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RAPTOR VIEW RESEARCH INSTITUTE

Winter 2014



THE FLYWAY

A Newsletter of The Raptor View Research Institute

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We are a 501(c)(3) non-profit organization. We hope that you will consider us for a tax-deductible contribution. Your support is needed and ensures the continuation of our research, conservation and education programs. Thank you.

MESSAGE FROM THE PRESIDENT



Welcome to Raptor View Research Institute's (RVRI) annual newsletter. It has been ten years since our inception which, frankly, is difficult for me to conceive! It seems like only a few short years ago we formed RVRI to pursue our migratory Golden Eagle research along the Continental Divide near Lincoln, Montana. That said, ten years sounds about right when I consider all of our accomplishments, past and current projects, and exciting new studies on the horizon.

Indeed, we have been busy; from our Swainson's Hawk and Osprey studies, our Nora Ridge/Rogers Pass Golden Eagle/raptor migration project, and, more recently, our exciting research collaboration with the MPG Ranch, we are on-the-go 24/7, continually learning, having fun, and sharing our work with people of all ages and backgrounds.

As apex predators, raptors feed atop the food-web and thus serve as important bio-indicators (like canaries in the coalmine) of ecosystem health and change. Making our data available through scholarly journals and other outlets will aid educators, conservationists, land stewards, industry and others in making sound land management decisions.

I have kept my letter brief so readers would go directly to the content of this newsletter. Whether you read through it in its entirety, or simply page through it, you will find that we continue to do our best and stay true to our mission. Of special note, five of our projects have matured to a point where we have submitted and/or published our findings in scientific journals. Additionally, after an eight year absence, we are back at Rogers Pass, where it all began for RVRI! You can read more about those projects, publications and more in the body of this newsletter.

In closing, I trust that you are pleased with our accomplishments. We have worked tirelessly to reach this point in our development and look forward to the next ten years. To that end, we hope you will consider us for a tax-deductible contribution. Your support is needed and ensures the continuation of our research, conservation and education programs. Thank you.

Sincerely,



Raptor View Executive Director Rob Domenech with Golden Eagle

SWAINSON'S HAWK NESTING PROJECT



During the spring and summer of 2014, with much help from Ken Furrow of Furrow Productions, and numerous landowners, we conducted our ninth survey for Swainson's Hawks (SWHA) nesting in the Missoula Valley.

Since 2005, we have identified 17 SWHA territories (areas where one or more adults are observed throughout a breeding season) in our study area. This year we encountered SWHAs on 7 of these territories, and documented nesting efforts on five. Unfortunately, two of these nests failed, and the three successful nests fledged a total of just five young. This year's occupancy and productivity rates were similar to 2012 and 2013, but a marked decrease from 2006, when we recorded 17 successful fledglings from a total of ten active nests. This downward trend in occupancy and productivity is troubling, especially when we consider that our knowledge of territories, survey efforts and area covered is greater than ever. We will continue working hard to better understand our Missoula Valley SWHA population, and determine what factors influence nest site selection, productivity, as well as nest failures and abandonment.

We have banded 57 individuals and marked 46 with uniquely color-coded leg bands. In 2014 we re-sighted one "new", or previously not re-encountered, color-banded SWHA, bringing our total to 18 re-sightings. This gives us a 39% overall encounter rate. Colored bands allow us to identify hawks from a distance, and keep tabs on their breeding behavior, survivorship, territoriality, nest site and mate fidelity.

Natal Dispersal Records

To date, we have recorded six natal dispersals. Historically, ornithologists debated whether or not birds return as adults to their natal ground to nest, or simply find suitable areas elsewhere. SWHAs are known to be faithful to their natal grounds and now, through color banding, we are excited to see that behavior in our Missoula Valley population.

Orange w/black zigzag (left leg) was banded at the now defunct Wal-Mart territory in 2006 - the last year the territory was active. This female was re-sighted at the Saunders Territory in 2011 where she and her un-banded mate successfully fledged one youngster. She has not been seen since.

Blue w/white zigzag (right leg) was banded as a nesting in 2006 at the Moccasin Road nest site, which has not been active since 2007. This male was observed in 2013 with a "metal only" female, who was likely captured before we started using color bands. They nested in a mature Douglas Fir. Unfortunately, shortly after they laid eggs, a new house construction project broke ground directly under their nest tree. The disturbance was more than they could tolerate and they abandoned their nest and young nestlings. In 2014, we were surprised when he and his mate returned to the same nest tree and successfully fledged two young.

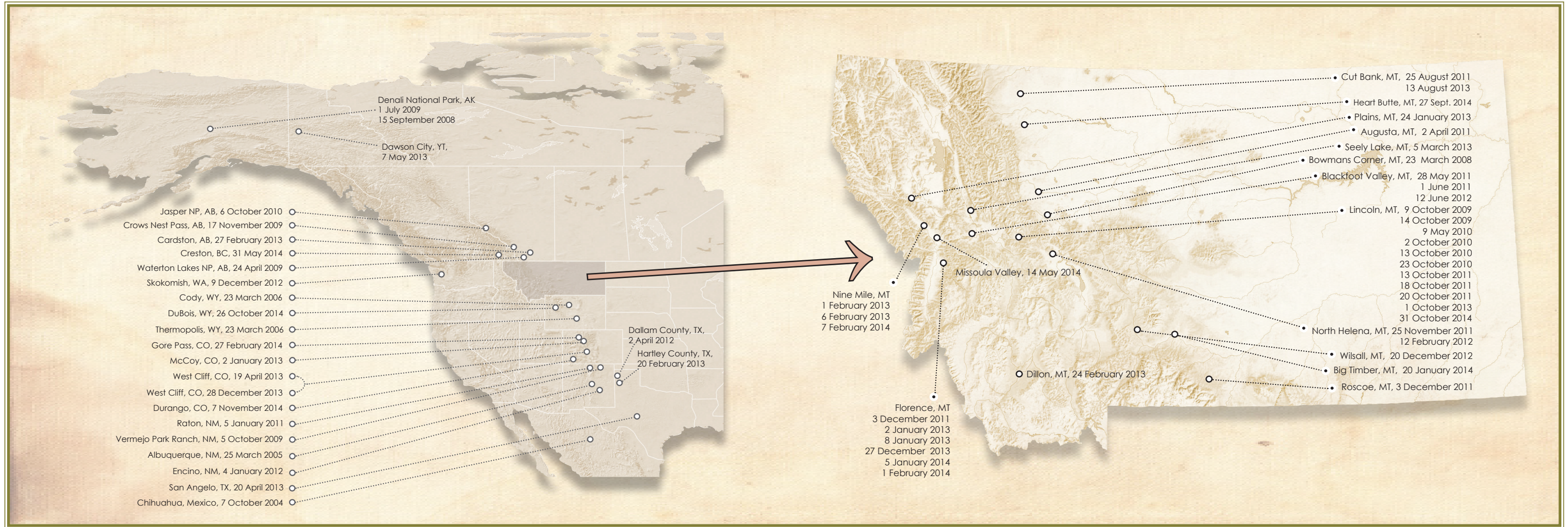
Blue w/white zigzag (left leg) was banded in 2006 and sibling to blue w/white zigzag (right leg). We spotted this hawk numerous times near the Valeo Ranch in 2009 and 2010, and though it was definitely holding the territory, we detected no evidence of successful breeding.

