

INSIDE



TAKE AIM WITH ARCHERY!

WISCONSIN NATURAL RESOURCES

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Where there's SMOKE...

Sky high with DNR pilots
Shore fishing pointers
Meet the chairman of the board

A 1936 fire in Douglas County forces people to evacuate their farm in a horse-drawn wagon with their cattle in tow.

Back in the day

Two emerging technologies ushered in a new era of fire control.

Loading a tractor and plow on a tilting platform trailer in 1935 in Lincoln County.

Firefighters extinguishing a grass fire in 1954.



V.E. HOLTZ



A seaplane spotting a fire in Vilas County in 1954.



DNR FILE

Kathryn A. Kahler

In a decade when landowners still used a horse and wagon to escape an encroaching forest fire, state fire control personnel were introducing state-of-the-art equipment and techniques like tractor plow units, pumpers and well-jetting to their arsenal. Two technologies — “portable” radios and airplanes — stood out among them and warrant a closer look.

According to a report in the *Wisconsin Conservation Bulletin* in February 1940, Wisconsin Conservation Department Communications Engineer Laurence F. Motl described how the airplane helped forest protection agencies make headwind in public safety and fire suppression efforts.

“Generally speaking, some of the uses of an airplane in forest protection work are for transportation of materials, scouting fires, aerial control of fires, reconnaissance work, mapping generally and burned over areas in particular, locating tower sites, impressing the public with the need of fire prevention measures and rapid transportation of executives.

“The U.S. Forest Service has developed a system whereby aerial pictures can be taken, developed, printed and dropped by an inexperienced person in

18 minutes or less. The value of this is readily seen. On any large fire the picture of the actual conditions put in the hands of the fire boss give him up-to-date information which is accurate. No form of ground reconnaissance could approach the speed or accuracy of such information.

“Because of our airport and hangar facilities at Tomahawk we have been able to make a trading arrangement with a local airplane owner whereby in exchange for storage of the plane we may use the plane on forest fire work a certain number of hours each year. The plane concerned is an Aeronca K, 40 h.p. monoplane. Experience has shown that it has several disadvantages for efficient application to our work in that its cruising speed is too slow, its rate of climb too low

and its cruising range rather limited. Nonetheless we feel we have benefited greatly by its use. We installed one of our field SV radio sets in the plane and found that we could communicate remarkably well over ranges as great as 65 miles to our various tower stations.

“We at Tomahawk firmly believe as a result of our own experience and observations that the airplane must of necessity eventually be recognized as a tool for the suppression of forest fires which will be considered as essential as tractors, plows, pumpers, and, if you will, even our old friend, the back-pack can.”

Five months later, a report in the July 1940 issue of the *Wisconsin Conservation Bulletin* pronounced “the use of portable radio sets in the field for forest fire control work [to be] a new epoch in firefighting development. The USFS type SV portable radiophone has been found to be the most practical type for field work. The working range of this set varies with topographical and atmospheric conditions with a maximum range of 80 miles between advantageously located stations. Independent transmitting and receiving stations are mounted on the same chassis. All batteries are contained in the set cabinet and the same antenna is used for receiving and transmitting. The weight of the set, complete with batteries, is 18 ½ lbs. and its compact construction makes it easily portable over rough terrain.”

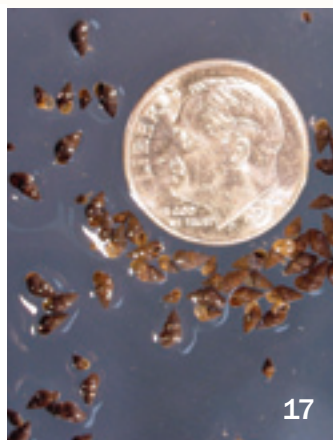
Seems humbling, doesn’t it, how in this age of global communications, when 90 percent of adults in the United States use 4-ounce cellphones that can instantaneously send a photo around the globe, that just 74 years ago we were singing the praises of dropping photographs from an airplane and communicating 80 miles with an 18 ½-pound radio? Humbling indeed.

Kathryn A. Kahler is an editorial writer for Wisconsin Natural Resources magazine.

WISCONSIN NATURAL RESOURCES

DNR FILE

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FRONT COVER: A full assault on the Germann Road Fire means planes, plows and people power in the air and on the ground.

Phil Miller

BACK COVER: The wood lily (*Lilium philadelphicum*) is a resident of the stabilized dunes at Jackson Harbor Ridges State Natural Area on Washington Island in Door County. **INSET:** Jackson Harbor Ridges. For more information, or to order a guidebook to State Natural Areas for \$18.00 (postage paid), contact the State Natural Areas Program, Bureau of Natural Heritage Conservation, DNR, P.O. Box 7921, Madison, WI 53707 or visit dnr.wi.gov and search "SNA."

Thomas A. Meyer, DNR



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REFLECTING ON A QUICK
AND EFFECTIVE RESPONSE.

One year after the Germann Road Fire

One of the largest wildfires to hit Wisconsin in over 33 years, the Germann Road Fire, consumed nearly 7,500 acres in the Towns of Gordon and Highland in Douglas County last May. Evacuations took place as DNR firefighters, local fire departments and numerous other federal and state cooperating agencies worked diligently to suppress the fire, containing it in less than 30 hours. Thanks to the rapid response, good communication and suppression efforts, no injuries or fatalities resulted.

DNR FILE

Xin Wang

Areas of Douglas County look much different today than they did a year ago when the threat of wildfire became very real and the Germann Road Fire ignited.

When the emergency call rang May 14, 2013, the fire was so intense that it eventually burned enough acreage to earn the status as the largest forest fire to burn in Wisconsin since the 1980 Ekdall Church and Oak Lake fires that consumed more than 200 buildings.

This time, though, while 23 homes were lost and nearly 7,500 acres were scorched, 350 other buildings were saved and the fire, despite its size, was contained within 30 hours.

It's no coincidence or pure luck that there were no injuries or fatalities. DNR staff who worked on the Germann Road Fire agree that a well-kept multi-agency partnership and rapid and effective response by firefighting crews likely saved lives and homes.

"We have wonderful relationships with our partners," explains DNR Wildfire Prevention Specialist Catherine Koele, who worked in the fire command center in Madison. "Each partner had a unique role, which was critical to the fire suppression success story."

Forty fire departments, 34 cooperating agencies and other organizations assisted the Department of Natural Resources with evacuating people, protecting property and fighting the fire.

A perfect storm

Conditions on May 14 were prime for wildfires in northern Wisconsin. Dry foliage, warm temperatures and gusty winds prevailed in an area replete with natural fuel sources.

"The fire was burning in pine, which is very resinous and highly flammable," recalls Robert Manwell, DNR's South Central Public Affairs Manager who was called north to work on the Incident Management Team (IMT).

A few hours after the fire started, the wind direction made a dramatic shift. In its path was the incident command post located at the Barnes Ranger Station, which had to be moved to safer ground at the Gordon Fire Hall.

Supported by the National Weather Service (NWS), the department was able to forecast the weather conditions for the fire. The NWS's radar and satellites depicted the fire and smoke plume direction. At the fire, aviation resources coordinated tactics with DNR-led ground crews, who battled throughout the night with tractor plows, bulldozers and fire engines to contain the blaze.

The fire was managed by the DNR's Northwest District IMT, comprised of agency staff from across the district

along with personnel from Burnett, Bayfield and Douglas counties. Incident Commander Larry Glodoski explains, "The overarching goal of the IMT was to contain the fire safely for all of those involved, including firefighters on the ground, aircraft and the citizens affected. During the course of the fire over 100 residents were evacuated from their homes by law enforcement and fire department personnel. Despite the high level of stress and urgency, no accidents or injuries were reported during the evacuations. The entire incident was handled in a very safe manner. This is a testament to the professionalism of those involved."

Local ties and training

"Local resources play a huge role in this kind of action," Manwell says. "We had local fire departments, sheriff's departments, police departments and town governments ready to assist. While our crews worked on the fire itself, the fire departments concentrated on saving structures that were in harm's way and local law enforcement knocked on doors evacuating people."

Other local partners helped with communication, temporary shelter, donation collections and more.

"Hundreds of firefighters came to help. Most of them were volunteers," recalls DNR Cooperative Fire Specialist Christopher Klahn.

There are about 860 fire departments in Wisconsin, 95 percent of which are staffed by volunteers. Training is key to



Dense pine, high winds and dry conditions resulted in rapid spread and intense torching.

DNR FILE



To read more about the fire and the final report visit dnr.wi.gov and search keywords "Germann Road Fire."

DNR FILE

their firefighting success.

Klahn leads the department's Cooperative Fire Program. His duties include leading a wildfire training program for fire departments.

The courses teach wildland firefighting skills, structural protection and how to best work with DNR's IMTs.

"Every area has some specialized courses too, depending on what the fire department can use," Klahn explains.

In the case of the Germann Road Fire, training in Douglas County took place in March, which prepared the crews for the massive battle they would face just two months later.

Klahn also manages the Forest Fire Protection Grant program, which provides funds on a 50-50 cash match basis to local fire departments and county and area fire organizations to purchase wildland fire suppression equipment, communication equipment, personal protective equipment and more. Almost \$500,000 is annually allocated.

"We just updated the fire suppression agreement in 2012 and gained 150 additional fire departments as part of our grant program. That's a big step for us," Klahn says.

Partnerships

Resources from Michigan, Minnesota, the U.S. Forest Service and even Canada were called in. Working at the command center, Ralph Sheffer, DNR forest fire operations specialist, coordinated resources across the state and supported

the district forestry leaders whenever there was a request.

"When we have an incident, we can easily call other agencies, request resources and get them moving rather quickly," Sheffer says.

He adds that such smooth transitions are a result of regular coordination and long-term agreements with a larger web of partnerships outside the state.

Since 1989, Wisconsin has been part of the Great Lakes Forest Fire Compact (GLFFC) with Michigan, Minnesota, Ontario and Manitoba. GLFFC facilitates the sharing of ideas, technology, equipment, personnel and other resources across state and international boundaries. Similar compacts exist for the Northwest, Northeast and other regions of the United States.

More than 1.5 million acres of Wisconsin's Northwoods are covered by the Chequamegon-Nicolet National Forest, which is under the U.S. Forest Service's governance. The department thus has agreements, discussions and occasional training with USFS staff on fire prevention and suppression.

Wisconsin also belongs to the Eastern Area Coordination Center (EACC), which serves federal and state wildland fire agencies within the 20-state Eastern Area, sprawling from Minnesota to Missouri and connecting the Midwest with the East Coast. When needed, EACC deploys crews, aircraft, ground equipment, logistical support and more for members.

Social media

Success in the Germann Road Fire also came from strong communication with the public.

Working with her forestry fellows in the command center at the DNR headquarters in Madison, Koele's duty was to face a sea of inquiries from the worried public and media.

"I was getting calls from the media and showing up on TV to inform people of the current status of the fire," she recalls. "I probably did 50 interviews over the course of three days."

The stream of interviews spoke to the public's desire for direct access to the constantly updating stream of information the department was collecting. Koele and others turned to social media in order to provide the public with concise and immediate access to developing and breaking stories.

"For the first time we were really able to use social media such as Facebook and Twitter in a breaking news situation," Koele says.

During the fire, the agency released 11 Facebook posts that attracted thousands of views in three days and 81 tweets in one week from real time updates about the fire status to heart-warming stories. Those timely and brief updates were well received.

"I went to the scene after the fire and talked to community members. Some said they were talking to their sons and daughters who read our posts. So they were able to know what was happening through social media," Koele says.

"We posted photos taken on the fire lines by firefighters and pilots, and when an area was safe, sent a fire information officer out with a camera and immediately uploaded those photos to the agency's website," recalls Manwell. "We were able to publish regular news updates from the incident command post via the Internet and provide real time interviews with reporters via cellphones. People from the area, absentee landowners and family members no longer living in the area appreciated it."

A Web page was developed detailing fire information, status, maps, news releases and pictures. DNR Division of Forestry Web Manager Scott Huelsman took charge of the Germann Road Fire Web page and says the goal was to create a template that could be used in future emergencies.

Preventive Firewise planning

In Wisconsin, people's actions or man-made objects account for 98 percent of wildfire ignitions. The risk is aggravated by the expanding population living close to wildland. From 2000 to 2010, Wisconsin gained 6 percent in its total population while the exurban or suburban areas were the biggest gainers, according to the University of Wisconsin-Extension.

As people move deeper into rural areas, they expand the wildland-urban interface (WUI) area where human properties are intermingled with undeveloped wildland, increasing the likelihood of wildfires and property loss. In Wisconsin, 337 cities, towns and villages have been designated as being at high or very high risk for wildfire, while 237 other municipalities are designated as "communities of concern."

The area in Douglas County where the Germann Road Fire burned includes

DNR FILE

GERMANN ROAD FIRE

DOUGLAS COUNTY, TOWNSHIPS OF HIGHLAND AND GORDON



numerous high risk and very high risk communities.

Being Firewise before a fire occurs is often a homeowner's best bet for seeing their home survive a fire.

Jolene Ackerman, DNR's wildland-urban interface coordinator, visited the area affected by the Germann Road Fire four days after the fire to conduct a structure survival assessment. She says that she was not surprised to find that some structures had been burned into ashes, while

others nearby stood intact.

