. North Dakota Game and Fish Department Turkey Hunting Units

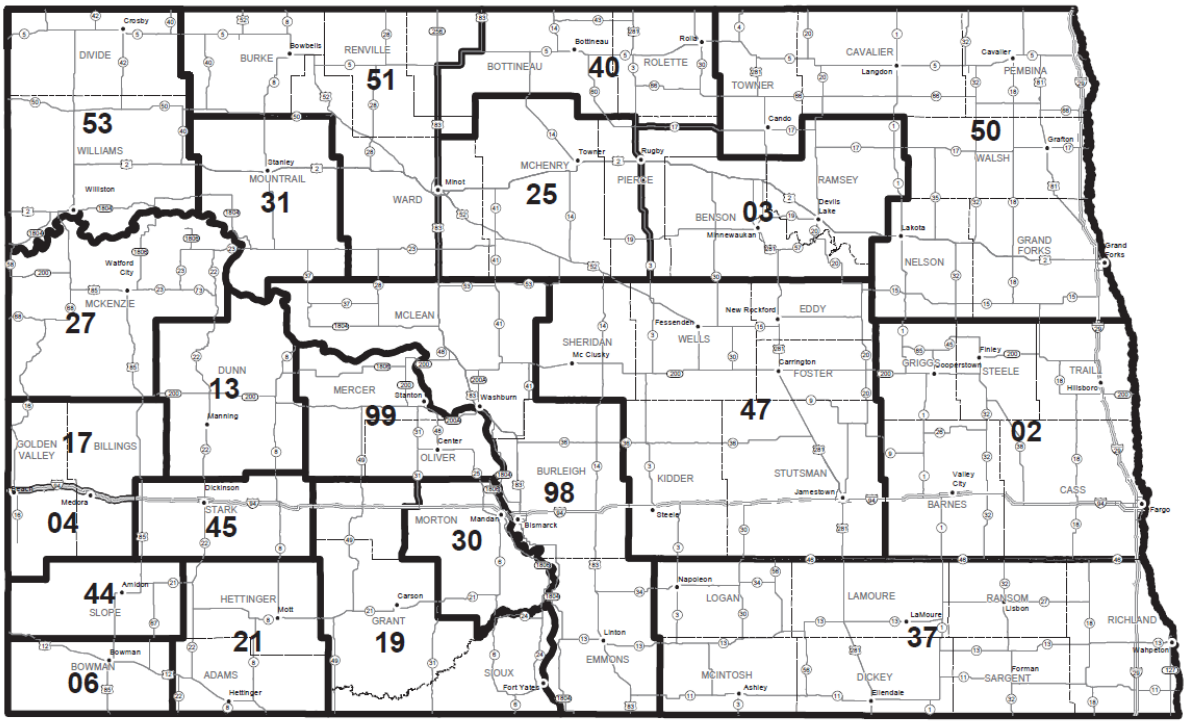


Table 1. Brood data for wild turkeys in North Dakota, 2011 - 2018.

PARAMETER	YEAR								% Change
	2011	2012	2013	2014	2015	2016	2017	2018	2017 - 2018
Number of routes driven	374	379	376	386	411	394	392	397	1.3%
Number of miles driven	9,012	9,043	9,416	9,781	10,209	10,025	10,086	10,013	-0.7%
Number of hours driven	617.0	615.0	638	638	696	642	640	649	1.4%
Number of adult birds observed	124	251	164	208	342	287	399	298	-25.3%
Number of juvenile birds observed	68	192	162	238	352	376	442	528	19.5%
Number of broods observed	13	27	24	37	50	59	76	61	-19.7%
Number of birds observed per 100 miles driven	2.1	5.0	3.6	4.6	6.8	6.7	8.5	8.2	-3.5%
Number of broods observed per 100 miles driven	0.1	0.3	0.3	0.4	0.5	0.6	0.8	0.6	-25.0%
Number of juveniles per adult hen	1.2	1.2	1.9	2.5	1.79	2.04	2.3	3.59	56.1%
Number of birds observed per hour driven	0.31	0.72	0.51	0.70	1.00	1.03	1.37	1.27	-7.3%
Number of broods observed per hour driven	0.02	0.04	0.04	0.06	0.07	0.09	0.12	0.09	-25.0%
Age ratio (juvenile/adult)	0.55	0.76	0.99	1.14	1.03	1.31	1.11	1.77	59.5%
Average Brood Size	5.23	7.11	6.75	6.43	7.04	6.37	5.82	8.66	48.8%

TABLE 2. North Dakota Spring Wild Turkey Hunting Seasons, 1976 - 2019.						
Year	Number of Applicants	Number of Permits Available	Number of Permits Issued	Number of Hunters	Number of Birds Bagged	Percent Success
1976			30	22	9	40.9%
No Spring Wild Turkey Hunting Seasons 1977 through 1981						
1982	1,660	72	70	57	18	31.6%
1983	470	160	160	146	61	41.8%
1984	1,033	270	258	231	94	40.7%
1985	1,691	285	283	257	130	50.6%
1986	1,548	325	325	290	155	53.4%
1987	2,065	455	455	387	232	59.9%
1988	2,032	600	600	527	331	62.8%
1989	2,561	845	843	753	502	66.7%
1990	5,151	1,175	1,188	998	547	54.8%
1991	5,783	1,485	1,490	1,319	658	49.9%
1992	6,345	1,705	1,717	1,533	746	48.7%
1993	5,442	1,795	1,807	1,605	696	43.4%
1994	4,153	1,500	1,500	1,328	555	41.8%
1995	4,157	1,315	1,322	1,174	581	49.5%
1996	4,399	1,435	1,445	1,277	641	50.2%
1997	4,245	1,520	1,528	1,272	669	52.6%
1998	5,208	1,695	1,695	1,484	924	62.3%
1999	6,583	2,055	2,060	1,835	1,173	63.9%
2000	7,720	2,505	2,534	2,266	1,421	62.7%
2001	8,207	2,925	2,925	2,556	1,449	56.7%
2002	9,370	3,310	3,310	2,888	1,679	58.1%
2003	8,662	3,710	3,709	3,282	1,896	57.8%
2005	8,537	6,165	6,213	5,359	2,391	44.6%
2006	8,629	6,425	6,405	5,318	2,430	45.7%
2007	8,138	6,935	6,961	5,743	2,696	46.9%
2008	7,966	7,300	6,506	5,997	2,859	47.7%
2009	7,655	7,136	7,138	5,476	2,051	37.5%
2010	6,832	6,641	6,645	5,388	2,323	43.1%
2011	7,077	6,720	6,672	4,783	1,698	35.5%
2012	5,784	5,795	5,872	4,586	2,115	46.1%
2013	7,015	5,930	6,053	4,534	1,905	42.0%
2014	6,613	5,881	6,003	4,598	1,947	42.3%
2015	6,613	5,886	6,003	4,694	2,029	43.2%
2016	5,912	5,815	5,895	4,850	2,309	47.6%
2017	6,810	5,685	5,800	4,566	1,952	42.8%
2018	7,177	5,595	5,731	4,336	1,797	41.4%
2019	***7,293***	***6,025***	***6,489***	***4,755***	***1,876***	***39.5%***
Total Avg.	**5,535**	**3,307**	**3,309**	**2,714**	**1,268**	**46.7%**

Table 3. Fall harvest statistics for wild turkeys in North Dakota, 1958 - 2018.