Black with white polka dots (left leg) was banded as a nestling in 2008 at the Lucier territory. This season, we re-sighted him for the first time, with a female that was banded as an adult in late August, 2011 near Frenchtown (green/yellow (right leg), black/metal (left leg). The pair held the 44 Ranch Territory; even though we observed mating and courtship behaviors throughout the early part of the season, we were unable to confirm nesting. It is possible they nested on Missoula International Airport grounds, which is off limits for surveys.

Green/metal (left), blue/Yellow (right), was banded in 2010 shortly after fledging on the 44 Ranch territory. She was re-sighted on Loisselle Lane territory in 2013. We did not see her with a male and the territory remained vacant. She was observed only once.

Nest mate to the hawk above, blue/metal (left), green/black (right) was re-sighted on Mullan Road, near Frenchtown in 2014 with an un-banded dark morph female. We have observed SWHA pairs in this area before, but have never been able to locate a nest, or confirm successful breeding.





RVRI has been applying vinyl wing-tag markers (blue with white numbers) on Golden Eagles since 2004. To date, we have wing-tagged over 250 migrant eagles at our banding stations. This technique is proving considerably more effective than banding alone as a means of identifying individuals and receiving re-encounter information.

This year, eight of our wing-tagged eagles were observed, bringing our total number of wing-tag encounters to 46. These sightings help us learn where these individuals winter and summer, how far they travel, how long they live, as well as the causes of Golden Eagle mortalities. We feel fortunate to get these glimpses into the lives of these individuals, and hope to better understand the migratory ecology for the species as a whole.

Finally, and perhaps most importantly, is the picture emerging on our wing-tag encounter map. Many of our eagles are re-sighted along the Rocky Mountain Front (RMF) where the convergence of the Great Plains and the Rocky Mountains creates an obvious migration corridor from northern Canada to central Mexico. We already know from migration count data, the critical importance of the northern RMF, stretching from northern Canada to west-central Montana. Our encounters along the southern RMF suggest this region is also very important for migrating and wintering Golden Eagles.



EDUCATION



RVRI continues to offer free, hands-on outdoor educational workshops for local school groups, youth homes, college students, community organizations, the general public, and for charitable events. We feel that 'the informal, non-traditional classroom' is a great way to augment conventional approaches to learning, while exposing students to a very unique outdoor education experience. We are able to involve students from a variety of backgrounds and circumstances in all aspects of raptor research, and introduce them to key ecological principles, raptor ecology, and conservation biology.

Participants in our educational programs include:

Audubon Society, Missoula Youth Homes (MYH), Seeley-Swan High School, Potomac School, Willard Alternative High School, Flagship Youth Program, WORD (Summer Arts and Leadership Camp, Learning Times Child Care), Clark Fork Watershed Education Project, Natural History Center, and others.

All the participants of our programs experience a unique view into wildlife research and conservation that few people ever see. We feel this particularly important with the kids, as we instill in them an appreciation for the often misunderstood 'bird of prey.'

Day in the Field

RVRI donates a day in the field for local community fundraisers, charitable events and other non-profit organizations. The day is spent working with RVRI biologists on one of our research projects. Participants assist directly in all aspects of our field work. We enjoy sharing our research and are glad we can help.

Groups and charities include: The Natural History Center, AniMeals, Missoula Children's Museum, Montana Audubon, Missoula Carousel Association, Footloose Montana, National Public Radio, YMCA, YWCA, Animal Wonders, Humane Society of Western Montana, Traveler's Rest Preservation and Heritage Association, Paxon School (art curriculum fundraiser), U of M Legal Services - Environmental Law Group, The Women's and Children's Alliance of Idaho, and others.



Merlin



Lydia Ruth with a Cooper's Hawk

RESEARCH



FALL MIGRATION AND BANDING RESEARCH FROM NORA RIDGE

This fall we successfully completed our eighth season of research from Nora Ridge along the Rocky Mountain Front (RMF) in west-central Montana. This project is part of an ongoing effort to monitor trends in raptor populations of the northern Rocky Mountains, with an emphasis on Golden Eagles.

The Crew

As always, we had a highly motivated field crew. Biologists included RVRI Executive Director Rob Domenech, Vince Slabe, Stephen "Step" Wilson, Bracken Brown, Beth Mendelsohn, Hannah Beyl and Emma Cox. In addition, the team was joined by two full-time volunteer biologists David Lumpkin and Sara Meicho. Heading-up the Nora Ridge count were raptor migration specialists Fred and Cathy Tilly. In addition, good friend and colleague Jim Lish made the trip from Oklahoma to Montana for his eighth year in a row. We thank everyone, including numerous dedicated volunteers for an amazing job!