"This is largely because some properties had better Firewise characteristics than others," Ackerman explains.

A Firewise property is easy for emergency vehicles to get to when they have the chance. The area 30 feet around all buildings is maintained by keeping leaves and pine needles raked up and plants, shrubs and trees kept away from buildings. Ideally, there are no evergreens or firewood stacks within this area. Rain gutters are regularly cleaned out so there isn't a pile of fallen leaves that could be ignited by a flying ember. The areas under decks and open steps are kept free of debris. Firewise recommendations continue out to 100 feet, with the focus on removing dead trees and shrubs and working to minimize the density of evergreens.

Being Firewise also means having a family wildfire action plan that details what the family should do in case they need to evacuate when a wildfire is in their area.

In Wisconsin, eight homeowner associations are participating in the Firewise Community USA Recognition Program, which helps neighborhoods develop an action plan to focus their wildfire mitigation activities.

Wisconsin's WUI program also supports local efforts to create and implement Community Wildfire Protection Plans (CWPPs).

A CWPP focuses on providing wildfire education, emergency response, hazard mitigation, community preparedness and structure protection for homeowners. There are 15 CWPPs statewide, covering 32 communities at risk. Towns with a CWPP receive priority consideration for National Fire Plan grants.

The towns of Gordon, Highland, Wascott and the Village of Solon Springs are part of the Brule-St. Croix CWPP, which DNR WUI Specialist Martin Kasinskas initiated. His working area also includes the Barnes-Drummond CWPP and the Clam Lake CWPP in the northwest district.

"We are in one of the most hazardous wildfire areas in the state," Kasinskas says. "Fire planning is extremely important. That's what saved the structures in the Germann Road Fire. Without it, it's possible another 200 structures could have burned. A big challenge is to help people understand how simple Firewise practices actually are. Easy things like raking around their homes and yards and cleaning out rain gutters can prevent them from losing their homes in a wildfire."

Heroes step up

Chippewa Flowage Property Manager Neal Kephart shares another success story. He has known June Tielen for years. Tielen lives at the end of a dirt road in the Town of Highland and was asleep when the fire came near her home. She awoke to loud pounding on her door and someone shouting for her to get out. In minutes, Tielen and her cat were escorted from the house by a stranger. Tielen spent the night at the Drummond High School not knowing if her home had survived. The next day she learned that her home was safe, but she lost her shed, two tractors and lots of tools.

Tielen searched for the man she had come to call the "Angel"—the man who safely got her out. When telling her story at the town hall the next Saturday morning, Tielen heard someone behind her say, "That was me, June."

She turned and saw Conservation Warden Lance Burns. She was speechless, crying and she hugged him.

"She told me afterward that Lance hugged her back just as hard," Kephart recalls.



Xin Wang studies journalism at the University of Wisconsin-Madison.

June Tielen thanks her "Angel," DNR Conservation Warden Lance Burns, who woke her up and got her out of her house safe.

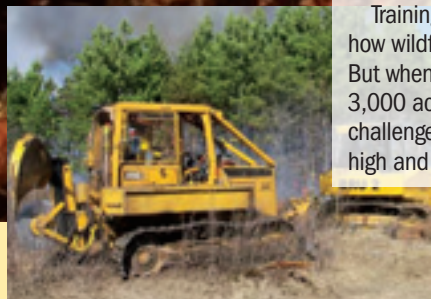


Tools of the trade

DNR firefighters attack woodland blazes with a variety of essential gear.



Wildland fire vehicles come in different sizes (types) depending upon how many gallons of water they hold and the gallons per minute (GPM) the pump can produce. This is a type-5 tractor plow.



At the Germann Road Fire the ground-based wildland fire suppression effort was primarily a flanking action, using tractor plow units in a direct attack mode with burnout followed by resources to hold the line.

Type-5 tractor plow

Fully-loaded weight: 12.5 tons

The type-5 tractor plow's primary purpose is to disrupt a fire's source of fuel (the ground vegetation lying in its path — trees, grasses, shrubs and other foliage on the surface, as well as tree roots that burn underground).

The tractor, using a front blade and rear plow, acts like a large rototiller, severing roots in the ground and toppling standing trees. The front blade tears at the roots while the rear pushes the earth to either side. This creates a path of plowed earth known as a "fire line" or "mineral soil break." As the firefight progresses, fire lines are widened, allowing trucks to travel to strategic spots to deliver tools and water.

For the operators, the type-5 tractor plow comes with a sprinkler system that once activated, showers the nearby area with water to protect the driver from extreme temperatures and prevent damage to the machine. Each type-5 comes with "fire barrier

Eric Verbeten

When smoke rises from a Wisconsin forest, a highly-motivated team of men and women is mobilized, fully prepared to battle a dangerous, fast-moving wildfire.

Most of northern Wisconsin and large parts of the central forest region are designated by the Department of Natural Resources as "fire protection areas." In these regions, the department is the primary agency charged with protecting life, property and the forest itself.

For more than eight decades, DNR wildfire crews have battled wildfires, some small, some large. Most are started by humans or man-made objects like power lines. The number one cause of wildfires in Wisconsin is related to debris burning. A very low percentage are acts of nature, as when lightning strikes.

Training and experience are paramount. Understanding how wildfires behave is a key part of this critical task. But when facing a fire that can grow from 300 acres to 3,000 acres in a matter of hours, and all the dangers and challenges this entails, DNR firefighters rely on a mix of high and low tech equipment to give them the upper hand.

curtains," which consist of heat- and flame-resistant material that can be rolled down over the cockpit like a shade on a window, effectively stopping heat from reaching the operator.

Type-4 truck

Fully-loaded weight: 12.5 tons

The type-4 is a 300 horsepower truck used to haul type-5 tractor plows and deliver water to the fire line. Recently, many of the units in the Wisconsin fleet have been upgraded with all-wheel drive, enabling greater access to the fire across rough terrain.

A type-4 carries 850 gallons of water used by firefighters on the ground to extinguish localized fires. The truck comes



A type-4 truck hauling a type-5 tractor plow is referred to as a "heavy unit."

packed with tools and other gear for ground crews. There are currently more than 80 type-4 units located across the state. In the event of a large wildfire, such as the Germann Road Fire, "heavy units" consisting of a type-4 towing a type-5 tractor plow are deployed to staging locations near the fire. Here crews unload supplies and the tractor plows, and receive orders from incident command on where to attack the fire.

Fire-resistant clothing and Pulaski

Any firefighter near the fire line is required to wear flame-retardant clothing, often referred to by its commercial name "Nomex."

Firefighters use a hand tool known as the "Pulaski" which joins the functions of an axe, for chopping, and a hoe, for digging into the ground and severing roots.

The tool bears the name of a U.S. Forest Service ranger who refined it in 1911. Its primary purpose is for expanding and connecting fire lines in areas inaccessible to type-5 tractor plows and other tools because of rough terrain.

Eric Verbeten is a communications specialist with the DNR Office of Communications. He covers DNR science and research.



The Pulaski is a versatile hand tool for constructing firebreaks as it can be used to both dig soil and chop wood.



DNR PILOTS HAVE AN OFFICE
WITH A VIEW LIKE NO OTHER.

A soaring career

Jeff Oimoen is one of nine DNR pilots the agency employs to work on projects ranging from wildlife surveys to wildfire spotting and suppression.

NATASHA KASSULKE

Natasha Kassulke

When Jeff Oimoen flies, it is often as bald eagles do. For nearly 100 miles, Oimoen, a DNR pilot who works out of Madison, cruises just 300 feet above the Wisconsin River, gently dipping and maneuvering the Cessna 182 he pilots. Joining him are DNR wildlife biologists Dan Goltz and Elizabeth Boyd, who work out of Boscobel. Their combined goal is to spot and count bald eagles as part of the DNR's annual winter eagle survey.

There are no leaves on the trees, so the crew has a clear view of the frosted farm fields near Mauston, which eventually give way to a patchwork of ice and open water where eagles, trumpeter swans, Canada geese, ducks and even coyotes gather on the Wisconsin River.

"Alright, this is it," Oimoen announces over the radio headsets that connect him to his passengers. It's a smooth flight, but there are air sickness bags readily available just in case.

Oimoen keeps an eye out for hazards such as power lines, cellphone towers and what he calls "other ghosts like that." He politely responds to requests from the back seat to fly lower to allow the crew to get closer for a better view. The department has a low altitude waiver with the Federal Aviation Administration.

Oimoen, who works for the DNR bu-

reau of forest protection, is one of nine pilots the agency employs on its Aeronautics Team. Besides Oimoen in Madison, there are two pilots each in Oshkosh, Eau Claire, Rhinelander and Siren.

These pilots represent a colorful and ongoing chapter in the DNR's history. The agency's forest air patrol turns 100 next year and is the oldest in the country.

A historic marker posted in 1955 in Boulder Junction, Vilas County, recognizes that first flight feat and reads: "First Forest Patrol Flight was made from Trout

Lake by Jack Vilas on June 29, 1915. Vilas was commissioned 'Official Aviator' by the Wisconsin State Board of Forestry (now Wisconsin Conservation Department) and on his own request received no salary other than 'many thanks.' . . . The flights from here by Jack Vilas marked the first time anywhere that an aircraft was used in detecting and locating forest fires and patrolling large forest areas."

While silk scarfs and goggles were all the rage back then, today DNR pilots are outfitted with headsets, telemetry equipment and GPS. They not only detect fires but find missing persons, aid law enforcement in drug busts, spot for people hunting over illegal bait

piles, survey endangered wildlife populations and much more.

DNR pilots are trained to use telemetry receivers for a variety of species. Wolves, deer, bear and several fish species have been tracked by DNR pilots. Telemetry information provides researchers with valuable data on animal movements and habits.

DNR pilots and aircraft have been a key



Wildlife biologists Dan Goltz and Elizabeth Boyd conduct the Wisconsin River bald eagle survey from the sky.

NATASHA KASSULKE

NATASHA KASSULKE



Flying over a dam on the Wisconsin River looking for eagles, which tend to congregate at open waters in the winter to search for fish.

BEV PAULAN



Wolves are one of several species DNR pilots help track using telemetry equipment.

BEV PAULAN



DEAN TVEDT

Jack Vilas at the marker recognizing that his 1915 flight was the first time an aircraft was used in the nation for fire detection.



Eaglets nesting as seen from a plane.

BEV PAULAN

part of the trumpeter swan reintroduction to Wisconsin. Because trumpeter swans are highly mobile, the aircraft is critical in finding various birds' locations after they have been released.

Gypsy moth spraying relies on DNR pilots to enhance safety and ensure proper and safe chemical application to wooded areas.

DNR pilots are an agency-wide resource and their time in the air does wonders for those who work on the ground.

Wildland firefighters, cooperative fire departments, federal, other state and local agencies rely on the immediate dispatch of DNR pilots and the aircraft they use. For example, on the morning after the 2001 tornado in Siren, DNR pilots helped emergency responders determine which roads and driveways needed to be opened in order to reach those who were trapped.

John Jorgensen heads the Aeronautics Team and takes pride in the fact that the pilots in his unit are professionals with thousands of hours of flight time and decades of flight experience. Some have flown heavy aircraft, some have been transport pilots, others served as bush pilots or were flight instructors. Jorgensen himself was a pilot working in Belize and Hawaii before joining the DNR crew.

"Over the years, the department has owned and operated numerous types of aircraft for a variety of purposes," he says. "The Aeronautics Team has evolved to provide pilots with appropriate training and experience as well as appropriate aircraft to help meet the changing needs of the department."

DNR FILE



DNR pilots are stationed around the state and ready to respond as needed.

The department no longer owns planes but leases them from the Department of Administration, which also maintains them. Two of the planes are equipped with Forward Looking Infrared (FLIR) units that were paid for in part with a Port Security/Homeland Security grant. In Wisconsin, FLIR is used to locate hotspots over fires, find persons of interest during law enforcement activity and find missing people. The imagery can be recorded live and also sent to hand-held receivers on the ground via the onboard downlink system. This allows ground personnel to see what the flight operator is seeing in real time.

DNR's Aeronautics Team is diverse. These aviation specialists combine their knowledge of department programs and piloting abilities to become the flying counterparts to fire rangers, game wardens and a variety of specialists within the department.

Bev Paulan flies out of Eau Claire. She's been a pilot for 30 years — receiving flying lessons as a graduation present — and has a biology degree. When she isn't tracking wolves or spying into eagle nests, she is on the ground assisting in the Karner blue butterfly program — performing duties that range from training volunteers to habitat assessment, to simply "chasing butterflies." She's also an excellent aerial photographer.

Her past piloting experience includes serving as a flight instructor and working with Operation Migration.

"Being a DNR pilot lets me bring my two loves together — wildlife and flying," she says. "The more data that

comes in from our work, the more knowledge is gained."

Pilot Phil Miller is stationed in Siren and is the DNR's current longest serving pilot. He joined the DNR team in 1991 and laughs at the fact that he came to the job with a degree in music education. He had planned to teach grade school instrumental and vocal classes until he took flying lessons and was hooked.

After some additional training at an aviation school and earning a mechanics license, he moved to the West Coast to be a flight instructor and charter pilot. That is, until Air Serv International got his attention. For three years he flew relief missions in Mozambique and Kenya for Air Serv, a U.S.-based nonprofit corporation that provides air transportation for humanitarian programs and disaster relief operations worldwide.

