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## Research Corner

# Ghosts of the Cedar River Valley: Wood Turtle Research in Iowa

Turtle population declines worldwide have been well documented in recent years, especially species inhabiting eastern and central North American rivers and streams. Declines are generally attributed to habitat loss or alteration, habitat fragmentation, nest predation, and road mortality.

One riverine species that has been affected by human activities is the wood turtle (*Glyptemys insculpta*). Wood turtles are a medium-sized (14–20 cm)

semi-aquatic turtle found in most New England states, north into Canada, south to Virginia, and in four Midwestern states; Michigan, Wisconsin, Minnesota, and Iowa. Overall, the distribution is often locally

disjunct with many populations being fairly small and isolated, where suitable habitat remains. Wood turtles are named for the appearance and feel of the carapace (top of shell), but that name also may be derived from the habitat they are found: within a few hundred meters of clear, sandy, shallow

streams and rivers surrounded by woodlands and grasslands. Due to population declines and habitat loss, this species is legally protected to various degrees in the United States and Canada.

The Iowa wood turtle population is both genetically and geographically distinct from other midwestern populations. They occur only in a few scattered populations along the Cedar River watershed in suitable habitat located near rivers and streams. These “ghost” populations consist mostly of

older adults that may experience low mortality but also exhibit little or no annual recruitment. Due to their rarity and limited range, the Iowa Department of Natural Resources (DNR) lists the wood turtle as a

state endangered species.

In Spring 2014, the wood turtle research group at the University of Northern Iowa (UNI) was awarded a state wildlife grant (“Upper Midwest Riverine Turtle Habitat Improvement”) through the US Fish-

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**Wood Turtle nesting habitat along the Cedar River.**  
Photo by Jeff Tamplin



**Wood Turtle (*Glyptemys insculpta*)**  
Photo by Jeff Tamplin

## WOOD TURTLE CONSERVATION IN NORTH EAST IOWA

### Management Corner



**Wood Turtle**

Photo by Jeff Tamplin

The West Fork of the Cedar River in Butler County is a known location for state endangered Wood Turtles (*Glyptemys insculpta*). Most of the sightings have been on the Big Marsh WMA and the surrounding private lands. In 2003, Dr. Jeff Tamplin from the University of Northern Iowa (UNI) found and started tracking the turtles to document habitat use throughout the year. What Dr. Tamplin and his students found was that the turtles spent a majority of their time in open flood plain timber. Also, they found only about a quarter of their territories were permanently protected on DNR property.

In 2012, the DNR was offered the opportunity to acquire two properties within the newly found wood turtle territories. The acquisition of the first 80 acres was made possible through the donation of \$8,000 from the local Cedar-Wapsie Whitetails Unlimited Chapter and the Whitetails Unlimited National Office. The second 75 acre acquisition received a \$50,000 donation from the Parkersburg Conservation Trust Fund. This local trust fund was set up to donate money to projects that protect wildlife habitat and allow for public use on the area. With these new land acquisitions now over half

of the wood turtle territories are present on DNR land. This includes some observed nesting and hibernation locations which are critical to the survival of this population.

Shortly after purchasing the new properties, the local DNR Management Staff began efforts to manage the habitat to benefit the wood turtle. The local DNR Wildlife Biologist Jason Auel contacted DNR Wildlife Diversity Program Coordinator Karen Kinkead about management suggestions which led the Iowa DNR to join a multi-state Competitive State Wildlife Grant for Wood turtles. The other states included Michigan, Wisconsin, and Minnesota. The Competitive State Wildlife Grant Program is administered by the US Fish and Wildlife Service to encourage states working together to reach goals and implement actions for species of greatest conservation need as outlined in their Wildlife Action Plans. The goals of the grant are to:

- improve turtle nesting success by nest site management
- reduce adult turtle mortality by increasing connectivity among habitats
- improve turtle habitat in river and stream corridors
- assess the effectiveness of conservation actions by monitoring turtle use, abundance, and habitat response
- submit a comprehensive report of all activities conducted by the participating states.

