MONTANA FISH, WILDLIFE & PARKS

NONGAME WILDLIFE MANAGEMENT BUREAU
2018-2019 REPORT*

The Montana Fish, Wildlife and Parks Nongame Program strives to meet five fundamental objectives;

1. Conserve, restore, and enhance habitat for nongame wildlife.
2. Maintain nongame species distribution and abundance.
3. Increase internal and external support and appreciation for nongame wildlife.
4. Increase the public's access to nongame wildlife.
5. Minimize the negative impacts of Endangered Species Act listings to landowners, recreationists and user groups.

Western Kingbird. (Photo, Lee Nelson)

*This report does not cover all work to manage or conserve nongame species or the habitat they use across the state rather it is intended to highlight the scope and diversity of work being conducted by MFWP and its partners to meet program objectives. This report covers work primarily conducted during calendar year 2018 through the Fall of 2019 but does include some work from previous years as appropriate to describe a full project or its background.

Contents

Program Personnel and Funding

The nongame program is supervised out of Montana Fish, Wildlife and Parks (MFWP) heaquarters by the Wildlife Division Administrator and the Nongame Wildlife Management Bureau Chief. Staff specifically assigned to the Bureau include only the Bureau Chief and statewide Avian Conservation Biologist. In each of the seven MFWP regions is a wildlife biologist responsible for coordinating nongame wildlife work under the Region Wildlife Manager with both program and region priorities in mind. Successful monitoring, management and conservation of nongame species is happening across the Department through the efforts of all staff including Wildlife Division biologists, coordinators, technicians, and interns in addition to staff from other Divisions including Fisheries, Responsive Management Unit, Communiciations, Enforcement, and Parks. Volunteers and staff from other agencies like the Montana Natural Heritage Program (MNHP) also contribute to meeting program objectives.

The program is funded through a combination of federal State Wildlife Grant dollars, Department license sales, Pittman-Robertson dollars, Nongame Tax Checkoff contributions, and monies brought in from outside grant awards or funders such as the Montana Outdoor Legacy Foundation.

<u>2018-19 Staff</u>

Wildlife Division Administrator	Ken McDonald
Nongame Wildlife Management Bureau Chief	Lauri Hanauska-Brown
Avian Conservation Biologist	Allison Begley
Region 1 Wildlife Biologist/Nongame Specialist	Chris Hammond
Region 2 Wildlife Biologist/Nongame Specialist	Torrey Ritter
Region 3 Wildlife Biologist/Nongame Specialist	Claire Gower
Region 4 Wildlife Biologist/Nongame Specialist	Kristina Smucker
Region 5 Wildlife Biologist/Nongame Specialist	Megan O'Reilly
Region 6 Wildlife Biologist/Nongame Specialist	Heather Harris
Region 7 Wildlife Biologist/Nongame Specialist	Brandi Skone
Statewide Nongame Program Technician (Seasonal)	Eric Johnston

Torrey Ritter (right) was hired in August 2018 to fill the MFWP Region 2 nongame specialist position vacated by Kristi Dubois. Torrey tutored in the Nongame Program for four summers under Claire Gower's mentorship in MFWP Region 3, gradually adding seasonal work in the Block Management Program to his background. From there he moved to working at the MFWP Wildlife Lab on the brucellosis project and for USGS on the Interagency Grizzly Bear Study Team before earning his master's degree under Lance McNew at MSU on beaver ecology. Torrey's unique expertise in riparian systems, will contribute greatly to MFWP R2s habitat program. Torrey was raised in the Bitterroot Valley and is an avid birder and angler.

