The Roost

NEWSLETTER OF THE OWL RESEARCH INSTITUTE (ORI) & NINEPIPES CENTER FOR WILDLIFE RESEARCH & EDUCATION
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Message from the President

Good day from the ORI field station in Charlo, Montana. It's been another beautiful autumn, albeit a bit warmer than usual. Our resident Great Horned Owls nested in our neighbor's driveway, and for reasons unknown, the female abandoned the nest after a lengthy incubation period.

Our year was busy. Our ten major owl research projects, numerous public and professional talks, and field classes absorbed all our time. Among many talks, I was the luncheon speaker for the Waterton-Glacier International Peace Park celebration in September. I spoke about the economics of wildlife watching and its impacts on wildlife conservation. Matt Larson (ORI) and I guided a mammal workshop to Yellowstone NP, for board members and staff of the Pittsburgh Zoo. In addition to wildlife watching, we emphasized wintering animal ecology and adaptations to the winter environ-ment. Steve Hiro (ORI) and I worked with visiting mechanical engineer Justin Jaworski, from Lehigh University, PA. Justin joined us in the field to examine owl body shape, wing and feather structure, and flying motion. His research focuses on learning from owl feather adaptations to design silent flight aircraft. Justin is contracted with the US Navy. Jessica Larson (ORI) conducted several education programs for students from grade schools to high schools, including the popular Frenchtown Sciencepalooza.

Our Day in the Field program is broadening. This year we were asked by land and watershed conservation groups from NH, OH, and MN, to contribute for their fund raisers. The Cornell Laboratory of Ornithology sent staff writer Pat Leonard to our Snowy Owl study in Barrow, AK. Pat is writing a feature story for Cornell's prestigious Living Bird Magazine. This story will appear in spring 2015.

Because of our commitment to long-term field studies, the ORI is increasingly asked to become more involved in wildlife conservation advocacy. In almost every publication or e-mail I receive, there's a statement regarding declining species of wildlife. Why are declines in so many species of wildlife populations accelerating? People have been promoting a conservation message for a long time. Are our conservation messages and management strategies outdated? Are the declining numbers true, or an artifact of fluctuating populations that can only be detected over long monitoring periods? Are some species naturally on a decline for biological and not anthropogenic causes? Some species appear to be doing well. However, these species are usually ones that adjust to human landscapes, or are specifically managed.

What will it take to conserve wildlife in the future? First, I believe it will take results from long-term study and monitoring to reliably detect population changes. Our own studies clearly show much annual variation in population demographics over time. Some species appear stable, while others appear to be declining. We would never know this with short-term studies.

Next, I would like to see universities and agencies provide an opportunity and encourage their researchers to balance office and field time. Most wildlife researchers spend almost their entire careers office-bound. Although office administrators have important roles, actual long-term field experience can bolster one's credibility when promoting programs.

I would also suggest that wildlife researchers extend their studies beyond the typical 1-3 month season for 1-3 years. Some of the best wildlife data we have in North America come from long-term monitoring programs by bird watchers, and hunter harvest data.

Then, I would also encourage researchers who solely publish in peer-reviewed scientific journals to also publish in popular magazines. An informed public can be a conservation ally.

Finally, I see data from individuals, and non-government and private wildlife groups, becoming increasingly important in leading the way for wildlife research and conservation today, and in the future.

I ask once a year for your support. Your investment provides us the means to continue field research, public education, and promote wildlife conservation, and we thank you for that. As of this writing, we have a generous $25,000 challenge grant. We hope to match this before the New Year and ask your help in doing so. After reading this newsletter, please pass it on to an interested friend.

Photo by Simone Welch

Denver (left) with Silverback Film Productions crew, England

Thanks and Happy Holidays.

~Denver Holt

RESEARCH

Photo by Sofi Hindmarch

Barn Owl

Barn Owl. We completed our 10th season of Barn Owl study. Although Barn Owls were seen in several barns, buildings, and natural sites, zero nests were found. Whether the owls shifted locations or did not breed is not known.

Kari Eneas, a former intern, submitted her first manuscript. Her paper on Barn Owl food habits draws upon research she conducted while interning with the ORI last year. Kari recently completed her BS in Wildlife Biology from the University of Montana and currently works as a wildlife biologist for the Confederated Salish and Kootenai Tribes, Flathead Indian Reservation, MT.

The Barn Owl, also known as the agricultural owl, has historically been welcomed by farmers and ranchers. Man-made structures such as old barns, silos, and sheds provide nest sites, while surrounding farm fields are hunted for small rodents that potentially damage crops.

Flammulated Owl. For the seventh season, Flammulated Owls were found singing in the hills above Missoula. We found two nests and a number of other occupied territories.

For the third year in a row, Flammulated Owls have been found nesting in the same cavity high in a live Ponderosa Pine. We banded all four chicks and the female from this nest.

A second nest was found in a nest box. This was the second consecutive year that chicks fledged from this box. Neither the male nor the female were previously banded.

Our nest site and distribution data is helping the Forest Service write the environmental analysis for proposed management activities in the Lolo National Forest. We find ourselves in a unique position to have breeding and occupancy data for Flammulated Owls both before and after management applications. Our Flammulated Owl paper was published in late 2013. (See recent publications list.)