But when the opportunity presented itself, he returned to his home state, landing a job with the Department of Natural Resources.

"What I love the most about the job is that we use the airplane as a tool rather than just transportation," he says. "We get to do aerial photography and animal tracking. I also like that the job is seasonal and we get to do different kinds of flights throughout the year. There is fire season, fall law enforcement work and winter surveys."

Last year Miller flew as part of a 14 aircraft team (DNR and partner pilots) that fought the Germann Road Fire in Douglas County.

A well-known and highly valuable duty carried out by department pilots is that of fire detection and suppression. Pilots work 11 fire detection routes statewide and receive yearly training with both formal classes and by participating in fire simulator training held around the state.

DNR pilots are often the first to reach the scene of a fire. They provide rangers responding to a fire with critical information that can be used to determine how much equipment is needed for a proper response. But that is only the beginning. Once on a fire scene, the pilot remains overhead providing intelligence on the fire's behavior and movements, as well as indicating structures or resources that are threatened. The pilot also provides critical safety information for tractor plow operators and others working on the fire.

One of Miller's most memorable flights, though, wasn't a fire but find-



DNR FILE

DNR pilots meet at hangars around the state for training and more. The Aeronautics Team's mission: To provide safe, effective and cost-efficient air support for all aspects of resource work conducted by the Wisconsin Department of Natural Resources.

ing a missing woman in Copper Falls State Park. Miller recalls spotting her in an open field waving her arms. From the air, he then guided rescuers on the ground to her. Later, she shared that she had remembered an episode of "Walker, Texas Ranger" in which Walker (Chuck Norris) advised those around him that if they ever get lost, to go to an open area and look for an airplane.

When he isn't flying, Miller runs the DNR's firefighting training simulator. He also penned the spreadsheets used to track DNR pilot flight logs, writes computer programs and conducts energy audits of DNR buildings.

"There are certain jobs that the department does that we can only do with an aircraft," Miller says. "And that's why we exist."

Safety training and follow through is paramount before, during and after every flight, Paulan says.

She cites her pre-flight checklists that include gauging her own health and that of the plane, as well as weather conditions and the flight plan. She also points to the importance of a pilot's constant awareness of their "Division of Attention," meaning paying attention to multiple stimuli while flying, from tracking GPS coordinates to running telemetry equipment to actually piloting the aircraft.

"Every flight has its own unique hazards and complacency is the enemy of every pilot," Paulan says.

Back to Oimoen, who begins his eagle survey flight at the Department of Administration hangar on Madison's north-east side by checking weather conditions and any temporary flight restrictions. He also checks that weight restrictions are adhered to. He balances the weight of passengers with the weight of the fuel necessary to complete the assignment.

He inspects the plane to see that it is fully fueled, or in pilot speak "topped off," and in excellent condition — ready to go. With the hangar door open Oimoen pushes the plane outside and then jumps in to cruise it onto the landing strip. There, he awaits flight clearance from the tower. And then he's off. He checks in with the tower.

"We are not alone up here," he says.

Oimoen has been flying for 45 years and lives in Mount Horeb. He can find his way around southern Wisconsin just from seeing high points such as Blue Mound and the Baraboo Bluffs.

Oimoen says the best part of the job is when he can participate in animal tracking surveys.

"It's great to see the animals and I like to see them doing well," he says of his involvement in the fixed-wing surveys used by wildlife managers to estimate populations of deer, beaver, otters, ducks, eagles, osprey, trumpeter swans and more.

During the eagle count flight, Oimoen follows bridges and dams that divide the Wisconsin River. He's watching for the eagles' white heads amid frosted tree limbs.

He points out a snowman on the ice. Then a few river otter slides. Then some turkeys. Finally, he spots two adult eagles calmly poised on their perch seemingly oblivious to the nearby plane.

"It's a most scenic tour you are taking us on, Jeff," Goltz says. "Thank you."

In the end, the survey will yield 59 bald eagle sightings on the Wisconsin River.

"It's a great job," Oimoen opines. "Especially, when you get a day like this. Some people would pay for the chance to do this. What a beautiful day. You can see forever."



Natasha Kassulke is editor-in-chief of Wisconsin Natural Resources magazine.

BRINGING DIVERSITY,
TRANSPARENCY AND
CUSTOMER SERVICE TO THE
FOREFRONT OF MANAGING
NATURAL RESOURCES.

Natural Resources Board Chairman Preston Cole

Marcus Smith

Preston Cole was raised on 15 acres in southwestern Michigan. Living in a farming community it was expected that he would join the Benton Harbor High School Future Farmers of America. And he did. His first conservation teachings came from his parents who told him that he should leave this planet in better shape than he found it. Their message stuck and led him to the University of Missouri where he studied agriculture before moving into the school's Forestry, Fisheries and Wildlife program, graduating with a forestry management degree in 1987.

For over 20 years, Cole has worked for the city of Milwaukee in a variety of positions — City Forester, Environmental Services Superintendent and his current position as Director of Operations for the Department of Public Works (DPW).

He hunts ducks, geese and pheasants, and enjoys hiking the state park system with his wife, Laura.

Meet Preston Cole, chairman of the Wisconsin Natural Resources Board (NRB).

Cole has been an NRB member since August 2007. At the urging of colleagues, he ran for and was elected the NRB's first African-American chairman in January 2013. On May 28, 2013, Gov. Scott Walker reappointed him to a six-year term. In announcing the reappointment, Gov. Walker cited Cole's "knowledge and depth of experience" as making him "uniquely qualified to continue serving the state of Wisconsin on the board."

Cole values transparency and has been a strong advocate for using social media, webcasts (live broadcasts) and videotaping NRB meetings to inform the public on issues facing the Department

of Natural Resources and the board. The meetings are archived so people can watch them as their schedules allow.

Cole says now that NRB meetings are webcast, people watch the meetings, "because the board is on the record, and people really want to hear about issues that are going on that impact them, whether it's hunting, fishing, forestry, air or water rules."

He believes that taped NRB meetings "offer a wonderful opportunity to shed insight on the process about how the board works as the policy-making organization."

Supporting the use of social media is a natural offshoot of his duties at the city of Milwaukee, where he championed using social media as part of the DPW's communication strategies to increase awareness of public works programs and weather-related emergency operations.

"It's important to me — through any means necessary — to open up what the Natural Resources Board is responsible for, what we are challenged to do, and how the residents can use it to voice their opinions

on issues that concern them," he says.

Whether it's the department or the NRB, customer service and "solutions-based management" are just as important to him as transparency. He believes the public's concerns and problems should be resolved in a timely manner and "not taking a long bureaucratic process to let them know what the rules are whether it's air, water or the rules that we issue."

He says the department is "doing a yeoman's job of continuing to look for ways to provide service excellence to its constituencies. We should be steadfast, we should be thoughtful and we should be open about what it is we need to do, whether it affects their business or their backyard."

During his time at the city of Milwaukee, Cole has worked on several "greening activities" such as the Greening Milwaukee Schools program that involved summertime playground conditions.

DPW staff visited about 16 schools where they discovered that many of the schools had paved over their playgrounds.

"Youngsters in Milwaukee were playing on hot asphalt and during the summertime those temperatures were well in excess of 115 degrees. It also increased storm water into an already overburdened system," Cole recalls. "The Green-

Preston Cole chairs the Wisconsin Natural Resources Board, which sets policy for the Department of Natural Resources and exercises authority and responsibility in accordance with governing state laws.

BEN PIERSON



Preston Cole was appointed to the NRB on Aug. 17, 2007 and reappointed by Gov. Scott Walker on May 28, 2013.



To learn more about the NRB, find its calendar of meetings or to watch a webcast of a meeting, visit dnr.wi.gov and search keyword "NRB."

ing Milwaukee Schools program was a partnership with Milwaukee Public Schools where we would excavate asphalt and plant trees and use it as outdoor education for a science curriculum and get kids toiling in the soil and understanding the impact of their environment, so we can produce another generation of young stewards, while at the same time improving the community in which they live."

The window sill in Cole's office is crowded with awards and mementoes from his conservation work, civic engagement and volunteerism. One award he's proudest of, is receiving the National Urban Forester's Medal of Honor in 1992.

Cole was the first African-American to graduate from the University of Missouri with a degree in forestry management in 1987. That fact was not lost on him and he set out to find ways to remedy that.

Cole organized a diversity in urban forestry program that was able to "find ways to encourage men and women of color to enter into a curriculum through their course work and open up jobs for people at all levels in urban forestry, specifically people of color."

He "hosted a national discussion" that

resulted in significant policy changes relative to how the U.S. Forest Service deals with and recruits urban foresters into their program. The result was a forestry curriculum at Southern University and A&M College, a historically black college in Baton Rouge, La.

Working with the university, the Forest Service awards scholarships to students who graduate with degrees in urban forestry management or urban forestry and research, to assist them as they pursue a Master of Science and conduct research around urban communities. Cole believes that national discussion "became kind of a spark for the rest of the urban forestry community to have that open and honest discussion, because the forestry community does not represent what the rest of America looks like."

Cole wants to connect nontraditional audiences with opportunities to get outdoors. Take for example his volunteer work with the Urban Ecology Center.

Ken Leinbach, executive director of the Urban Ecology Center, says, "Preston Cole has been a longtime supporter of our work at the Urban Ecology Center in the various roles he has held in Milwaukee. Our efforts to get urban kids exposed to the natural world fits closely with his

personal ethic as shown by his career path. As a successful African-American man in the conservation field, Preston is the perfect role model for the students that we serve."

"Seeing how those kids are engaged begins to lay the foundation for those children becoming stewards of the environment," says Cole. "I think what the Urban Ecology Center is doing as an organization — and organizations like the Urban Ecology Center — are so important, so that these children understand the natural environment in which they live."

Several years ago he submitted a question in the Wisconsin Conservation Congress spring hearing questionnaire: "With youth declining in outdoor activities, should the WCC establish a Youth Conservation Congress?"

The question passed in 69 counties and 13 youth delegates attended the May 2013 Wisconsin Conservation Congress statewide meeting.

"This shows how the board and the congress work together to look to the future of hunting, fishing and trapping," Cole says. "The youth congress will serve as a sounding board for attracting more youth to outdoor activities. The advice we get from these committed young stewards will undoubtedly assist the department, Natural Resources Board and Wisconsin Conservation Congress in developing strategies that keep our youth engaged."


When asked to describe what he views as qualities he brings to the NRB as chairman, Cole says, "I continue to count on things like collaboration, leadership, and of course, being a conservationist with a forestry management background."

He believes his "conservation approach to things in resource management" will serve him in good stead on the board.

"I think I can add some value not only in breadth but in scope in terms of issues that impact our resources," he says.

DNR Secretary Cathy Stepp says, "Preston is a chairman to model. He is thoughtful and understands the importance of the Natural Resources Board. His commitment to what is in the best interest of Wisconsin's citizens and our natural resources are what make him a perfect fit for this very important position. His advice and observations are priceless."

Marcus Smith is the DNR's Southeast Wisconsin public affairs manager.



DNR Conservation Warden Scott Thiede and Maria Palm worked together to keep these fawns in their natural home and near their mother.

A LESSON
IN KEEPING
WILDLIFE WILD.

The fawn, the newborn and the warden

SUSAN PALM

Joanne M. Haas

A mother's urgent call for advice ended with a caravan of action after a DNR conservation warden and a neighbor's newborn together helped show the way to an Eau Claire girl who only wanted to share her good life with a fawn.

Warden Scott Thiede was talking with an angler when Susan Palm called. It seems her big-hearted grade school-aged daughter had just arrived home — with a fawn.

It was 5:35 p.m. on a Sunday last spring. "What should we do?" the mother asked. The fawn was about to become Fido in her daughter's master plan to help an animal she saw as being without a mom and a home — two things daughter Maria wanted to share.

The innocent helping the innocent: A kid helping another kid — in this case, a four-hoofed kid. What could be so wrong when the intention is so good?

That was what Warden Thiede was going to have to explain as he started up the truck to drive to the Palm home.

"My thoughts were about the emotions associated with these types of baby animal calls," Thiede recalls. "She (Palm) had taken the time to make the call, as do other callers in these types of cases because they have genuine concerns about the well-being of the animals."

Callers often use terms like "mother," "baby" and "family" to explain the situation, Thiede says. "These concerns are real, so the warden must be sensitive to the feelings of the people involved in the animal encounter. Wardens and wildlife

biologists deal with a lot of animal calls. But for the caller, this might be the first time they have had a close encounter with wildlife."

Thiede was invited to the Palm's home. There, he found a living room full of people. All eyes turned to the man in the uniform, as the room's conversations lulled. The spotted fawn stood in the center of the room in front of Susan and her daughter — both had red eyes.

It felt like a wake.

Then, Thiede spotted a neighbor woman seated with others in the crowded living room. She was holding an infant that looked to be only a few months old. And with that, Thiede's lesson plan for Maria started to gel in his head.

Palm told Thiede and the guests in her living room that her daughter had seen two fawns in a fenced prairie outside Flynn Elementary School on May 31. Her daughter had been checking on them and playing with them, but she never

saw the doe in the area. So, her daughter decided to bring them home. But on this particular Sunday, her daughter could only catch one fawn.

