

# Refuge News

Spring 2015

## Seney National Wildlife Refuge

### Manager's Corner

by Sara Siekierski



I think it's safe to say I survived my first U.P. winter and we rather enjoyed it! I am grateful to have had the quiet of wintertime to get myself acquainted, however I am excited to see this place transform with the growing season upon us. Spring has sprung and the Refuge seems to be coming to life with wildlife, visitors and volunteers. Each week I have been able to get out and explore new areas of the

Refuge and see new critters. New species for me so far include the snowshoe hare, gray wolf and black bear. Birds are also on the move and I'm looking forward to more birding for spring migration!

As for Refuge work, so far 2015 has been productive with quite a few accomplishments and tasks completed and many just getting underway.

- The maintenance crew was busy updating and repairing the Student Cabin and residential quarters where volunteers, interns and seasonal employees stay during the summer months. The people who stay in these facilities are vital in helping to make the Refuge as successful as it has been. It's important we maintain our current facilities for safe and healthy living conditions so that we can continue support these programs.
- The maintenance crew also worked diligently to construct a store front in the Visitor Center for the Marshland Bookstore. We hope the new store front helps visitors to better understand that the bookstore is run by the Seney Natural History Association (SNHA) and is just one of the many ways SNHA helps to support the Refuge.
- Refuge fire fighters have already burned 700 acres in prescribed fires on Service lands down state to improve habitat. Prescribed burning is planned for Seney NWR later this summer to help reduce wildfire fuels and benefit habitat. They also remain ready to respond to wildfire that may occur on the Refuge or in the surrounding community.
- A forest thinning project is nearly finished at the Chicago Farms northern hardwood forest area of the Refuge to help increase forest diversity and structure. We targeted maple in the cut because we've lost several beech trees at this site and want to ensure other species such as hemlock have an opportunity to grow.

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### Youth Conservation Corp Crew

by Greg McClellan

Seney NWR will be hosting a Youth Conservation Corp (YCC) crew again this year. Tony Block from Manistique, our YCC crew leader from last year, will be returning for his second year leading the crew.

The four members of the crew include Keegan Nance, 17 years, from Germfask, who worked on the crew last year and is returning as a youth leader this summer. New crew members are Charles Bontekoe, 17 years, from Manistique; Haily Streeter, 17 years, from Shingleton; and Lauren Page, 16 years from Manistique. Tony will start at the Refuge on June 8 and the crew will start on Monday, June 15, and will work through Friday, August 7th. ❖

Photo: Seney Sunset

© Anne Chase

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# Refuge Volunteers Wear Two Hats

by Jennifer McDonough

Are you a Refuge volunteer? Are you a member of the Friends group? Do your volunteer efforts benefit both groups? Are you confused by recent talk of policy changes for Refuge Friends organizations?

Let's start with an explanation of what a Friends group is. Friends groups are nonprofit organizations established with a mission of supporting the refuge they are affiliated with. They cooperate with the U.S. Fish and Wildlife Service (Service) under an approved Friends partnership agreement. Seney's Friends group is the Seney Natural History Association (SNHA). Like SNHA, Friends groups are usually formed by community volunteers and provide a variety of volunteer services to a refuge. While volunteering on behalf of a refuge (outreach, special events, tours, environmental education, biological surveys, maintenance projects, etc), Friends are refuge volunteers and work under an approved Volunteer Services Agreement. Friends organizations can also participate in some activities that cannot be done by refuge volunteers. For example: any work associated with lobbying, soliciting donations, and the operation of the Friends organization are distinctly Friends functions. The Refuge cannot include time spent on these sorts of activities as volunteer time.

These similarities and distinctions are spelled out in a recently updated Friends policy and the Service is encouraging us to create a better awareness of the activities Friends groups carry out as an independent organization.

