

# RAPTOR VIEW RESEARCH INSTITUTE

Spring 2018



## THE FLYWAY

*A Newsletter of The Raptor View Research Institute*

P.O. BOX 4323 MISSOULA, MT 59806 (406) 258-6813

ROB@RAPTORVIEW.ORG

WWW.RAPTORVIEW.ORG



## MESSAGE FROM THE PRESIDENT

Welcome to Raptor View Research Institute's (RVRI) annual newsletter – the “Flyway” where we have summarized our research, conservation and education based activities for 2017. Some of our long-term, population based research projects, such as our Golden Eagle work along the Continental Divide near Lincoln, Montana and our Osprey study along the Clark Fork River near Missoula have been on-going for more than a decade and continue to offer key insights on heavy metals loads (e.g. mercury and lead) in these birds, as well as important natural history and behavioral information on these species. Others projects such as our satellite tracking of fall migrating Red-tailed and Cooper's Hawks are only a few years running and are already offering-up fascinating information on the migratory ecology, breeding biology, as well as survival challenges these raptors face annually. Our studies are geared to help us to learn more about the natural histories and conservation challenges birds-of-prey face locally and on a landscape level in our industrialized world of human-induced change.

In short, raptors are often the first obvious component in an ecosystem to alert us of change. This is why it is our priority to share our research through scholarly journals, popular articles, social media and other outlets, to bring general awareness and to aid educators, conservationists, land stewards, industry, and the general public in making sound, science-based land management decisions. These decisions could be made in our own backyards or cover thousands of acres (e.g. where to place an industrial scale wind farm).

Speaking of thousands of acres, I cannot write about 2017 without mentioning the massive, record breaking wildfires we had in western Montana. The fires and associated restrictions prohibited access to our Roger's Pass and Nora Ridge study sites for the first part of the season. As we approached late September the fires were still raging, we seriously began to consider the reality that we may be forced to forfeit the fall Golden Eagle season. Fortunately, a huge weather system moved into the region, dumping a

foot or more of snow throughout the mountains and over the fires. The cool wet weather persisted for days putting in effect “a wet blanket” over the fires, snuffing them out seemingly overnight. Before long, we got the “all clear” from authorities and hustled to set up the Roger's Pass banding station as quickly as possible. We were trapping on September 29th – the latest start date in the history of the project. We dubbed fall 2017 the “fire and ice” season.

Staying on the topic of our fall Golden Eagle research, 2017 offered us a chance to take a critical look and reevaluate our Nora Ridge study site. The difficult to access site has served us very well over the years, but with lead observers Fred and Cathy Tilly retired and the fact that we have switched our major banding project to Roger's Pass gives us pause on how to move forward with Nora Ridge. Also, our recent resurrection of our 2007 Grassy Mountain banding station in the Big Belt Mountains has added new research opportunities in the way of sampling long-distance migratory Golden Eagles for our satellite tracking studies and identifying important Golden Eagle migration corridors south of Wyoming. This promises to be the perfect complement to the work we have already accomplished identifying important northern migration corridors from Wyoming to Alaska. In meantime, while we decide exactly how to address Nora Ridge, we are very excited about the direction our fall Golden Eagle studies are taking us.

In closing and after you page through this newsletter, I hope that you are pleased with our accomplishments. We have stayed true to our mission, doing our best to target priority research needs, while protecting raptors, the ecosystems and habitats they depend on. To that end, I hope you will consider us for a tax-deductible contribution. Your support is essential and ensures the continuation of our research, conservation and education programs. Thank you.



*Robert Damovich*

### RVRI MISSION STATEMENT

The mission of RVRI is to provide knowledge of raptors (birds of prey) and the ecosystems that support them to the public and scientific community, through research conservation and education. As widespread predators inhabiting all terrestrial ecosystems, raptors serve as valuable indicators of ecosystem health. As “environmental barometers” or the “coal miner's canary,” raptors are often the first obvious component of an ecosystem to show the negative effects of a failing system. RVRI believes that by protecting raptors and effectively managing for them, we are in turn, protecting the wild integrity of those ecosystems as a whole.