Clockwise from top left: Bracken Brown, Beth Mendelsohn, Hannah Beyl, Northern Goshawk, David Lumpkin, Sara Meicho

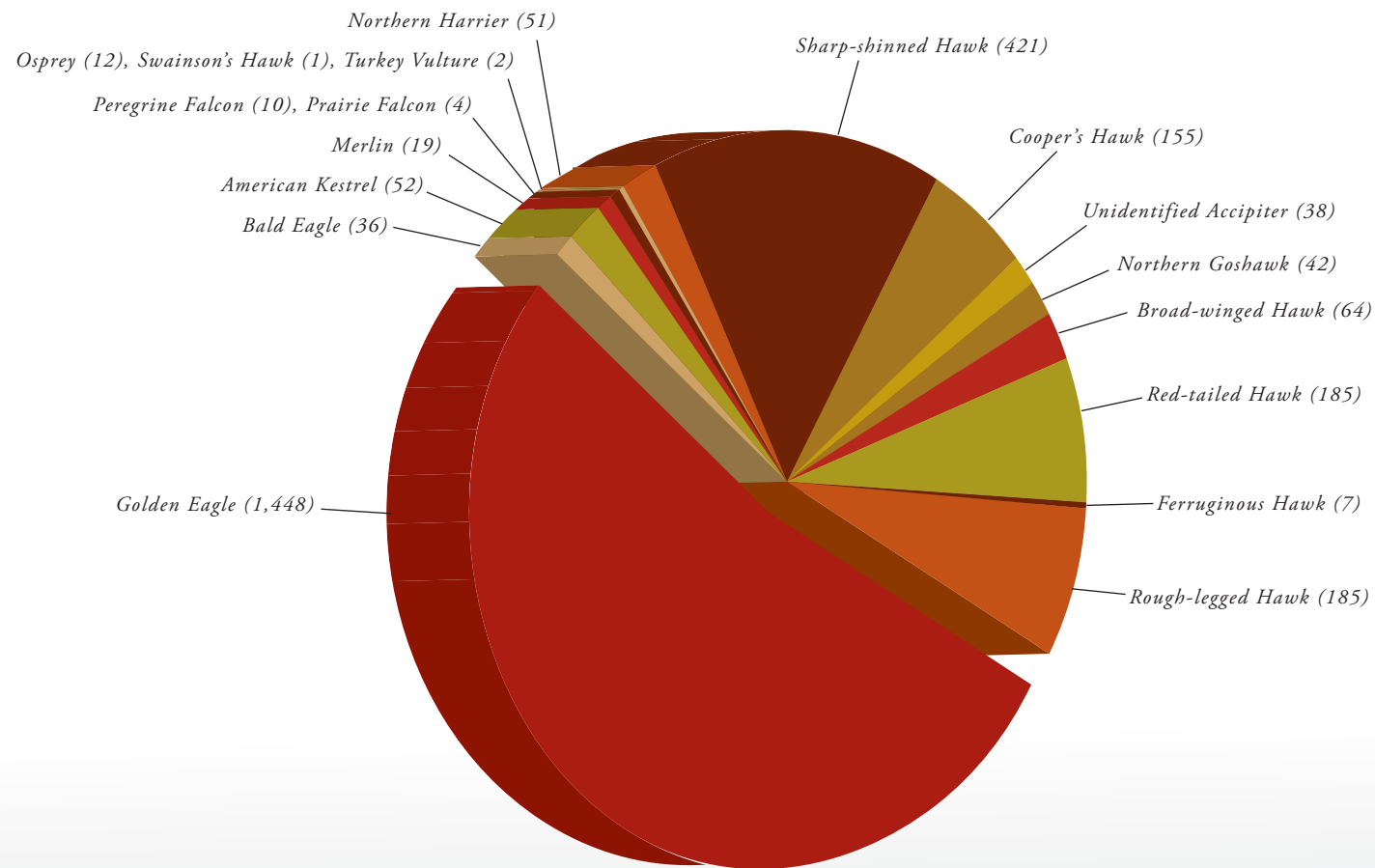
RESEARCH



GOLDEN EAGLE AND FALL RAPTOR MIGRATION COUNT FROM NORA RIDGE

Observations were conducted from September 15th through October 30th. During the 46 day count period, three days were suspended due to unworkable weather conditions. A total of 2,700 raptors were counted in 277 hours of observation (10.1 raptors/hour), comprised of 17 species, including Turkey Vultures. The Golden Eagle total was 1,448. Peak flight days were September 27th and October 10th with 128 and 177 raptors respectively. Golden Eagles comprised 53 percent of all observed migrants.

Golden Eagle (GE): A total of 1,448 were recorded this season between September 15 and October 30. Of the 1,448, 86 were recorded in September and 1,362 in October. Peak counts per day were 91, 147, 107 and 128 on October 10th, 11th, 12th and 14th, respectively. This year's total was 24% above the 2007-2013 average of 1,170, due in-part to very favorable weather and flight conditions throughout the peak Golden Eagle flight.