Year	Number of applicants	Number of permits available	Number of permits issued *	Number of hunters	Number of birds bagged	Percent success	Average days hunted
1958			376	376	88	23.4	
1959	No Season		--	--	--	--	
1960	No Season		--	--	--	--	
1961			309	246	174	70.7	
1962			426	392	241	61.5	
1963			306	298	171	57.4	
1964			404	386	198	51.3	
1965			350	290	109	37.6	
1966	No Season		--	--	--	--	
1967			200	183	103	56.3	
1968			200	178	97	54.5	
1969			197	186	117	62.9	
1970			197	180	131	72.8	
1971			201	185	134	72.4	
1972			227	205	129	62.9	
1973			203	195	151	77.4	
1974			307	285	213	74.7	
1975			359	308	186	60.4	
1976			500	466	653	140.1	
1977			650	513	411	80.1	
1978			844	737	540	73.3	
1979	2,834	975	961	881	583	66.2	
1980	2,611	1,155	1,135	1,029	736	71.5	
1981	4,969	1,530	1,514	1,310	976	74.5	
1982	3,258	1,530	1,501	1,361	975	71.6	
1983	3,057	1,660	1,678	1,488	1,181	79.4	
1984	3,143	1,710	1,707	1,521	1,197	78.7	
1985	3,902	1,960	1,946	1,631	1,269	77.8	
1986	3,800	2,235	2,126	1,861	1,324	71.1	
1987	3,393	2,455	2,417	2,177	1,668	76.6	
1988	6,918	5,930	5,938	5,098	3,607	70.8	
1989	5,890	5,810	5,760	4,818	3,233	67.1	
1990	6,921	4,765	4,735	3,845	2,556	66.5	
1991	7,305	4,580	4,593	3,683	2,236	60.7	
1992	6,402	3,585	3,605	2,938	1,830	62.3	
1993	6,030	3,585	3,546	2,735	1,331	48.7	
1994	4,330	3,585	3,154	2,578	1,484	57.6	
1995	3,862	3,195	3,212	2,608	1,619	62.1	
1996	4,348	3,230	3,241	2,595	1,946	75.0	
1997	4,717	3,250	3,273	2,695	1,835	68.1	
1998	5,218	3,855	3,860	3,141	2,114	67.3	
1999	4,977	4,620	4,620	3,941	2,750	69.8	
2000	7,665	6,000	6,000	4,690	3,029	64.6	2.9
2001	8,119	6,510	6,622	5,224	3,083	59.0	2.9
2002	8,399	6,610	6,752	5,234	3,157	60.3	3.1
2003	8,048	9,095	8,896	6,886	4,410	64.0	2.8
2004	10,070	10,980	11,224	8,064	3,773	46.8	3.4
2005 [1]	9,334	9,230	9,331	6,722	3,191	47.5	3.3
2006	8,319	7,925	8,066	5,982	3,194	53.4	3.1
2007	8,138	8,025	6,961	5,743	2,696	46.9	3.0
2008	8,767	8,700	8,215	5,539	2,632	47.5	3.2
2009	7,126	6,805	6,804	4,274	1,851	43.3	3.1
2010	5,930	5,755	5,901	3,702	1,551	41.9	3.1
2011	4,692	4,630	4,708	3,145	1,259	40.0	3.5
2012	4,516	4,145	4,190	2,652	1,212	45.7	3.2
2013	4,401	4,020	4,066	2,583	1,012	39.2	3.7
2014	4,401	4,020	4,066	2,786	1,108	39.8	3.8
2015	3,972	3,655	3,629	2,524	1,114	44.1	3.7
2016	3,327	3,510	3,515	2,361	929	39.3	3.7
2017	3,407	3,505	3,514	3,441	939	38.5	2.9
2018	3,887	3,710	3,345	2,339	966	41.3	3.6
TOTAL	220,403	182,030	186,583	143,434	81,402		
AVG:	5,510	4,551	3,217	2,473	1,403	56.8%	

* Includes lottery permits (10,504) plus gratis permits (720) in 2004.

[1] First year nonresidents were allowed to apply for fall turkey AFTER the first drawing for residents.

Figure 4. Fall harvest statistics for turkeys in North Dakota, 1980 - 2018.

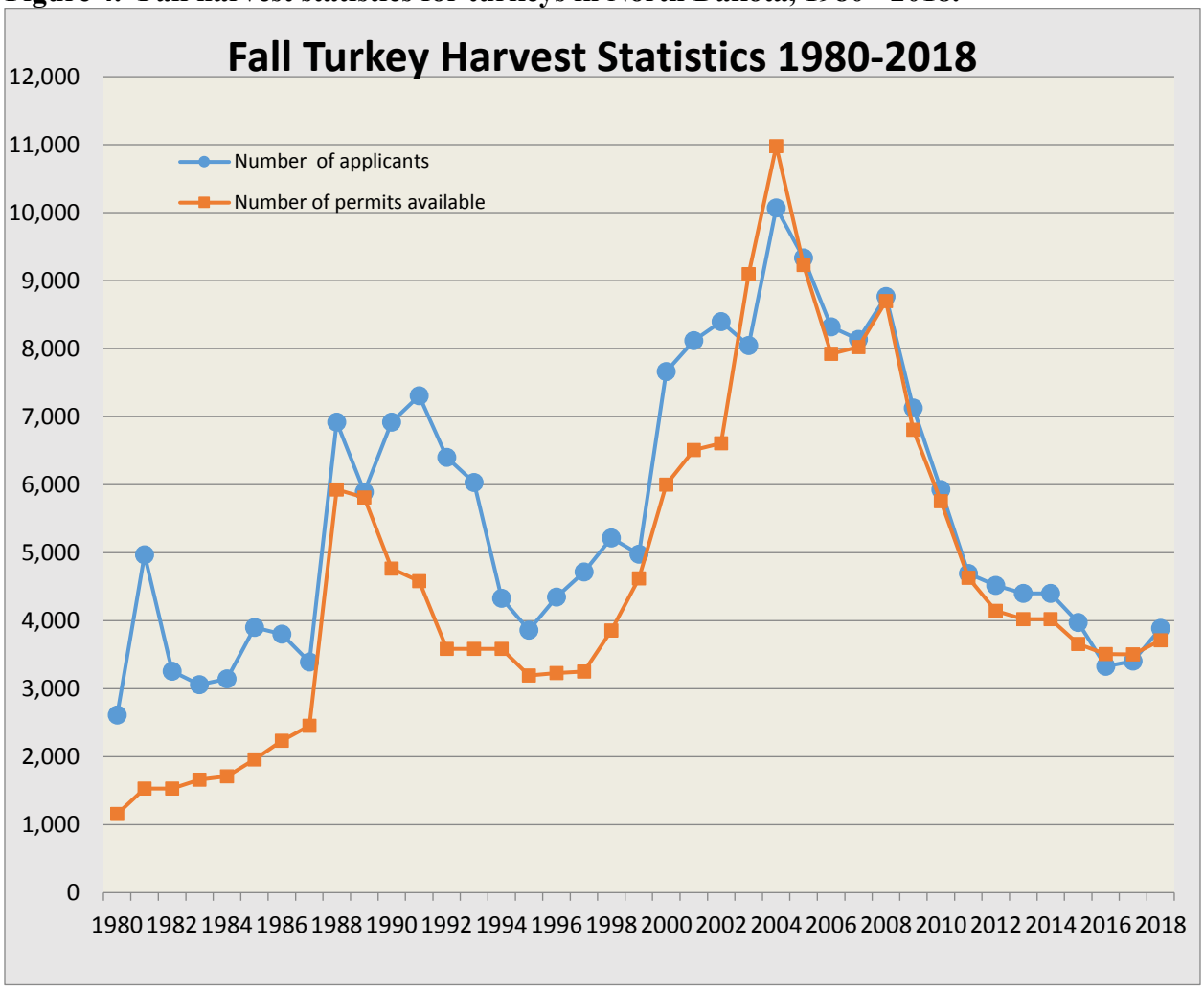
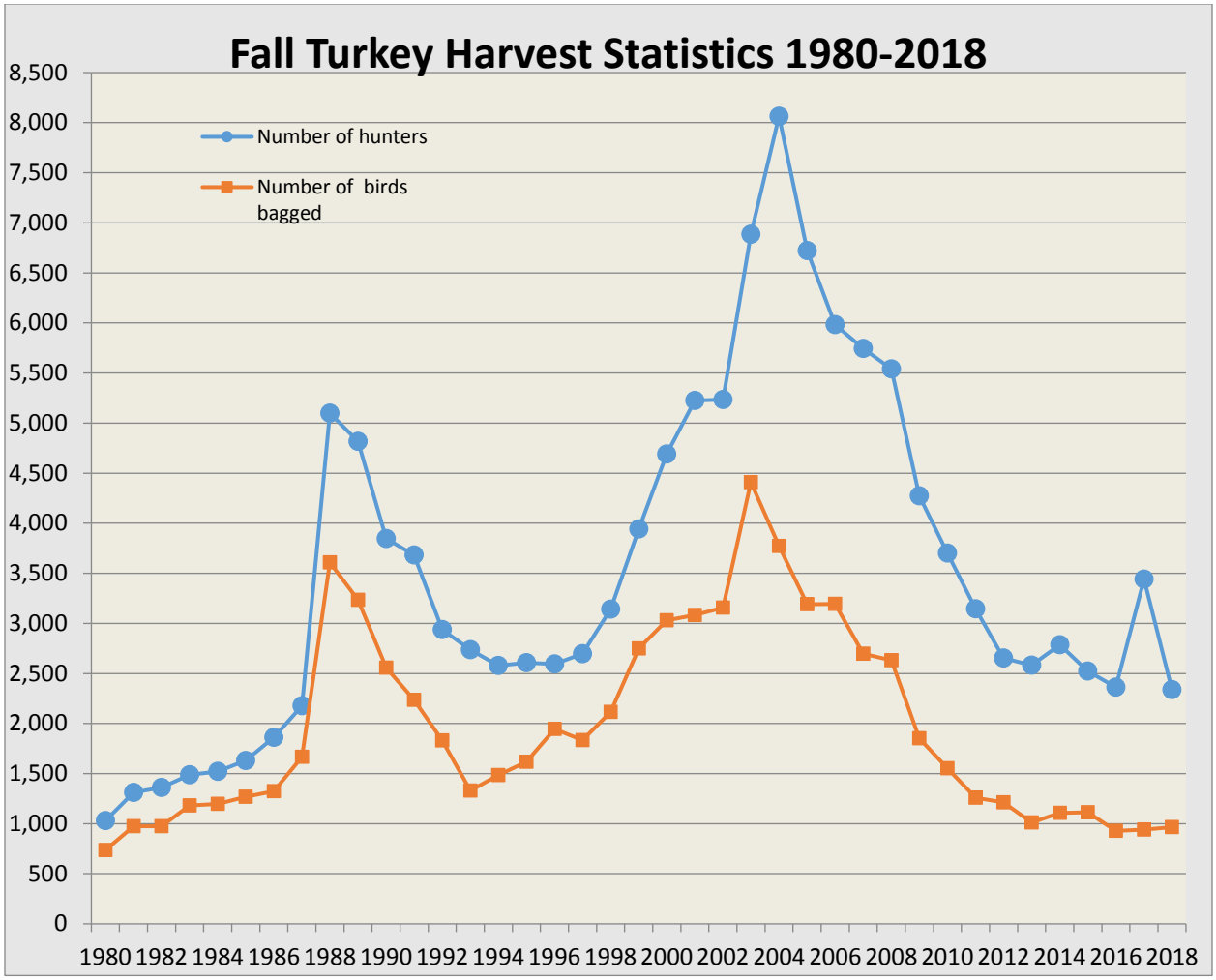