## SWAINSON'S HAWK NESTING PROJECT



During the 2017 breeding season, we conducted our 12th annual survey for Swainson's Hawks (SWHA) nesting in the Missoula Valley and since 2005 have identified 19 SWHA territories (areas where one or more adults are observed throughout a breeding season). Within those territories, we banded nearly 70 individuals and marked 58 with uniquely color-coded leg bands. Colored bands allow us to identify individuals from a distance and “keep tabs” on individuals annually, while learning more about breeding behavior, survivorship, territoriality, nest site and mate fidelity. We have re-sighted and positively identified 27 color marked individuals, for an impressive encounter rate of 38%. Additionally, we have also documented seven cases of natal dispersal – where birds hatched in the valley have returned to nest in subsequent years.

In 2017 we encountered SWHAs on seven territories, and documented nesting efforts on five. Of the five observed nesting attempts, 10 young were fledged for average productivity of 2 young per nest. One nest produced three fledglings! The male of that nest was banded as a nestling in 2008!

We did have two notable fledgling casualties this season. Our Frenchtown pair, which included an adult male banded as a nestling in 2011 and an un-banded dark morph female. The male was killed due to vehicle collision while the nestlings were less than a week old. Against all odds the female managed to provision, protect and fledge the two nestlings! Sadly one of the fledglings, a robust bird of good body condition was found dead near the nest. We also discovered hard evidence that a grounds keeper for a nearby business across the street from the nest was using rat poisoning to kill ground squirrels. We strongly believe the poison is what killed her. We shared our findings with the grounds keeper and he said he would try non-lethal measures to control the squirrels. We suggested letting the hawks do the work for them.

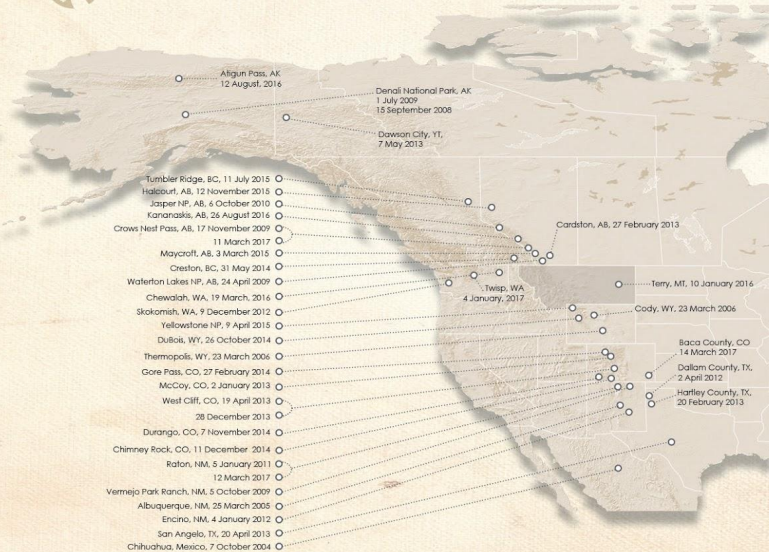
Another fledgling from territory a few miles east was killed due to electrocution. This was the only nestling the pair had raised, thus a total waste of time and effort for this pair. Fortunately the utility company – Missoula Electric Co-operative – was on the scene and retrofitted (made raptor safe) the offending pole. These are just two examples of the anthropogenic causes of mortality these hawks face on a regular basis. These are also two very preventable mortalities and why we work diligently to educate the public and others about the survival challenges these hawks face on daily basis.



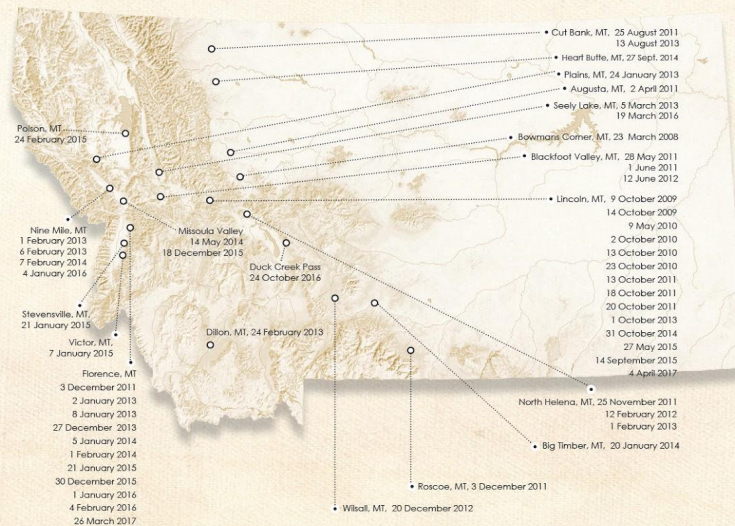
clockwise from left, ROB WITH SWAINSON'S HAWK, COLTON WITH SWAINSON'S HAWK, DEAD SWAINSON'S HAWK



## GOLDEN EAGLE WING TAG UPDATE 2017



WESTERN NORTH AMERICA



MONTANA

In 2004, RVR began applying wing-tag markers to Golden Eagles. These tags are blue vinyl with white numbers painted on. To date, we have wing tagged almost 300 migrant eagles at our banding stations and 40 wintering eagles in the Bitterroot Valley. Wing tagging provides us with invaluable re-encounter information on individual eagles that we cannot get from banding alone.