Thiede told the group he had no doubt of any kind the intentions that led to this fawn standing in this residential neighborhood living room were good. But... and the group seemed to know this was coming.

"The fawn is a wild animal that would be better off being cared for by its mother," Thiede said, and he turned to the neighbor woman holding the infant on her lap. "This fawn is not a human baby. The fawn has care and diet needs that only its mother deer can provide."

The food a human baby needs and gets from its mother is not the same food a fawn needs, Thiede said as he looked toward the newborn, the fawn and Maria. Providing human food to a wild animal may make it sick or possibly cause its death.

"A human baby would not do well feeding on the unique and species-specific food, such as grasses and other items animals depend upon for their health and to live their lives," Thiede said.

Thiede went on to explain that licensed wildlife rehabilitators provide care to injured or orphaned animals in some situations, but he surmised this fawn was neither injured nor orphaned.

"A doe will leave her fawns hidden to protect them from other animals. And the fawns know just what to do while she's away — lie still and keep quiet," Thiede told the group. "But the doe returns to care for her fawns when people are not in the area. The fact that this fawn appears healthy tells us it was not abandoned — or on its own."

Maria and the other kids in the room listened and had no questions. Susan asked about the chances of taking the fawn to a wildlife rehabilitator.

"We have no deer rehabilitators in the area," Thiede said. "The closest wildlife rehabilitator that would take a fawn is in Rhinelander."

The reality of the situation sunk in. Everyone knew the right thing to do: return the fawn to the grassy field outside Flynn Elementary.

And with that, it was time to leave the Palm home and return the fawn to its wild home. Thiede got in his warden truck and followed the family's vehicle to Flynn Elementary School. Once near the school, they spotted the second fawn in the grass.

"Someone had placed a wooden box with grass bedding and a dish of water there...again, people have the desire to do something, but they don't know what to do. Their actions often make the situation worse," Thiede recalls.

Given all the attention the fawns were receiving, it was decided to move the deer to a nearby location outside of the fenced enclosure.

Together, the warden and the Palms worked to get both fawns relocated and help keep the fawns and doe together as a family.

Conservation Warden Pete Dunn, who specializes in captive wildlife cases, says often it is a case of people assuming what works for humans — especially human babies — is the remedy for animal babies. "We've handled cases where some good intentions have led to a wild animal dying because of the wrong care. Or, someone may put out food thinking they are

helping, and the animal's digestive system simply is not equipped to handle that type of food and it gets sick or dies."


Dunn echoes Thiede's recommendation to work with wildlife rehabilitators.

"They are DNR partners in the goal to help and to protect wildlife," Dunn says. "The problem is there simply are not enough rehabilitators to handle the demand for their help. But, if people would think twice about intervening in a wild animal's existence, the rehabilitator's involvement would be limited to only those animals that are injured or sick and truly in need of their expert care — and not those wrongly removed from their natural homes because someone didn't understand how that wild animal lives."

"We humans are occasionally placed in the front row to observe this natural process in action. Some situations may work out as we want and the wild animal survives, or sometimes the ending is not what we would have preferred," Thiede says. "But if we interfere in the day-to-day activities of wildlife, we must understand our desire to help may do more harm than good. Please leave wild animals to live the life of a wild animal."

Thiede's message reached the Palm family that Sunday in their living room where a human infant's presence taught the real lesson.

A few days after that meeting, Susan Palm sent Thiede a note thanking him for taking the time to come to their home and discuss the fawn situation.

"The kids learned a lot that day — as did I," she wrote. 

Joanne M. Haas is a DNR public affairs manager and Keep Wildlife Wild team member.

In April, DNR Secretary Cathy Stepp launched a multi-agency partnership dedicated to helping citizens understand how to best help their wildlife neighbors. The initiative is called "Keep Wildlife Wild."



HERBERT LANGE



It is normal for nocturnal animals such as raccoons to be seen during the day when they have young. They may be looking for food.

DON BLEGEN



Reunite baby birds with their parents if they are not injured.

Wild animals have complex nutritional, physical, mental and social needs not easily replicated in captivity. Here are some reasons why citizens should not attempt to raise wild animals:



STRESS

Wild animals do not exhibit stress in the same way that people or domestic animals do so you may not realize you are frightening to a wild animal. Wild animals view people as predators and the mere presence of people close by can be distressing.



DIET

Wild animals have specialized dietary needs not easily met in captivity. Wild baby animals especially require a specific, complete diet. Otherwise, they are at a high risk of suffering serious nutritional deficiencies such as metabolic bone disease.



SOCIALIZATION

Wild animals need to learn normal social behaviors from their own species. Young wild animals that learn abnormal behaviors from humans or domestic animals likely will not survive if released into the environment because they have not learned the behaviors necessary to live, they have lost their natural fear of humans and predators and they may be habituated to human activity. When young animals reach maturity, their demeanor can change toward a more aggressive behavior that can be dangerous for humans and domestic animals.



DISEASE

Wild animals carry many different diseases and parasites, some of which are transmissible to domestic animals and even humans. Keeping a wild animal in captivity increases the chance of spreading or contracting a disease or parasite, which can cause serious health issues. Conversely, domestic animals and humans may also expose wild animals to other diseases and parasites that can have negative health effects on them.



LEGALITY

Regulations do not allow unauthorized or unlicensed citizens to possess wild animals in captivity. Most wild animals are protected under state and federal laws and cannot be taken from the wild or possessed by unauthorized citizens. Wisconsin's captive wildlife regulations allow a citizen to possess a wild animal for up to 24 hours for the sole purpose of transferring that animal to an appropriately licensed individual, such as a licensed wildlife rehabilitator or veterinarian.

Keep Wildlife Wild: Three words, one big meaning

Mandy Kamps

Wild animals are meant to stay in the wild. Every species is equipped with their own adaptations that allow them to survive and thrive in the wild. For deer, the best way a doe can protect her fawn is to leave it camouflaged in vegetation, lying still and motionless and only visiting a few times a day to feed it. For cottontail rabbits, the best way a mother can protect her young is to leave them concealed in a nest of tall grass and only visit a few times a day to feed them. For some birds, the mother will "fake" a wing injury to draw predators away from her young, which are hiding close by.

If you find a wild baby animal and are not sure if it needs help, the best thing to do is leave it alone and call a licensed wildlife rehabilitator or the Department of Natural Resources. They can help assess the situation and determine if the wild baby animal is truly orphaned or if it is demonstrating natural instinct behaviors.

Remember, you can contact a licensed wildlife rehabilitator or the Department of Natural Resources to help determine if an animal is in need of assistance. The DNR Call Center, 1-888-936-7463 (1-888-WDNR-INFO) can provide information or even direct you to a nearby licensed wildlife rehabilitator who might be able to help (visit dnr.wi.gov/topic/wildlifehabitat/directory.html). For tips on determining if a wild animal is truly orphaned go to dnr.wi.gov and use the keyword "orphan."

Together, we can all help Keep Wildlife Wild.

Mandy Kamps is a DNR wildlife rehabilitation program manager and member of the Keep Wildlife Wild team.



Focus on Wildlife

TAKE PICTURES, BUT PLEASE DON'T TOUCH.

Brooke Lewis

Congratulations to the winners of the 2014 Focus on Wildlife photo contest benefitting Dane County Humane Society's Four Lakes Wildlife Center.

■ "Hey Guys! Wait for Me!"

by Pete Price

"A rather large flock of pelicans has been gathering at the far end of Okee Bay on Lake Wisconsin during the warm months of summer the past few years," Price writes. "When I stepped out from behind a tree to get a clear shot, a number of the pelicans took to the air which provided the opportunity to catch them in flight."



■ "Fawn Hiding in Lupines"

by Sandra Prebeg

"I stopped at the wayside just into Marquette County to see all the beautiful lupines in bloom. As I looked around, just a few feet in front of me a very young fawn thought it was hiding in these flowers and did not know I was able to see him/her," Prebeg writes. "I was able to get one or two photos before the fawn realized I was taking photos and jumped up running."



■ "Mom's Work is Never Done"

by Beth Rodgers

Rodgers writes, "Mother swallow feeds her brood."

Four Lakes Wildlife Center (FLWC), the wild side of Dane County Humane Society, has experienced unprecedented growth. While we are grateful to be part of a community that is looking out for wildlife welfare, due to space and resource limitations, we are unable to accommodate the increasing number of animals coming in for rehabilitation.

Far too often, well-meaning individuals bring in healthy baby animals that simply do not need our help and we need to keep healthy babies with their families so that we are able to keep space open for animals that truly need assistance. Please call before removing an animal from its home. We can help assess the situation to decide if intervening is in the best interest of the animal.

Facts about baby wildlife:

- It's a **myth** that human scent on a wild baby animal will make their parents abandon them.
- **Young birds** normally spend up to a week on the ground before learning to fly. The parents will still feed and protect the baby while it is on the ground.
- **Baby birds and squirrels** that fall out of the nest are not necessarily orphaned. If they are uninjured, they should be reunited with their parent.
- It is normal for nocturnal animals such as **raccoons or opossum** to be seen during the day when they have young. They need to spend extra time foraging for food when supporting babies.
- If you have an animal that has made a nest in your attic or crawl space, there are humane ways to encourage it to take its babies and relocate them. Live trapping and relocating mothers creates many orphans.

How do you know when an animal needs help?

- **It's bleeding or obviously injured.** Don't assume that a fledgling bird has an injured wing because it cannot fly. A bird with an injured wing will often hold the injured wing differently than the uninjured one.
- **It's heavily parasitized.** Mother animals tend to keep their babies free of parasites so animals that have a large number of fleas or ticks or are swarming with flies, have fly eggs (look like tiny grains of rice) or maggots on their fur or feathers should be brought in.
- **Its mother is known to be dead or relocated.**
- **It had confirmed contact with a predator,** especially domestic cats.

A list of licensed Wisconsin wildlife rehabilitators is available at dnr.wi.gov/topic/wildlifehabitat/directory.html. In the Madison area, call FLWC at (608) 287-3235.

Brooke Lewis is the wildlife rehabilitation supervisor for Dane County Humane Society's Four Lakes Wildlife Center.

TIMELY LESSONS AS JUNE
IS INVASIVE SPECIES
AWARENESS MONTH.

Invasive snails find Wisconsin ready to defend

Deborah Seiler

Sampling the bottom of a cold water stream is a lot like upending a Lilliputian city into your net. There are caddisflies in their rocky armor, split-tailed stoneflies and worm-like midge larvae — all tumbling downstream into a waiting net along with algae, vegetation and gravel. That's why it was so easy for hundreds of tiny, dark snails to hide in the net of Water Quality Biologist Mike Sorge, kicked up like so many pieces of sand from the bottom of Black Earth Creek in Dane County, a renowned trout-fishing stream.

Without any fanfare, they made their way to a lab at UW-Stevens Point, just one of more than 400 samples from around the state that the Department of Natural Resources takes every year to keep track of stream health and catch problems early. Except when researchers began to pull apart Sorge's sample under the microscope last October, they noticed the pieces of "sand" were actually New Zealand mudsnails, one of the most troublesome invasive species for trout streams.

When Sorge heard the news, he knew Wisconsin was in for a tough challenge. The snails can travel unnoticed on wading boots, gear or construction equipment and people leaving waterways don't think to look for them. They graze on algae and zooplankton, compete with native grazers and could negatively impact the stream.

Sorge says, "They're hard to see, they like to cling and they can be mistaken for coarse grains of sand or tiny rocks."

Sticking to boots may be how the snails

reached Black Earth Creek in the first place. Since mudsnails only reproduce asexually outside of their native range



Citizen Lake Monitoring Network Educator Laura Herman (recently retired from the Department of Natural Resources) sampling for the New Zealand mudsnail.

DNR FILE

Due to its small size (several can fit on a dime), the New Zealand mudsnail can easily hitchhike on a variety of recreational and commercial equipment that comes in contact with the water and riparian zone.



© PAUL SKAWINSKI

— cloning themselves — geneticists can track where they came from. "Clone 2" snails live in the waters of Lakes Michigan and Superior and probably arrived through ballast water, but have not been expanding their range. "Clone 1" snails may have arrived with stocked game fish in Idaho and then spread on recreation equipment. Clone 1 populations only lived west of Colorado... until now.

Call to action

With such an adept hitchhiker in Black Earth Creek, the first step was to get the word out as fast as possible. Two aquatic invasive species (AIS) experts — DNR's Statewide AIS Monitoring Coordinator Maureen Ferry and Regional Watershed Coordinator Susan Graham — reached out to Wisconsin's existing AIS partnership to quickly pull together a rapid response team with experts from UW-Extension, the River Alliance of Wisconsin and the department. Within days of confirming the find, the team was spreading the word with the news media and stakeholder groups across the Midwest.

Any time a species arrives to a new habitat, it's hard to predict how it will fare. In the worst case scenarios, mudsnails in some western U.S. waterbodies have been found growing at densities of

June is the 10th Annual Invasive Species Awareness Month. Learn more at invasivespecies.wi.gov/awareness/index.asp.



Jim Beecher, Southern Wisconsin Trout Unlimited board member, lends his help sorting samples taken from Black Earth Creek that might contain the New Zealand mudsnail.