Figure 5. Fall harvest statistics for turkeys in North Dakota, 1980 - 2018.



OHIO WILD TURKEY POPULATION STATUS REPORT – 2019

43rd Midwest Wild Turkey Working Group Meeting – August 13-14, 2019
Abe Martin Lodge at Brown County State Park, Nashville, IN

Mark Wiley – Forest Game Bird Biologist
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POPULATION STATUS

Wild turkeys were extirpated from Ohio in 1904 and remained absent from the state for nearly half a century. The Ohio Department of Natural Resources, Division of Wildlife (ODNR) successfully reintroduced wild turkeys to the state in the late-1950's. Following reintroduction, ODNR utilized in-state translocation until 2008 to expedite range expansion. Turkey numbers in the state peaked in the early-2000's and have remained stable since that time. Ohio's current wild turkey population is estimated to be 200,000 birds, with turkeys present in all 88 counties.

ODNR has conducted roadside gobbling surveys prior to spring hunting season since the late-1990's. In 2019, ODNR completed surveys on 41 routes in eastern Ohio. The 2019 index was 55 gobblers per 100 stops, which is 29% below 2018, but equal to the 5-year average (Figure 1).

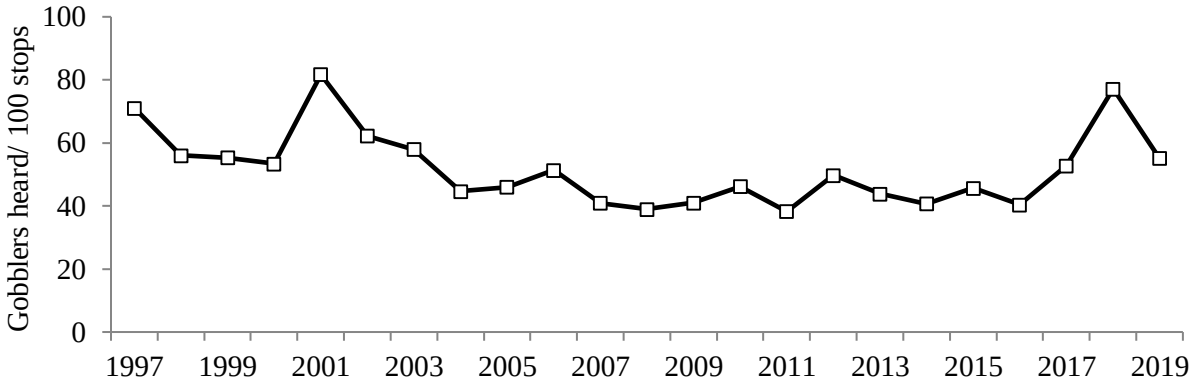

Figure 1. Ohio wild turkey gobbling index 1997-2019.

REPRODUCTION

Since 1962, the ODNR has collected summer observations of wild turkey. ODNR uses this data, specifically the ratio of young (poults) per hen observed during July-August, as an index to annual reproductive success. Historically, ODNR distributed observation cards to agency staff frequenting Ohio's turkey range. Starting in 2009, ODNR has utilized an online reporting webpage to collect turkey observations from the public.

In 2018, ODNR implemented a brood survey protocol adopted by the Midwest Deer and Wild Turkey Study Group (MDWTSG). Implementation of the MDWTSG protocol required little change to ODNR's previous method of data collection but introduced slight changes to data censoring and analysis procedures. ODNR used the MDWTSG protocol to reanalyze Ohio's brood survey data from 1999-2018.

The 2018 statewide index was 2.0 poults per hen (PPH), which is the lowest on record since 1999 (Figure 2). The 2018 PPH index was a 9.1% decrease from 2017 and 23% below the 5-year and 10-year means. ODNR received 278 valid observations in 2018, with a total of 2,100 wild turkeys (gobblers, hens, poults, unknown) observed during July-August. Of the 278 total observations, 259 included hens and 200 included poults. In total, 628 hens were reported, 77.2% of which were accompanied by ≥ 1 poult (Table 1).

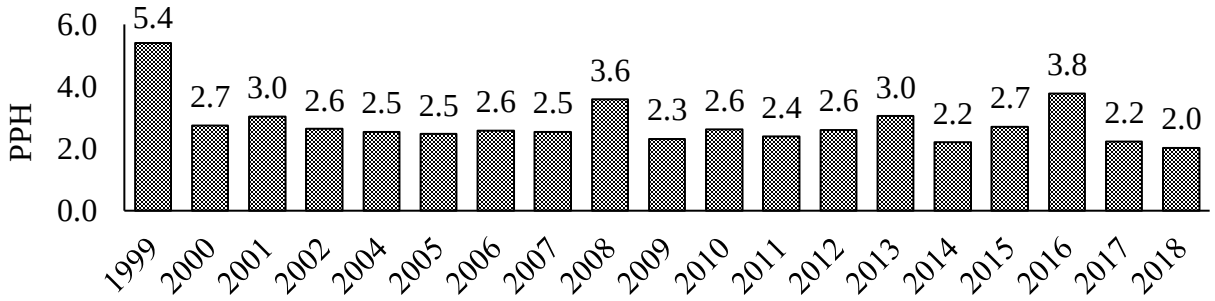

Figure 2. Statewide summary of wild turkey poults per hen (PPH) during 1999-2018.

Table 1. Summary of all Ohio Wild Turkey Brood Survey observations during 1999-2018.