The work for this grant must be completed by summer 2016.

The Iowa DNR asked Dr. Tamplin and his students to conduct the research needed for the Iowa portion of the grant requirements. The DNR also asked the Black Hawk County Conservation Board and the Butler County Conservation Board to assist with the work and matching dollar needs of the grant because these partners also have wood turtle habitat and popula-

## WOOD TURTLE CONSERVATION

### Management Corner

tions on their properties. The DNR Private Lands Staff was also included to assist with contacting private landowners near known wood turtle locations and helping these landowners manage their properties to benefit the turtles. The total match provided by the DNR and these partners came to \$80,560.

Habitat techniques that were proposed by the Iowa partnership to improve wood turtle habitat included opening up the timber canopy by using edge feathering, crop tree releases, and clear cutting. Additional work proposed was killing reeds, canary grass, planting native prairie/shrubs, creating flood escape/nesting mounds, and creating area where turtles can escape predators.

The DNR was notified that the grant request had been approved by the US Fish and Wildlife Service in late summer of 2013. Iowa received a total of \$100,000 to complete its portion of the grant proposal. These funds are split between public lands management (22%) and private lands management (22%) for wood turtle habitat needs and 56% being used to determine how the wood turtles respond to the habitat management.

The work on the grant began in March of 2014 by sending out mailings to landowners within the wood turtle focus area. In March, the DNR along with Dr. Tamplin and some of his students hosted a Land Owner Workshop in Parkersburg. The goal of this work shop was to provide information to private landowners about wood turtles, techniques to improve turtle habitat, develop a contact list for DNR Private Lands staff of landowners willing to manage their property for wood turtles. The workshop was attended by 35 people and many were interested in doing some type of habitat management.

Currently, the DNR Private Lands staff is making site visits to the properties and created a ranking system to determine which properties would provide the most benefit to wood turtles given the limited grant dollars. The properties are ranked by their location to known populations, type of habitat currently on the property, and which man-

agement techniques that would be most effective. All work on private lands must be maintained for 10 years after work has been completed.

Dr. Tamplin and his students were able to start tracking turtles in Butler and Black Hawk Counties this spring despite the flooding they had to endure. This will provide some good baseline data on current wood turtle habi-



**Wood turtle woodland habitat.**

Photo by Jeff Tamplin

at preference and will help document use on newly developed habitat.

The DNR Public Lands staff has put together a management plan to start this winter. The plan includes edge feathering and some small clearcuts. This timber management will also be part of the Forest Stewardship Management Plan for the Big Marsh Wildlife Management Area. There are also some plans to plant prairie and plant some shrubs for food and cover.

After the work has been completed in 2016, the DNR and other managers will have a better idea of the effectiveness of habitat management techniques for wood

Jason Auel is a Wildlife Biologist for the Iowa Department of Natural Resources at the Cedar-Wapsi Wildlife Unit.



turtles. Ultimately leading to better future management and conservation of this species.

**It's Our Responsibility**

We have a moral obligation to ensure that our children and grandchildren can enjoy Iowa's water, land, wildlife, and natural beauty the same way we do today. It is our duty to care for God's creation, and to leave a legacy that we can be proud of. The Natural Resources and Outdoor Recreation Trust Fund will safeguard the natural beauty of our state for generations to come with a permanent, constitutionally protected fund to **enhance water quality, agricultural soils, fish and wildlife habitat, parks, and trails** so that our children, and our children's children, can experience the glory of Iowa's nature.

**It's Our Mandate**

Iowans are willing to devote more state dollars toward conserving natural resources and providing outdoor recreation opportunities. Iowa voters overwhelmingly supported the creation of the Natural Resources and Outdoor Recreation Trust Fund, with **63 percent** voting yes in 2010 to better protect our water quality, agricultural soils, and wildlife habitat.