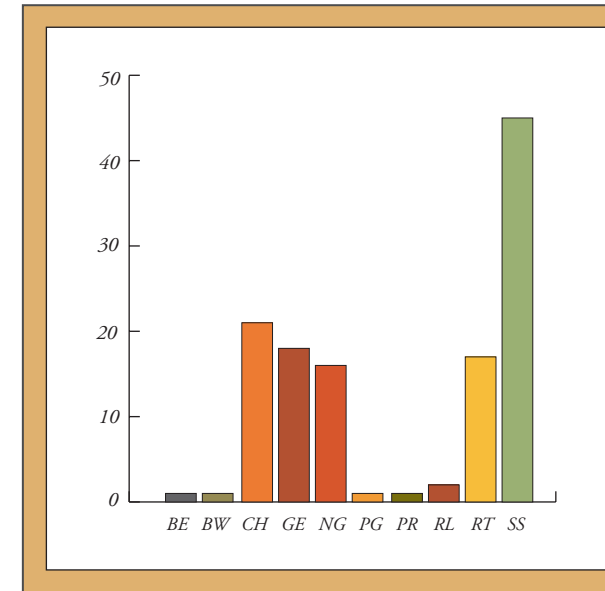


RESEARCH

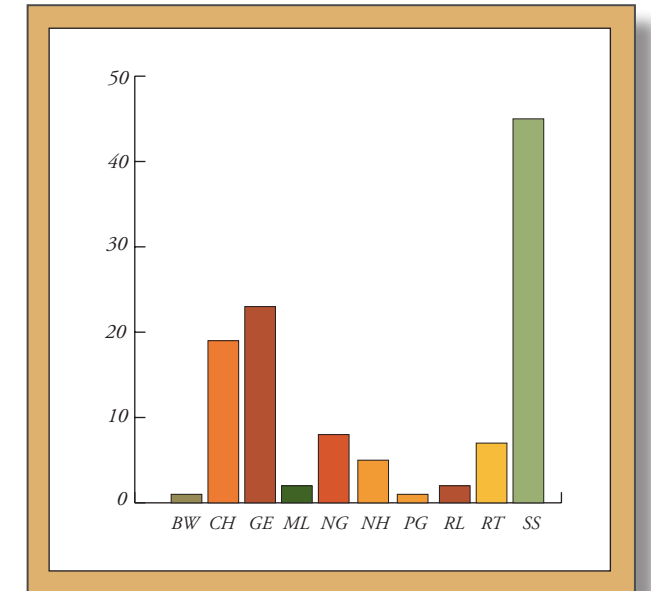


BANDING SUMMARY, NORA RIDGE

Banding took place September 17th through October 21st. We captured 41 Golden Eagles in total - a new season high!



Nora Ridge Capture Summary 2014



Rogers Pass Capture Summary 2014

ROGERS PASS - REVISITED

RVRI was founded in 2004, based on research that originated on Rogers Pass, located 3.5 miles northeast of Nora Ridge along the Continental Divide Trail. This year we returned to Rogers Pass and conducted fulltime observations and trapping for the first time since 2006.

We revisited Rogers Pass to evaluate its potential as a secondary survey location to Nora Ridge, which would benefit our efforts to quantify and index the full breadth of the fall raptor migration through the region. We compared species composition, flight patterns, and total numbers observed at each site, and how any differences and similarities were related to local and regional weather conditions.

Count numbers were similar between both sites, with Nora Ridge edging out Rogers Pass for overall raptor and Golden Eagle totals. Rogers Pass offered closer looks at eagles, however, which better enabled us to classify the age of passing migrants. We are excited about the prospect of merging the counts and garnering the benefits both sites have to offer. Currently, Fred Tilly is conducting a detailed flight analysis to develop the most effective way to combine our efforts at Rogers Pass and Nora Ridge and continue our long-term migration monitoring and banding research.

RESEARCH (CONTINUED)



ADULT GOLDEN EAGLE SATELLITE TRACKING STUDY 2014

While historic threats to migrating eagles (power-line electrocution, lead contamination, poisoning, vehicle collisions, shooting, etc.) persist, many wintering destinations throughout the West have recently seen rapid habitat changes with the oil and gas development boom of the past two decades. More recently, large-scale wind farms have become a concern, as the sweeping blades are known to kill eagles. What effect these facilities may have on the Golden Eagle population is unclear.

Long-term counts of migrating Golden Eagles on the Rocky Mountain Front flyway indicate a 15 year declining trend in fall and spring counts. This trend is more pronounced in the spring, which may be due, in part, to increased mortalities on wintering grounds in the lower 48. Small changes in the mortality rates of long lived, slow to reproduce species, such as Golden Eagles, can have a significant effect on the population. To gain more information, we are using the latest in satellite telemetry technology.



RESEARCH (CONTINUED)



Adult Golden Eagles are far less studied with satellite telemetry than young birds, largely due to the difficulty of capturing wary adults. Juvenile Golden Eagles have a mortality rate estimated to be nearly 70% during their first year of life. Thus, we can learn more about the species' migratory, wintering, and breeding ecology by studying adults, as they are proven survivors.

To date, we have put satellite transmitters on 34 adult Golden Eagles. This year we submitted a paper on the habitat use of wintering Golden Eagles in the western United States. We will expand this dataset and share our findings through peer-reviewed journals. A major goal of this project is to aid industry and land managers in the placement of large scale energy-development facilities. We will better understand the on-going effects of these industries by observing how eagles behave in and around these facilities – some of which are massive.

Our major partners in this project are: The MPG Ranch, Craighead-Beringia South and the Bureau of Land Management. Their support, passion, dedication, and expertise has been essential to the successes of this project. Thank you!





GOLDEN EAGLE RESEARCH PROJECTS 2014

Determining Gender in Golden Eagles (ongoing)

Morphological measurements, such as wing-chord, tail length, body weight, etc., have proven to be reliable indicators in determining gender for several raptor species. Typically in raptor species, females are measurably larger than males when we consider simple descriptors like mass and wing-length. This, however, is not always the case with Golden Eagles. By collecting DNA and comparing it to our suite of morphological measurements, we hope to identify the most accurate technique for sexing Golden Eagles in hand.

Wing Loading (Submitted for publication, in review)

Wing loading, the relationship between weight and wing surface area, is a key aerodynamic feature of flight. It is associated with how a particular raptor species hunts and the types of prey it can capture. Lightly wing-loaded raptors, such as Harriers and Kites, exhibit a slow, buoyant flight with a hunting strategy characterized as "searching." These birds commonly hunt and fly in an energy-efficient manner, not requiring great speed to capture their prey. Heavily wing-loaded raptors, like the Gyrfalcon and Merlin, are known as "attackers." These powerful, high-speed fliers employ a direct pursuit style of hunting, often aimed at swift, larger bodied (relative to their size) prey species. Though a species of tremendous interest, until our study, little was known in terms of where Golden Eagles fit along this spectrum. We determined the wing loading of 33 Golden Eagles and compared individuals by age and gender. Our results indicate wing-loading estimates for adult female Golden Eagles are among the heaviest reported for any raptor, and significantly heavier than other age and gender classes.



Missing talon on Golden Eagle foot



Eagle Lead Project (Accepted for publication - Archives of Environmental Contamination and Toxicology)

Lead has long been documented as a serious environmental hazard to eagles and other predatory, opportunistic and scavenging avian species. Due to lead poisoning in Bald Eagles, Golden Eagles and numerous waterfowl species, the use of lead shot for waterfowl hunting on federal and state lands was banned in 1991. Mounting evidence suggests that the problem persists and the source of the contamination is coming from gut piles left behind by unknowing hunters.