Technical Services

MFWP hopes to reduce impacts to fish, wildlife, parks, and recreation resources from development by providing technical expertise and advice in the areas of solar energy, energy infrastructure development, wind development and habitat conservation projects. In coordination with the Responsive Management Unit (RMU), biologists have commented on or participated in conversations of more than 10 different wind projects at various stages of development. There has been an increased effort to coordinate these consultations with the US Fish and Wildlife Service to provide consistent feedback on expectations or desires for development in the state. Staff from all regions provide technical assistance on subdivision, road developments, oil and gas development, mining projects, timber management, and land management agency plans such as US Forest Service and BLM Resource Management Plans. Biologists have been providing feedback to RMU on the development of a guide for commenting on wind energy projects, a 'Renewable Energy Tracker' in ArcGIS Online, and an automated comment system for oil and gas leases. Review of projects for potential impacts to Species of Concern or federally listed threatened or endangered species is of particular importance to nongame specialists. MFWP staff preparing EAs and Wildlife Management Area management plans also consider impacts of habitat alteration and habitat needs of nongame species and rely on nongame specialist expertise.

Wind Energy

MFWP has been increasing its expertise on wind energy and it's impacts to wildlife through attendance at the biennial NWCC Wind Wildlife Research Meeting, organized and presented by the American Wind Wildlife Institute. Up to five MFWP employees have attended over the years. Plans are underway to have this Institute facilitate a Montana focused wildlife and wind energy workshop in Montana in 2020. The purpose of the workshop will be to bring together stakeholders from the wind industry, the conservation and science community, the regulatory community, and state and federal agencies to learn about wind-wildlife issues specific to the State of Montana. The goal is to create a foundation for dialogue, share information and work collaboratively to develop strategies for minimizing wildlife conflict.

Through a partnership with Northwestern Energy. MFWP Region 4 staff have been the principle investigators on the post-construction monitoring at Spion Kop Wind Farm near Geyser, Montana. The Spion Kop Technical Assistance Committee approved the post-construction wildlife monitoring plan the region developed in 2015 and the monitoring program was implemented in 2016 and 2017.MFWP conducted post-construction monitoring studies in 2016 and 2017 to evaluate direct and indirect impacts of Spion Kop Wind Farm on birds and bats using the project area. Studies to examine indirect impacts included eagle point counts, raptor nest monitoring, sharp-tailed grouse lek surveys and acoustic bat surveys. Eagle point counts revealed low raptor activity and no raptor fatalities were found. We noted a steep decline in raptor nest activity over the three years of post-construction, by 2017 only three of 13 known nests were active, but our study was not designed to determine causation. While the potential for wind farms to cause raptor nest displacement is widely recognized there have been few before-after studies to examine the issue and results are mixed. Three new sharp-tailed grouse leks were discovered within the project area and no fatalities were found in formal searches. Bat acoustic surveys produced a more complete record of the bat community in the area and yield valuable information on the timing of bat activity.

Direct impacts were assessed by conducting formal searches for bird and bat fatalities under 10 of 25 wind turbines and producing fatality estimates adjusted for imperfect detection by observers and carcass

persistence rates. The two-year mean bird fatality estimate was 0.97 birds/MW/year (May-October) and a site total of 39 birds/year (May-October), which is low relative to estimates from two recent reviews of bird fatality rates at other wind farms in the region (Figure 1)