Photo by Adam Eckert

Top: Female Flammulated Owl

Bottom: Banding a Flammulated Owl chick on a branch 70 feet in the air

RESEARCH

Snowy Owl. Finishing the 23rd season, our Snowy Owl Breeding Ecology and Lemming Population study in Barrow, AK ,is the second longest study of its kind in the world. The season started out great and we found 20 nests in the first two weeks. (See Figure 1 at right) Given the number of nests, lemmings must have been numerous and easy to catch in early May.

That all changed rather quickly, as lemmings either declined or never reached their potential. With the disappearance of lemmings, some owl nests were abandoned, while in other nests, most nestlings starved to death. It was one of the most dismal breeding performances in 23 years of research. However, some chicks did fledge.

We continue advocating that Snowy Owls and Brown Lemmings are indicators of a healthy Arctic environment in our study area, and that these species can be used to monitor effects of Arctic climate change. ORI staff and co-authors finished the Snowy Owl species account for the Birds of North America project. It is in final editing and expected to be published in 2015 by the Cornell Lab of Ornithology. (See recent publications list.)

Photo by Simone Welch

Monitoring Snowy Owl chicks

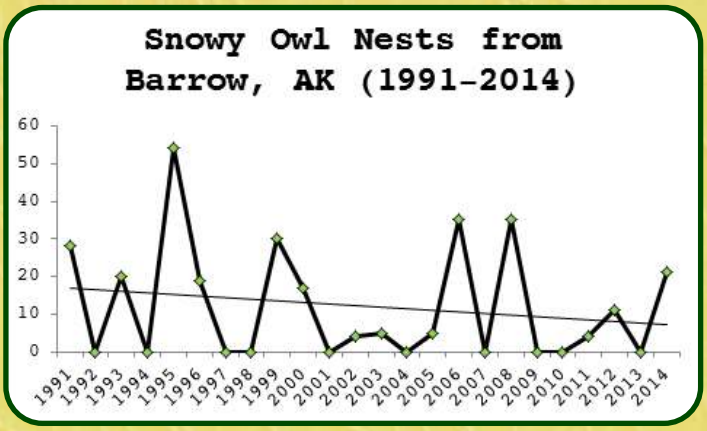

Photo by Simone Welch

Northern Hawk Owl. In our ninth season, we found one Northern Hawk Owl nest on the west side of Glacier National Park. The nest was in the same cavity used and abandoned in 2012. Both adults were caught and banded, and five chicks fledged.

We also trapped and banded an owl on the east side of the park, but did not find a nest. However, later in the season, recently fledged chicks were observed in the same area.

Once thought to be a rare visitor to this area, we have now banded around 60 Northern Hawk Owls in Glacier National Park. Interestingly, we have only recaptured one hawk owl. One must wonder how many either live in the park, or travel to and from the park.

This project was featured on Montana Fish, Wildlife, and Parks' "Outdoor Reports" with Winston Greely.

Female Northern Hawk Owl peering out of nest cavity

Photos by Adam Eckert

Northern Hawk Owl

RESEARCH

Northern Pygmy Owl. Although our breeding season study began in 1981, it was not officially organized until 1985.

We are researching nest site characteristics with colleagues from Montana and have now documented 31 natural nest sites. We believe these data will be important for forest management snag retention policies.

Along with our reproductive success study, we have also begun to record growth rates and plumage development.

Pygmy Owl

Boreal Owl. Venturing into the mountains in search of Boreal Owls is often a practice in misadventure and the 20th year of our Boreal Owl nest box study proved to be both exciting and productive.

Amidst snowmobiles breaking down miles from the parking area, cars and trucks getting stuck in the snow, flat tires, snowstorms, and thunderstorms, we located three nests. All nests were successful and 13 chicks and two females were banded. The third female was already banded. She was originally caught two years prior in a different, but nearby, nest box.

Our records of site fidelity and natal philopatry, though rare, are important to understanding the life history of Boreal Owls. To date, ORI has found 31 nests and banded about 80 Boreal Owls, mostly nestlings and females.

After the breeding season, we spent some time cleaning out and fixing broken boxes.

Boreal Owl chick

Photo by Radd Icenoggle

Northern Saw-whet Owl

Northern Saw-whet Owl. As with the Pygmy Owls, the Northern Saw-whet study also began in 1981, but was not organized until 1985. We have located 50 natural nest sites and documented the owls using several nest boxes since that time.

Interestingly, we have documented nests from elevations of 3,000' to 7,000', in cottonwood stands in valley bottoms, through mixed coniferous forests in sub-alpine habitats. The owls appear to be habitat generalists, occurring in all forest types we survey.

We have been recording reproductive success, growth rates, and plumage development over the years, as well as documenting winter roost sites.

RESEARCH

Northern Saw-whet Owl Migration Study. While not like the big years we've experienced in the past, nightly numbers from our fourth autumn migration study were steady, and total numbers were higher than 2013. At the time of this writing, we have banded 125 owls at this site.

We also recaptured two previously banded individuals. One owl was banded almost exactly one year prior. The other owl's origin is currently unknown.

We hosted two public lectures at the banding station and were pleased with the response and turnout for each night. To the delight of all, the weather was amiable as we shared our research and a few close encounters with wild owls.

Photos by austin.trayser@blogspot.com

Long-eared Owl. Our year-round Long-eared Owl study, now entering its 29th year, is one of the world's longest running studies of this species. We have recorded 235 nests and banded over 1750 individuals in that time.