DNR FILE

investigate, though, they had to develop a protocol to clean gear so that researchers wouldn't spread mudsnails by accident. Graham says this step was challenging because New Zealand mudsnails have another trick up their shells that helps them get around. A structure called an operculum functions like a trap door to lock them in their shells at signs of trouble, making them resistant to common chemicals like bleach. They can also resist drying, staying alive for up to 26 days in a damp, cool environment, or even survive passage through a fish gut — making fish a potential source of spread.

The result, says Ferry, is that, "We have some new prevention steps that work for these snails that we haven't needed in the past." The team will work on sharing these new methods with groups at risk of spreading the snails such as researchers, anglers and stream restoration crews.

Graham and Ferry say the response from these stakeholders, especially groups like the River Alliance of Wisconsin and Trout Unlimited, has been phenomenal. Members of Trout Unlimited have volunteered for monitoring and outreach work, which Steve Wald, the president of the Southern Wisconsin chapter, says is just the right thing to do.

"We believe in a strong connection between enjoying and protecting the resource," says Wald. "We recognize that anglers can be a major vector for invasive species, so we're tuned in and ready to participate in any way we can."

up to 500,000 per square meter, changing native food webs and impacting trout health. However, in other locations they have had minimal impact, or the snail populations have crashed after an initial boom. It's too early to know which route the mudsnails will take in Wisconsin or if they will spread to other habitats in the Mississippi River watershed.

As ground zero for the snail's arrival in the inland Midwest, Graham says, "We had a lot of questions, but also guidance from our rapid response plan that helped lead us to the right people to answer them."

One of the first questions was whether the snail might already be at other locations.

"We think they've been in Black Earth Creek maybe two years," says Graham, "So there's a chance they've already spread around."

Before the team could head out to in-



Mike Sorge (right) meets with citizens during a public meeting in Cross Plains late last year, near the source of the New Zealand mudsnail discovery.

DNR FILE



DNR FILE

Volunteers sorting through samples must look through magnifiers to find the snail.

The search

The support was evident at a public meeting held in Cross Plains last December, near the source of the discovery. Local sportsmen and women, business owners and concerned citizens packed in to learn more about the snails on their doorstep and share their ideas with the response team.

With help from meeting attendees on locating heavily-trafficked water access points, the response team completed a plan to survey more than 100 sites statewide to learn if New Zealand mudsnails are anywhere else in Wisconsin.

With crucial help from volunteers, the team has been screening kick-net samples taken in the middle of winter.

Ferry said, "We had biologists going out in freezing temperatures to get stream samples, but they were happy to be there. That's remarkable."

With voluntary support from labs at UW-Madison, UW-Stevens Point, the U.S. Geological Survey in La Crosse and the U.S. Fish and Wildlife Service, the rapid response team is also experimenting with a new method that Wisconsin has used before to search for Asian carp — environmental DNA.

DNR Fisheries Biologist David Rowe explains how the process will work for mudsnails.

"Using Black Earth Creek as a test site, we're going to analyze the water samples for [mudsnail] DNA," says Rowe. "The neat part about eDNA is that water makes it go everywhere, so even at very low density it gives us an idea if mudsnails are there before we ever look with a kick-net. If it works well at Black Earth Creek, it will help us with early detection around the state."

The results could provide key clues for managing mudsnails in the future. "Oftentimes an invasive species will be present but stays in the background," says Rowe. "If we can detect populations with low densities, we can test the systems where they don't take off."

A future with invasives

Any time a new invasive species makes the jump across state borders, it's easy to be discouraged. What's remarkable about the New Zealand mudsnail discovery, though, is how quickly Wisconsin has been able to respond thanks to existing partnerships.

Historically, ballast water in the Great Lakes has been the main source of Wisconsin's inland invasive species and the associated costs they bring to water quality, recreation, tourism and industry. However, regulations since 2006 for oceangoing ships have effectively halted new introductions to the Great Lakes. Out of 184 species introduced to Lake Michigan in the past century, only 30 have made it to inland Wisconsin waters. The large majority of Wisconsin's inland waterways remain free of harmful species like Eurasian watermilfoil and zebra mussels even decades after these species were introduced to the state.

This is a testament to the success of prevention programs like Clean Boats, Clean Waters, which today reaches more than 200,000 boaters each year. In 2013, 96 percent of these boaters said they were aware of state AIS laws. Department staff work with a vast partnership that includes scores of lake and watershed associations, nonprofit partners, university specialists, federal and state agencies and nearly 50 county AIS coordinators.

To Ferry, this says that the fight against invasive species is a stand worth taking. "What boaters are doing every day to clean their gear is working well for our lakes and rivers, protecting our natural heritage, as well as saving communities time and money down the line. When an invasive species does occasionally slip through the cracks, like now, we're able to respond."

Wisconsin's latest invader is certainly concerning, but Laura MacFarland of the River Alliance, who has been working with Wisconsin anglers since 2007 and is playing a leading role in the mudsnail re-

sponse, has suggestions on how to make sure mudsnails don't spread any faster than a one-eighth-inch snail can crawl.

"You can learn to identify them, learn the prevention steps and help educate others about the threat and prevention steps," says MacFarland. "Everyone who uses the water can make a difference."

Deborah Seiler is an aquatic invasive species communications specialist for UW-Extension and the Department of Natural Resources.



© PAUL SKAWINSKI

The New Zealand mudsnail has a dextral (right-handed coiling), elongated shell with five to six whorls (twirls) separated by deep grooves. The shell color can range from gray to light or dark brown.

To prevent the spread of New Zealand mudsnails, follow these prevention steps:

BEFORE LEAVING A WATERBODY

REQUIRED:

- **INSPECT** equipment and **REMOVE** attached plants and animals (required by law).
- **DRAIN** all water from equipment (required by law).

EVEN BETTER:

- **SCRUB** equipment with a stiff brush, including crevices.
- **RINSE** equipment with tap water.

THE BEST:

- **SOAK** in 2 percent Virkon® solution (2.7 ounces per gallon) for 20 minutes.
- **RINSE** clean at least 100 feet away from surface waters.

For more information and additional prevention steps, scan this code with a smartphone, or visit dnr.wi.gov and search "New Zealand mudsnail."



dnr.wi.gov/u/?q=94



Slaying the Go

The giant hogweed invades roadsides, empty lots and woodland edges. Due to fast growth rates it can crowd out native vegetation. The invasive prefers moist areas with some shade. Sap from leaves and stems can cause a phytophotodermatitis reaction on skin, when exposed to sunlight, consisting of severe burns and blisters.

GIANT HOGWEED IS NOXIOUS.

Story and photos by Hans G. Schabel

July 18, 2011 was not the kind of day when anyone would choose to engage in physical outdoor activity. A rapidly moving thunderstorm had rumbled through Portage County in the morning, soaking everything and adding to the already tropically charged atmosphere. I was worried that the “Godzilla Squad,” a force of 20 weed fighters who had volunteered to help contain the giant hogweed (*Heracleum mantegazzianum*) invasion on our property, would fizzle in the face of temperatures in the 90s and a heat index much higher.

A week later would have been too late. By then the plants could have shed multi-millions of ripe propagules. Fortunately, the Godzilla Squad did show up for this first of battles in a three-year war against a noxious invader from the mountains of central Asia.

What we now know to be a dangerously invasive exotic was originally introduced as an ornamental for bee

pasture or as forage for pigs and cattle into many parts of temperate Europe and North America, including at least six states and provinces in the Midwest.

Its long-distance spread generally relies on soil transport or the help of plant enthusiasts, who collect its seeds for garden use, or its showy dry umbels for flower arrangements. Short-distance spread is facilitated by wind and ani-

mals, and even in the treads of muddy shoes and vehicles. Because of its localized occurrence in Wisconsin, mostly in counties neighboring Michigan, the giant hogweed is not listed among the 44 serious “Invasive Plants of Wisconsin.”

It nevertheless deserves to be taken seriously. Aside from very aggressively displacing native flora, its sap is phototoxic and can cause skin inflammation and even blindness.

At first, the giant hogweed on our land seemed more like an attraction than a liability. With leaves up to six feet across and massive stalks, sometimes exceeding 20 feet, crowned by showy umbrellas of white flowers, there are no comparable native herbaceous plants in the northern hemisphere. The plant’s flowers attract numerous insects, among them butterflies. The foliage appears to be candy for deer and the caterpillars of the black swallowtail. As a result, it was a welcome newcomer to fill a few niches on our farm, which otherwise tended to be unattractively weedy.

But by the summer of 2011 everything had changed. The honeymoon was over. An abundance of snow was followed by a wet, cool spring, just like in the Caucasus Mountains, the home of the giant hogweed. In addition, a recent timber harvest allowed much more light to reach the forest floor. As a result, every single seed of the giant hogweed that had accumulated and remained dormant for years seemed to spring to life, especially in rich, moist, cool depressions, along edges and trails. The Trojan horse had spilled its hidden army. The showy siren had metamorphosed into a weed from hell! It was time to declare war.

Rallied by Anne Graham, chair of the invasive species committee of the local chapter of the Audubon Society, members of several nature conservation organizations and some neighbors graciously pledged their support. In the process we learned some lessons.

That first summer, in our attempt to

dzilla weed



Giant hogweed reaches up 8 to 20 feet when in flower and has hollow, ridged stems covered in coarse, white hairs and reddish-purple mottling. The plant sprouts a low-lying bushy rosette for at least the first year.



Mechanical removal (pulling or digging up) and chemical treatments are the best bets right now for controlling this invasive.

contain the giant hogweed, we relied almost exclusively on cutting the still green flower heads and carefully stuffing them into heavy-duty plastic bags. These were then “roasted” in the sun for days, before being disposed of in a waste bin. While this effort greatly reduced the amount of soon-to-be-released fresh seed, it was not sufficient to contain the bulk of the weed population. There were plenty of individuals in the vegetative stage left, poised to become flower bearers the following year.


More seriously, I noticed that all the flower stalks that we had cut produced secondary “stealth crops” of small, hard-to-detect flowers later in the summer and into fall. I tried to chase these down one by one, but this extremely tedious and labor-intensive procedure proved to be like cutting Medusa’s hair: the plants simply kept breeding tertiary and even quaternary sets of flowers, of which many undoubtedly escaped undetected.

To counter the giant hogweed’s tenacity, another volunteer force ratcheted up

the battle the second summer. This time we showed up about one month earlier than the previous year. The umbels were still in mid-bloom, and carried only a few seeds approaching maturity. After cutting the inflorescences, we simply dumped them in the trail for subsequent shredding by a lawnmower. The decapitated, mature plants were then dug up in their entirety and hung upside down for drying away from neighboring shrubs. Younger plants were cut by lawn mower or scythe throughout the remainder of the growing season wherever there was easy access with these tools, while isolated plants in more difficult locations were drenched in Roundup®.

Follow-ups assured that the chemical did its work. I had hoped to avoid herbicides, but felt justified in using this extreme measure to deal with a tough adversary. This procedure of cut, dig, spray and mow succeeded in substantially reducing the population of plants that would have produced flowers the following year. In several spots, eradication was achieved.

Finally, in early June of the third summer, only a few plants in the pre-flowering stage were detected during routine monitoring of several remaining trouble spots. The problem was small enough for me to take care of with the one-time help of a friend. We dug up the maturing specimens, while spraying the remaining immature plants with Roundup® or mowing them to exhaustion.

While the battle appears won, it’s imperative to keep watch on the situation for several years, as it is not known exactly how long seeds of giant hogweed can survive underground. In the meantime, deer and swallowtail caterpillars will have to do without the previous abundance of Godzilla candy, and, where a plant with “presence” is called for, non-invasive rhubarb, also from Asia, will have to stand in. 

Hans G. Schabel, Ph.D. writes from Custer, Wis.

INNOVATIVE LAKE
EDUCATION PROGRAM IS
MAKING SURE NO CHILD
IS LEFT ON SHORE.

Taking a LEEP

The majority of the LEEP curriculum is hands-on. Students paddle to critical habitat study sites. Here students prepare to disembark on Middle Eau Claire Lake in canoes provided by Canoes on Wheels (COW).

Story by John Kudlas and photos by Carole Rusch

“No child left on shore” became our lake association’s mantra after we learned that many of our area students did not have the opportunity to explore and learn about Wisconsin’s pristine Northern waters — resources right in their backyards. This revelation initiated a chain of events resulting in an innovative modular lake association curriculum, the Lake Ecology Education Program (LEEP).

In 2009 the Eau Claire Lakes Area Property Owners Association (POA) near Barnes collaborated with the Drummond Area School District and embarked on a unique educational journey.

The POA Education Committee, supported by a \$3,000 DNR Small Lakes Management Planning Grant (facilitated by Pam Toshner, aquatic invasive species regional coordinator) and encouraged by the Barnes Town Board, developed and implemented aquatic educational LEEP modules that could be embedded in the local seventh-grade science curriculum.

The material was not intended to be another “layer” of classroom teacher instruction, but was designed to creatively deliver state standards by using an enjoyable and experiential approach flavored with adventure.

Although an enthusiastic and cooperating teacher was crucial to the program’s success, the majority of instruction was designed so that it could be conducted by POA members and local citizens to create community involvement, support and ownership, while also supporting the local school and educators.