What does this mean for Seney Refuge Volunteers? For many of the programs this won't affect volunteers in any noticeable way. For Visitor Services volunteers, those working the Visitor Center desk will notice some changes. The bookstore has been renovated to create a clearer distinction between the exhibit space and the store space. SNHA bookstore operations will become more separated from Refuge operations and Refuge staff will be less involved with the bookstore. SNHA interns will play a larger role in assisting with bookstore management. If no SNHA volunteers or interns are available to run the bookstore and make sales, the bookstore will need to be closed during those times.

Volunteers working the Visitor Center welcome desk will usually be representing both SNHA and the Refuge and will be asked to sign two separate volunteer agreements. These folks are both Refuge volunteers working to welcome and orient visitors to the Refuge and they are SNHA volunteers assisting with bookstore sales. These volunteers figuratively wear two hats. For more than twenty years desk volunteers have supported the Refuge while also supporting SNHA. This will still be the case but, SNHA will have a more prominent identity as an independent organization. Welcome desk volunteers have done

a fantastic job of being good hosts for our Refuge visitors. They contribute to both organizations missions by informing visitors about this place of excitement and wonder where wildlife comes first and promoting a better understanding and appreciation of the Refuges natural history and natural environment while working in cooperation with Refuge staff. Refuge volunteers might need to wear two hats and assist two organizations, but in the end it is still about appreciating, caring for, and sharing with others this public space. ❖

## Nature Nut Column



Dear Nature Nut,

While visiting the Refuge I noticed a large amount of foam on the ponds surface. What causes the foam, pollution or some natural source? Also, I noticed several places that seemed to be contaminated by oil. A rainbow like sheen was floating on top of the water. You can imagine my concern.

Sincerely,  
Concerned Citizen

Dear Concerned Citizen,

I can appreciate your concern. While both rainbow sheens and foam on water may signal pollution they may also be signs of completely natural processes.



Photo: Natural Pond Foam. © April Payne

Foams found on ponds or streams may be caused

by a few natural conditions or they may be caused by pollution from soaps and other cleaning products. Natural causes of foam include surface tension and dissolved organic carbon. Surface tension is how insects skate on the surface of a pond or how dew beads up on grass. Dissolved organic carbon is created as things like leaves break down in the water. The carbon increases the chance of bubbles forming. Both may cause bubbles to form on the top of water especially on windy days or in areas where water is flowing. The bubbles create large masses forming the foam. When new, the foam is often times white, but may turn brown at it ages.

Do you want to find out how a specific mass of foam was formed? Smell it! Yep bend down and put your nose close to the bubbles and give it a good whiff. That's right. What did you smell? Often times bubbles caused by soap will smell like soap, a cleaning product or another fragrant additive like lavender or apples. Pollution bubbles also tend to be short lived.

A rainbow sheen may be caused by certain types of bacteria. Some bacteria produce slimes, films and rock coating which can range in color from blues, to greens, to purples to whites. The bacteria react to the presence of minerals in the water including copper, sulfur, aluminum and calcium. When sunlight bounces off of the surface of the film it looks oily.

There is a simple way to tell if the cause of the oily appearance is natural or human caused. Natural films and slimes occurring on the surface of the water will break apart when disturbed by throwing a stone or poking it with a stick. The film will remain in pieces. However a true oil slick will flow back together if disturbed.

Sincerely,  
The Nature Nut.

*The questions in the Nature Nut Column come from questions posed by visitors. This month's columns were written by Sara Giles. If you have a question you would like the Nature Nut to answer email [Sara\\_Giles@fws.gov](mailto:Sara_Giles@fws.gov). ❖*

## Fishing Loop Bridge Update

by Greg McClellan

The construction of a replacement bridge between J and H Pools on the Fishing Loop was conducted this past winter. We are happy to report that the construction of the bridge is complete and the bridge will be open to the public this spring. The contractors still have to do some re-vegetation work at the bridge site, but that should not interfere with public access. The new bridge replaces the original wood bridge which was constructed in 1943. We originally requested a new wooden bridge but long term durability and maintenance mandated a concrete replacement. The new bridge is a little longer and wider than the original which will allow us to drive the Refuge's excavator across the bridge, something we were not able to do on the old bridge. Unlike our other bridges, the railing system is concrete versus metal or wood. At both approaches to the bridge, there are wooden timber curbs. Finally, the bridge decking was moved slightly to the south so you will have a new perspective as approach the bridge. ❖