Golden Eagles are opportunistic feeders, known to scavenge and take wounded animals. To date, we have lab analyzed blood from over 250 Golden Eagles and have found that nearly half of our sampled eagles had elevated blood-lead levels. This is a long-term project for which we will continue sampling eagles, while ramping-up our educational outreach. It is our belief, that over time, we will see a decrease in lead levels of our sampled eagles, as people learn more about the health hazards (to humans and wildlife) of using lead based ammunitions for hunting.

Stable Hydrogen Isotope Project (Accepted for publication - Journal of Raptor Research)

Every fall, thousands of northern-latitude raptors migrate through Montana on their annual journey from breeding and natal areas to wintering grounds. We often wonder where regionally these raptors are coming from. Using innovative sampling and laboratory techniques, we can estimate the natal region (not birthplace) of juvenile Golden Eagles. We have found that 66% of our eagles are coming from the Yukon and western Northwest Territories, Canada, to eastern Alaska.

Specifically, we monitor the ratios of an isotope of hydrogen, called deuterium, as the ratio changes consistently with latitude. With this technique we only need a thumb-sized feather sample, which then can be analyzed to determine the ratio of deuterium. By sampling only juvenile birds, whose feathers are grown in the nest, we can estimate the individual bird's natal origin. We completed analyzing the data from 50 fall-migrant, juvenile Golden Eagles and authored a manuscript, which has recently been accepted for publication in the Journal of Raptor Research! At the time of this writing, the publication date had not been finalized. We do know however, it will come out during spring or summer of 2015.



RESEARCH (CONTINUED)



RAPUNZEL

Last October, birders near Surfside, Texas realized the Osprey they were watching sported a colored leg band and a satellite transmitter. Through a network of Osprey researchers, they eventually got in touch with RVRI, and shared their observation. Their pictures gave us our first look at Osprey 54 (named Rapunzel by a few young RVRI volunteers) since she fledged from her nest on the MPG Ranch in 2012. We were thrilled to see her looking so healthy in her adult plumage, and we were told she was very adept at catching fish.

Rapunzel spent a year and a half on her wintering ground along the Gulf Coast. Then, on May 11, 2013, she began her first spring migration journey north. This late of a departure meant she would be unable to breed in 2014, but we were eager to see where she would go. In just nine days she was back in the Bitterroot Valley, just a few miles from the nest where she was born two years earlier. She continued north to Flathead Lake, where she rested for a day before traveling to a spot just north of the Montana-Canada border, near Coumts, Alberta. Five days later, just as Rapunzel seemed to be settling down, she embarked on a 13 day, nearly 2,000 mile loop through Montana, Idaho, Oregon and Eastern Washington. Rapunzel made four looping journeys May 28 – July 16, returning to Alberta each time. On July 20, a couple from Lethbridge, Alberta camping near the Milk River snapped photos of Rapunzel. We were ecstatic to see she still looked terrific despite traveling thousands of miles in a matter of just weeks, and the couple was excited to learn Rapunzel's lengthening history.

On July 27, Rapunzel traveled approximately 40 miles southwest to a spot just east of Glacier National Park, near Cut Bank, Montana. Here she spent the rest of her summer, returning to her wintering grounds along the Gulf Coast of Texas in early September. So far, Rapunzel's exciting story has been featured in the Montana Naturalist, The University of Montana's Vision Magazine, the Cornell Lab of Ornithology's blog, and a children's book by Dorothy Patent. We think seeing Rapunzel raise a brood of chicks next summer would be a great development in her story!



Map of Rapunzel's epic journey of 2014



Rapunzel flying over Aransas Bay, Texas

Greg Lavatay photo

RESEARCH (CONTINUED)



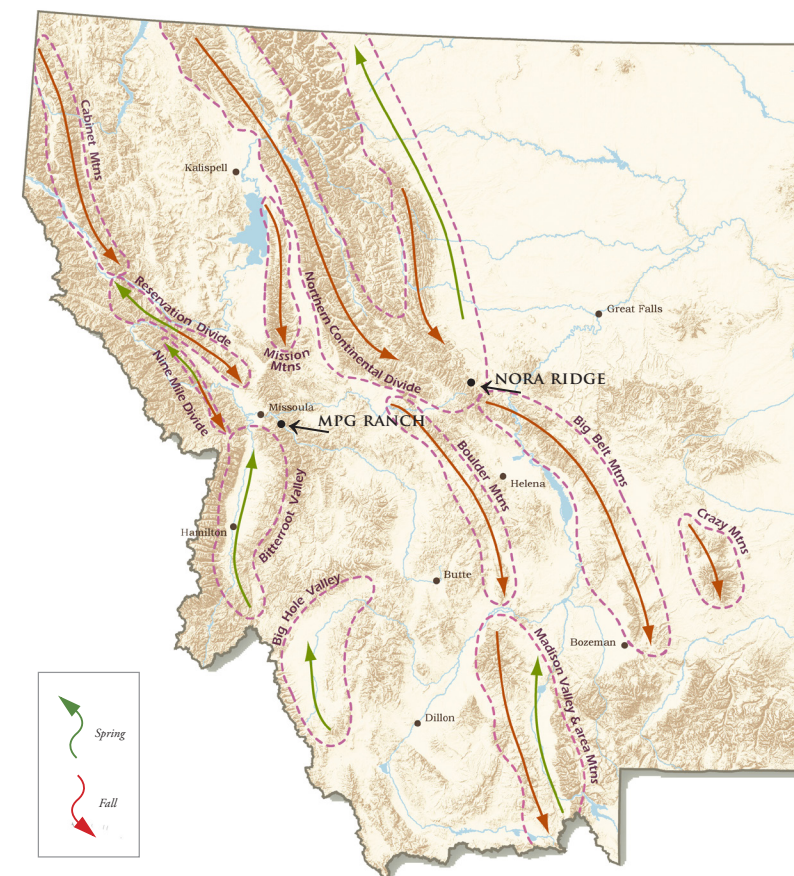
MPG RANCH COLLABORATION

In 2011 we partnered with the MPG Ranch to conduct a variety of conservation based raptor research projects. Located in the north end of western Montana's Bitterroot Valley, the MPG Ranch consists of roughly 10,000 acres of river bottom and coniferous forests, open grassland, and shrub lands. The MPG Ranch owners and staff are working diligently to restore the ranch to historic ecological conditions. As indicator species, raptors can serve as barometers of ecosystem health. By closely monitoring raptor populations on the MPG Ranch, we can help gauge the effects of restorative efforts.