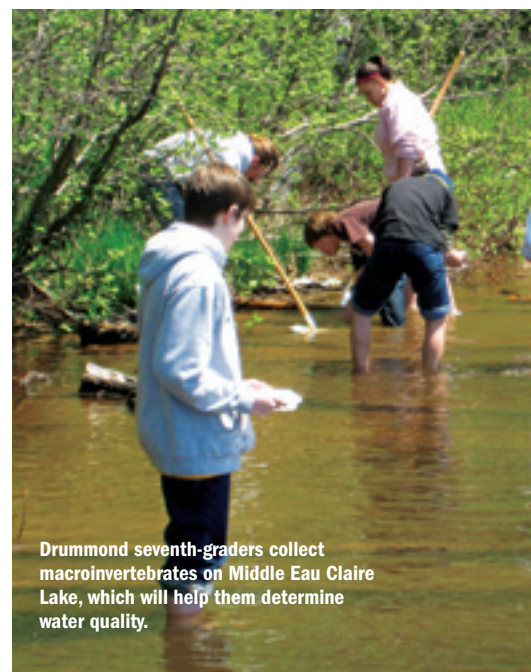
LEEP Education committee members

included Cris Neff, Jerry Kaiser, John Kudlas, Bob Hershey, Ted Eastlund and Fred Haueter. Bayfield Aquatic Invasive Species (AIS) Coordinator Jeremy Bates, Bayfield County Land and Water Conservation Department Land Use Specialist Travis Tulowitzky and DNR’s Alex Smith provided additional expertise. Douglas County AIS Coordinator Carrie Sanda was instrumental in the project.

The committee aligned the curricular material with state standards in concert with Andy Arthur, a seventh-grade science teacher in the Drummond School District. The Friends of the St. Croix Headwaters (FOTSCH) Canoes on Wheels (COW) program became an integral part. The program provides — at no cost — a trailer, eight canoes, paddles and life preservers to nonprofit educational and research organizations. Canoes are an enjoyable, effective and efficient vehicle of choice for conducting aquatic investigations and adventure.

For the LEEP aquatic curriculum, each lesson was developed so it could be plugged into an existing curriculum. Although preferable, the total curriculum does not need to be implemented to enrich the present school curriculum. Modules need to “fit” into existing curriculum and be grade-appropriate. The LEEP curriculum is designed for seventh-graders, but would be appropriate for sixth-graders and could be made more sophisticated for higher grade levels.

The majority of the LEEP curriculum is “hands-on” rather than rote memorization. Modules are delivered in a relaxed educational environment and students are encouraged to work in teams. Modules ad-



Drummond seventh-graders collect macroinvertebrates on Middle Eau Claire Lake, which will help them determine water quality.

dress various learning styles and use an interdisciplinary modular approach.

LEEP founders believe Wisconsin lakes, rivers and wetlands are unique and precious areas that can and should be explored with citizen instructors (lake associations) in collaboration with local schools.

Activities are designated in fall and spring to coincide with plant and animal life cycles. Preparatory indoor laboratory sessions are used before the students move outdoors to apply what they have learned.

Indoor fall classes find students studying at computers as they check data to prepare for an upcoming lake visit. Students use investigative activities to learn the chemical and physical qualities of unknown samples of water. Temperature, pH (acidity), clarity (turbidity) and dissolved oxygen are checked. Plankton is analyzed and categorized. Phosphates and nitrates are discussed.

Students are introduced to free-floating, submersed, floating leaf and emergent aquatic plants and are presented with an array of aquatic invasive species that might threaten lakes and waters.

Safe canoeing, avoiding hypothermia and wearing life jackets are emphasized and practiced before the LEEP Day experience.

When the class moves outdoors, students and chaperones paddle canoes to various critical habitat sites and use scopes to view, identify and photograph each unique site. Students key various plants from an assortment of aquatic plants and rake unknown plants to classify on site.



The author, John Kudlas, with Drummond seventh-graders categorizing macroinvertebrates.

They are awarded "stars" for plants identified to add a fun, competitive component.

Later, students ride pontoon boats to a deep water site where they measure temperature and dissolved oxygen at 5-foot increments and also measure surface pH and clarity using a secchi disc. Plankton nets are also used to collect and identify microorganisms. Students are asked to make a qualitative lake analysis.

Students photograph critical habitat sites, learning activities they enjoy and wildlife they discover. Students then create poster collages that they present to the class during the wrap-up day. Each session concludes with a group assessment time.

In the spring, the indoor module finds students using lab materials to differentiate macroinvertebrate types and learn how they indicate water quality. Students also learn about the value of terrestrial plants around lakes and transplanting methodology. They study how living and nonliving things are connected and how the flow of materials and energy are established in healthy terrestrial and aquatic environments. Students learn the importance of trees and shrubs to lakes and they distinguish tree species indigenous to the area by leaf, needle and cone structures. Students also learn how to take basic tree measurements using clinometers and measuring tapes.

When the spring class moves outdoors, students gather lakeside and classify macroinvertebrates as sentinels to determine water quality. The bugs are then returned to the environment unharmed.

At another site, students plant buffer plants and seedlings under the guidance of Bayfield County personnel. They ethically gather and record aquatic plants and animals and place them into appropriate categories of producers, consumers and decomposers. After classification, all samples are photographed or sketched and returned to their habitat.


Students take what they have learned

and apply it to a fun-filled, competitive scavenger hunt session featuring canoeing and gathering lake quality readings, tree indicators and tree measurements. Students use photography, writing, various media and poetry to present a creative project during the final wrap-up day under the guidance of the language arts teacher.

LEEP Day concludes with a student-teacher evaluation and assessment.

The LEEP program has already rendered valuable dividends. A sixth-grader recently discovered Eurasian watermilfoil in George Lake and a seventh-grade student found curly-leaf pond weed in Middle Eau Claire Lake during a 2011 LEEP Day.

After completion of a LEEP Day, several students have volunteered to help with the Clean Boats, Clean Water initiative. The education committee has learned that with training and opportunity, students can become conscientious lake stewards.

More than 20 volunteer instructors today have coalesced into a unique instructional lake camaraderie. They cooperatively work on delivering the program goals and objectives with an enjoyable attitude and renewed appreciation for the symbiotic enthusiasm that exists between the outdoors and young learners. The lakes, schools, students and the community all benefit from the lake association's initiative. 

John Kudlas writes from Barnes, Wis.

Any and all parts of the LEEP curriculum may be used and duplicated by any nonprofit organization to help teach students about the aquatic outdoors. The LEEP curriculum is available online at leepeducation.wordpress.com.

For more information, contact an Education Committee member:

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To learn more about Canoes on Wheels, visit canoesonwheels.org/.



The Wisconsin Department of Natural Resources provides a statewide inventory containing over 2,000 identified public boat access sites and over 100 developed shore fishing sites. The inventory is available through a mapping application and through queries and searches. Be careful that the site you choose to fish from is open to the public and that you are not trespassing on private land. Visit dnr.wi.gov/topic/lands/boataccess/.

No boat? No problem.

DISCOVER THE JOYS OF FISHING FROM A RIVERBANK.

Story by David Harkness, Garry Leonard Running and Chris Mackey-Natz

For some anglers, the bank offers loads of possibilities and strategies that just don't fit in boats.

In fact, some days, it's too darn hot to be in a boat and the shade along a riverbank offers a much more comfortable setting for piscatorial pursuits. And then there is the cost — time and money — to trailer a boat to a nearby landing. Sometimes it's just easier to fish from a conveniently-located, publicly-accessible riverbank.

Equally important is the fact that bank fishing suits the high-energy and short attention spans of young kids and spaniels. And who wants to fish without them? But kids need to catch fish for fishing to be fun. If you want to experience a very long and trying day, just try sharing a boat with bored kids.

Bank fishing offers a wealth of healthy outdoor play options that boats don't. Kids can build forts, catch frogs, climb trees or indulge their imaginations even when the fish aren't biting.

Our kids always had their own bank fishing adventure backpacks filled with items of their choosing including water,

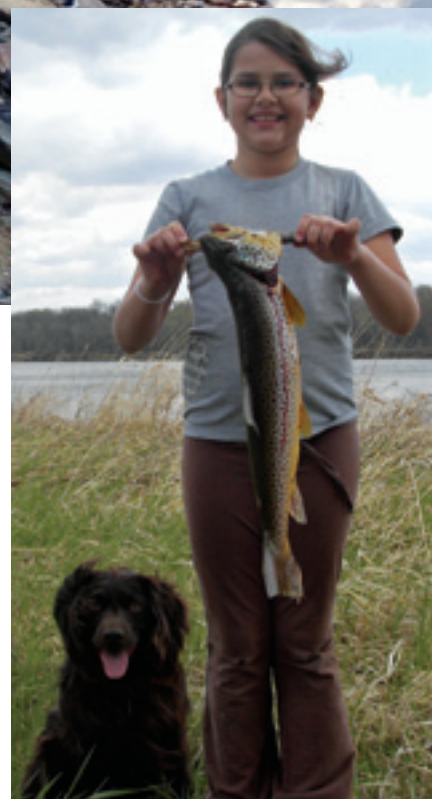
snacks, bug spray, sunscreen, some rope and a tarp (even pocket knives and hatchets — at the right age and after safety instruction).

With room to roam, a few simple tools, food and water, and armed with their vivid imaginations, our kids always had a great time whether the fish were biting or not.

Even if the catch was small, our days of bank fishing usually ended with the best question any kid could ask: "When can we go fishing again?"

How do I find a good bank fishing spot?

Good bank fishing spots are neither ubiquitous nor state secrets. Just ask local kids; they'll know where to wet a line. Ask bait shop owners — such knowledge is their bread and butter. Better yet, put your canoe, kayak, floatie or boat in the river. Bring a good topographic map or a GPS unit along. Fish your way



Kids have the most fun when the fish are biting. But if the fish aren't cooperating, shore fishing provides hours of other entertainment.

downstream looking for the classic forked-stick rod holders along the bank. Mark them on your map or GPS. Stop and chat awhile and learn from the bank anglers.

Of course, if you're reading about bank fishing because you don't have access to a boat, you can still find a good spot. Road right-of-ways, boat landings, parks and public picnic areas are plentiful. Don't forget city parks. The Department



DAVID HARKNESS

Circle hooks don't require a hook-set, so even novice anglers (remember the kids?) can use them effectively.

of Natural Resources has an inventory of public fishing spots. Visit dnr.wi.gov and search "shore fishing access." Talk to people who are carrying fishing gear. Even if they're headed to "their spot," they may point you to an equally attractive piece of riverbank. Pack a lunch and make a day of scouting spots — but don't forget to pack a line so you can yield to temptation.

Patterns will emerge. Popular public bank fishing spots are often downstream from dams, at boat landings, under bridges or where smaller tributaries enter larger streams. Many of the best bank fishing spots put the angler within casting distance of deeper pools adjacent to slack water, or some other fish-holding structure.

The key to bank fishing is mobility: the more spots, the better. If fish aren't biting at one spot, move on. Invest about a half hour to try your bait and tackle combinations.

What gear do I need?

We're getting on in years, so when we fish from the bank we want comfort in addition to our fishing equipment. We bring a soft-sided cooler large enough to keep crawlers, a sandwich or two, water and enough cold beverages for the day. Frozen, salted minnows help keep the cooler cool.

We also bring a landing net for big fish, which tend to roll in shallow water near the bank and can cut the line or injure themselves if not netted promptly. We carry a floating minnow bucket for live sucker, shiner or walleye minnows.

Everything else we bring can either fit in or be strapped onto our fishing packs. We bring small portable chairs (with backs). Our fishing packs are lightly loaded with bug spray, sunscreen, sinkers,

swivels, circle hooks, clothing for when the weather changes, garbage bags to carry out what we brought in (and more), a stringer, an emergency first aid kit and a fire-starter. And don't forget the camera!

Gear up for your personal comfort and needs. One of us (Gadget-Boy) has all sorts of clippers, scissors, tape measures and more on keychain-style pulls hanging off his fishing vest.

But remember that you have to carry your load, so don't overdo it.

There also are three pieces of equipment that every bank angler must have: a rod holder, an appropriate fishing rod-reel-line combo and terminal tackle. Through trial and error, we've developed (built or modified) or discovered what we think are effective and inexpensive versions.

Rod holders

Bank fishing, especially with children (and spaniels), isn't just fishing. You won't always be able to keep your fishing rod in your hand (especially if you are allowed more than one rod at a time). A good place to set your rod while you're busy with other things is necessary, but not always handy.

So we make our own rod holders and bring them along. Our rod holder designs have many advantages: they are inexpensive, homemade (which appeals to the garage tinkerer in us), adaptable to the sandy and gravelly conditions we often encounter on the banks of our favorite rivers and streams, and lightweight and easily portable (which appeals to our laziness — though we prefer to think of ourselves as "efficient users of our personal manpower resources").

And there are some mighty big fish where we bank fish. We've tested our rod holders time and time again. They don't pull out, bend enough to lose our fishing



DAVID HARKNESS

Our rod-reel combos are sturdy and give us more control.

rods or break when a big fish starts to run.

Our rod holders are easy to make and have a two-part design: a metal or fiberglass post and a PVC tube.