Our wing-tagged eagles have been encountered nearly 150 times so far! These sightings help us learn where individuals winter and summer, how far they travel, as well as how long they live. We feel fortunate for these glimpses into the lives of these individuals, and hope to better understand the migratory ecology for the species as a whole. This project relies on citizen scientists who encounter aux-

iliary marked eagles and we sincerely thank all of the individuals who make this project possible by documenting their sightings!

Most importantly, mapping out wing-tag encounters clearly defines migration routes and seasonal ranges. 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 a migration corridor from northern Canada to central Mexico. Migration count data has already shown the critical importance of the northern RMF, stretching from northern Canada to west-central Montana. Our wing-tag encounters along the southern RMF suggest this region is also very important for migrating and wintering Golden Eagles.



above, MAPS OF WING TAG RE-ENCOUNTERS ACROSS NORTH AMERICA

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, MPG Ranch, 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 raptor 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, National Public Radio, YMCA, YWCA, Animal Wonders, Humane Society of Western Montana, Paxson School (art curriculum fundraiser), U of M Legal Services - Environmental Law Group, The Women's and Children's Alliance of Idaho, Back Country Hunters and Anglers, Missoula Humane Society and others.

## MPG Ranch Raptor Tracker

In 2016, after much research and development, The MPG Ranch launched the new "raptor tracker" website. Now anyone with a computer or smart phone can track the raptors as we do – see where they summer and winter, as well as follow them along their migration. This exciting new tool has unlimited outreach and education potential. To track the raptors, go to: [raptortracker.mpgranch.com](http://raptortracker.mpgranch.com)

This fall we completed our eleventh season of monitoring migrating raptors, with an emphasis on Golden Eagles, along the Rocky Mountain Front in west-central Montana. We operate at Rogers Pass along the Continental Divide, where we band migrating raptors and record species composition, flight patterns, and total numbers observed, as well as local and regional weather conditions. 2017 was a great fall—we banded 31 Golden Eagles including a daily record of 7 on October 10th!



COMMUNITY MEMBERS OF ALL AGES PARTICIPATE IN OUR OSPREY EDUCATIONAL WORKSHOPS

## FALL MIGRATION AND BANDING RESEARCH FROM NORA RIDGE AND ROGERS PASS

### 2017 Banding Summary

This year at our sole fall migration banding station, Rogers Pass, we banded 31 Golden Eagles from September 29th – October 27th. During this time, we also banded 47 other raptors including 4 Harlan's Hawks and 5 Rough-Legged Hawks. We even had two seven Golden Eagle days in the week of October 10th!

### Fall Migration and Banding Research from Rogers Pass and Nora Ridge

This fall we completed our tenth season of monitoring migrating raptors, with an emphasis on Golden Eagles, along the Rocky Mountain Front in west-central Montana. We operated one banding station this year at Rogers Pass, where we band migrating raptors and record species composition, flight patterns, and total numbers observed. We also maintained our long term migration count at Nora Ridge, where we record numbers and species composition as well as local and regional weather conditions. Both locations are important tools that help to shed light on phenomena of raptor migration.

### The Crew

As always, we had a highly motivated field crew that went above and beyond expectations. Biologists included RVRI Executive Director Rob Domenech, Adam Shreading, Erik Enzien, Mary Scofield, Danny Stark, Brian Busby, and Jack Toriello. We had so many great visitors and dedicated volunteers for an amazing season!