### Manager's Corner Continued from page 1

- Several planning and administrative documents were complete. I won't bore you with details but I mention them because they take a lot of time and hard work from staff. If you're really interested let me know and I'll share!
- When you travel the Fishing Loop, you will likely notice a new bridge where J and H pool connect. The bridge was completed this winter with funding from the Federal Highway Administration. The new bridge will enable school & Refuge bus tours to cross the bridge as well as most RVs and maintenance equipment that is used to maintain the roads and dikes.
- A new accessible boardwalk is scheduled this summer to be constructed at the Whitefish Point Unit of Seney NWR. The boardwalk will lead from the parking area to the base of the tip of the point. The purpose is to establish an official trail that concentrates foot traffic and protects sensitive plants and dunes in the area surrounding the trail. Currently there are no official trails and numerous "social paths" have been created throughout the area that make navigating confusing and cause trampling of plants and dunes.
- Lastly, several monitoring and research projects are under way. Check out the science page of the Seney NWR website for more details!

I'll close for now by saying that I hope you all find some time to visit your favorite places and people at Seney NWR. We have several new interns and volunteers joining us for the summer! I would like to wish them a warm welcome to our Refuge family! Have a safe and productive spring field season everyone and I look forward to seeing you! ❖



New bridge on Fishing Loop. USFWS

# Introducing the Interns



**Ellen DiGiacinto**  
*Visitor Services Intern*  
May 11th to October 24th  
Hometown: Norrisville, MD

My name is Ellen DiGiacinto and I am from Norrisville, Maryland. I am a recent graduate from Northern Michigan University. I graduated with a bachelor's degree in Environmental Studies and Sustainability and a minor in dance. Since moving to Marquette, I have enjoyed the beautiful U.P. my home. I served as captain of the University dance team, as I danced on the team for 3 years. I also had the opportunity to study abroad in Costa Rica, where I studied ecology and ecotourism of the country. I have enjoyed traveling the UP from skiing the Porcupine Mountains, to hiking the Pictured Rocks National Lakeshore. I enjoy crafting, knitting, biking, downhill skiing, kayaking, and enjoying the outdoors in all seasons. I am excited to spend a full season at the Refuge.

**Andrea Martinson**  
*Visitor Services Intern*  
May 28th to August 15th  
Hometown: Springfield, OH

Hi! My name is Andrea Martinson, and I'm from Springfield, Ohio. I am going into my senior year at Cedarville University as a Biology major. Some of my passions are reading/writing fiction novels, going on adventures, playing any pickup sport (especially soccer!), and learning all I can about nature through hiking, taking pictures, and reading books on it. I am currently wrapping up my four months in New Zealand studying a variety of subjects including Sustainable Community Development, New Zealand Ecosystems, Environmental Literature, and even a Maori language and culture class. I have fallen in love with this beautiful place, and it has helped fuel my passion for sharing the amazingness of nature to those around me back home. I am thrilled with the opportunity to work at Seney Wildlife Refuge as an intern this summer, and look forward to the adventures that await!



**Alejandro Cruz**  
*Visitor Services Intern*  
May 28th to August 15th  
Hometown: Stockton, CA

My name is Alejandro Cruz and I have recently finished my freshman year of college studying both biology and business. I've been around national, state parks as well as wildlife refuges for a large portion of my life. I have lived in and visited Haleakala National Park in Hawaii, Lassen Volcanic and Yosemite National Parks in California. I enjoy the outdoors and like to hike and look for wildlife in the places I go. At the end of next year I plan on transferring to the University of Oregon to study sports product management and biology. In high school I participated in various sports like soccer and golf, I also was a part of different

clubs like Key club and MESA. I also did a lot of volunteer work with the Golden Gate Raptor Observatory and The Friends of The Lower Calaveras.