After a good breeding year in 2012, breeding numbers in 2013 and 2014 were low. Long-eared Owl numbers continue to decrease in our study area, and at one of their major migration sites in Duluth, MN. The reasons remain unknown.

According to recent population estimates for owls in Canada and the United States (See Table 1, pg. 6), the Long-eared Owl population estimate is the lowest for any owl species that regularly breeds in Canada and the U.S. (See Table 2, pg. 17)

We encourage all states and provinces to initiate breeding and wintering surveys for Long-eared Owls in order to increase data.

Our paper using plumage color to sex Long-eared Owls will appear in 2015. (See recent publications list.)

Photo by Radd Icenoggle

Examining flight feathers of a Long-eared Owl

Photo by Radd Icenoggle

Long-eared Owl

Short-eared Owl. Although we have been steadily increasing our attention toward Short-eared Owls over the past several years, we significantly ramped up our efforts in 2014.

We embarked on a collaborative effort with the Alaska Department of Fish and Wildlife and the Global Owl Project to attach satellite transmitters to breeding Short-eared Owls in the Mission Valley. This project arose from discussions with Travis Booms (AK DFW). He found Short-eared Owls tagged in Nome, AK, wintering in parts of Montana, Idaho, Colorado, and the Dakotas.

We located four nests, two of which successfully fledged chicks. Satellite transmitters were deployed on two of the breeding adult females. We were also able to grapple with the logistics of the project and familiarize ourselves with the amount of effort this undertaking will require going forward. We are looking forward to another full spring of Short-eared Owl surveys and nest searching.

We co-authored a paper on the Decline and Conservation of North American Short-eared Owls in 2014. (See recent publications list.)

Photo by Ashok Khosla/www.seeingbirds.com

Short-eared Owl

Short-eared Owl equipped with satellite transmitter

Table 1. Population Estimates for North American Owls.

Common Name	Scientific Name	Estimate
Barn Owl	*Tyto furcata*	160,000
Flammulated Owl	*Psiloscops flammeolus*	12,000
Western Screech-Owl	*Megascops kennicotii*	300,000
Eastern Screech-Owl	*Megascops asio*	800,000
Whiskered Screech-Owl	*Megascops trichopsis*	200,000?
Great Horned Owl	*Bubo virginianus*	4,000,000
Snowy Owl	*Bubo scandiacus*	100,000
Northern Hawk Owl	*Surnia ulula*	60,000
Northern Pygmy Owl	*Glaucidium gnoma*	60,000
Ferruginous Pygmy Owl	*Glaucidium brasilianum*	20,000,000?
Elf Owl	*Micrathene whitneyi*	70,000
Burrowing Owl	*Athene cunicularia*	700,000
Spotted Owl	*Strix occidentalis*	15,000
Barred Owl	*Strix varia*	3,000,000
Great Gray Owl	*Strix nebulosa*	90,000
Long-eared Owl	*Asio otus*	15,000
Short-eared Owl	*Asio flammeus*	600,000
Boreal Owl	*Aegolius funereus*	1,700,000?
Northern Saw-whet Owl	*Aegolius acadicus*	200,000

Data from: Partners in Flight 2013. Population Estimates Database, v. 2013. Available at http://rmbo.org/pifpopestimates. Accessed on 04 Nov 2013. ?Global population.

2014 NANCY CLAFLIN AWARD

Blakiston's Fish Owl

This year's Nancy Claflin Award went to Takeshi Takanaka of Japan. Takeshi has been studying Blakiston's Fish Owl in Hokkaido, Japan, for the past 20 years. The $1,000 award is unrestricted.

Takeshi sent us the following information pertaining to his research:

I would like to introduce Blakiston's Fish Owl (Ketupa blakistoni blakistoni). It is distributed in Hokkaido, Japan's northernmost island, and surrounding islands. With a height of 2½ feet, a wingspan of 6 feet, and a weight of 8-9 pounds, it is one of the largest owls in the world. Its diet consists mainly of fluvial fish, and it uses large tree cavities or broken-top trees for nesting. In Hokkaido, it lives in riparian habitat and maintains a year-round territory.

Takeshi Takanaka crossing a river in his study area

Hokkaido was once almost entirely forested. However, during the late 19th century, the majority of forests were cleared for government sponsored agriculture and logging. The decline of Blakiston's Fish Owl populations occurred as these habitats and the owls' prey species were lost.

In the mid-1980s, a conservation program, which included establishment of nest boxes and supplemental feeding, was initiated. In the early 1990s only 100 fish owls (perhaps 40 pairs) were estimated to survive in Hokkaido, and the government assigned it an endangered status. Since then, more than 200 nest boxes have been installed, and artificial feeding conducted at 14 locations.

I joined the conservation and research team in the early 1990s, and now almost half of all the nest sites are under my responsibility. My role has been to study its breeding ecology and habitat requirements and propose strategies for its conservation. In addition, I conduct surveys, band nestlings, and collect blood for sex determination and DNA analysis.

As a result of our efforts, the fish owl population has seen a 40% increase in the last 20 years. The provisioning of nest boxes and supplemental feeding has sped up this recovery. On the other hand, it is not ideal that 80% of the pairs use nest boxes and 25% benefit from supplemental feeding. As the population increases, it is important to improve its habitat and this is the only strategy likely to achieve the long-term conservation of these owls.