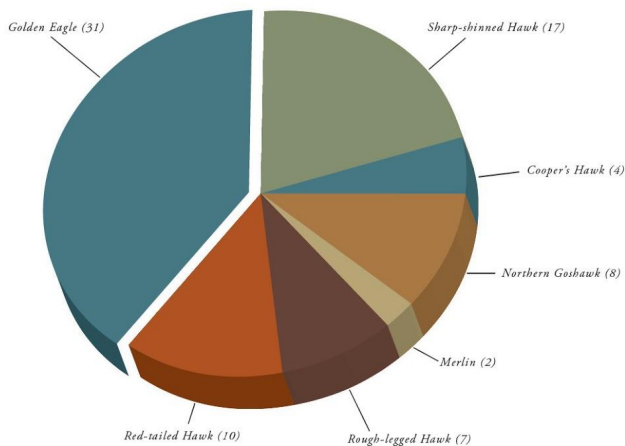


BRIAN BUSBY, MARY SCOFIELD, JACK TORIELLO, DANNY STARK

## GOLDEN EAGLE AND FALL RAPTOR BANDING SUMMARY FROM ROGERS PASS 2017

The 2017 season was one the most challenging seasons to date due to record setting wildfires in western Montana. The fires burned hot through most of September and we had very real concerns that not only would we have to forfeit the season due to restrictions, but also that our site and all the equipment would be burned. Fortunately, the late September snow came leaving a foot or more snow in the higher elevation and effectively ended the fire season. The day restrictions were lifted we hurried to site and set up our banding station in less than two days and were up and running on September 29th.

That first day of banding we tied our site record pulling down 14 individual raptors comprised of five species including 2 Golden Eagles and one Northern Goshawk! It seemed the raptors were backed up and as ready to migrate as we were to band! We trapped through October 27th and banded a total of 79 raptors, of seven species. In spite of the late start we still managed to band 31 Golden Eagles!



## ADULT GOLDEN EAGLE SATELLITE TRACKING STUDY 2017

While historic threats to migrating eagles (power-line electrocution, lead contamination, poisoning, vehicle collisions, shooting, etc.) persist, many wintering destinations throughout the West have 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 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.

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% the 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.



FITTING A GOLDEN EAGLE WITH A SATELLITE TRANSMITTER

To date, we have put satellite transmitters on over 50 adult Golden Eagles. Due to the conservation and management utility of this technology we plan to expand this dataset in upcoming years, and continue to share our findings through scientific, 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, Teton Raptor Center, the U.S. Fish and Wildlife Service and the Bureau of Land Management. Their support, passion, dedication, and expertise has been essential to the successes of this project. Thank you!

## GOLDEN EAGLES 30 & 31 WING-TAG ENCOUNTERS

Here are two Golden Eagle wing-tag encounters I just had to share. Golden Eagles (tags 30 and 31) were 2 of only 5 eagles captured during the fall of 2006 banding season. This was the year we had to move from Roger's Pass to Nora Ridge and it took a season to work out the "eagle capturing" kinks.

GE 31 represents the "oldest" eagle in terms of banding to last tag encounter - 12 years! GE 31 was first observed in Cody, WY on 1/12/2010 and wasn't seen again until 4/2/2018 where it was photographed (with binoculars and cell phone!) by Travis Boons while it was feeding on a moose carcass near Denali National Park. Coincidentally, the second "oldest" eagle was GE 30, observed and photographed in northeast New Mexico on 3/20/2017. This encounter represents the longest interval (11 years) between tagging and re-sighting. Back-to-back captured and tagged eagles having the first and second longest time spans from banding to encounter is pretty remarkable!



left, MAP OF GE 30 AND 31 WING-TAG ENCOUNTERS, top and bottom right, GE 31, SOON TO BE RELEASED, BACK IN 2006



## GOLDEN EAGLE RESEARCH PROJECTS 2017

**Determining Sex in Golden Eagles**

Morphological measurements such as, wing-chord, tail length, body weight, etc., have proven to be reliable indicators in differentiating between sex in several raptor species. Typically, female raptors are measurably larger than males (reverse sexual dimorphism) in 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**

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, requiring little 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 little is 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



SHOWING THE BAND ON A GOLDEN EAGLE

mined 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

**Eagle Lead Project**

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 lead bullet fragments left in gut piles from field dressing large game.



Golden Eagles are opportunistic feeders, known to scavenge and take wounded animals. To date, we have lab analyzed blood from over 350 Golden Eagles, most of which had elevated blood-lead levels. We published our findings in the Archives of Environmental Contamination and Toxicology. We continue to sample eagles as a long-term project, adding to our growing database while ramping-up our educational outreach. We believe 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**

Every fall, thousands of northern latitude raptors migrate through Montana on their annual journey from breeding and natal areas to wintering grounds. Where do these raptors come from? Using innovative sampling techniques, we have been able to more accurately estimate that natal origin, or "place of birth" of juvenile Golden Eagles and Northern Goshawks.