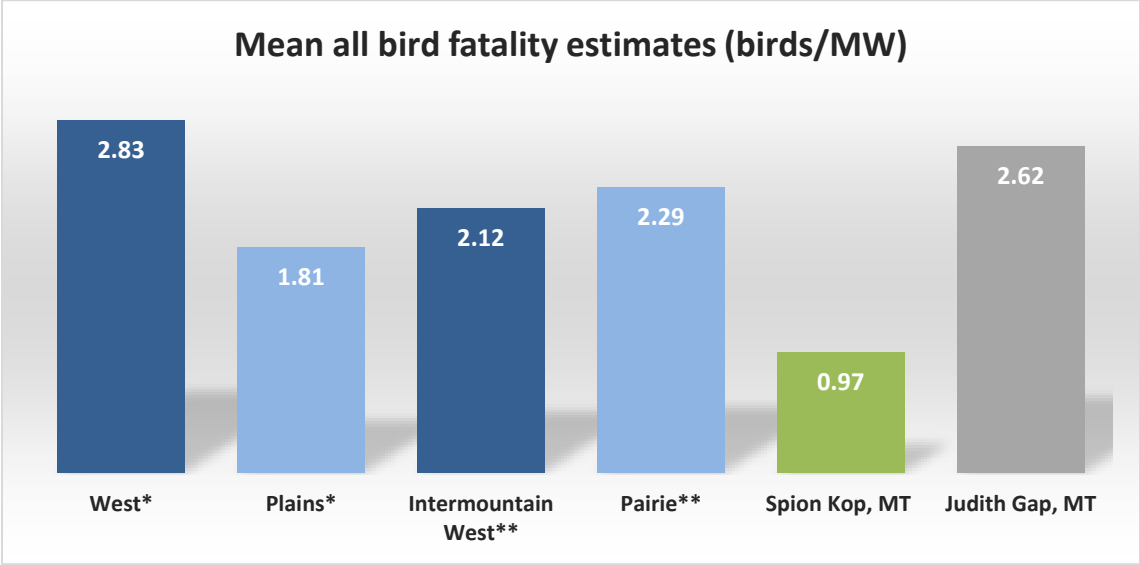


Figure 1. Bird fatality estimates at Spion Kop and Judith Gap wind facilities compared to regional estimates from reviews of other wind farms in the region (*Loss et al. 2013 (68 studies); **Erickson et al. 2014 (116 studies).

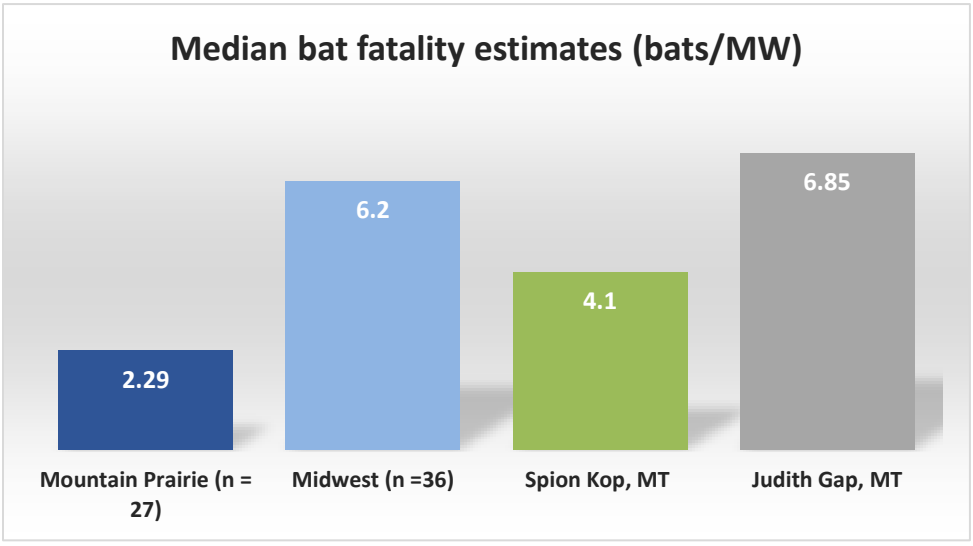


Figure 2. Mean bat fatality estimates (bats/MW) at Spion Kop and Judith Gap Wind Farms compared to regional median estimates of bat fatalities (AWWI 2018); n = the number of wind farms contributing to the estimate. The two-year mean bat fatality estimate at Spion Kop was 4.1 bats/MW/year (May-October) with a site total of 163 bats/year (May-October): higher than the mean bat fatality rates for 27 wind farms in the Mountain Prairie Region.