One day I hope to climb in Yosemite, hike the John Muir Trail and “El camino de Santiago” in Spain. I also want to surf the North Shore of Oahu and Maui. I love watching the Golden State Warriors basketball team and the San Francisco Giants baseball team. Photography and collecting sneakers are both passions of mine that I hope to continue into the future.

### **Jenna Happach**

*Visitor Services Intern*

*May 11th to May 30th and Weekends this Fall*

*Hometown: Winnebago, IL*

A native of northern Illinois, I came up to the Upper Peninsula to pursue a passion for the natural world. I am going into my second year at Northern Michigan University, I plan to get a degree in Ecology with a minor in Outdoor Recreation. Most summers of mine are spent acting as a camp councilor for various nature centers, playing soccer, and going on hikes with my dog. I am excited to spend my first summer in the U.P and take advantage of the warm weather. I am so thankful for this opportunity with Seney and the USFWS, and I’m looking forward the adventure that awaits!



### **Shelby Weiss**

*Applied Science Intern - Crew Leader*

*2014 to July 31st*

*Hometown: St. Louis, MO*

I am the 2015 Crew Leader for the Applied Sciences Program at Seney NWR. I’m originally from St. Louis, Missouri and began working at Seney in June of 2014 after graduating from Colorado State University with a B. S. in Wildlife Biology and a minor in Applied Statistics. After the 2014 summer field season, I continued working with the Applied Sciences Program by doing data analysis, writing reports, and contributing to the efforts of the Lake States Fire Science Consortium to initiate an information exchange on fire and wildlife. I’ve enjoyed living in the U.P and cannot wait to get started on another summer field season in 2015. I have also enrolled in the Environment and Natural Resources Graduate Program at The Ohio State University this fall, pursuing

an M.S. degree in which I will study social and ecological aspects of management for wildlife species in fire-dependent ecosystems. Some of the data for this project will come from Seney and I am excited to continue learning about the U.P. and Seney through work and education.

### **Becky Lynn**

*Applied Science Intern*

*May 18th to August 7th*

*Hometown: Dunwoody, GA*

I graduated from the Warnell School of Forestry and Natural Resources majoring in Wildlife Sciences at the University of Georgia in May 2015. In school, I had the opportunity to study abroad in Costa Rica, practice spatial analysis skills through a NASA Develop internship, and participate in field work in the Southern Appalachian Mountains. I was born and raised in Georgia, but have family in the



Detroit area. I am an outdoor enthusiast and love all endurance sports, especially running. This summer I am thrilled to be an Applied Science Program Intern at Seney NWR. I have a passion for research and cannot wait to gain experience in proper inventory, monitoring, land assessments and much more! My objective is to gain insight in the operations of wild lands like Seney through the U.S. Fish and Wildlife Service. I am also excited to experience the Midwestern part of the country from a wildlife management perspective. In the future, I plan to attend graduate school and hope to earn my PhD, continue research towards sustainable management practices and conservation, and raise a family close to nature in the Rockies!

### **Sarah Toner**

*Applied Science Intern*

*May 25th to August 14th*

*Hometown: Ann Arbor, MI*

I grew up in Ann Arbor, Michigan, where I've developed my birdwatching skills and interest in conservation and ecology. I've spent a lot of time in the U.P. and neighboring areas: during my sophomore year of high school, I attended a semester boarding school in Land O' Lakes, Wisconsin (right across the Michigan border), where I studied environmental sciences and learned outdoor skills. I've also spent parts of my summers exploring cool areas all over the U.P. This summer, I'm hoping to gain a deeper understanding of the ecology of the northern ecosystems through hands-on experience. I will be at Cornell University in the fall, where I will be majoring in Biological Sciences with a concentration in Ecology and Evolutionary Biology. In the future, I hope to study the interactions between birds and their habitats so that we can better understand and preserve the natural world. I'm also interested in the interactions between birds and the weather and climate, so I hope to understand the connections between the atmosphere and the biosphere by studying meteorology as well.