Spring/Fall Migration:

The MPG Ranch has the distinction of being one of only three locations in the West where raptor migration monitoring counts are conducted in both the spring and fall. Since 2011, our counts in both seasons have been impressive in overall numbers and species diversity for the intermountain region of the Rocky Mountains.

We see a higher proportion of Turkey Vultures, Ospreys, Northern Harriers, Red-tailed Hawks and falcons at the MPG Ranch than at Montana's other count sites. Our spring total count was the lowest we have recorded thus far, which may have been due to regional weather events. Though rarely seen at Montana's ridgeline count sites, Turkey Vultures dominated our fall count for the second straight year. Turkey Vultures, Ospreys, and falcons migrate low over the Bitterroot Valley in great numbers; in 2013 we added a second count site at a lower elevation which has greatly improved our ability to detect these birds, increasing our season totals.



Map of Western Montana's Major Raptor Migration Corridors

• MPG RANCH FALL 2014 • RAPTOR MIGRATION COUNT	
Turkey Vulture	1,089
Osprey	84
Bald Eagle	53
Northern Harrier	107
Sharp-shinned Hawk	335
Cooper's Hawk	264
Northern Goshawk	23
Broad-winged Hawk	41
Swainson's Hawk	28
Red-tailed Hawk	816
Ferruginous Hawk	4
Rough-legged Hawk	112
Golden Eagle	44
American Kestrel	310
Merlin	43
Peregrine Falcon	23
Prairie Falcon	24
Unidentified Raptors	160
Totals	3,560



MPG RANCH COLLABORATION

MPG Ranch biologist Eric "Kerr" Rasmussen headed this year's efforts, and worked with an amazing team of counters including: Ben Turnock, Larisa Thomas, Kristina Harkins, Amy Seamen, and John Csoka, Karen Prisby, Zeke Smith, and Breanne Cooney. Our crews braved the elements for over two straight months during spring and fall counts, often scanning the skies for eight or more hours a day. We were very fortunate to have such a great group of individuals; their enthusiasm, work ethic, and positive attitude made each season a success!

Banding Summary, Fall 2014

In addition to counting, we conducted our third full season, fall migration banding effort this year. We banded from September 7th through October 30th, capturing a total of 66 individuals of 10 different species, including 26 falcons!

Resident Raptor Banding:

In conjunction with MPG staff biologists we have been monitoring all known nesting raptors on the MPG Ranch including Golden Eagles, Bald Eagles, Osprey, Northern Harriers, Red-tailed Hawks, Cooper's Hawks, and American Kestrels. Additionally, we have marked over 200 raptors with unique combinations of colored bands so they can be identified at a distance. Re-sightings of color-marked individuals help us assess survivorship and fidelity to breeding areas and mates. The high number of American Kestrels on the ranch (42 territories monitored in 2014) has earned them special attention. Since 2011, we have captured over 150 American Kestrels on the MPG Ranch; over 30% of adults have been re-sighted in subsequent breeding seasons!

Eagle Toxicology Study

Since 2011 we have tested over 50 eagles captured on the MPG Ranch for blood-lead content. Unfortunately, all but four tested higher than what we would expect from background levels alone. Because lead is absorbed into the body from the blood within 2-3 weeks after exposure, our results suggest that Golden Eagles are ingesting lead while in the Bitterroot Valley.