**It's Time**

A vast majority of Iowans want action by state leaders to support natural resources and outdoor recreation, and voters agree the state's parks, trails, wildlife areas, and other public lands are an essential part of our economy. Any moneys expended through the trust fund, estimated at \$150 million annually, would see **strict accountability and transparency measures, including independent public audits and citizen over-**

**sight. It will not fund bureaucracy.**

IWILL's coalition members agree: **it is time to fully fund the Natural Resources and Outdoor Recreation Trust Fund to protect our unique Iowa heritage, economy, and natural beauty.**

We must all come together to preserve our outdoor heritage for ourselves and for our future. Please join IWILL in our collective push to fund the trust fund.

**It's our state and our legacy.**

Join the coalition of organizations, agencies and individuals working to fund the Natural Resources and Outdoor Recreation Trust Fund!

There are several ways to show your support for the Iowa's Water and Land Legacy coalition:

Visit

<http://www.iowaswaterandlandlegacy.org>

and add your name to the pledge



**Follow Iowa's Water and Land Legacy on Facebook**  
**Follow @IWILL\_IA on Twitter**

**#ItsOurLegacy**

**#IWILL**

# Ghosts of the Cedar River Valley: Wood Turtle Research in Iowa

**Research  
Corner**

(CON'D FROM PAGE 1)



**Wood turtle with attached radio transmitter.**

Photo by Jeff Tamplin

eries and Wildlife Service (USFWS) to monitor Iowa wood turtle behavior at two sites, one in Black Hawk County and one in Butler County. Monitoring is conducted in conjunction with land restoration work being performed by the state DNR and the Black Hawk and Butler County Conservation boards.

Surveys are completed at both sites to gain baseline data. A mark/recapture study is used to determine population de-

mographics at both sites. Radio telemetry is used to track individuals in order to delineate home range size, determine movement patterns, habitat preferences, nesting sites, foraging habitat, and hiberna-

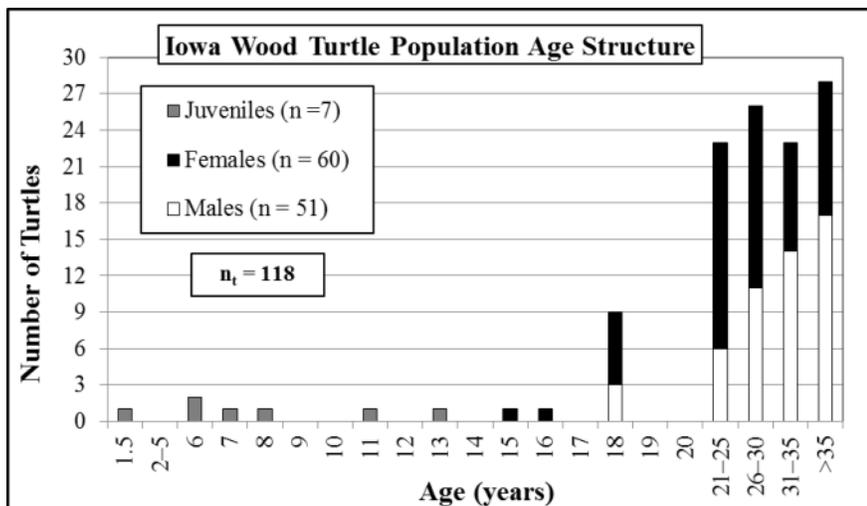
tion locations of adult and juvenile wood turtles. Microhabitat details are recorded at each turtle location to reveal how turtle body temperature relates to environmental temperatures and levels of sunlight exposure. Among other data, distance to permanent water, and several other river/stream characteristics preferred by wood turtles are recorded. In addition, previous studies completed in Butler County from 2003 to 2009, and Black Hawk County from 2009 to 2013 will be compiled with current findings to assist in management recommendations.