### **Emma Doden**

*Applied Science Intern*

*May 18th to August 28th*

*Hometown: Ann Arbor, MI*

I am currently a junior studying Wildlife Ecology: Research and Management and Biology at the University of Wisconsin-Stevens Point. I am from Wadsworth, Illinois, but have spent a lot of my childhood and the past two summers in the North Woods living at my grandparents' cabin near Eagle River, Wisconsin. Animals and the outdoors are my passions, and I am excited to spend this summer working with the plant and animal communities of Seney NWR. I hope to contribute positively to the management of the refuge through the various bird and amphibian surveys, invasive species management, ecosystem restoration, and research studies I will be helping with as a part of the Applied Sciences Program. In the future I plan to go on to graduate school to further my wildlife research experience and eventually would like to have a career that will allow me to conserve and manage the wildlife and natural landscapes that I love. ❖

# Save the Dates

## 2015 Seney National Wildlife Event Calendar

### Volunteer Bus Tour

May 14 from 9 a.m. to noon

Volunteers and potential volunteers are invited to join staff on a backcountry tour of the Refuge. We will discuss current management practices, wildlife, and habitat during this tour.

### Twilight Tours

May 28 and June 4 from 9 p.m. to 12 a.m.

Twilight Tours offer a rare opportunity to experience the Refuge alongside Rangers, during the hours the Refuge is closed. Use your ears not just your eyes on these special nighttime tours to experience evening wildlife activity.

### Wildlife Wednesday

June - August from 7 to 9:30 p.m.

Wednesday nights experience the Refuge backcountry on roads otherwise closed to public vehicles. Rangers will share Refuge history and management practices, while everyone scans the scenery for wildlife.

### Children's Fishing Day

June 27 from 9 a.m. to 4 p.m.

Children's Fishing Day is geared toward kids ages 16 and under and families. The Visitor Center will hold games, arts and crafts, presentations, prizes, and a free fish dinner for all who attend.

### Morning Bus Tours

July and August from 10 a.m. to 12:30 p.m.

Monday and Friday mornings enjoy a guided tour through the Refuge.

### Jr. Duck Stamp Art Exhibit

Month of July

Take advantage of viewing the first place winners of original waterfowl artwork, by kids from each US state and territory. The artwork will be on display in the Visitor Center the month of July.

### Seney NWR Photo Contest

Photos must be postmarked by August 31

Share your photos of Seney NWR and its Whitefish Point Unit with the public as they vote for their favorite in the people's choice contest. Photos will

be up for judging by September 10 and the last day of judging is October 20.

### **Art on the Lake**

September 5 (in Curtis)

Visit the Refuge's booth at *Art on the Lake*.

### Fall Morning Bus Tours

September 4, 18 and October 2, 16 from 10 a.m. to 12:30 p.m.

Friday mornings enjoy a guided tour through the Refuge.

### Youth in the Outdoors

September 26 from 9 a.m. to 4 p.m.

The day is designed to get youth out into the Refuge to explore and learn. Participants may choose from a variety of sessions. The event is open to kids ages 7-17. Scouts can earn badges!

### Fall Color Float

October 3 from 11 a.m. to 4 p.m.

Join our staff for a 4-5 hour canoe/kayak trip down the Manistique River. Boat rentals are available locally.

### **National Wildlife Refuge Week – October 11-17**

Additional nature programs may be announced. Visit <http://www.fws.gov/refuge/Seney/Events.html> for more events and details.