Year	Total Observations	Total Hens	Total Poults	Poults Per Hen (PPH)	Poults Per Observation	% Hens with Poults
1999	374	788	4255	5.4	12.9	94.3
2000	144	294	804	2.7	7.7	76.5
2001	225	497	1511	3.0	7.6	88.9
2002	198	390	1026	2.6	6.4	82.9
2004	211	431	1093	2.5	7.4	74.7
2005	174	342	843	2.5	6.6	78.5
2006	189	359	928	2.6	6.4	80.0
2007	218	482	1223	2.5	7.5	75.1
2008	323	635	2281	3.6	9.2	83.8
2009	439	1,006	2,330	2.3	7.5	77.5
2010	492	1,067	2,798	2.6	7.7	81.5
2011	425	864	2,066	2.4	6.8	79.6
2012	295	618	1,608	2.6	7.5	80.4
2013	251	463	1,410	3.0	8.0	79.6
2014	635	1,380	3,037	2.2	7.0	74.6
2015	422	938	2,543	2.7	7.7	84.2
2016	400	830	3,131	3.8	9.8	85.6
2017	235	521	1,164	2.2	6.9	77.8
2018	278	628	1,272	2.0	6.4	77.2

HARVEST

2019 Spring Turkey Season

Ohio's 2019 spring wild turkey season included a 2-day statewide youth season and a 4-week regular season within each of two zones (Figure 3). The two-day youth season was open statewide during April 13-14. The south zone was open April 22 to May 19. The northeast zone was open April 29 to May 26. A spring turkey permit was required of residents ($24) and nonresidents ($29) in addition to a valid Ohio hunting license (resident = $19, nonresident = $140.50). Neither a permit nor license was required for Ohio landowners hunting on property they own. All turkeys harvested in Ohio were required to be reported to the ODNR by 11:30 p.m. on the day of harvest. The season bag limit was two bearded turkeys (one turkey per permit and per day). Hunting hours were 30 minutes before sunrise to noon during the first week, and 30 minutes before sunrise to sunset during the last three weeks of the regular season.

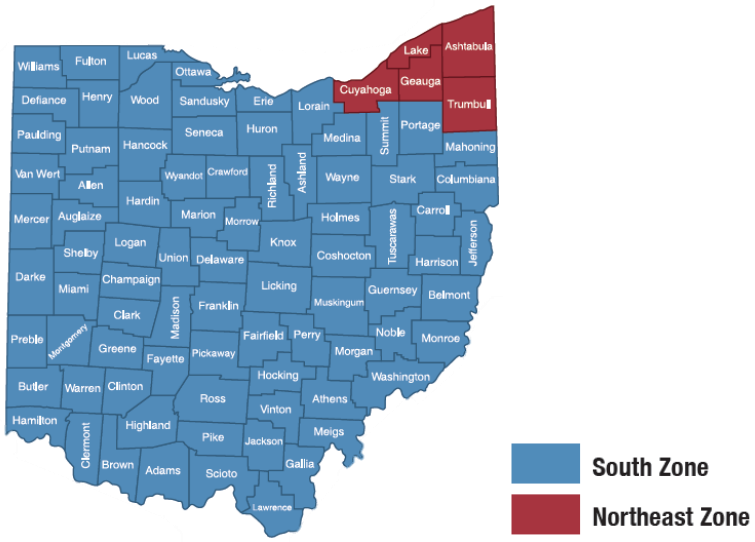

Figure 3. Ohio's spring wild turkey zone map for 2019.

In 2019, a total of 63,604 spring permits were issued, which is 0.4% below the 2018 spring season total and 2.3% below the 5-year average (65,049). Of all 2019 spring permits, 65.4%, 7.5%, and 12.5% were resident, nonresident, and youth permits, respectively. Approximately 14.6% of all permits issued were reduced cost or free permits (Table 2).

Table 2. Total spring turkey permit sales in Ohio during 2015-2019.

Year	Resident		Nonresident		Youth		Reduced Cost		Free		**Total**
	No.	%	No.	%	No.	%	No.	%	No.	%	
2015	41,395	62.8	3,628	5.5	9,245	14.0	4,680	7.1	6,935	10.5	**65,883**
2016	41,876	63.0	3,975	6.0	9,304	14.0	5,139	7.7	6,142	9.2	**66,436**
2017	41,851	63.9	4,311	6.6	9,167	14.0	5,503	8.4	4,654	7.1	**65,486**
2018	41,122	64.4	4,669	7.3	8,376	13.1	5,698	8.9	3,973	6.2	**63,838**
2019	41,589	65.4	4,761	7.5	7,948	12.5	5,756	9.0	3,550	5.6	**63,604**

Total turkey harvest during Ohio's combined spring hunting seasons was 19,088 in 2019, a decrease of 15.5% from 2018. Total spring harvest increased annually from 1966-1999, a period when both hunting opportunity and the turkey population were expanding. Spring turkey harvest peaked in 2001 and has been relatively stable since. Fluctuation in spring harvest total is largely attributed to annual variation in reproduction and recruitment (Figure 4).

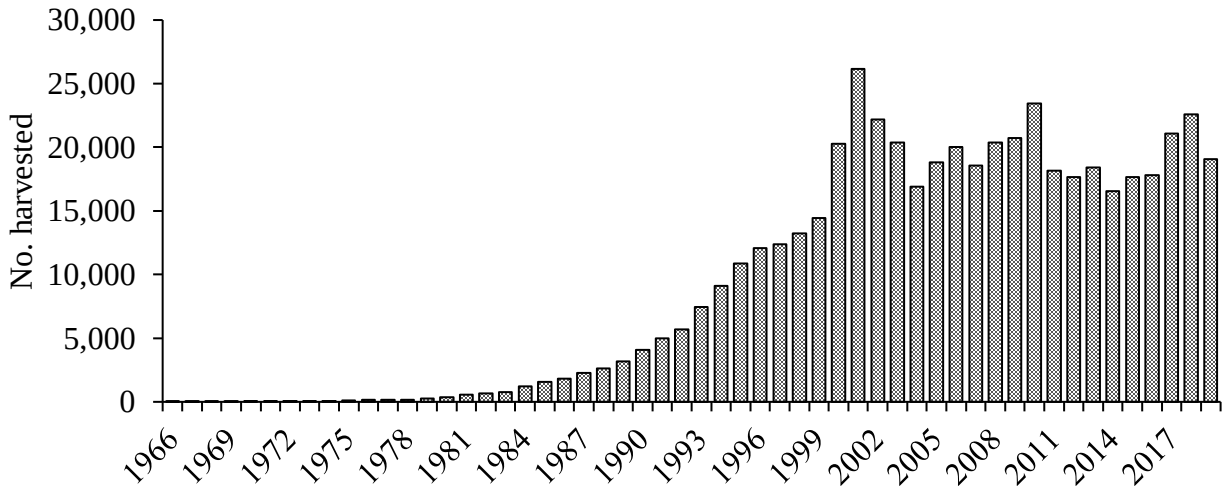

Figure 4. Total spring turkey harvest in Ohio during 1966-2019.

In 2019, 16,026 hunters reported a turkey harvest. Of those, 19.1% reported harvesting more than one turkey. Most turkey harvest occurred on private land (91.3%), while 8.7% of turkey harvest occurred public land. Landowner tags were used to take 21.7% of the total harvest.

In 2019, the percentage of adult male birds in the total harvest was slightly above the 5-year average (79.2%) while the percentage of juvenile male birds was slightly below the 5-year average (19.5%). The percentage of bearded hens harvested was similar to previous years (Table 3). The percentages of turkeys taken by shotgun, vertical bow (compound, recurve, etc.), and crossbow was consistent with previous years (Table 4). Patterns in reported spur length correspond with percentages of adult and juvenile males harvested (Table 5).

Table 3. Summary of spring turkey harvest by turkey type during 2015-2019 in Ohio.

Year	Adult male		Juvenile male		Bearded female		**Total**
	No.	%	No.	%	No.	%	
2015	13,731	77.8	3,728	21.1	194	1.1	**17,653**
2016	13,426	75.4	4,176	23.5	203	1.1	**17,805**
2017	15,401	73.0	5,426	25.7	270	1.3	**21,097**
2018	20,045	88.6	2,286	10.1	281	1.2	**22,612**
2019	15,521	81.3	3,306	17.3	261	1.4	**19,088**

Table 4. Spring turkey harvest by hunting implement during 2015-2019 in Ohio.