About 30 nests have been located during my 20 years of research. All nests were in deciduous trees with an average DBH of about 40-41". Only one pair has used a cliff ledge as a nest. Our nest camera research at 25 sites proved that breeding success varied from year to year, and that in the last five years, the fledging rate was 27.6%. During the nesting period, the amount of food brought into the nest averaged 2.2 lbs. daily and around 110 lbs. annually, mainly fish and frogs. In some years pairs may not breed.

Predation is also a factor in nest failure. For example, in 2006, 60% of the nests were preyed upon by sables. Food shortage, severe winters, conflicts between other fish owls for territories, and aging could be other causes of nest failure.

Over the years, I have conducted many field surveys alone, and with the help of my wife, friends, and volunteers. I also feel happy to report the survival and the recovering population of Blakiston's Fish Owl. When Denver Holt visited Hokkaido in 2000, the situation of the fish owl was bad and the conservation efforts were just beginning. I believe in the importance of long-term field study and conservation efforts based on scientific thinking to address endangered birds in the wild.

EDUCATION

ORI education is focused on volunteer opportunities, internships, hands-on field classes, and lectures to people of all ages. Conservation education is now more important than ever. Economic woes, political party division, and an increasing public skepticism about science, have resulted in increasing challenges for conservation. Think about this: According to a December 2013 report, the United States scored dismally in international rankings for Math (26th), Reading (17th), and Science (21st). This seems to be an alarming trend.

To remedy this, however, we need proactive conservation education at all levels. We most often emphasize children as the conservationists of our future, and this may be true, but we also need to provide more conservation education programs for adults. Many adults are eager to learn about wildlife and conservation issues, but programs are limited when compared to those for children. We need to go beyond teaching to only like-minded adults. It is our responsibility to reach outside the safety of our "box" and communicate with others who may not think as we do, or agree with us. Adults vote, have influence, provide money, and often commit time to heartfelt causes. Ultimately, parents are their children's teachers, and influence how their children view, value, and interact in the world.

Photo by Paul Queneau

EDUCATION

Volunteer Researchers. Volunteers are an integral part of the ORI and have contributed thousands of hours to our programs. We are enormously grateful for their support, and could not achieve our goals without them.

Volunteers participate in year-round research, entering and managing data, facilities and equipment maintenance, fostering partnerships, building a foundation for high-quality programs for the public, and often assist in presenting these programs. In turn, we offer volunteers valuable hands-on field experience in wildlife research, public communication, recognition for their efforts, and other services.

This year, volunteers came from the University of Montana, Montana Conservation Corps, Raptor View Research Institute, and private citizens.

Volunteer Simone Welch with Snowy Owl chick

For more information about volunteer or internship opportunities, or to report observations of nesting owls in Montana, contact us at owlresearchinstitute@gmail.com.

Internships and Seasonal Employees.

Throughout the years, we have hosted a number of interns who are typically high school or undergraduate students. The overall objective of this program is to provide a deeper understanding of wildlife research field methods, study design, life history traits, and the importance of long-term study and monitoring.

In addition, students often participate in literature searches and data analysis. Occasionally, they take the lead in their own projects. A typical internship lasts one field season.

Interns Adam Eckert and Sarah Stephenson

Intern Sara Stephenson heads up a rope dragging effort looking for Short-eared Owls

We hosted interns Adam Eckert and Sara Stephenson from Principia College in Elsah, IL. They spent six weeks with us this past summer participating in field research, equipment and building maintenance, dietary analysis, searching local barns, and conducting public outreach. We enjoyed their energy and appreciate their efforts.

We also hosted volunteer intern Simone Welch (above), an environmental education teacher from the International School, Netherlands, on our Snowy Owl project in Barrow, AK. Simone worked hard and was very competent in the field. She also assisted with the Snowy Owl camera and public outreach. She used this experience to teach her classes about Snowy Owls and Arctic animal ecology. We are grateful for her hard work.

Day in the Field. For over 20 years, we have donated a Day in the Field with researchers. ORI provides an opportunity for the public to join us for a day. These donations typically go to schools, community groups, and charitable fundraisers. Charitable groups receive the donation and we provide donors with a day in the field, observing and learning about research, natural history, and wildlife conservation. In 2014, recipients included: Glacier National Park Conservancy, MT; Green Mountain Conservation Group, NH; Western Reserve Land Conservancy, OH; KUFM Montana Public Radio/NPR; Salish Kootenai College Public TV, MT; Whitefish Winter Classic - For the Children, MT.

Day in the Field With Former National Football League Star.

Husband and wife Doug Betters and Jennifer Prendergast of Whitefish, MT, along with friends, joined the ORI for a day in the field this past spring. Doug (formerly #75), at 6'7" and 270 pounds, played his10-year professional football career with the Miami Dolphins.

He played in Super Bowls in 1983 and 1985 and was the NFL's Defensive Player of the Year and selected to the All Pro Team in 1983. In 2008, he was inducted into the Miami Dolphins Ring of Honor. At the induction ceremony, former Miami Dolphins Head Coach Don Shula said, "No one has a bigger heart than Doug."

In 1998, Doug had a life-changing skiing accident and is now a quadraplegic.

Doug and Jennifer had this to say about their Day in the Field: "We joined ORI in the field this past spring and that one day with the ORI team opened our eyes to the importance of owls and the work that the ORI is doing.