Specifically, we monitor the ratios of an isotope of hydrogen, called deuterium, which change consistently with latitude. With this technique, we only need to take a thumb-sized feather sample, which then can be analyzed to determine the ratio of deuterium. By sampling only juvenile birds, whose feathers were grown in the nest, we can estimate the individual bird's natal origin. We analyzed feathers from 58 fall-migrant, juvenile Golden Eagles and published a manuscript in September 2015 in the Journal of Raptor Research.

## RVRI RECENT PUBLICATIONS

**Estimating Natal Origins of Migratory Juvenile Golden Eagles Using Stable Hydrogen Isotopes (2015).**

Journal of Raptor Research, 49, 308-315. Domenech, R., Pitz, T., Gray, K. & Smith, M.

**Space Use and Habitat Selection by Adult Migrant Golden Eagles Wintering in the Western United States.**

(2015). Journal of Raptor Research, 49(4): 429-400. Domenech, R., Bedrosian, B., Crandall, R. & Slabe, V.

**Lead and Mercury in Fall Migrant Golden Eagles from Western North America (2015).**

Archives of Environmental Contamination and Toxicology, 1-8. Langner, H.W., Domenech, R., Slabe, V. & Sullivan, S.P.

**Wing Loading in North American Golden Eagles (2015).**

Journal of Raptor Research, 50(1): 70-75. Lish, R., Domenech, R., Bedrosian, B. & Ellis, D.

**Diagnostic Analysis of Veterinary Dried Blood Spots for Toxic Heavy Metals Exposure (2013).**

Journal of Analytical Toxicology, 37(7), 406-422. Lehner, A.F., Rumbelha, W., Shlosberg, A., Stuart, K., Johnson, M., Domenech, R. & Langer, H.

**Mercury and Other Mining-Related Contaminants in Ospreys Along the Upper Clark Fork River,**

Montana, USA (2012). Archives of Environmental Contamination and Toxicology, 62(4), 681-695. Langer, H.W., Greene, E., Domenech, R. & Staats, M.F.

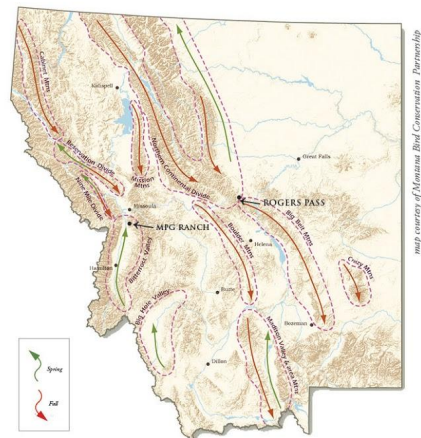
## MPG RANCH COLLABORATION

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

### Spring/Fall Migration

The MPG Ranch has the distinction of being one of the only three places in the West where raptor migration counts are conducted in both the spring and fall. Since 2011, we have conducted counts in both seasons and recorded impressive 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. This spring's count was higher than the previous two years, but lower than the springs of 2012-2013. Our fall total of 5,771 is the most raptors we have seen since starting our surveys in 2011.



* MPG RANCH FALL 2017 * RAPTOR MIGRATION COUNT	
Turkey Vulture	2064
Osprey	125
Bald Eagle	141
Northern Harrier	237
Sharp-shinned Hawk	687
Cooper's Hawk	259
Northern Goshawk	32
Broad-winged Hawk	74
Swainson's Hawk	36
Red-tailed Hawk	1689
Ferruginous Hawk	5
Rough-legged Hawk	99
Golden Eagle	123
American Kestrel	302
Merlin	41
Peregrine Falcon	34
Prairie Falcon	34
Unidentified Raptors	228
<b>Totals</b>	<b>6210</b>

MAP OF WESTERN MONTANA'S MAJOR RAPTOR MIGRATION ROUTES

### Bitterroot Valley Eagle Lead Study

Since 2011 we have tested over 100 Bald and Golden Eagles captured on the MPG Ranch for blood-lead content. Unfortunately, the vast majority (~87%) tested higher than what we would expect from background levels alone; many had sub-clinical levels and a handful had acute, near lethal levels. Because elevated blood-lead levels indicate recent exposure, our results suggest eagles are ingesting lead while on their wintering territories in the Bitterroot Valley. We believe the main source of this lead is bullet fragments left in big game gut-piles and carcasses ingested by eagles. Besides testing the eagles we capture for lead levels, we outfit Golden Eagles with wing tags or satellite tracking units, and Bald Eagles with blue numbered leg bands.