American Kestrel

MPG Ranch along the Bitterroot River

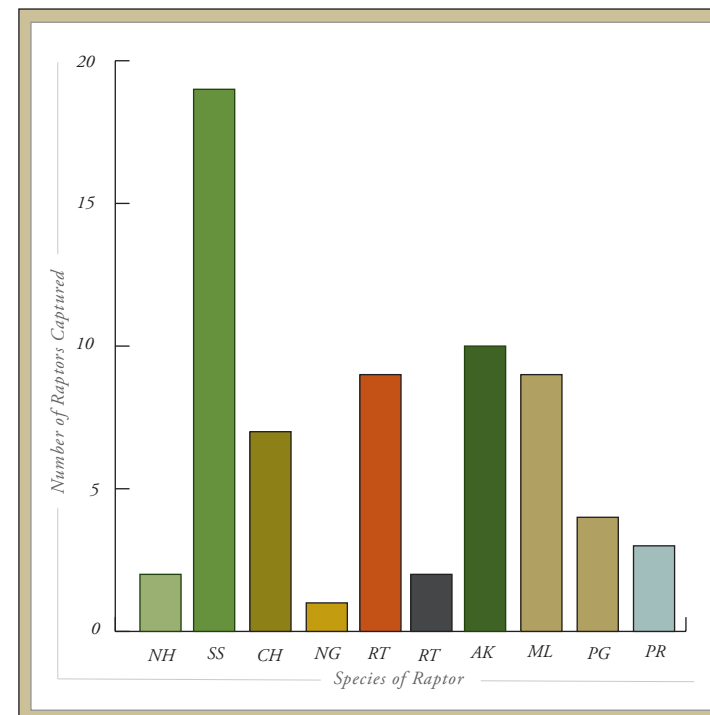


Golden Eagle Satellite Tracking

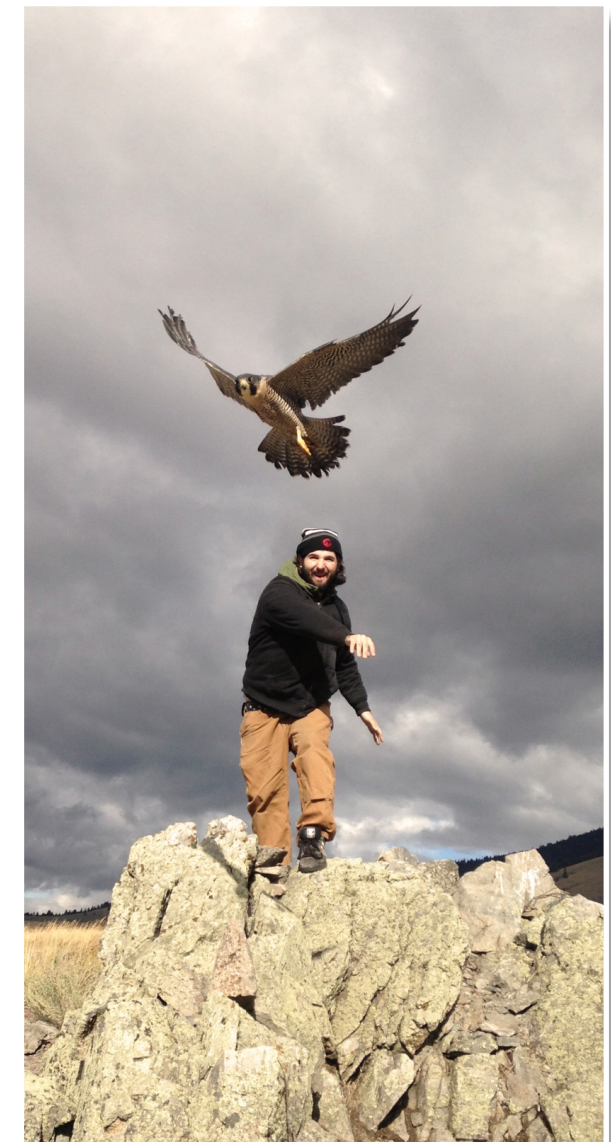
This winter we deployed seven GPS transmitters on Golden Eagles captured on the MPG Ranch, bringing the total number since 2011 up to 14. During the past two springs, we watched the eagles travel north to Canada and Alaska, as far north as the Brooks Range above the Arctic Circle! In fall, each bird returned to Montana, showing a high degree of fidelity to the Bitterroot Valley. We look forward to following the birds from this winter. Hopefully, one or two stay and breed in Montana--it would be great to visit them this summer and document their breeding activity!

Osprey Satellite Tracking

This year we set out to track individuals from two nests on the MPG Ranch as well as a third nest located nearby. As the adults from the Ranch Entrance and North Center Pivot nests on the MPG Ranch initiated laid eggs, the Bitterroot River, and other waterways in western Montana, began to swell with spring runoff. Water levels stayed high for an unusually long period, making it difficult for Ospreys to forage. As a result, both nests failed, as did many other Osprey nests in the region. The third nest, located on the Sapphire Ranch, was initiated much later than the North Center Pivot and Ranch Entrance nests. By the time their lone nestling hatched in July, peak runoff flows had subsided, which gave them a much better chance of successfully raising their chick. On August 13, we accessed the nest and outfitted the nestling with a GPS transmitter. This marked the second straight year where just one nestling was produced from the nests near the MPG Ranch. Currently, the young bird is on its wintering grounds in Mexico, where we expect it to stay until the spring of 2016.



MPG Ranch Fall Capture Totals 2014



Tyler Veto releases a Peregrine Falcon on the MPG ranch



OSPREY RESEARCH 2014

Osprey Toxicology & Baling Twine Projects

To date, we have accessed about 40 nests, drawn blood samples (for heavy metal analysis) and banded 330 nestlings. This makes our Osprey project one of the largest and most comprehensive of its kind. Results are troubling, with many nestlings showing mercury levels 100 times higher than what would be considered toxic in humans.

We are proud to be partnering with several local experts, University of Montana researchers Dr. Heiko Langner and Dr. Johnny Moore (Environmental Biogeochemistry Lab) and Dr. Erick Greene (Division of Biological Sciences and Wildlife Biology), to closely examine the causes, locations and possible effects of mining-related and possibly atmospheric contaminants on Ospreys and the ecosystems that support them.

To learn more about this toxicology project, please see our recent publication in the Archives of Environmental Contamination and Toxicology. The paper is titled: Mercury and Other Mining-Related Contaminants in Ospreys along the Upper Clark Fork River.

Color Banding

In 2010 we began color banding Osprey (blue with white numbers), as this greatly enhances our chances of identifying individual from a distance. Specifically identifying individuals



Banding an Osprey chick



wearing only a metal USGS band almost always means they must be recaptured or found as mortalities. In total, we have color banded 180 individual Osprey and the encounters are starting to come in. This year a chick banded in 2012 was seen as a healthy adult all the way in Honduras!

Baling Twine

Ospreys have the bad habit of collecting baling twine to adorn their nests. Unfortunately, baling twine is a serious threat to Osprey, as they often get tangled in this durable polypropylene rope. We have found baling twine in nearly every nest located in our study area. For example, one Osprey nest that blew down in Missoula contained more than a quarter of a mile of baling twine!

Every summer we get calls about Osprey tangled in baling twine. We always drop whatever we are doing to see if we can rescue these tangled birds. It is important to get to the Osprey quickly, before it suffers irreparable damage by way of amputation, heat stress, broken bones and so on. Unlike many other human-caused environmental problems facing wildlife, this is a simple one, with an easy fix. We ask landowners and stewards to please clear their fields and property of the deadly twine. By simply picking up the loose strands and properly disposing of the material, we can save untold numbers of Osprey.

To help spread the word, Erick and Anne Greene put together an informative pamphlet addressing this issue. For more information or for copies of this Osprey and Baling Twine pamphlet contact projectosprey@mso.umt.edu or visit our website and check out our Osprey section at www.raptorview.org.