We recommend a ¼- to ½-inch-diameter steel or fiberglass rod for the post. These are available at hardware stores, as are posts designed for electric fencing. We make our post 2 to 4 feet long so we can drive it deep into sandy and gravelly banks. We round the end a bit (not so sharp as to accidentally impale ourselves) so we can poke it through coarser gravel if necessary. We thread a nut onto the top to create a bigger target to hit with a hammer if we need to pound it into the bank.

We recommend strong PVC piping wide enough to easily allow setting a fishing rod into it (and taking it out fast under pressure when a fish is on), but not so wide that it allows the fishing rod to wobble: 1 ¾- to 2 ½-inch-diameter PVC pipe works for most of our fishing rods. We find that 6 inches of pipe is enough to hold most rods.

Lastly, we adhere our PVC pipe to the post using two hose clamps covered with duct or electrical tape to protect our



These homemade rod holders are inexpensive, lightweight, sturdy and adaptable.

DAVID HARKNESS



DAVID HARKNESS

These simple rigs work for a variety of fish. The Wolf River rig is on top. The Canadian pickerel rig is in the middle. The Carolina rig is on the bottom.

fishing line from rough edges. We tried cable ties, but they didn't hold up to the pressure of big channel cats, flatheads, walleye, northern pike, muskellunge, redhorse, carp, snapping turtles or other monsters we routinely catch.

Rod-reel-line combos

"Go big or go home" is our motto. We don't mean to be macho; our experience is that rivers can overpower lighter combinations with swift currents, sharp rocks, snags, logjams and big fish. We recommend a medium-heavy or heavy fishing rod. If your fishing rod is bent way over just from the current, you won't be able to work a fish should — or when — you hook one. We also prefer a 6- to 10-foot version because the extra length gives us more control when playing a bigger fish near the bank or working it out of a snag.

We like a reel with plenty of line capacity and a high gear ratio. Style is less important than durability. When bigger fish like northern pike or channel catfish are the target, use a reel designed to handle them.

Lastly, bigger streams and rivers are no places for light line. Losing terminal tackle is a part of river fishing, but light line increases your chance of leaving terminal tackle (your swivel, weight, leader and hook) in a fish's mouth, on the river bottom or even in an overhead branch. We recommend 20-pound-test braided nylon. Though not cheap, there are many brands to choose from. All are abrasion-resistant, have excellent knot and stretch characteristics and are small in diameter compared to monofilament, which reduces drag and increases the line capacity of your reel.

Yes, our "go big or go home" mantra takes a bit of the adventure out of reeling in a drum, perch or other panfish, but it makes landing a big fish more likely. That means that big fish not wanted for the fry-

ing pan can be brought in before they tire, terminal tackle can be removed and the fish's survival upon release is improved.

Terminal tackle

We've tried everything and still experiment, but we always seem to end up with the same couple of rigs. We recommend a modified Carolina rig, pickerel rig from Canada or a Wolf River rig. Believe it or not, these simple rigs work for anything from perch to pike and carp to cat.

Over the years we've found that 2- to 5-ounce sinkers work best on our favorite rivers where the current is strong. They're expensive and we lose our share, and some days more than our share. That's why we bought sinker molds and make our own. Lead alternatives as sinkers work well.

For the basic Carolina rig, we use 10- to 12-pound monofilament between the swivel and the hook, and swivels rated to 15 pounds. Fluorocarbon line works too, but it's more expensive.

The Canadian pickerel rig is a drop-shot rig. You can use one or two hooks and adjust their height above the bottom as needed.

The Wolf River rig uses a three-way swivel and is a compromise between the other two. We find it best for big chunks of cut-bait for bigger fish.

In all cases leave 8 to 12 inches between sinker and hook. That seems to be the right length to allow the bait to swim with the current, and it's short enough to indicate a strike by pulling the rod tip down. We find it best to build in a weak point in the system so we know what will fail when we give up on releasing a snag. A sinker, swivel, hook and 1 to 2 feet of line is a lot cheaper than a new rod or reel.

We always tip our rigs with a circle hook. They don't require a hook-set, so even novice anglers can use them effectively. We just start reeling when our fishing rod starts to bounce. They almost always catch in the

corner of the fish's mouth. Fish rarely swallow them. Circle hooks, we've found therefore, are easier to remove. Fish not wanted for the frying pan can be released undamaged to be caught another day.

Circle hooks also work well with a variety of baits. We recommend size 2/0 to 4/0 hooks when worms, grubs or grasshoppers are used and smaller fish like drum and perch are the target. Sizes 1/0 to 2/0 work well with night crawlers when walleye and channel catfish are the target species. Larger sizes up to 9/0 work best with cut-bait, and yes, we've found that bigger cut-bait attracts bigger fish. Just make sure the barb of the circle hook is exposed. Cut-bait harvested from redhorse or other sucker species works well. They can be cut to size, salted and frozen. We often use the belly meat for cut-bait and smoke or pickle the rest of the fish. Oily pieces of moon-eye work even better. Moon-eyes don't freeze well, so must be used the day they are caught (but catch enough of them and they're wonderful smoked).

Remember to keep it simple when you're fishing with kids. Pick a site in advance and bring supplies for comfort and safety, and gear that is affordable and reliable. Always check the fishing regulations — keep a copy in your tackle box or search dnr.wi.gov and keywords "fishing regulations."

A final tip? Clean all the bones out before battering and deep-frying the catch. That way, everyone enjoys eating what the kids have caught.

Happy feasting and tight lines to all! 🎣

Garry Leonard Running is a professor in the Department of Geography and Anthropology at UW-Eau Claire. Chris Mackey-Natz is a middle school science teacher at Fall Creek Middle School. David Harkness is a recently retired English-Geography-Math-Humanities teacher from Nelson-McIntyre Collegiate in Winnipeg, Manitoba.



ANIMALS
AMAZE US WITH
THEIR ADAPTATIONS.

Nature's Superheroes

Story by Emily Stone and graphics by James Hays/Mighty Mammoth Media

Peregrine falcons fly with super speed, dragonflies dart in all directions, caterpillars change identities and take flight, and dung beetles move objects with super strength. Gray tree frogs don a cloak of invisibility, spiders spin webs of steel-strong silk, and bats use super senses to catch prey. The real accomplishments of these incredible Wisconsin critters deserve the same respect as the antics of comic book heroes.

For the kid in all of us who marvels at the fastest, the strongest, the best of anything, learning about animal adaptations can be a BAM! WOW! SHA-ZAM! experience. Those adaptations, which are things that animals (or plants) have or do that help them survive, can be as simple as moving fast, or as complex as ingesting toxins to deter predators. Many adaptations remind us of the super powers wielded by our favorite fictional characters.

Peregrine falcons can dive at speeds over 200 mph, making them the fastest animals on Earth. Peregrines use their super speed to attack other birds from high above. When a peregrine locks its sights on a pigeon or duck, it tucks its wings close to its torpedo-shaped body and rockets down in a dive called a "stoop." Stoops have been clocked at up

to 242 mph. True, that isn't faster than a speeding bullet, but a bullet doesn't have to survive its high velocity.

Reaching such high speeds requires special safety equipment — a.k.a. adaptations. Peregrines have a third, clear eyelid, called the nictitating membrane, which protects the eye from dust and debris as they dive. Small, bony baffles in their nostrils regulate the amount of air that can enter the nasal cavity. The baffles (copied by engineers and applied to jets) allow peregrines to continue breathing at high speeds and protect their airways from damage.

While dragonflies can't match peregrine falcons' speed (dragonflies can only reach about 30 mph, compared with a peregrine's 35 mph flat-flight speed), these mosquito-eating insects may win the agility contest. Each of a dragonfly's

four wings operates independently, powered by its own set of muscles, resulting in fantastic maneuverability. Dragonflies can fly backward and forward, straight up and straight down, hover, accelerate to full speed in a split second and make hairpin turns.

Dragonflies have adapted to see faster, too. Together, a dragonfly's eyes and brain can detect movements separated by only 1/300th of a second! Dragonflies also possess an almost super-human capacity for selective attention. They can focus on a single mosquito in a swarm, track the moving target and adjust their path to intercept the prey.

While we like it when dragonflies eat mosquitoes, their prey also includes other insects we would rather see alive. Dragonhunter dragonflies sometimes



munch on monarch butterflies, despite the presence of milkweed toxins that deter other predators. Those toxins, first ingested by the monarch caterpillars, remain after metamorphosis and bestow continued protection on the adult.

Metamorphosis itself is an incredible phenomenon, perhaps more impressive than Clark Kent's transformation to Superman. Inside a bejeweled chrysalis, the caterpillar's body dissolves and imaginal disks grab cells out of the soup to assemble each new wing, leg and organ. The caterpillar's mission was to eat. With an entirely different set of needs and adaptations, the adult butterfly does not compete with its offspring.

Dung beetles also undergo complete metamorphosis, pausing in a resting stage similar to the butterfly's chrysalis. Beautifully iridescent dung beetles can roll at least 10 times their own weight, just like Superman.

While not exceptionally strong themselves, spiders spin super strength into their webs. A single strand of spider silk is stronger by weight than steel. Hypothetically, a pencil-thick strand of silk could stop a plane in flight. Luckily, spiders weave much thinner webs, and use them to catch the buzzing villains who steal our blood.

Despite the daintiness of spider silk, another one of Nature's Superheroes can detect webs in mid-air, using only their ears. Bats exemplify super senses, since their excellent hearing and echolocation techniques allow them to catch insects on the wing, hear an insect walking six feet away, and maneuver around your head, all in complete darkness.

Bats emit super-sonic "shouts" in sync with their wing beats exhaling on every stroke. Each shout lasts only a few thousandths of a second, and silences between the calls enable bats to listen to the echoes. The information contained with

the echoes allows bats' brains to calculate the size and hardness of the body of the insect, detect the flutter of a prey's wings and compute their flight speed.


It would take a super sense of sight for any animal to decode the gray, brown, and green blotches of gray tree frogs. Those patterns, along with a light sprinkling of warts, help gray tree frogs become seemingly invisible when on tree bark.

Even with all these amazing powers and adaptations, Nature's Superheroes each face their own "kryptonite." Peregrine falcons were almost wiped out by DDT in the mid-1900s. Humans became their sidekicks and launched an incredible effort to ban the pesticide and increase the birds' numbers through captive breeding. In 1999, the peregrine was removed from the Federal Endangered Species List, although they remain listed as endangered in Wisconsin.

Dragonflies face the kryptonites of pollution, low oxygen and habitat destruction during the years they spend in rivers and ponds as immature nymphs. Gray tree frogs also need good water quality and habitat protection. You can become their sidekick by getting involved in stream monitoring through UW-Extension's Water Action Volunteer program and by supporting nature reserves.

Spiders, bats and dung beetles all face human misconceptions as their kryptonite. These critters need sidekicks who will educate others about their importance in ecosystems.

Monarch butterflies face numerous kryptonites, with insecticides, herbicides and habitat loss in the forefront. Become a superhero sidekick by letting milkweed grow in your ditch or planting more of the beautiful flowers in your garden.

To learn more about the amazing adaptations of Wisconsin's animals, their kryptonites and how you can become a conservation sidekick, visit the Cable Natural History Museum's new exhibit: *Nature's Superheroes — Adventures with Adaptations*, and participate in the conservation sidekick programs this summer. **For more information visit cablemuseum.org.** 

Emily Stone is the naturalist/educator at the Cable Natural History Museum in Cable. She teaches kids of all ages about amazing adaptations and has been known to wear a superhero cape.



SUBMITTED BY MICHAEL BRADLEY

FATHER'S DAY FISHING SUCCESS

I'm a recent Wisconsin transplant from Washington state, familiar with salmon, steelhead and rainbow trout fishing in the Puget Sound region. Father's Day 2013 was my first experience fishing Lake Michigan. I didn't know what to expect except I had read the fishery resource in the lake was prized and healthy. Our charter, Dumper Dan, accesses Lake Michigan through the sediment laden waters of the Sheboygan River. The water quality difference upon reaching the clear water of Lake Michigan was almost startling. Our chartered service was excellent from rods and reels to radio communications with other boats and fish cleaning. Unlike Puget Sound where live bait is used, all of our fish were caught with lures. Downriggers with electric motors and lures trailed at varying depths, 30 to 100 feet were the order of the day. The fishing action seemed to go in spurts with an occasional two fish on at once. The existence of few other fishing boats in our vicinity created low fishing pressure. My party was pleased to find plentiful Coho and king salmon along with steelhead and lake trout. The fish management practices on the lake are obviously a success. The

largest fish caught in my party was a 22-pound king salmon hooked at a depth of 100 feet. This king took 40 minutes to land due to numerous hard runs from the boat after close reel-ins. No seasickness. The catch was grilled and had excellent flavor. Overall, great weather, companions and accommodations marked our day. The experience has created a fervent desire to get my own boat complete with downriggers so I can continue to enjoy outstanding Lake Michigan fishing.

Michael Bradley
Shullsburg

DAD, DEER AND DREAMING OF HUNTING SEASON

Ever since I was little, I wanted to go hunting with my dad. I remember seeing his face when he got back with a deer and he looked happy. Finally, in 2009 I asked my dad if he could take me hunting with him and he did. That experience was the best experience of my life. Even though my dad didn't shoot anything that year I had fun with him.