Oil-like bacteria. © Vilseskogen, Flickr Creative Commons

# Lake States Fire Science Consortium

A JFSP KNOWLEDGE EXCHANGE CONSORTIUM



## Marshbirds and Fire in the Northern Lake States

by Shelby A. Weiss (Applied Sciences Program Intern, Seney NWR)

In the northern Lake States emergent wetlands have been found to succeed to shrub-dominated wetlands over time in the absence of fire. Mechanical shearing or prescribed fires are sometimes used to remove shrub cover and create a more open condition. Populations of rare and secretive marshbird species that depend on emergent wetlands, such as the Yellow Rail (*Corturnicops noveboracensis*), have been in long-term declines. Encroachment of shrubs in wetland ecosystems is cited as one possible reason for these declines, and this encroachment is often due to a lack of periodic disturbance resulting in an associated decrease in open grass and sedge meadows. The two studies presented here look at the responses of different bird species to fire, other treatments, or lack of any treatment done to wetland ecosystems affected by shrub encroachment.

A study in northern Minnesota looked at breeding bird abundance and composition of emergent wetland sites managed with mechanical shearing or prescribed fire versus those that had not been managed. Shearing and prescribed fire treatments were done to prevent shrub encroachment in the hopes of benefiting such target species as: Sharp-tailed Grouse (*Tympanuchus phasianellus*), Yellow Rail, Upland Sandpiper (*Bartramia longicauda*), Sandhill Crane (*Grus canadensis*), Wilson's Phalarope (*Phalaropus tricolor*), Short-eared Owl (*Asio flammeus*), and Sharp-tailed Sparrow (*Ammodramus nelsoni*). The study took place over two breeding seasons (1996 and 1997) using unlimited radius point counts that were conducted on roadsides, ditches or trail edges. All birds seen or heard at an unlimited distance were recorded, and 14 other habitat variables were also measured. Overall, 116 sites were surveyed in 1996 and 93 were surveyed in 1997. Data on



Photo: Yellow Rail, USFWS

### MANAGEMENT IMPLICATIONS

1. Sites in northern Minnesota managed with prescribed fire or by shearing shrubs had fewer species of birds overall, but greater abundances of some open wetland species.
2. Yellow Rails at Seney NWR in Upper Michigan were found to occur more often at sites that had burned 2-5 years previously and with water depths up to 4 inches.

#### Want to learn more?

Greg Corace at Seney National Wildlife Refuge (Greg\_Corace@fws.gov; (906) 586-9851 x14.

management history were also collected.

Managed sites had more willow (*Salix spp.*) with shrubs distributed in clumps. Unmanaged sites had more alder (*Alnus spp.*) and snags, with taller and denser brush. Managed sites had fewer species of birds than unmanaged sites; however, species requiring open wetland habitat such as Sedge Wrens (*Cistothorus platensis*), Clay-colored Sparrows (*Spizella pallida*), and LeConte's Sparrows (*Ammodramus leconteii*) were all found to be positively associated with managed sites. Both time elapsed since the treatment and the management history of the site had little effect on species composition.

A species-specific study on Yellow Rails was conducted at Seney National Wildlife Refuge (NWR) over the 2007-2009 breeding seasons. This study looked at variables affecting Yellow Rail occurrence, including water depth, percent cover of fine-leaved graminoids, thickness of the senescent litter mat, vertical cover of woody vegetation, and fire return intervals. Fire history for each survey point was categorized as burning <1 year ago, 2-5 years ago, or >10 years ago. Overall, 64-68 points were surveyed each year using call-playback methods; 8 Yellow Rails were detected in 2007, 13 in 2008, and 15 in 2009. The dataset was reduced to detections that were made within 178 or 328 yards of the survey point. Logistic regression was done to model potential factors affecting Yellow Rail occurrence with Akaike's Information Criterion (AIC) used to evaluate candidate models.

Results suggested that the depth of water following spring flooding was important to Yellow Rail occurrence for detections within 178 yards of the survey point. Probability of Yellow Rail occurrence increased for water depths up to 4 inches, before decreasing at any greater depth. Results also suggested that fire history was important to occurrence of Yellow Rails for detections within 328 yards of the survey point. Sites that burned within 2-5 years had the highest probability of occurrence, followed by sites that burned less than a year previously. Sites that burned 2-5 years previously also had greater and more variable litter depths. Mean litter depth declined after that period likely because of compaction or partial decomposition. Overall, Yellow Rails occurred in areas with greater percent open area, lower shrub area and height, and fewer shrub patches, though no difference in shrub cover or height was detected among fire history categories. This was likely because most burns were characterized as low severity and likely had shrubs readily re-sprouting.