Satellite transmitter equipped Osprey carries away a fish

2014: A VIEW FROM THE FIELD



Peregrine Falcon



Golden Eagle release



Melissa Ruth with Golden Eagle



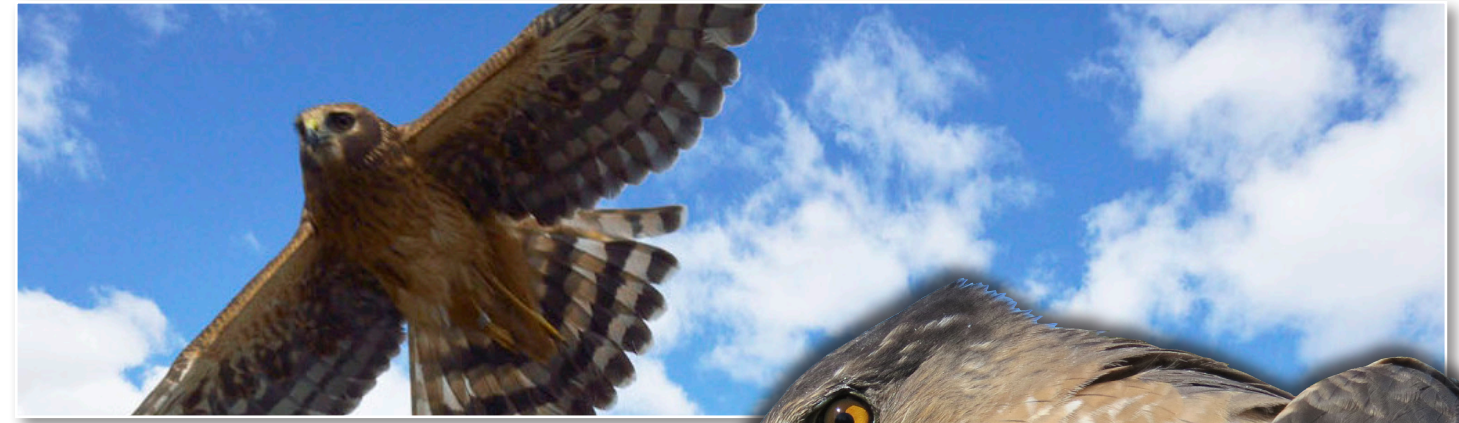
Northern Goshawk



American Kestrel



Red-tailed Hawk



Northern Harrier



Cooper's Hawks, all along bottom row

THANK YOU



Here we recognize those foundations, organizations, businesses and individuals who have supported us through monetary donations, professional expertise and volunteer support. Without all these generous contributions RVRI wouldn't be able to accomplish all that we have.

ORGANIZATION & FOUNDATION SUPPORT

- | | | |
|--|---------------------------|-------------------------------|
| Bureau Land Management | Maki Foundation | Rocky Mountain Golden Eagle - |
| Charlotte Martin Foundation | Llewellyn Foundation | Research Foundation |
| Cinnabar Foundation | Louis Borick Foundation | S.E.C. Charitable Corp |
| Clark Fork Coalition | The MPG Ranch | Seaturtle.org |
| Craighead-Beringia South | Mountaineer's Foundation | The Nature Conservancy |
| Fanwood Foundation | MT Fish, Wildlife & Parks | University of Montana |
| Fledgling Fund | MT Audubon | Walker Family Trust |
| Five Valleys Audubon | Oklahoma State University | Wild Skies Raptor Center |
| Helena National Forest | Owl Research Institute | Yellowstone to Yukon |
| Koret Foundation | Patagonia | |
| Liz Claiborne Art Ortenburg Foundation | Raptors of the Rockies | |

BUSINESS SUPPORT

- | | | |
|----------------------------|--------------------------------|-------------------------------|
| Ancare Veterinary Clinic | Dillon Tree and Landscape Co. | Missoula Electric Cooperative |
| Alter Enterprises Inc. | Draught Works Brewery | Montana Ace Hardware |
| A & S Electric | Furrow Productions | Northwestern Energy |
| B.A. Builders Inc. | Grant Creek Ranch | R.E.I. |
| Boyce Lumber | Law Office of John J. Ferguson | Rustysring Graphic Design |
| Candy Goff-Bookkeeping | Law Office of J. Tiffin Hall | Salmon Logging |
| Chuck Irestone Web Designs | Kettle House Brewery | |
| Dave Taylor Roofing | Missoula Veterinary Clinic | |

CONSTITUENTS

In the interest of their privacy, we no longer list the names of our private and individual constituents, as many of them wish to remain anonymous

INDIVIDUALS

From assistants in the field, to detailed lab analysis and everything you could imagine in between; we could not make it happen with out their generosity. As always, we make an effort try to recognize everyone. Thanks to all of you!

- | | | | |
|------------------|-----------------------|-------------------------|-----------------------|
| Amy Seaman | Don Rakow | Karen Prisby | Ross Crandall |
| Barbara Meek | Emma Cox | Kate Stone | Sam Milodragovich |
| Becky Garland | Erik Enzien | Katie McKalip | Sarah Norton |
| Becky Lomax | Erick Greene | Kathy Gray | Sara Meicho |
| Bob Walker | Eric Rasmussen | Kelly Castleberry | Stan and Marge Lucier |
| Bracken Brown | Fred and Cathy Tilly | Ken Furrow | Stephen "Step" Wilson |
| Breanne Cooney | Hannah Beyl | Kris Guyman | Steve Hoffman |
| Brooke Tanner | Heiko Langner | Leawna Brodner | Tim and Noel Nesmith |
| Bryan Bedrosian | Jacob Driscoll | Mallory Ortego | Tyler Veto |
| Christa Weathers | Jerry and Jane Densel | Mat Seidensticker | Vince Slabe |
| Chuck Irestone | Jerry and Liz Cain | Matt Young | Victoria Parks |
| Dale Beavers | Jesse Varnado | Melanie Smith | William Blake |
| Dave Taylor | Jessica Lindsay | Mellissa and Lydia Ruth | Zeke Smith |
| David Lumpkin | Jim Lish | Nate and Whitney Schwab | |
| Dawn Duncan | Jim and Marci Valeo | Pat Little | |
| Denver Holt | John Csoka | Pat Shanley | |

RAPTOR VIEW RESEARCH T-SHIRTS NOW AVAILABLE!

RVRI now has 100% organic cotton T-shirts available for purchase. We have 2 styles to choose from. They cost \$20.00 per shirt, shipping and handling included. Make your check payable to Raptor View Research Institute and specify type, size and number. You can also e-mail Rob at rob@raptorview.org and subject your message "T-shirt."



T- Shirt Design #1
Front



T- Shirt Design #2
Back

PARTNERSHIPS & COLLABORATIONS 2014

RVRI continues to develop partnerships and collaborate with other professionals to build on our research and expand our educational and conservation outreach. It is impossible to express how crucial these relationships are to our work. They develop out of a need, common interest and passion for wildlife, conservation and the environment. As often happens, professional relationships turn into lifelong friendships.

We would like to take this opportunity to recognize some of these people, organizations and businesses.

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