The next year — 2010 — I saw a flyer announcing that there was



Adan Hernandez
with his deer.

NARCEDALIA HERNANDEZ

a deer hunter safety course. I took it home and my dad explained to me what it was. My dad said I could take the course since safety comes first. I took the class and got a 99 percent on the test. My dad was so proud.

That year the law was changed so that you could start hunting when you turned 10 and lucky for me I turned 10 that year. My dad got me my first hunting license and I remember being so excited to see my name on the license. That year I went hunting with my dad where he works. There is a woods there and he got permission for us to hunt on it. It was a junk yard with a creek to the left of where we had our stand. There also was a factory behind our stand and it had a tree line with a cornfield beyond that.

The first time I saw a deer out there, my heart stopped and my adrenaline started to pump. My

dad put me in the right position and then I put the sights right behind the deer's leg. BOOM! I shot and the deer ran about 20 yards before stumbling down to the creek where we retrieved it. We brought it home and skinned it and my mom was so happy for me.

The next year wasn't as exciting because I didn't get a deer but it was still fun. To me I enjoy being with my dad and all of the fun times we have out in the woods because there are a lot of animals to watch. There are always birds, turkey and chipmunks. Every year we get two bags of jerky to eat when we are hunting.

Last year I was at my friend Ryan's house when my dad called me to come home. He said he had a present for me. Ryan and I raced to my house. I walked into our garage where my dad stood next to my present — a grayish-white camouflage Diamondback bow. I had always wanted to bow hunt because gun season is so short.

We got six arrows, broad heads, a trigger and the correct pounds for my bow. I practiced every day for a week with it before I was finally ready. Then my dad took me out hunting. We were in the stand 15 minutes when a doe walked into my view. It went down to eat grass and I shot and got it. My dad helped me drag it to the truck and then we took it home. Instead of processing it, we made homemade jerky.

I can't wait for this year's hunting season. My goal is to try to get a nice buck. I hope this is just a start and that there are many more good hunting stories to come.

Adan Hernandez
Cambria



MARK ELLIOTT

LUCKY CATCH

We were on vacation at Sisko's Pine Resort about 15 miles east of Hayward and fishing next to an island when we saw this eagle perched on a dead limb. I picked up my camera and started taking some photos. Then he flew off the perch and I kept shooting. I had no idea what he was doing but he kept getting lower and lower and the rest is history. I was tickled after I looked at my photos.

Mark Elliott
La Crosse

COMMENT ON A STORY?

Send your letters to: Readers Write, WNR magazine, P.O. Box 7191, Madison, WI 53707. Or email letters to dnrmagazine@wisconsin.gov. Limit letters to 250 words and include your name and the community from which you are writing.

NO ACCESS TO THE WEB?

Don't have access to a link we mention in a story? Let us know when you want to follow a link we list. We'll do what we can to get you a copy of the material if it is available free of charge and is relatively short in length.

Traveler

It's the most (water)fowl of museums.

Story and photos by Nolan Pickar

There's a new attraction greeting visitors to Devil's Lake State Park and the Baraboo area. Located just outside the north shore entrance to the park is the Flyways Waterfowl Museum, an educational facility for all ages.

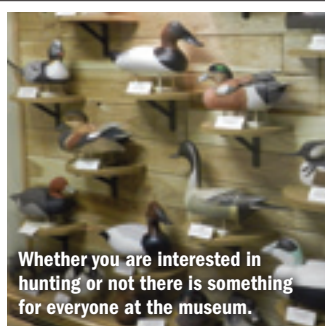
The building had long been associated first with an indoor gun range and later with a SCUBA diving business. But in 2012, Nichol and Craig Swenson discovered the vacant building and thought it would be a perfect place to start their dream museum. The museum opened last year.

A family effort

Nichol grew up on a barrier island in New Jersey. That location and the fact that she lived through hurricanes generated her early interest in soil conservation. Nichol went on to study at Rutgers University where she graduated with a bachelor's degree in soil and crop science. She later came to the University of Wisconsin-Madison and earned her master's degree in land resources from the Nelson Institute of Environmental Studies.

She went to work for the Department of Natural Resources in 1985 and worked there until 1998 when she left for a 10-year stint in the private sector. Later, she returned to the department working an additional three years out of the Poynette office before retiring at the end of 2013 to devote more time to the museum.

Nichol's husband Craig grew up in McFarland where he hunted, trapped and fished with his family. As a child, one of Craig's greatest memories was when he and his family fished the lakes just south of Madison. Craig later became



Whether you are interested in hunting or not there is something for everyone at the museum.

more interested in hunting, especially waterfowling. He was an electrician in Madison for 35 years before recently retiring.

Over the years, the couple acquired an impressive collection of waterfowl pieces and decided to give back to the state of Wisconsin by displaying their items and educating others about migratory waterfowl, their ecosystems and the management practices and conservation efforts that affect them. A museum seemed to be the best way to do that.

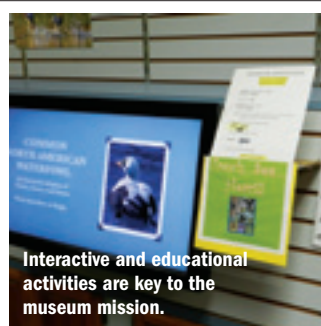
"Once we realized we had many of the components for the museum," Nichol says, "I thought about it and eventually everything came together."

Throughout his many years of hunting, Craig had acquired over 60 taxidermy waterfowl pieces, all of which were made into beautiful displays by his friend Kenny White of Montello. The Swensons contend that the quality of White's work matches or exceeds those that you'd see in the Field Museum of Natural History in Chicago.

Nichol applied her education



Craig and Nichol Swenson share their waterfowl collection at the Flyways Waterfowl Museum.



Interactive and educational activities are key to the museum mission.

to write all of the content for the displays.

Craig's brother Rick also contributed to the mix by providing a large collection of antique and contemporary decoys and waterfowl calls stemming from the early 1900s to the present. The family also has a large collection of duck stamp art from various states, Canada and Mexico, and a variety of waterfowl art pieces.

The Swensons say their goal is to introduce visitors not only to the variety of North American waterfowl, but to explain the importance of the sportsman's role in habitat protection and restoration.

The museum is intended for everyone whether your interest is in hunting or you simply love the outdoors. Nichol notes that there is an intrinsic and critical relationship between wetland health and waterfowl populations. She says many visitors are not aware of how wetlands are protected by the Pittman-Robertson Act and the Duck Stamp Act and what wonderful opportunities they ensure.

"Most people do not understand how those acts

fund the protection of our waterfowl and national wildlife refuges," Nichol says.

By touring the museum, she hopes people will become more aware of efforts in wetland conservation and how these efforts are funded.

What you'll find here

Along with the waterfowl mounts, calls and decoys, there are many other educational activities offered at the museum. There is a touchscreen TV where visitors can peruse pictures of every North American duck, goose or swan, read a brief description of the bird and listen to its call.

In the Duck Blind Theater visitors are invited to sit in a duck blind, just like the ones hunters use to camouflage themselves, and experience the sights and sounds of being in a marsh.

In another area, visitors can test their shooting skills in the indoor virtual arcade. Pick up a replica Remington Model 870 12-gauge shotgun and choose from three video games: Mallard Mania, Marksmanship Training and Speed Trap Shooting.

One of the most interesting artifacts at Flyways is a goldeneye duck that Craig shot in 2012. He bagged this rare goldeneye in the bay of Green Bay and recalls that when he retrieved the duck, he found that it had been banded, but that he could not read the numbers because the steel was too worn. He eventually had the numbers raised so that they could be sent to the U.S.

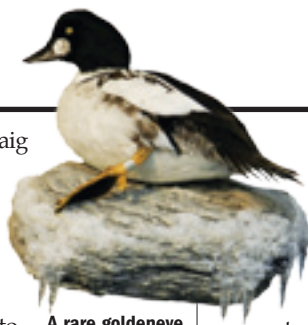
Geological Survey (USGS) to acquire information about the bird, and discovered that it was the oldest banded goldeneye to ever be recovered.

The duck had been banded in 1992 at an age when it was still unable to fly in Beltrami County, Minn. That made the duck 20 years old. Craig takes great pride in the bird and created a small display of its own, just for the once in a lifetime harvest. Visitors to the museum can see the goldeneye along with the band and USGS certification.

Looking forward

The Swensons plan to continue to add exhibits to the

museum. Craig is currently designing an exhibit dedicated to sea birds. The couple also intends to do exhibits on sportsmen and their dogs and hunting for sustainability. There is also classroom space available on the second floor,



A rare goldeneye on display.

where the couple is hoping to provide space for hunter safety classes and classes that teach hunters how to hunt for migratory birds, including choosing shot size, choke and how to shoot a bird on the fly with minimal wounding loss. With over 100 species of

wild waterfowl in the world, and as many as 43 species that can be seen in North America, there is plenty to cover in this space. The museum has taken flight. Craig and Nichol hope the visitors will flock to it.

Nolan Pickar is a communications specialist in the DNR Office of Communications. He recently graduated from the University of Wisconsin-Platteville.

Flyways Waterfowl Museum

LOCATION: S5780 Highway 123, Baraboo

SPRING (May 15 through June 14):

Thursday through Saturday, 10 a.m. to 5 p.m.; and Sunday, 10 a.m. to 3 p.m.

Closed Monday, Tuesday and Wednesday.

SUMMER (June 15 through Labor Day weekend):

Monday, Wednesday, Thursday and Friday, 10 a.m. to 5 p.m.; Saturday and Sunday, 10 a.m. to 3 p.m.

Closed Tuesday.

FALL (after Labor Day weekend through Dec. 15):

Thursday through Saturday, 10 a.m. to 5 p.m.; and Sunday, 10 a.m. to 3 p.m.

Closed Monday, Tuesday and Wednesday.

WINTER (Dec. 16 through May 14): Closed.

FEATURED EXHIBITS FOR 2014:

The Mighty Tundra Swan (throughout the entire season)

U.S. Fish and Wildlife National and Junior Duck Stamp Artists display (Aug. 25 through Sept. 12)

For more information, visit duckmuseum.com or call 608-356-0084 or 608-225-7732.

ADMISSION: \$7 adults, \$6 seniors, \$5 students with ID, children under 6 are free.

Group discounts are available.



Find us at the fair

Remember to stop by and visit *Wisconsin Natural Resources* magazine at the Wisconsin State Fair running July 31 to Aug. 10 in West Allis. We'll be in the DNR exhibit area located across Main Street just south of the cream puff pavilion.

The first visitors to subscribe or give a gift subscription will receive a canvas tote bag. For more information on the fair visit wistatefair.com.



ADAM SENATORI

What's cooking?

STRAWBERRY PIE

Make it a "berry" good season with this fresh and easy strawberry pie.

4 cups (1 quart) fresh strawberries

1 ½ cups water

½ cup sugar

2 tablespoons cornstarch

1 package (3 ounces) strawberry gelatin

Graham cracker pie crust (store bought or homemade)



STEVE APPS

Wash and hull strawberries and cut large berries in half.

Put berries in a bowl and set aside.

Put water in a 2-quart saucepan. In a separate bowl, mix sugar and cornstarch together and add to the water. Bring to a boil over medium heat. Cook for two minutes, stirring constantly, until the mixture is thick and clear. Remove from heat. Add strawberry gelatin. Stir until gelatin is dissolved.

Pour gelatin mixture over berries and stir gently to coat. Pour into pie crust. Chill in the refrigerator until set.

From the book *Garden Wisdom: Lessons Learned From 60 Years of Gardening* by Jerry Apps with recipes by Ruth Apps (Wisconsin Historical Society Press, 2011).



Wisconsin, naturally

JACKSON HARBOR RIDGES STATE NATURAL AREA

Thomas A. Meyer
State Natural Areas Program

Notable: Perched off the tip of the Door Peninsula on Washington Island, Jackson Harbor Ridges protects several Great Lakes coastal plant communities and an exceptionally rich flora of uncommon plants. The landscape undulates, with areas of dry, sandy ridges separated by low, wet swales. This “swell and swale” topography represents the former shorelines of early Lake Michigan as the last glacier receded. The swales harbor Kalm’s lobelia, shrubby cinquefoil, bird’s-eye primrose, low calamint, and slender bog arrow-grass. The dune-like ridges nearest the lake are stabilized by common and creeping junipers, bearberry, sand coreopsis, dune goldenrod, bastard toadflax and the vibrant orange wood lily (seen right). Behind the dunes is a mixed conifer-hardwood forest of red and white pines, white cedar, balsam fir, and American beech. Patches of the federally-threatened dwarf lake iris are scattered throughout the site. A narrow sand spit at the entrance to the harbor attracts gulls, terns, shorebirds and waterfowl.



How to get there:

From the ferry landing on Washington Island, Door County, go north on Lobdell Point Road (County Highway W) 1.8 miles, then continue north on Main Road 2.6 miles, then go east and north on Jackson Harbor Road 3.9 miles. Turn left on Indian Point Road and continue to a parking area at the Jackson Harbor Ridges town park on the right. The site is owned by the town of Washington, which designated it a State Natural Area in 1973 in partnership with the Department of Natural Resources. Visit dnr.wi.gov and search “Jackson Harbor Ridges” for a map and more.