"We were amazed at the knowledge the ORI has gained through their research. They're expanding our knowledge of owls – not just here in Montana, but globally as well. We took away from the experience a new-found admiration for these fascinating birds. ORI made us owl fans for life!"

Doug added, "Being confined to a wheel chair and still having the opportunity to spend a day in the field with researchers was a unique and fun experience."

The ORI donated a Day in the Field for the 29th Whitefish Winter Classic – For the Children. This charitable event was founded by Doug. Its mission is to provide financial assistance for children of Montana families in need of pediatric medical care outside the state.

Today Doug and Jennifer live in Whitefish, MT, where they continue their charitable efforts.
(For more information, see www.whitefishwinterclassic.org)

Denver Holt, Doug Betters and Jennifer Prendergast

Long-eared Owl in flight

Photo by Paul Queneau

EDUCATION

Classes, Lectures and Media Programs

■ Field Classes: Five Valleys Audubon, MT; Grizzly Peak Retirement Home, MT; Montana Academy Youth Home; Montana Natural History Center; Montana Audubon; Northwest Outdoors Writers Association; USFWS North Slope Science Culture Camp, Barrow, AK; YWCA GUTS, MT; Coeur d'Alene Audubon, ID; Glacier Institute, MT; Salish Kootenai College Field Methods class, MT.

■ Indoor Lectures: Bitterroot Audubon, MT; Flathead Valley Audubon, MT; Montana Natural History Center; Missoula Children's Museum, MT, Green Mountain Conservation Group, NH; Grizzly Peak Retirement Community, MT; San Diego Bird Festival, CA; Yellowstone Valley Audubon, MT; Lone Pine State Park Raptor Day, MT; Frenchtown School's Sciencepalooza, MT; Confederated Salish & Kootenai Tribes Community Bird Festival, MT.

■ Professional Talks: Mountain Bluebird Trails 40th Anniversary Banquet, Ronan, MT; Raptors of the Northwest Symposium, Pasco, WA; Montana Wildlife Society, Bozeman, MT; Raptor Research Foundation, Corpus Christi, TX; Waterton-Glacier International Peace Park Celebration, Kalispell, MT.

■ Interviews: We participated in Winston Greely's "Outdoor Report"; "The SciShow", youTube; Cornell Lab's "Living Bird" Magazine; Missoula Independent newspaper; Distill Productions' "Epic Montana" documentary.

■ Publications: We authored and coauthored a few manuscripts published in late 2013 and 2014, and some in press for 2015. We have now published about 100 manuscripts that vary from descriptive, inferential, theoretical, and experimental research. We have also authored and coauthored several Birds of North America owl species accounts, book chapters, children's books and technical reports.

If you are interested, you can find the recent manuscripts at the following:

Seidensticker, M.T.; D.W. Holt, and M.D. Larson. 2013. Breeding Status of Flammulated Owls in Montana: With a Call for Research. Northwestern Naturalist 94:171-179.

Holt, D.W.; J.L. Yuxó, S. Hiro, and O. Méndez. 2014. First Evidence of Stygian Owls Nesting in Guatemala. Spizeatus 17:14-17.

Booms, T.L.; G.L. Holroyd, M.A. Gahbauer, H.E. Trefry, D.A. Wiggins, D.W. Holt, J.A. Johnson, S.B. Lewis, M.D. Larson, K.L. Keyes, and S. Swengel. 2014. Assessing the Decline, Status, and Conservation of Short-eared Owls in North America. Journal of Wildlife Management 78:1-7.

Holt, D.W., M.D. Larson, N. Smith, D. Evans. The Snowy Owl (Bubo scandiacus). In press. The Birds of North America (A. Poole, Ed.). Ithica, NY: Cornell Laboratory of Ornithology.

Holt, D.W.; M.L. Mull, M.T. Seidensticker, M.D. Larson. 2015. Sexing Long-eared Owls Using Plumage Color. In press. Journal of Raptor Research.

Students dissecting pellets at Frenchtown Sciencepalooza

In the field with Distill Productions

CONSERVATION ISSUES

Natural Cavity Nesting Owl Species and Forest Management.

Photo by Adam Eckert

Finding natural cavities used by small obligate cavity nesting owls is labor intensive. Indeed, few nests have been found in Canada and the United States. Each spring we scour study sites, inspecting countless trees and looking into hundreds of nest holes in search of cavity nesting owls.

Over the past 30 years, however, the ORI and collegues have collectively documented natural nest sites for five species of small cavity nesting owls. We have found over 100 natural nest sites for these species, which are some of the largest sample sizes for North America.

Our data indicate that several of these species have specific nest site needs. These findings demonstrate the importance of retaining a diversity of snags and cavities. In turn, protecting a diversity of snags would benefit a host of other snag-dependent wildlife species.

We encourage other researchers to locate natural sites, as well. If we only conduct studies at nest boxes, then we will fail to identify trees needed to be preserved for obligate cavity nesting owls. We may also consider using guidelines or standardization for nest box placement. These small cavity nesting owls could be used as indicators of healthy forests, and indicators of adequate snag density and diversity, for snag-dependent wildlife species.

Rangeland and Grassland Conservation and Open Country Species of Owls.