### Golden Eagle Satellite Tracking

This winter we deployed six GPS transmitters on adult Golden Eagles captured on the MPG Ranch and in the Bitterroot valley, which brings the total number since 2011 up to 34. During the past five springs, we watched the eagles travel as far north as the Brooks Range above the Arctic Circle! In fall, most birds returns to Montana, showing a high degree of fidelity to their Bitterroot Valley wintering grounds.

### Osprey Satellite Tracking

This season we set out to track individuals from three Osprey nests on/near the MPG Ranch for the fifth consecutive year. We outfitted one nestling from the Sapphire nest with a GPS transmitter. Be sure to visit [raptortracker.mpg-ranch.com](http://raptortracker.mpg-ranch.com) to follow along with the Ospreys and Golden Eagles throughout the year!



PRAIRIE FALCON RELEASE ON MPG RANCH

## ROGERS PASS HARLAN'S HAWK 2017

In collaboration with the MPG Ranch, RVRI began a satellite telemetry study on Red-tailed Hawks (RTHA) in 2013. In total we have instrumented 12 individuals (5 adult and 7 immature) and are thrilled with the success of this project thus far. Our birds can be found wintering as far south as Baja Mexico and summering as far north as Northwest Territories, Canada and Alaska.

Building on this project, we have begun tagging a select few individuals captured at our Roger's Pass banding station. Here we are specifically targeting Harlan's race RTHAs due to the high proportion of this sub-species captured here and the lack of information on this race. This northern ranging sub-species, of Alaska and north-

western Canada was once even recognized as a separate species. It has unique colors and feather patterns that set it apart from all the others. Perhaps the most notable trait is the "paint splattered" tail plumage.

We captured this beautiful adult female on 10/19/2017. Like many of our Golden Eagles, she flew down the Rocky Mountain Front, reaching her wintering grounds in SE New Mexico on 10/28. Here she stayed hunting in the agricultural areas of Roswell. She began her spring migration 3/14/2018. She arrived on her summer range in SE Alaska on 5/1/2018. She moved around for about two weeks or so before settling down out near the tip of the Kenai Peninsula in the Alaskan Maritime Wildlife Refuge, about 100 miles south of Anchorage. See RVRI's *Flyway Spring 2016* to see tracks of the first RTHA and Harlan's we ever tracked.



FALL AND SPRING MIGRATION ROUTES OF SATELLITE TRANSMITTER EQUIPPED HARLAN'S HAWK, right, ROB WITH HARLAN'S HAWK

## MPG RANCH COLLABORATION

### Bitterroot Valley Eagle Lead Study

Since 2011 we have tested over 100 Bald and Golden Eagles captured on the MPG Ranch for blood-lead content. Unfortunately, the vast majority (~87%) tested higher than what we would expect from background levels alone; many had sub-clinical levels and a handful had acute, near lethal levels. Because elevated blood-lead levels indicate recent exposure, our results suggest eagles are ingesting lead while on their wintering territories in the Bitterroot Valley. We believe the main source of this lead is bullet fragments left in big game gut-piles and carcasses ingested by eagles. Besides testing the eagles we capture for lead levels, we outfit Golden Eagles with wing tags or satellite tracking units, and Bald Eagles with blue numbered leg bands.

### Golden Eagle Satellite Tracking

This winter we deployed six GPS transmitters on adult Golden Eagles captured on the MPG Ranch and in the Bitterroot valley, which brings the total number since 2011 up to 34. During the past five springs, we watched the eagles travel as far north as the Brooks Range above the Arctic Circle! In fall, most birds return to Montana, showing a high degree of fidelity to their Bitterroot Valley wintering grounds.

### Osprey Satellite Tracking

This season we set out to track individuals from three Osprey nests on/near the MPG Ranch for the fifth consecutive year. We outfitted one nestling from the Sapphire nest with a GPS transmitter. Be sure to visit [raptortracker.mpranch.com](http://raptortracker.mpranch.com) to follow along with the Ospreys and Golden Eagles throughout the year!