Year	Shotgun		Vertical bow		Crossbow		**Total**
	No.	%	No.	%	No.	%	
2015	17,251	97.7	280	1.6	122	0.7	**17,653**
2016	17,384	97.6	297	1.7	124	0.7	**17,805**
2017	20,617	97.7	311	1.5	169	0.8	**21,097**
2018	22,092	97.7	359	1.6	161	0.7	**22,612**
2019	18,660	97.8	262	1.4	166	0.9	**19,088**

Table 5. Reported spur length for male turkeys harvested in Ohio during 2015-2019.

Year	1/2 inch or less		>1/2 inch but <1 inch		1 inch or greater		**Total**
	No.	%	No.	%	No.	%	
2015	4,382	25.1	4,892	28.0	8,184	46.9	**17,458**
2016	4,813	27.3	4,441	25.2	8,352	47.4	**17,606**
2017	6,048	29.0	4,604	22.1	10,214	49.0	**20,866**
2018	2,817	12.6	6,511	29.1	13,019	58.3	**22,347**
2019	3,758	20.0	4066	21.6	11,003	58.4	**18,827**

Hunters checked 1,324 turkeys during the two-day youth season in 2019, a 29.6% decrease from 2018 (1,855). The youth season accounted for 6.9% of the total spring harvest in 2019. Turkeys taken opening day of the regular season in the south zone (April 22) accounted for 15.6% of the total spring harvest. Nearly half (46.5%) of the total spring harvest occurred during the first week of the regular season in the south zone (April 22-28; Figure 5).

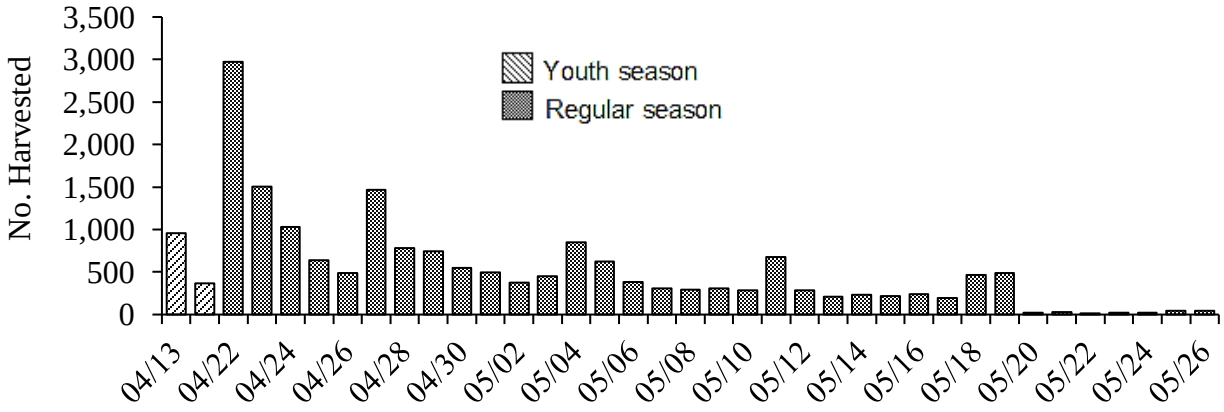

Figure 5. Daily turkey harvest during the 2019 spring season in Ohio.

Approximately 25%, 27% and 24% of resident, nonresident and youth spring turkey permits, respectively, resulted in a reported harvest in 2019. Reduced cost permit success was 20% while only 5% of free permits resulted in a reported harvest. The percentage of reported harvest for all permit types decreased from 2018 to 2019 (Table 6). We cannot determine landowner success rate since permits are only issued to landowners that report a harvest.

Table 6. Spring turkey permit success rate (%) during 2015-2019 in Ohio.

Year	Resident	Nonresident	Youth	Reduced cost	Free
2015	23.3	24.0	23.6	18.6	4.1
2016	23.3	22.1	22.3	19.0	4.1
2017	27.1	28.3	27.4	21.5	5.6
2018	29.0	33.7	28.1	24.3	5.1
2019	25.1	26.5	23.5	20.4	4.8

Counties in east-central Ohio reported the highest turkey harvest in the state in 2019. The top five Ohio counties were Monroe (648), Washington (591), Muskingum (589), Tuscarawas (569), and Belmont (565; Figure 6).

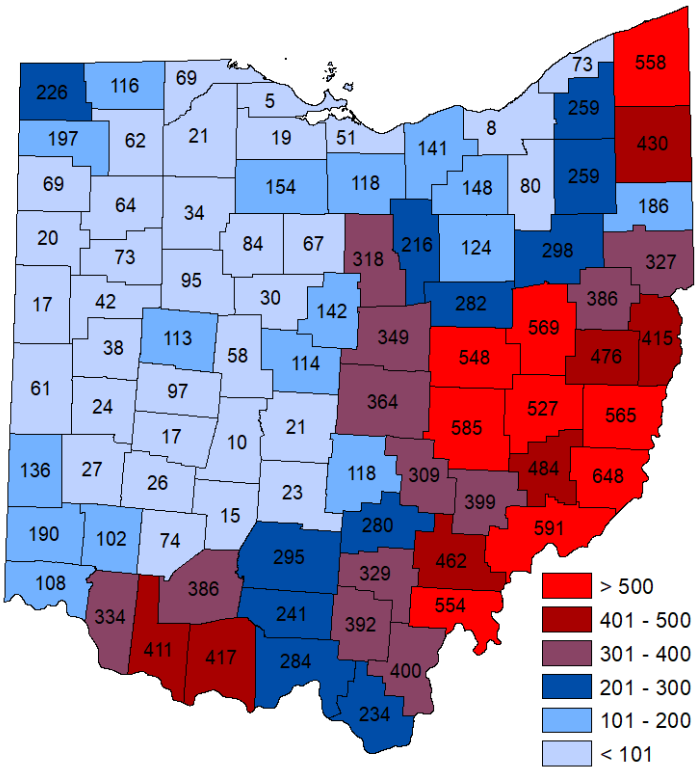

Figure 6. Total spring wild turkey harvest by Ohio county during 2019.

2018 Fall Turkey Season

In 2018, Ohio's fall turkey season opened during Oct. 13-Nov. 25 in 70 counties, which included 3 counties newly opened to fall hunting (Figure 7). ODNR determined county eligibility by the county's spring turkey harvest trends, habitat characteristics, and location relative to other eligible counties. A valid Ohio hunting license was required in addition to a fall turkey permit. The season bag limit was one turkey of either sex. Hunting hours were 30 minutes before sunrise to sunset. It was legal to use dogs to assist in taking turkeys during the fall season.

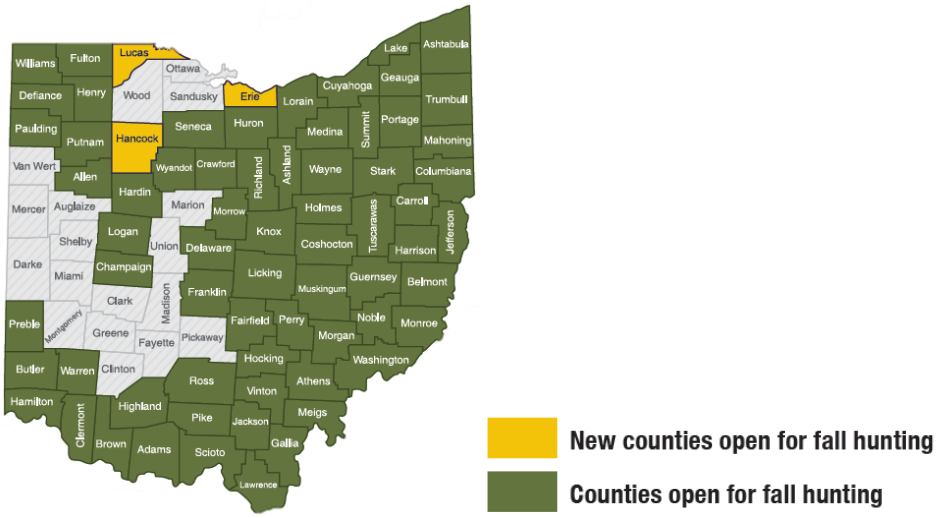

Figure 7. Ohio map of counties open to fall turkey hunting in 2018

In 2018, 9,825 fall permits were issued, a 14.6% decrease from 2017. Of all 2018 fall permits, 49.6%, 9.7%, and 6.1% were issued to resident, nonresident, and youth hunters, respectively. Reduced cost or free permits accounted for 34.6% of those issued (Table 7).