North American grasslands and rangelands, such as coastal dunes, prairies, deserts, savannahs, chaparrals, sagebrush, and arid scrublands, have experienced dramatic changes. In fact, about 99% of North American tall-grass prairies have been lost or transformed by human activities, while 50% of wetlands have been drained or filled. Today, extensive monoculture farming, unmanaged grazing, invasive weeds, natural resource development, urban development, pollution, climate change, and a host of other activities have left Americans with a fraction of our original open country landscapes. Almost the entire suite of open country wildlife species are declining at a faster rate than species in other habitat types.

For open country species of owls, there is strong evidence of declining populations for Barn, Burrowing, Long-eared and Short-eared owls. In many areas of Canada and the United States, Barn Owls have declined due to loss of habitat, construction of new owl-proof barns, and poisoning of rodents the owls eat. Burrowing Owl populations have also declined and this is directly related to habitat loss for owls and the Prairie Dogs they depend on for nest burrows. In Canada, Burrowing Owls are almost gone.

North American Long-eared Owl populations were estimated at 15,000 individuals, with 9,000 in Canada and 6,000 in United States. This is the lowest estimate for any owl species whose distribution is primarily Canada and the United States. (See Table 1, pg. 6) North American Short-eared Owl populations have experienced 70-80% declines. This is also linked to habitat loss for the owls and their prey.

Given the status of these owl species, we suggest that states and provinces begin immediate surveys of appropriate habitats for these open country species. Because of their position as top predators, each species is a potential indicator of grassland and rangeland community health. Given that owls are one of the most popular groups of animals in the world, they may be the best group of animals to create awareness for conservation.

CONSERVATION ISSUES

Arctic Wildlife Conservation. The climate is changing, but how this change will affect the Arctic ecosystem over time remains speculation. There is much conversation regarding Polar Bears and Snowy Owls, as they are two of the most high profile species, and generate public interest, sympathy, and support. They are also viable candidates as indicators of Arctic health, in both marine and terrestrial ecosystems. However, the Arctic ecosystem maintains about 25-30 species of obligate Arctic animals, not including fish. These species do not migrate to warmer climates, but rely on the Arctic marine and terrestrial environment for most of their lives. Most are mammals, with about half terrestrial and half marine. They include: Alaska Marmot, Arctic Hare, Arctic Fox, Bearded Seal, Beluga Whale, Bowhead Whale, Caribou, Collared Lemming, Hooded Seal, Muskox, Polar Bear, Ringed Seal, Walrus, and others. Other species are also linked to the Arctic, but their habitats include Arctic, Sub-Arctic and Temperate zones. These species include Arctic Ground Squirrel, Brown Lemming, Collared Pika, Dall Sheep, Ermine, Gray Whale, Wolverine, and others. Birds, too, call the Arctic home. Many waterfowl and shorebird species breed during Arctic summer, yet migrate to avoid Arctic winter. Others species, such as Snowy Owl, Willow Ptarmigan, Rock Ptarmigan, Snow Bunting and Raven, can do both. Some species may benefit from climate change, while others may not. There are also other pathways to think about, among them: how will climate change affect oceanic and terrestrial food webs, permafrost, water temperature and chemistry, and vegetation? It's unlikely we'll prevent climate change or even slow it, so we must be prepared to adjust and document wildlife responses.





Photos by Daniel J. Cox/Natural Exposures.com

CONSERVATION ISSUES

Wildlife Watching & Wildlife Conservation

When not researching owls, ORI staff has guided wildlife watching tours for many years. In doing so, we often speak about the economics of wildlife watching and how this can spread to wildlife conservation. In the last assessment in 2011, U.S. Government Economic Input-Output Models were used to generate the following results on related expenditures of wildlife watching on federal, state, and local economies.

In 2011, there were 71.8 million wildlife watchers (30% of U.S. population), 33.1 million fisherman, and 13.7 million hunters. Wildlife watchers generated $54.9 billion, fishing $41.8 billion, and hunting $31.7 billion in expenditures. The $54.9 billion generated by wildlife watchers resulted in $142 billion in industry output, far outnumbering fishing and hunting. Interestingly, that's twice the combined revenue of all sporting events in the U.S. in 2011. In fact, $1.00 of wildlife watching turns into $1.59 in economic activity. If wildlife watching were a business, it would have ranked 44th on the Forbes 500 list in 2011. Consequently, wildlife and habitats are worth conserving for the economy, as well as being a civic responsibility.

See USFWS Reports on Hunting, Fishing, Birding, and Wildlife Watching in the U.S. Reports can be found at http://wsfrprograms.fws.gov/Subpages/NationalSurvey/reports2006.html

NATURAL HISTORY TOURS

Our affiliate, Wild Planet Nature Tours, provides the following tours, led by Denver Holt, Megan Fylling, and Matt Larson and other qualified guides:

WINTER RAPTOR WORKSHOP
Western Montana
GUATEMALA
Antigua, Tikal, and more
MONTANA OWL WORKSHOP
Western Montana
ALASKA
The North Slope of Alaska at Barrow
WHERE THE DESERT MEETS THE SEA
La Paz, Baja California, Mexico
YELLOWSTONE NATIONAL PARK
Yellowstone National Park, Montana

WILD PLANET nature tours

All Photos by Daniel J. Cox/Natural Exposures.com

- Dates announced later. See www.wildplanetnaturetours.com.
- Most tours cater to small groups and individuals.
- Denver, Megan and Matt also guide a few specialty tours and an owl education workshop for Victor Emanuel Nature Tour Company, Austin, TX. VENT is the largest nature tour company in the world. See www.ventbird.com.