These baseline findings will be used to improve turtle habitat in the river/stream corridors through the creation of canopy openings, prairie plantings, and improved nest sites. Approximately 38 acres of lowland savanna, high quality prairie and soft shrub edge habitat will be created on public lands, and an additional 40 acres of im-

provements will be made on private lands. The effectiveness of these habitat management practices will be assessed through continued monitoring; specifically targeting turtle use, species abundance, nest success, and habitat response at these two sites.

Currently, 42 turtles (20 females, 19 males, and 3 juveniles) are

actively being tracked via radio telemetry: 22 individuals (9 females, 12 males, and 1 juvenile) in Black Hawk County, and 20 individuals (11 fe-



# Ghosts of the Cedar River Valley: Wood Turtle Research in Iowa

Research  
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**Grassland habitat restoration along waterways is important for wood turtle conservation**

Photo by Jeff Tamplin

males, 7 males, and 2 juveniles) in Butler County. In addition, another 76 turtles (18 in Black Hawk, 58 in Butler) have been captured, marked, and released since 2003 when studies began. Field site visits occur 2 to 4 days per week, depending on weather conditions and the locations and movement patterns of individual turtles. All turtles are located at least once per week, when possible.

Data from the 2014 field season is being analyzed, but preliminary findings show that during the active season, Butler County turtles average farther distances from permanent water (47.8 m, n=274) than Black Hawk County turtles (30.0 m, n=238), potentially due to limited habitat availability at the Black Hawk County site due to human development. On average Butler County females were found to be about 62.8 m from permanent water, while Black Hawk County females averaged about 40.8 m from permanent water. Three adult female turtles in Butler County were found more than 200 m from water, with the farthest being an individual traveling approximately 350 m into an

agricultural field. The maximum distance from water that was observed by an adult female in Black Hawk County was 200 m. Two additional Black Hawk County females were observed approximately 155 m from water.

Male wood turtles may remain closer to water than females and this is evident at both study sites (18.4 m, in Black Hawk County, 15.56 m in Butler County). In Butler County, the farthest distance from water observed in a male turtle was approximately 75 m, while in Black Hawk County; two male turtles were observed nearly



**Wood turtle riparian habitat**

Photo by Jeff Tamplin

135 m from water.

Habitat restoration is anticipated to begin in winter 2014 and early 2015. Monitoring surveys will continue through the summer of 2015, with additional properties likely to be surveyed when turtles emerge from hibernation.

*Josh Otten is an Environmental Scientist for Stantec and Graduate Research Assistant at the University of Northern Iowa.*

## ITWS FALL WORKSHOP RE-CAP

On September 23, fifty Iowa Chapter members gathered in Spirit Lake in the heart of Iowa's Prairie Pothole Region for the annual Iowa TWS Fall Workshop. The focus of the workshop was shallow lakes habitat restoration and man-



### **Field tour of shallow lakes restoration projects in north west Iowa**

Photos by AnnMarie Krmpotich

agement. Greeted with beautiful fall weather, attendees enjoyed a field tour of nine different shallow lakes in various stages of restoration as part of the Iowa Department of Natural Resources' Shallow Lakes Program. Iowa DNR wildlife staff from the Great Lakes and Prairie Lakes Wildlife Units discussed the ecological, logistical, and social challenges of shallow lakes restoration. In addition, Iowa DNR fisheries biologist Mike Hawkins shared the goals of restoring sport fisheries to these systems, demonstrating a critical partnership between wildlife and fisheries staff in finding common objectives in the effort to restore these systems to near historic state while still offering excellent recreational opportunity. Iowa DNR biologist Jackie Gautsch presented another integral part of the success of this program; monitoring. Jackie discussed the Shallow Lakes Monitoring Program that collects data on water quality, vegetation, and invertebrate communities in an effort to quantify the success of these restorations. And lastly, Tim Stewart from Iowa State University presented more about the impacts of water quality and non-native fish on invertebrate populations in these systems. I think I can speak for all attendees when I say that I learned a tremendous amount about these unique habitats and the challenges faced throughout the restoration process.