Table 7. Total Ohio fall turkey permit sales by type during 2014-2018.

Year	Resident		Nonresident		Youth		Reduced Cost		Free		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
2014	4,914	41.3	848	7.1	767	6.4	1,062	8.9	4,310	36.2	11,901
2015	5,196	44.5	1,004	8.6	812	6.9	1,115	9.5	3,562	30.5	11,689
2016	5,268	45.8	1,118	9.7	913	7.9	1,217	10.6	2,990	26.0	11,506
2017	5,409	47.0	1,224	10.6	845	7.3	1,318	11.5	2,705	23.5	11,501
2018	4,870	49.6	956	9.7	604	6.1	1,247	12.7	2,148	21.9	9,825

Total turkey harvest was 1,121 during Ohio's 2018 fall season, a 5.6% increase from 2017 and 21.4% below the 5-year average. Notable upticks in fall harvest were evident in years with high reproductive indices (e.g., 1999, 2008, 2016; Figure 8).

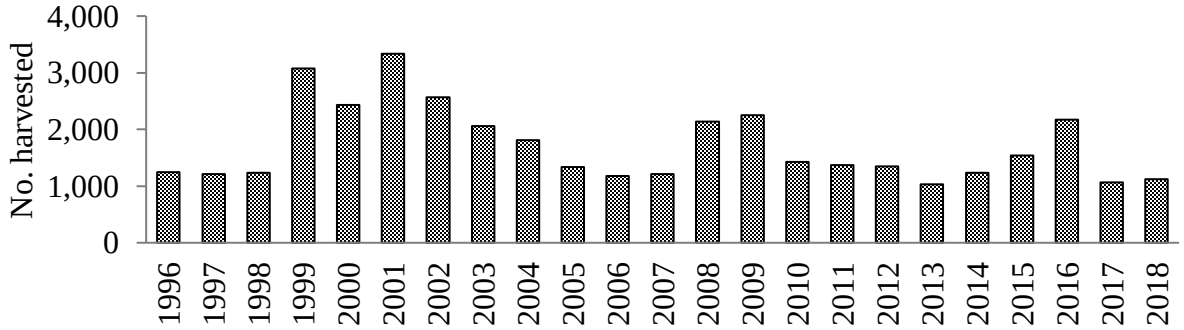

Figure 8. Annual fall turkey harvest total in Ohio during 1996-2018.

Harvests reported on private and public land accounted for 94.6% and 5.4% of the fall harvest total, respectively. Landowners reported taking 495 turkeys, or 44.1% of the total harvest. In 2019, the percentage of adult male birds in the total harvest was slightly above the 5-year average while the percentage of juvenile male birds was slightly below the 5-year average. The percentage of bearded hens was similar to previous years (Table 8), as were percentages of turkeys taken by shotgun, vertical bow (compound, recurve, etc.), and crossbow (Table 9).

Table 8. Summary of fall harvest by turkey type during 2014-2018 in Ohio.

Year	Adult Male		Juvenile Male		Adult Female		Juvenile Female		Unknown		Total
	No.	%	No.	%	No	%	No	%	No.	%	
2014	393	31.7	146	11.8	534	43.1	166	13.4	-	-	1,239
2015	425	27.7	181	11.8	690	44.9	241	15.7	-	-	1,537
2016	546	25.2	261	12.0	977	45.1	384	17.7	-	-	2,168
2017	473	44.6	94	8.9	382	36.0	100	9.4	11	1.0	1,060
2018	423	37.7	87	7.8	473	42.2	132	11.8	5	0.4	1,121

Table 9. Summary of fall turkey harvest by hunting implement during 2014-2018 in Ohio.

Year	Shotgun		Vertical bow		Crossbow		Total
	No.	%	No.	%	No	%	
2014	786	63.4	196	15.8	257	20.7	1,239
2015	965	62.8	239	15.5	333	21.7	1,537
2016	1,363	62.9	319	14.7	486	22.4	2,168
2017	657	61.9	149	14.0	255	24.0	1,061
2018	596	53.2	189	16.9	336	30.0	1,121

Harvest was distributed evenly throughout the season, with spikes in harvest on weekends and lulls in harvest mid-week (Figure 9).

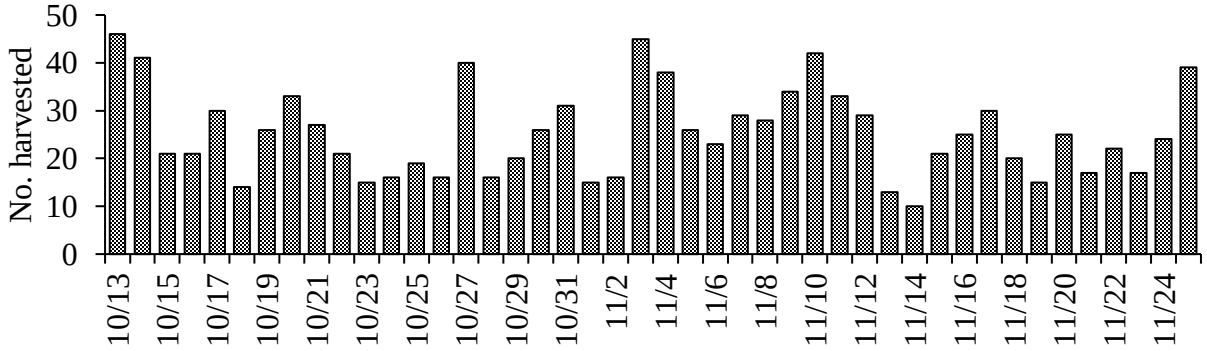

Figure 9. Daily turkey harvest during the 2018 fall season in Ohio.

The permit success rate for resident, nonresident, youth, and reduced cost fall turkey permits holders ranged from 6.0-8.5%, while only 1.1% of free permits resulted in a reported harvest (Table 10).

Table 10. Permit success rate (%) during fall wild turkey season 2014-2018 in Ohio.

Year	Resident	Nonresident	Youth	Reduced Cost	Free	Total
2014	9.5	8.1	8.0	7.7	1.2	6.1
2015	10.9	9.6	10.0	10.4	1.3	7.7
2016	13.8	9.7	15.9	13.6	2.1	10.5
2017	8.0	5.1	4.7	6.6	1.1	5.7
2018	8.5	6.1	7.3	6.7	1.1	6.3

Counties in east-central Ohio reported the highest fall turkey harvest in the state in 2018. The top five Ohio counties for fall turkey harvest were Coshocton (52), Guernsey (41), Tuscarawas (40), Ashtabula (39), and Harrison (35; Figure 10)

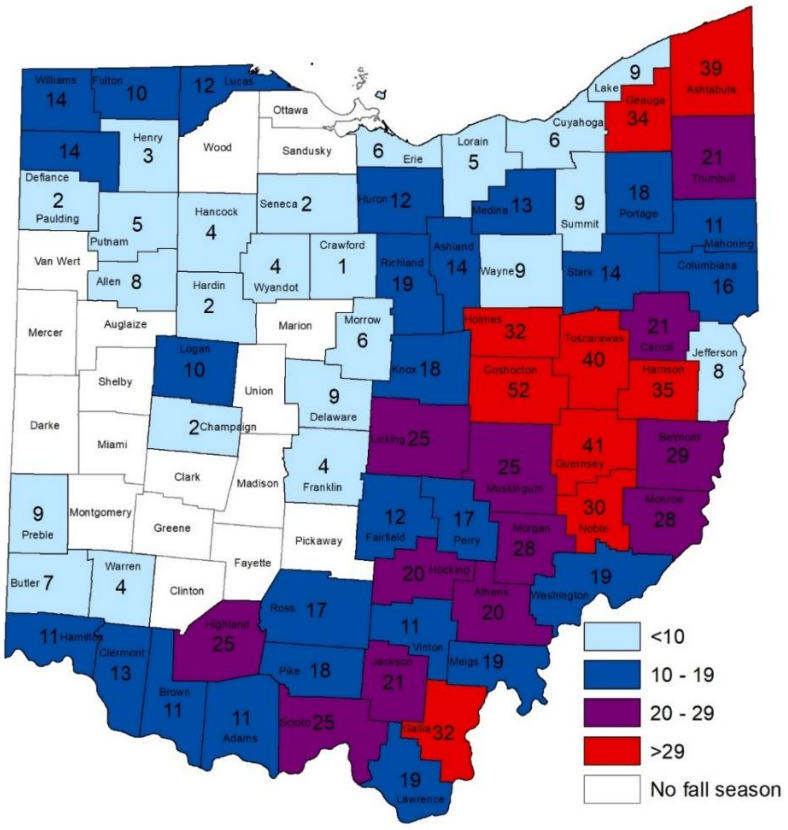

Figure 10. Map of total 2018 fall wild turkey harvest by Ohio county.