For more information, visit www.wildplanetnaturetours.com.

CONSERVATION PARTNERSHIPS

Ultimately, conservation is about land preservation and stewardship. To reach these goals, communication is essential in dealing with agencies, as well as the public. Our partnership with the groups listed below exemplifies our commitment to work together. Our information is available to groups wherever we work, and to any interested parties throughout the U.S. and world. Professional partners include:

Alaska

Alaska Department of Fish and Wildlife. Permits and research sharing for Snowy and Short-eared Owls.
North Slope Borough, Department of Wildlife. Information sharing.
Ukpeagvik Inupiat Corporation (UIC). Land access, permits, and housing.
Umiaq (UIC). Permits, office, housing and logistical help.
US Fish and Wildlife Service. Information sharing.

Montana

Avian Science Center, University of Montana. Provides volunteer field assistance, and working to establish cooperative projects.
Bureau of Land Management. Permits, land access, information sharing.
Flathead Indian Reservation. Permits, land access, information sharing, interns.
Glacier National Park. Permits, land access, information sharing.
Marshall Woods Project. Cooperative partnership with U.S. Forest Service and Lolo Restoration Committee for forest restoration efforts and conservation in the Rattlesnake National Recreation Area.
Montana Bird Conservation Partnership. A state run collective group that disseminates information and suggest strategies for bird conservation.
Montana Fish, Wildlife and Parks. Permits, land access, information sharing.
US Fish and Wildlife Service. Permits, land access, information sharing.
US Forest Service. Permits, land access, information sharing, research funding.

Private Landowners

A special thanks for allowing our research and education programs to be conducted on your lands. We research owls and teach many education programs on private lands. Without permission from these land owners, much of our research could not be conducted. Currently, approximately 60% of the land in United States is privately owned. Consequently, land owners have enormous potential to conserve wildlife and habitats. We are grateful for access to their lands. We are especially grateful to Fred Deschamps, Darrel Osler, Flathead Indian Reservation, and Ukpeagvik Inupiat Corporation (UIC) for allowing us to set cameras on their land.

OTHER PROFESSIONAL PARTNERSHIPS

Cornell Lab of Ornithology. One of the top ornithological research groups in the world. We are working closely with them on the Snowy Owl live cam and articles for their Living Bird magazine.

Distill Productions. A commercial and documentary production company helping organizations define their brand. The ORI and Distill have finished our first clip describing the ORI's research mission. The title is "Owls Of Montana - Species and Adaptations". You can look for the"Epic Montana" clip on youTube: https://www.youtube.com/channel/UCo5W9_LkAdpGVSDD7JEl1nA or through our website www.owlinstitute.org. This project was funded in part by the Montana Film Office. See www.distillproductions.com

Explore: Pearls of the Planet. Part of the Annenberg Foundation to provide a visual recognition of our planet's natural resources. The ORI and Explore are using live cameras to study and inform the public about the secretive life of owls. See www.explore.org

Montana Conservation Corps. MCC visited the ORI for two days of maintenance of buildings, general clean-up, and construction of nest boxes.

Natural Exposures. Dan and Tanya Cox generously share their award winning wildlife photographs for our publications and presentations. See www.naturalexposures.com. Dan and Denver are also working on a Snowy Owl book and video. Some of this information will be in Dan's Arctic Documentary Project .

Owl Book Project. We provided photographer Paul Bannick with an opportunity to photograph Snowy Owls at our Barrow site. Over the past several years, Paul has visited several of our study sites to photograph owls. Paul is working on a photographic book of North American owls.

Victor Emanuel NatureTours. VENT is the largest nature tour company in the world. They have generously agreed to invest a portion of their proceeds to our education programs.

LIVE OWL CAMS

This was our second collaborative season working with conservation partner Explore (www.explore.org). We launched three live web cameras in 2014. For the second season in a row, we set cameras on Great Horned Owl and Long-eared Owl nests in western Montana. The cameras were outfitted with infra-red systems and microphones. As in 2013, hundreds of thousands of people viewed the footage, and we were once again able to peer into the lives of these owls around the clock.

We also set a live camera on a Snowy Owl nest in Barrow, AK. We believe this is the first ever for this species. Camera specialists Tim and Tiffany Sears, of IP Video Specialists (www.ipvsinc.com), along with ORI crews, braved the 20-degree weather over several days to complete the operation. We then worked closely with Explore and Cornell Lab of Ornithology.

We were all overwhelmed with the immediate response to the Snowy Owl camera. Within the first week, the camera attracted over 200,000 web visits. Cornell recorded tens of thousands of visits to the Snowy Owl social media sites. We even answered viewers' questions during two one-hour live chats from the tundra by iPhone, with Cornell Lab.

Live Owl Cam photos courtesy of Explore.org

Long-eared owl female and chicks

Setting up the Great Horned Owl cam

As with the Great Horned and Long-eared owl cameras in 2013, we gained much insight into parental behaviors of the male and female Snowy Owl. For example, we observed the female move her family behind the nest mound for many days to protect them from strong, cold easterly winds. This is a rarely observed behavior.

We are in the midst of communicating with a PhD candidate from Cardiff University, Wales, who is interested in working with our archived footage from these nests.