These studies suggest that for those species requiring open wetland conditions, prescribed fire or other treatments to prevent the encroachment of shrubs may be appropriate. In northern Minnesota it was found that these more open conditions yielded less species overall, but did increase abundances of open wetland species such as Sedge Wrens, Clay-colored Sparrows, and LeConte's Sparrows. Surprisingly, this study detected very few of the target species for which treatments were originally carried out. For Yellow Rails at Seney NWR, it was found that water depth and fire history were predictors of occupancy. Water depths up to 4 inches as well as sampling 2-5 years since fire resulted in the highest probability for Yellow Rail occurrence. It was also thought that water level conditions following fire could affect the recruitment of woody seedlings so that if water levels were high, fewer shrubs would be able to re-sprout following a fire. ❖

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# Lake States Fire Science Consortium

A JFSP KNOWLEDGE EXCHANGE CONSORTIUM



## Fire Effects on Amphibians and Reptiles

by Shelby A. Weiss (Applied Sciences Program Intern, Seney NWR)

Fire may have direct or indirect effects on herpetofauna. These effects can be variable depending on habitats used and characteristics of individual species. Direct negative effects from fire usually consist of mortality events. Amphibians may be at an increased risk for direct mortality because they often have limited dispersal capabilities. Amphibians may also be particularly vulnerable to heat and the drying of microhabitats. Seasonality of fire can also play an important role in mortality events. The majority of wildland fires in North America take place in the summer months when many amphibians are underground or in close proximity to water due to drier environmental conditions, whereas most prescribed burning is done when conditions are wetter in the spring or fall. These wetter conditions may coincide with an increase in surface activity for amphibians and a greater mortality rate when fire occurs. While there is potential for direct mortality, it is widely believed that these effects are not significant on a population level for many species of herpetofauna.

Indirect effects from fire occur as a result of habitat alteration. Possible effects on habitat include increased solar radiation to soils and streams from loss of shade, sedimentation or a change in substrate composition, nutrient pulses or loading in lakes and streams, alteration of prey resources, and changes in vegetative structure. Whether these changes to habitat have an ultimate positive or negative effect on herpetofauna depends upon individual needs of a species. For example, in Florida longleaf pine (*Pinus palustris*) ecosystems, some reptile species are found in open, early successional habitats historically maintained by fire. For species requiring more ground cover, however, immediate post-fire effects can be detrimental. Fire suppression also changes vegetation structure in ways that have



Photo: Garter Snake, © Matt Smokosa

### MANAGEMENT IMPLICATIONS

1. Indirect effects of fire through habitat alterations have greater impacts on herpetofaunal assemblages than direct effects (mortality).
2. Fire effects on amphibians and reptiles can be variable and dependent on factors such as timing of the burn and individual species characteristics or habitat needs.
3. Prescribed fire is thought to increase overall diversity of herpetofauna at broad scales, although site-level impacts may cause local declines for some species.

#### Want to learn more?

Greg Corace at Seney National Wildlife Refuge (Greg\_Corace@fws.gov; (906) 586-9851 x14.

impacts on herpetofauna. Surveys in Michigan over a 30-year period have suggested that local extirpations of amphibians may have occurred as a result of succession to closed canopy conditions and the associated changes in hydrology. Additionally, succession and stand maturation can fragment open landscapes suitable for some herpetofaunal communities.