There is widespread acknowledgement and concern over the potential impact of wind energy facilities on bat populations, and a need to implement measures to reduce bat fatalities. Small increases in the turbine cut-in speed can substantially lower bat fatality at wind farms. Bat acoustic data collected at this site show that a turbine cut-in speed of 6 m/s would avoid 95% of bat activity. Phase 2 of the Spion Kop project is underway to add ~40 turbines.

Photo Credit, Kim Linnell.

Nongame specialists and RMU staff are developing a plan to improve MFWP tracking, review, and input on wind projects. Objectives are to make it easier for MFWP biologists to review and provide input, and to increase consistency of MFWP comments on wind projects. Staff completed an ArcGIS Online mapping application that tracks wind proposals and MFWP input. Future plans are to develop an internal guide for MFWP biologists reviewing proposals; standard recommendations to reduce impacts; comment letter templates and talking points; and other guidance materials.

Solar Energy

MFWP continues to provide information and recommendations for solar developments. For example, MFWP provided comments on the potential impacts to wildlife from the proposed 1,300-acre utility-scale Apex Solar Farm near Dillon. RMU and nongame specialists are working with other state agencies and developers to understand how MFWP can provide useful information and effective comments on these relatively new types of projects.

Urbanization

The MFWP Region 3 nongame specialist worked closely with other staff to develop a priority map for the new Gallatin County Growth Plan. The group had extensive discussions with the county planners to determine their needs for the new growth policy. A wildlife priority and connectivity map were presented to the County for their review. Final results of this effort are pending.

Climate Change

MFWP initiated a climate change working group whose purpose is as follows:
To help MFWP move toward a more visible response to climate change. It is not to replicate the expertise of climate scientists, but to identify and help develop effective partnerships between climate scientists and MFWP as they apply to our work. While MFWP employees need not become climate scientists, this committee will gain access to existing and customized informational and training resources to develop a common understanding and currency on climate change among MFWP resource professionals.

Outcomes will include an improved capacity for MFWP employees to converse knowledgeably within and external to the agency about climate change. Outcomes will include an enhanced awareness and opportunities seized to set a positive example for energy conservation and related conservation practices in MFWP's work environment, motor pool, travel habits, facilities and landscaping, and other aspects of MFWP's agency infrastructure. Ultimately, MFWP will routinely and visibly incorporate and acknowledge climate science in its decision-making processes on things such as management direction and prioritization of habitat projects.

Eagles and Subdivision

The MFWP Region 3 nongame specialist worked extensively with landowners and developers to provide guidance on development adjacent to bald eagle nests in the Gallatin Valley. Meetings were held on site with USFWS biologists and private wildlife consultants to ensure that developers are aware of the federal laws pertaining to disturbance of eagles, the federal and state recommendations, and the applicable and necessary permits if development is to occur within defined buffers. Discussions also encouraged developers to consider compatible development, develop a mutual understanding and respect for the eagles, and to incorporate appreciation of the nesting eagles in subdivision planning in the valley center.

Habitat Restoration

The Working Grasslands Initiative program gained momentum in 2018 and 2019 with a large number of landowners expressing interest and a large number of proposals ultimately being submitted for consideration. While all selected projects will benefit game and nongame species, three were determined to be particularly beneficial for grassland birds. These three conservation leases in Garfield county that are great grassland bird habitat equal ~16,000 acres but it is fair to say the ~40,000 acres of leases completed in the last two years all provide native species habitat.

The R2 nongame specialist coordinated with the Natural Resource Damage Program to allocate funding for various projects in the Upper Clark Fork and Flint Creek watersheds. These projects are meant to replace lost or injured resources resulting from historic mining activities in and around Butte and Anaconda. The nongame specialist reviewed funding requests and project proposals, conducted site visits to assess project need and scope, and collected basic habitat data to best direct restoration actions. In

FY19, the nongame specialist provided technical support for a variety of proposed riparian and stream restoration projects in tributaries to the Clark Fork River and Rock Creek, as well as conifer removal projects in sagebrush and aspen stands. The nongame specialist was also involved with several land acquisition and conservation easement projects covered by NRDP.