These cameras joined the collection of fascinating wildlife cameras that Explore has initiated worldwide as part of its "Pearls of the Planet" series. This series has given the ORI a new avenue to share our research with the public and provide wildlife education. We look forward to continuing this partnership and providing this service in 2015. Visit our website for the latest news about our owl cameras. Excerpts can still be accessed by visiting the Explore site.

Great Horned Owl

Northern Saw-whet Owl

Flammulated Owl

Long-eared Owl

Snowy Owl and chicks

Short-eared Owl

Northern Hawk Owl

Boreal Owl

Table 2. Population estimates of other species of birds that have received conservation attention. Note the Long-eared Owl U.S. population estimate.

Common Name	Scientific Name	N.A. Estimate	U.S. Estimate
Flammulated Owl	*Psiloscops flammeolus*	12,000	12,000
Burrowing Owl	*Athene cunicularia*	700,00	700,00
Spotted Owl	*Strix occidentalis*	15,000	
Long-eared Owl	*Asio otus*	15,000	6,000
Short-eared Owl	*Asio flammeus*	600,000	20,000
Greater Sage Grouse	*Centrocerus urophasianus*	150,000	
Golden Eagle	*Aquila crysaetos*	130,000	80,000
Swainson's Hawk	*Buteo swainsoni*	540,000	420,000
Piping Plover	*Charadrius melodus*	8,000*	
Mountain Plover	*Charadrius montanus*	<9,000*	
Long-billed Curlew	*Numenius americans*	20,000 - 50,000*	109K - 150K**
Black Swift	*Cypseloides niger*	70,000	13,000
Lewis' Woodpecker	*Melanerpes lewis*	70,000	70,000

* American Bird Conservancy's Guide to Bird Conservation 2010. ** Stanley and Skagen 2007

BUILDING MAINTENANCE SPONSORSHIP

We are upgrading buildings, and would like to hear from any individuals, corporations or foundations interested in sponsoring the upgrades. The farm house needs energy efficient windows, and some foundation work. An energy efficient wood stove is desirable. A new roof is needed on the barn. Please contact ORI if interested in a sponsorship.

Photo by Ronan Dugan

Photo by austin.trayser@blogspot.com

TRAPPING STATION SPONSOR OPPORTUNITY

Due to high costs, we are asking for a corporation, foundation, or individual to sponsor the Northern Saw-whet Owl migration sites for 2015. The sponsor would be recognized only if they are willing, and thus the site would be honored in their name. Contact ORI if interested.

2014 WISH LIST

In addition to donations and grants,
the ORI is in need of other contributions.

Our wish list for 2014 includes:

- ATV – 2 newer four-wheelers
- Books, journals, wildlife art
- Camper trailer (newer model)
- Flatbed ATV trailer (heavy-duty)
- Snowmobiles & trailer (newer models) or snowmobile rental
- Vehicle (fuel efficient)
- Wall tent (large)

Our programs would not be possible without your generosity.

Look for ORI on:

Corporate Sponsors

ConocoPhillips, AK
D.H. Griffin Contracting, SC
Kettle House Brewing, MT
Natural Exposures, MT
Patagonia, MT
Ukpeagvik Inupiat Corporation (UIC), AK
Umiaq (UIC), AK

Foundation Sponsors

Amber Foundation
American Express Giving Program
Annenberg Foundation
Banbury Fund
Bobolink Foundation
Bucher Family Trust
Cinnabar Foundation
Charlotte Y. Martin Foundation
Community Foundation of North Texas
Fanwood Foundation
Fidelity Charitable Gift Fund
Glacier National Park Conservancy
GlaxoSmithKline Foundation Matching Gifts
Hess & Helyn Kline Foundation
Jerry Metcalf Foundation
JP Morgan Chase Foundation
Kendeda Foundation
Lawrence Foundation
Microsoft Matching Gifts Program
My Good Trust
Norcross Wildlife Foundation
Pleiades Foundation
Seligson-Johnson Foundation
William H Harris Foundation
Woods Foundation

Government Sponsors

Flathead National Forest, MT
Glacier National Park, MT

NonProfit Sponsors

Five Valleys Audubon, Missoula, MT
Mission Valley Audubon, MT
Montana Audubon Wildlife Fund, MT

Wall of Support

To secure your name on the Wall of Support, please fill out and return the form below. Complete the form exactly as you wish it to appear on the wall. We will use the weathered exterior wood siding from one of our buildings for your name. When the barn renovation is complete, the Wall of Support will be constructed. There are four size categories to choose from for your donation: $100 = 2"; $250 = 3"; $500 = 4"; and $1000 or more = 5". Included with a $1000 donation is an animal and/or plant of your choice.

Name_____

Size: 2"_____ 3"_____ 4"_____ 5" _____

Animal, Bird, Plant _____

Donation amount enclosed $_____

Address_____

City _____

State_____ Zip_____

Phone ( )_____

Email _____

Location of the Owl Research Institute and the Ninepipes Center for Wildlife Research & Education

NOTE ABOUT SPONSORSHIPS: In our newsletter, our practice is to recognize only businesses, nonprofits, foundations, and agencies. We do not list individual names as a courtesy to our constituents, for many wish to remain anonymous. Only in special cases, and with permission, do we list the names of individuals. On the Wall of Support, however, we will list all sponsors, individual or otherwise. This decision ensures a certain measure of privacy.

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