A huge thanks on behalf of the Chapter goes out to all those presenters mentioned above, staff with the Iowa Lakeside Laboratory for the excellent food and accommodations, and Mark Gulick, Chris La Rue, and Bryan Hellyer with the Iowa DNR for organizing a great field tour. In addition to the workshop on shallow lakes restoration and management, Iowa Chapter President Terry Haindfield organized an afternoon discussion on the topic of lead and non-toxic ammunition. Approximately 25 members participated in an exciting, effective discussion regarding items such as things the Iowa Chapter can do to educate members and the general public, assess the understanding of members of the lead/non-toxic ammunition issue, information gathering and sharing, ballistics and availability of non-toxic alternatives, and many others. As a result, the Iowa Chapter has created Lead/non-toxic Ammunition Issue Committee that is comprised of four subcommittees tasked with gathering information on non-toxic ammunition alternatives, developing a survey to assess understanding of Iowa Chapter members and the general public about the lead ammunition issue, and developing educational materials. The Iowa Chapter is excited to move to the forefront on education and outreach on this important issue. Thanks to Terry Haindfield for organizing the discussion and to the many members who volunteered to serve on subcommittees.

*Tyler Harms is an Assistant Scientist II in the Center for Survey Statistics and Methodology at Iowa State University and President-elect of the Iowa Chapter of The Wildlife Society*



**Species Spotlight  
Southern Flying Squirrel**

# IOWA'S SECRETIVE SCIURID

The southern flying squirrel (*Glaucomys volans*) ranks high on the list of Iowa mammals never seen by humans. Mainly nocturnal, this little squirrel weighs in at just two to three ounces, the smallest of our four tree squirrel species. Studies in Iowa and elsewhere have shown it to be highly dependent on mature oak forests with large trees. It nests in tree cavities and will occupy abandoned woodpecker nests and even bird houses. Flying squirrels nest communally in winter for warmth. Dens in hollow trees can sometimes hold from 10 to 20 individuals.

The flying squirrel's common name is derived from a furred membrane of skin stretching between its wrists and ankles, which allows it to glide from tree to tree. It can make downward leaps at distances of up to 80 yards, and can easily turn in flight, maneuvering around branches and other obstacles.

Like gray and fox squirrels, the southern flying squirrel eats nuts, soft fruits, green plants, tree buds, and fungus growing from dead trees. It is somewhat omnivorous, occasionally eating insects, bird eggs and nestlings, or scavenging from animal carcasses in the woods. The



**Southern flying squirrel just landed after gliding**

Photo by Melissa Wagner

flying squirrel itself is eaten by a variety of woodland predators including owls, hawks, black rat snakes, bobcats, weasels, raccoons, and unfortunately house cats. They have been known to live over 13 years in captivity but rarely over five years in the wild.

Flying squirrels can breed and produce two litters per year, one in



**Southern flying squirrel with radio transmitter**

Photo by Melissa Wagner

early spring and sometimes a second in late summer. Gestation lasts about 40 days and litters of two to three young are most common. Young flying squirrels are weaned by 65 days, a surprisingly long time for an animal this small.

Radio telemetry studies of flying squirrels in Iowa have shown that although home range size varies with topography, male home ranges are generally larger than that of females and will overlap several female home ranges.

Although the Iowa GAP Analysis lists its probable range in all counties but a handful in north west Iowa, anyone who's stepped outside lately knows that our state is not covered in mature oak forests. Upland forests in Iowa are fragmented and even large remaining blocks are often isolated from other areas of suitable flying squirrel habitat. How this landscape fragmentation is affecting the genetics of flying squirrel populations is largely unknown.