HUNTING INCIDENTS

ODNR documented 3 non-fatal hunting incidents in Ohio during the 2019 spring turkey season. During 2010-2019, Ohio averaged 1.8 spring turkey hunting incidents per year and had no fatal spring turkey hunting incidents.

REGULATION/LEGISLATION CHANGES

Ohio added 3 counties to the list of counties open to fall turkey hunting in 2018. County eligibility was determined by the county's spring turkey harvest trends, habitat characteristics, and location relative to other open counties.

Since 2010, Ohio's spring turkey hunting regulations allowed hunting until noon during the first two weeks of the season and until sunset during the last two weeks of the season. In 2019, the noon closure was in place only for the first week of the spring season.

On October 16, 2019 turkey permit costs will increase for most Ohio hunters (Table 11).

Table 11. Ohio Turkey permit costs

Permit Type	Cost before 10/16/19	Cost after 10/16/19
Youth Permit: Resident & Nonresident	$12.00	$16.00
Adult Permit: Resident	$24.00	$31.20
Adult Permit: Nonresident	$29.12	$38.48
Senior Permit: Resident Only	$12.00	$12.00
Free Senior Permit: Resident Only	FREE	FREE

RELEVANT LINKS

- ODNR-Division of Wildlife
  http://wildlife.ohiodnr.gov/
- ODNR- Division of Wildlife Hunting Regulations
  http://wildlife.ohiodnr.gov/huntingandtrappingregulations
- Ohio Turkey Brood Survey
  http://apps.ohiodnr.gov/wildlife/speciessighting/

SOUTH DAKOTA WILD TURKEY POPULATION STATUS REPORT – 2019

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POPULATION STATUS

Three subspecies (eastern, Rio Grande, and Merriam's turkeys) occur in the state at varying levels. Eastern turkeys are most common in the eastern riparian/cropland habitats. Rio Grande turkeys occur in smaller populations in eastern and south-central South Dakota. Merriam's turkeys primarily occur west of the Missouri River in prairie riparian and ponderosa pine habitats. We have 4 administrative regions in South Dakota, Region 1 is the west, Region 2 is central, Region 3 is southeast, and Region 4 is northeast.

REPRODUCTION

For brood surveys Region 1 of the Black Hills had a poult:hen ratio of 3.46. In Region 1 for the prairie that ratio was 3.03. For Region 2 the poult:hen ratio was 3.74. For Region 3 the poult:hen ratio was 3.19. Region 4- research data only (see demographic model below).

HARVEST

In 2018, South Dakota Game, Fish, and Parks sold a total of 16,449 turkey hunting licenses (Fig. 1). Wild turkey harvest appears to be stable to slightly declining (Fig. 2, 3, 4).

HUNTING INCIDENTS

None reported.

REGULATION/LEGISLATION CHANGES

Statewide went to shotgun only for spring seasons. Rifles are still allowed during fall seasons. Further, we extended our seasons to the end of May. So for most spring seasons it occurs from 2nd Saturday in April through May 31. Archery occurs from 1st Saturday in April through May 31.

RESEARCH

WILD TURKEY RESEARCH IN SOUTH DAKOTA

A northern Black Hills Merriam's turkey research study through Montana State University is now in its final phases of publication write up; this study has already provided needed vital rate

information for modeling wild turkey population growth from the northern Black Hills, and will continue to provide more information this coming year.

An additional study on eastern wild turkeys in Grant County South Dakota is in the final stages. This study has a graduate student from West Virginia University studying survival and reproduction of eastern turkeys. This study has provided needed vital rate data for turkeys in that area. We received a national NWTF research grant of $16,000 for the first field season.

Demographic Model for the Black Hills:
We have also created a demographic prediction model based on previous research from the Black Hills. We have incorporated precipitation data and correlated that information with reproduction and poult survival. We have broken out the results by southern, central, and the northern Black Hills. This year we incorporated data from the northern Black Hills Merriam's turkey study. The results for the 2018 models are presented below.

RESULTS DEMOGRAPHIC MODEL 2018

RESULTS

THE SOUTHERN BLACK HILLS MODEL

After running 100,000 simulations that asymptotic growth rate had a mean lambda of 1.12. The standard deviation was 0.14 (95% C.I. = 0.84-1.40).

THE CENTRAL BLACK HILLS MODEL

After running 100,000 simulations that asymptotic growth rate had a mean lambda of 0.95. The standard deviation was 0.11 (95% C.I. = 0.72-1.16).

THE NORTHERN BLACK HILLS MODEL

After running 100,000 simulations that asymptotic growth rate had a mean lambda of 0.73. The standard deviation was 0.06 (95% C.I. = 0.60-0.85).-

MEAN LAMBDA FOR THE ENTIRE BLACK HILLS MODEL

Averaging the 3 areas for the Black Hills gives a mean lambda of 0.93. The standard deviation was 0.10 (95% C.I. = 0.72-1.14).

Demographic Model for Grant County:
We have also created a demographic prediction model based on current research from Grant County, South Dakota. This county if located in prairie habitats in the northeast portion of the state, or Region 4.

RESULTS

The mean finite rate of lambda was 1.107 (95% CI = 0.943, 1.275) in Grant County. The elasticities of each lower-level vital rate indicate that lambda was most greatly affected by proportional changes in adult hen survival, and that adult fecundity had a greater effect on lambda than yearling hen fecundity.

EMERGING OR EVOLVING ISSUES

Plan to collect research data in the central Black Hills with a Ph.D. student starting in January of 2021.

RELEVANT LINKS

WILD TURKEY MANAGEMENT PLAN IN SOUTH DAKOTA: 2016-2020

Please review our South Dakota Wild Turkey Management Plan for updates and management direction at:

https://gfp.sd.gov/UserDocs/nav/WildTurkeyPlan.pdf

MISCELLANEOUS

None.

Fig. 1. Number of turkey licenses sold for the state of South Dakota from 1995-2018.

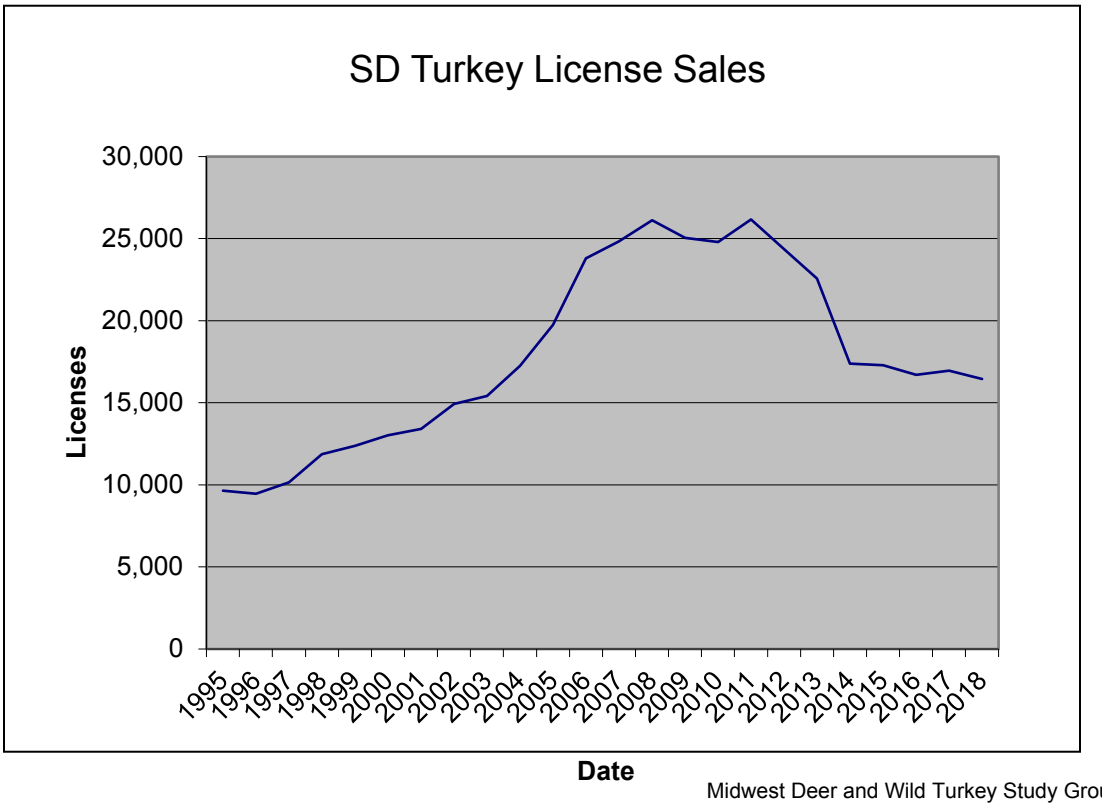

Fig. 2. State turkey harvest projections for South Dakota from 1995-2018.