JUVENILE GOLDEN EAGLE RELEASED ON MPG RANCH IN THE BITTERROOT VALLEY

## OSPREY RESEARCH 2017

### Osprey Toxicology & Baling Twine Projects

To date, we have accessed about 40 nests, drawn blood samples (for heavy metal analysis) and banded about 400 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 local expert, University of Montana researcher Dr. Erick Greene (Division of Biological Sciences and Wildlife Biology), to closely examine the causes, locations and possible effects of mining-related heavy metal contaminants on Ospreys and the ecosystems that support them.

To learn more about this toxicology project, please see our 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 bands with white numbers), as this greatly enhances our chances of identifying individuals from a distance. Specifically identifying individuals wearing only a metal USGS band almost always means they must be recaptured or found as mortalities. In total, we have color banded over 300 individual Osprey and the encounters are starting to come in. So far we have had young Ospreys encountered along the Gulf Coast of Texas, in Mexico, Honduras and Guatemala!



left, OSPREY CHICK, right, DEAD OSPREY CHICK TANGLED IN BALING TWINE

### 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](mailto:projectosprey@mso.umt.edu) or visit our website and check out our Osprey section at [www.raptorview.org](http://www.raptorview.org).



OSPREY CHICK



## 2017: A VIEW FROM THE FIELD



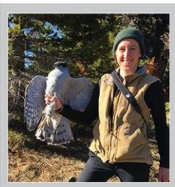
above, SUB-ADULT BALD EAGLE WITH DARK EYE STRIPE  
below, ADULT BALD EAGLE RELEASE



DAN COX POSES WITH A  
SUB-ADULT GOLDEN EAGLE



ELLIOT CASPER WITH GOLDEN  
EAGLE BEFORE RELEASE



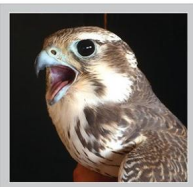
MARY SCOREFIELD WITH AN ADULT  
FEMALE NORTHERN GOSHAWK



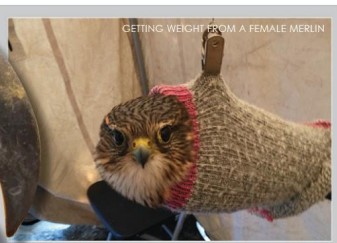
ADULT MALE NORTHERN GOSHAWK (L)  
& ADULT FEMALE HARLAN'S HAWK (R)



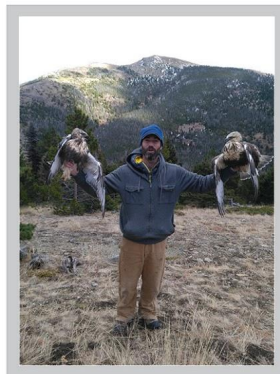
FIRST YEAR MERLIN IMMEDIATELY  
AFTER CAPTURE



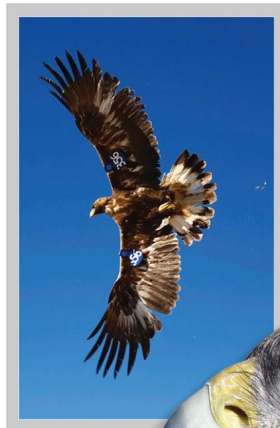
FORMIDABLE BEAK AND DARK EYE OF  
A YOUNG PRAIRIE FALCON



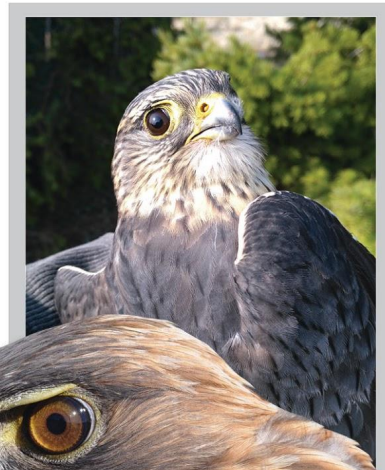
GETTING WEIGHT FROM A FEMALE MERLIN



above, ADAM WITH TWO ROUGH-LEGGED HAWKS,  
below, GOLDEN EAGLE 356, MOMENTS AFTER RELEASE



above, BEAUTIFUL PAINT SPATTERED TAIL OF AN ADULT  
HARLAN'S HAWK, below, ADULT MALE MERLIN



bottom right, ADULT GOLDEN EAGLE

bottom left, JUVENILE BALD EAGLE



# 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  
Charlotte Martin Foundation  
Cinnabar Foundation  
Clark Fork Coalition  
Fairwood Foundation  
Fledgling Fund  
Five Valleys Audubon  
Helena National Forest  
Koret Foundation  
Rocky Mountain Golden Eagle Foundation  
Liz Claiborne Art Ortenburg Foundation  
Maki Foundation