## IOWA'S SECRETIVE SCIURID

(CON'D FROM PAGE 8)

A recent study conducted by undergraduate students and their advisors Dr. Gerald Zuercher and Dr. Rasi-ka Mudalige-Jayawickrama at the University of Dubuque looked at the genetic connectivity of flying squirrels in two forested areas of north east Iowa, the Mines of Spain Recreation Area in Dubuque County and the Wapsi River Environmental Education Center in Scott County. DNA extracted from flying squirrel saliva and tail hair follicles showed a high degree of



### Southern flying squirrel

Photo by Melissa Wagner

genetic divergence between the two populations that were separated by about 60 miles. The southern flying squirrel is listed as a species of special concern in Iowa due to limited habitat and lack of suitable corridors between breeding populations. Land management practices that encourage the growth of large trees (especially oaks), leave dead snags for cavity nesting wildlife, and link large forest blocks with wooded corridors, would help ensure the continued survival of southern flying squirrels in Iowa.

*Pete Eyheralde is a PhD candidate in the Department of Natural Resource Ecology and Management at Iowa State University.*

## Don't Forget the Chickadee Check-off!



Since 1982, when the Iowa legislature created the Fish and Wildlife Fund Tax Check-off, Iowans have been able to bring a little wildness into the tax season. The Fish and Wildlife Tax Check-off, affectionately called the Chickadee Check-off was created to allow people to make a charitable donation to wildlife conservation in Iowa out of their tax refunds or by tacking a few dollars on to any taxes owed. When filling out the state income tax form, just look for the contribution line (usually somewhere between lines 55-60) and write in any dollar amount next to Fish/Wildlife.

All the money contributed through the chickadee check-off helps support the Wildlife Diversity Program at the Iowa DNR. This program has statewide responsibility for all the wildlife that can't be hunted, fished or trapped from Peregrine Falcons to Poweshiek Skipperling butterflies. You can learn more about the program on their website:

[www.iowadnr.gov/wildlifediversity](http://www.iowadnr.gov/wildlifediversity)

Please consider donating to the Chickadee Check-off this tax season and supporting wildlife conservation in Iowa!

## UPCOMING EVENTS:

Iowa Association of County Conservation Board Employees (IACCB) Winterfest, January 20-22, 2015. Five Sullivan Brothers Convention Center, Waterloo, Iowa. For registration and more information, [www.mycountyparks.com/Info/WINTERFEST.aspx](http://www.mycountyparks.com/Info/WINTERFEST.aspx).

Midwest Fish & Wildlife Conference, February 8-11, 2015. Hyatt Regency, Indianapolis, Indiana  
For registration and other information, visit [www.midwestfw.org](http://www.midwestfw.org)

Tallgrass Prairie and Oak Savanna Fire Science Consortium Midwest Fire Conference, February 17-19, 2015  
Dubuque, Iowa. For registration and more information, [tpos.firescience@gmail.com](mailto:tpos.firescience@gmail.com)

National Pheasant Fest and Quail Classic, February 20-22, 2015, Iowa Events Center, Des Moines, Iowa  
For more information, visit [www.pheasantsforever.org/Pheasant-Fest.aspx](http://www.pheasantsforever.org/Pheasant-Fest.aspx)

Iowa Chapter of The Wildlife Society Winter Meeting, 3-4 March, 2015, Ames, Iowa  
Stay tuned for details!



**Iowa TWS members learn about shallow lakes management during the 2014 Fall Workshop in Spirit Lake, Iowa**

Photo by AnnMarie Krmpotich

Pete Eyheralde  
Newsletter Editor  
([pete@iastate.edu](mailto:pete@iastate.edu))

[2014-2015 Iowa Chapter The Wildlife Society Education and Information Committee Members](#)

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Molly Gillespie  
Shannon Hansel  
Tyler Harms  
Andy Kellner  
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**We're also online!  
Check out Iowa TWS at**

<http://www.iowatws.org>