While there are some species within fire-adapted ecosystems that benefit from climax vegetation, restoring landscape heterogeneity in fire-dependent ecosystems using prescribed fire has been suggested as an appropriate management tool that can benefit amphibians and reptiles. Beneficial indirect effects, resulting in broader-scale diversity of species, likely outweigh any direct mortalities or decrease in diversity of a particular patch. To confirm this, however, more extensive research is needed with pre-fire baseline data. It is also important to take into account other impacts from prescribed or wildland fires such as the creation of fire roads and firebreaks. These features on the landscape, especially near wetlands, can prevent migration and dispersal of individuals. In wetlands, firebreaks are sometimes constructed with the perception of protecting the wetland, when in reality keeping fire out of these places may encourage hardwood succession. There is little known about the effects of mechanical treatments such as thinning understory brush or removing coarse woody debris on amphibian populations. More information is also needed concerning the effects of fire retardants, fire suppressants, and herbicides on herpetofauna. Sodium ferrocyanide (an ingredient of fire retardants and suppressants) has been shown to cause amphibian mortality, and these chemicals can also have detrimental impacts through bioaccumulation. Herbicide applications have been shown to have mixed effects on herpetofauna.

Amphibians and reptiles are known to have complex life histories. Particularly for amphibians, multiple life stages of a single species each may be impacted differently from fire. Impacts from changes in habitat are likely greatest on habitat specialists. Fire effects on a landscape can be varied, creating a mosaic of vegetation structures that can at once create or destroy amphibian and reptile microhabitats. While the nature of fire makes generalized recommendations difficult, it is thought that the increased heterogeneity in successional stages and habitat structures resulting from fire should increase overall diversity on a large scale. More research is needed to better understand the effects of wildland fire, prescribed fire, and other treatments on herpetofauna. ❖



Photo: Red-backed Salamander Guarding Eggs,  
© Matt Smokosa

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Seney National Wildlife Refuge  
1674 Refuge Entrance Road  
Seney, MI 49883

## Volunteer Gatherings 2015

### June -Volunteer Social

Date: TBA – Week of June 8th or 15th

Time: Potluck - 6:00 p.m. Presentation – 7:00 p.m.

Location: Visitor Center

Topic: Avian Radar Project - Tracking Bird and Bat Migration Along the Great Lakes Shorelines to Guide Wind Energy Development and Reduce the Risk to Migrants.

Presenter: USFWS staff from the Avian Radar Project

### July -Volunteer Social

Date: Tuesday July 14

Time: Potluck - 6:00 p.m. Presentation – 7:00 p.m.

Location: Visitor Center

Topic: Social and Ecological Aspects of Management for Wildlife in Fire-dependent Ecosystems

Presenter: Shelby Weiss. Applied Sciences Intern – Crew Leader

### August -Volunteer Social

Date: Thursday August 13

Time: Potluck - 6:00 p.m. Presentation – 7:00 p.m.

Location: Visitor Center

Topic: Marshbird Research and Monitoring at Seney NWR

Presenter: Mike Monfils Ph.D. Conservation Scientist. Michigan Natural Features Inventory.

### September -Volunteer Recognition Event

Date: Wednesday September 16

Time and Location: TBA

## Co-intern Whitefish Point

by Greg McClellan

Before Mark Vaniman left, he worked with the Seney Natural History Association, Michigan Audubon (MA) and Great Lakes Shipwreck Historical Society (GLSHS) and applied for a three year grant through the Service's Coastal Program. The prime focus of the grant would be to hire an intern to work at Whitefish Point throughout the summer and represent the three partners (Seney NWR, MA and GLSHS). Michigan Audubon was the hiring authority for the intern and Brian Dibbern was selected. He started in the position on May 5th and will work through the end of August. For the Refuge, Brian will primarily be involved with piping plover monitoring at the point, providing outreach, collecting visitor numbers and maintaining Refuge signage. Brian will also be providing outreach information/activities for all three entities, conducting other bird surveys for MA and assisting with habitat restoration activities primarily on GLSHS property. Brian will work a Tuesday – Saturday schedule and will be the first summer daily presence up at the point since the Refuge acquired the property. ❖

Photo: Reflection, © Steve Gasaway