Lawrence Foundation  
Llewellyn Foundation  
The MPG Ranch  
Movebank.org  
Mountaineer's Foundation  
MT Fish, Wildlife & Parks  
MT Audubon  
Norcross Wildlife Foundation  
Oklahoma State University  
Owl Research Institute  
Patagonia  
Rocky Mountain Golden Eagle Research

Foundation  
S.E.C. Charitable Corp  
The Nature Conservancy  
University of Montana  
Walker Family Trust  
Wild Skies Raptor Center  
Yellowstone to Yukon

## BUSINESS SUPPORT

Ancore Veterinary Clinic  
A & S Electric  
B.A. Builders Inc.  
Boyce Lumber  
Candy Golf-Bookkeeping  
Chuck Irestone Web Designs

Dillon Tree and Landscape Co.  
Furrow Productions  
Grant Creek Ranch  
Law Office of John J. Ferguson  
Law Office of J. Tiffin Hall  
Kettle House Brewery

Missoula Veterinary Clinic  
Missoula Electric Cooperative  
Montana Ace Hardware  
Northwestern Energy  
Rustyspring Graphic Design  
Salmon Logging

## 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 without their generosity. As always, we make an effort try to recognize everyone. Thanks to all of you!

Amy Seamen  
Andrew Wolfgang  
Barbara Meek  
Becky Garland  
Becky Lomax  
Beth Mendelsohn  
Bob Walker  
Brooke Tanner  
Bryan Bedrosian  
Caitlyn Powell  
Christa Weathers  
Chuck Irestone  
Danny Stark  
Dave Taylor  
David Haines

David Lopez  
Denver Holt  
Don Rakow  
Elliot Casper  
Erik Enzien  
Erick Greene  
Eric Rasmussen  
Fred and Cathy Tilly  
Hannah Beyl  
Jack Toriello  
Jerry and Jane Densel  
Jerry and Liz Cain  
Jessica Kato  
Jesse Varnado  
Jessica Taylor

Jim Lish  
Jim and Marci Valeo  
Jordan Harrison  
Joshua Lisbon  
Kate Stone  
Katie McCallip  
Kathy Gray  
Kelly Castleberry  
Ken Furrow  
Krist Hagar  
Mary Scofield  
Mat Seidenslicker  
Mat Hayes  
Matt Young  
Melanie Smith

Molly Ruggles  
Nate and Whitney Schwab  
Pat Shanley  
Peter Sherrington  
Ross Crandall  
Sam Milodragovich  
Sarah Norton  
Stan and Marge Lucier  
Stephen "Step" Wilson  
Stephen Nelson  
Steve Hoffman  
Tim and Noel Nesmith  
Vince Skabe  
Victoria Parks  
William Blake



## 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](mailto:rob@raptorview.org) and subject your message "T-shirt."



DESIGN #1  
FRONT VIEW



DESIGN #2  
BACK VIEW

## PARTNERSHIPS & COLLABORATIONS 2017.

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**

Our sincerest thanks and appreciation go to Bryan Bedrosian with Teton Raptor Center; The MPG Ranch; Dr. David Ellis; Dr. Erick Greene with University of Montana; Five Valleys Audubon Society; Five Valleys Land Trust; Dr. Jim Lish with Oklahoma State University; Melanie Smith with Audubon Alaska; Travis Booms with Alaska Fish & Game; Missoula Electric Coop; Sam Milodragovich with Northwestern Energy; Peter Sherrington with Rocky Mountain Eagle Research Foundation; Steve Hoffman with Montana Audubon; Jim Sparks with Bureau of Land Management; Steve Kioetzel with The Nature Conservancy; Pat Shanley with the Helena National Forest; MT Fish, Wildlife and Parks; U.S. Fish and Wildlife Service; Ken Furrow, Furrow Productions; Brooke Tanner with Wild Skies Raptor Center; MT Golden Eagle Working Group and others.

BOARD	Rob Domenech	Kathy Gray PhD	Victoria Parks	Kelly Castleberry	Noel Nies-Nesmith
OF	President	Secretary	Treasurer	Director	Director
DIRECTORS	Missoula, MT	Chico, CA	Missoula, MT	Missoula, MT	Missoula, MT