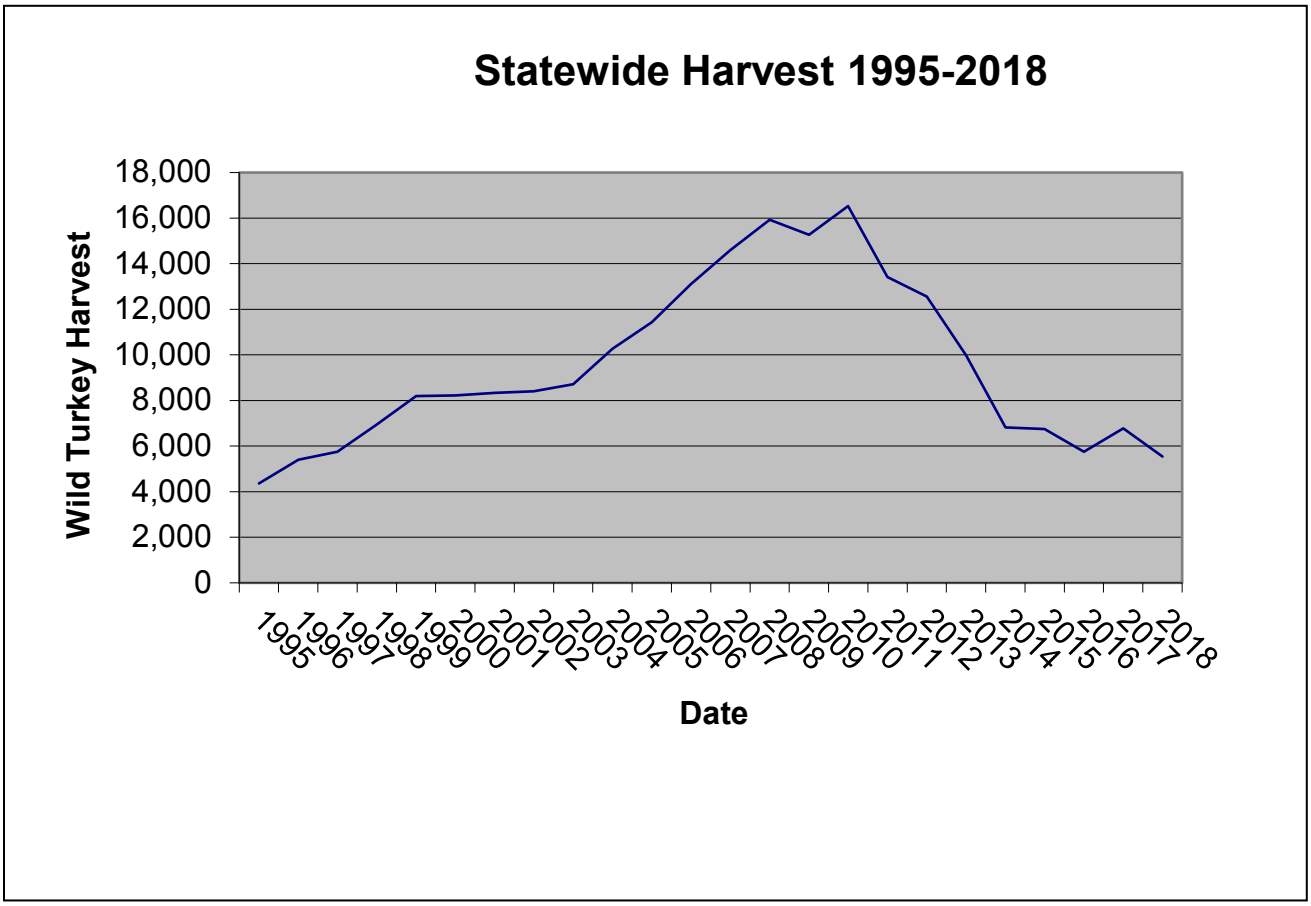

Fig. 3. Black Hills spring harvest projections from 1995-2018.

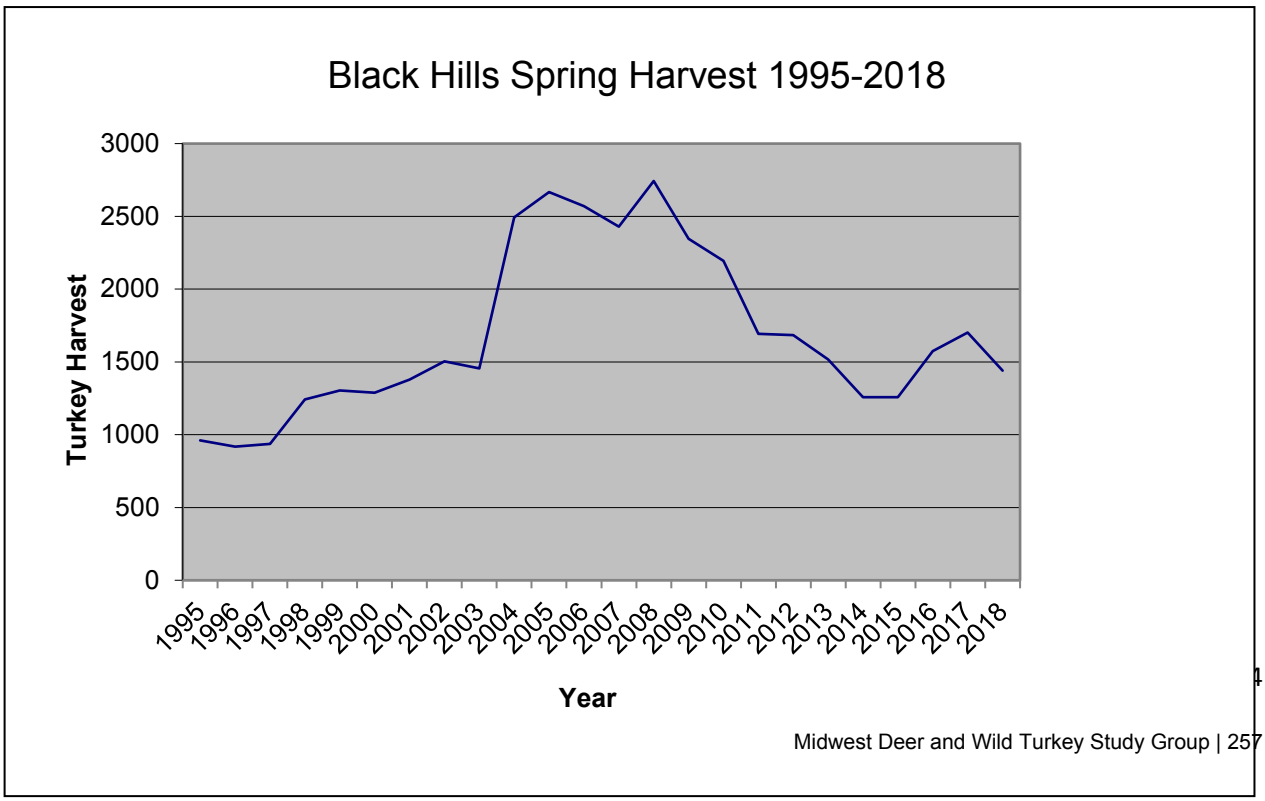

Fig. 4. Prairie spring harvest projections from 1995-2018.