The R2 nongame specialist worked on two land acquisition projects and two conservation easement projects in FY19. This work included applying for funding, touring the properties with interested parties, conducting baseline habitat value assessments, and carrying out the public process for land acquisitions. Currently, MFWP staff are developing Environmental Assessments for the two land acquisition projects that will be released to the public soon. MFWP is partnering with local land trust organizations to continue working on the two conservation easement projects.

The White Memorial Fishing Access Site (FAS) is a project along the West Fork of the Bitterroot River seeking to expand an existing leased FAS by purchasing the existing 1.5-acre FAS footprint as well as an additional 102 acres of both upland and river-bottom habitats. The White Memorial FAS will protect 80 acres of healthy river and riparian habitat as well as 22 acres of ponderosa pine forest leading up into USFS lands in the Bitterroot National Forest. The property provides outstanding habitat in both the aquatic and terrestrial realms, especially for songbirds, woodpeckers, shorebirds, small mammals, and many other species. The property will also greatly expand public access to the Bitterroot River bottom and adjacent public lands for hunting and fishing as well as wildlife watching and photography. This project represents a partnership with the Bitter Root Land Trust, the MFWP Fisheries Division, and private landowners.

The Stumptown addition to the Garrity Mountain WMA will conserve ~600 acres of aspen stands, mixed-conifer forests, grasslands, and riparian areas just outside of the town of Anaconda. The Stumptown addition encompasses one of the widest and most diverse portions of the riparian area along both sides of Warm Springs Creek. The creek-bottom portion of the property will be open year-round and will provide great hunting and fishing opportunities as well as ample trails running through aspen stands, cottonwood galleries, and dense willow and alder thickets. The upland portion of the property will be closed seasonally along with the rest of the WMA and provides open grasslands and a mosaic of aspen stands and conifer forests leading into the higher elevations. Overall, this addition will block up a major portion of the WMA and will greatly enhance access for all user types. This project represents a partnership with the Rocky Mountain Elk Foundation (RMEF) and the Natural Resource Damage Program.

The Marcella Creek-Dry Gulch Conservation Easement is in the foothills overlooking the Clark Fork River east of Missoula and would protect important winter range of ungulates as well as a diversity of grassland, rocky outcrop, and forested habitat types for nongame species. Currently, MFWP is engaging with Five Valleys Land Trust and the RMEF on this project.

The Sweathouse Creek CE would permanently protect a popular trailhead leading into the Bitterroot National Forest and would preclude development at the mouth of the Sweathouse Creek canyon where it spills into the Bitterroot Valley. There are abundant aspen stands and deciduous shrubby draws on the property that are important for nongame species in the Bitterroot Valley, where rapid development and lack of land-use planning has resulted in serious degradation of these habitat types on the landscape. The Sweathouse Creek CE project received partial funding from the Habitat Montana program, and MFWP staff are currently engaging with the Bitter Root Land Trust, Bitterroot National Forest, and RMEF to keep this project moving forward.

Beavers as Tools

Beavers are considered a keystone species because their activities create, enhance, and maintain critical habitats in both the aquatic and terrestrial realms. Beaver-mediated habitats allow many plant and animal species to exist and thrive in areas where they may otherwise not occur or be limited in distribution, abundance, or diversity. Beavers may be one of the most important species for the nongame program because of their ability to dramatically modify Montana's most biologically rich yet threatened ecosystems to the benefit of a wide range of species. Beaver activity is associated with beneficial impacts to amphibians, reptiles, small mammals, ducks, songbirds, and many other species. Additionally, beavers play a critical role in enhancing water storage on the landscape and bolstering resiliency of riparian and wetland systems to climate-related disturbances.

In MFWP Region 2, nongame staff have been giving presentations to landowner and conservation groups on the potential benefits of beavers as well as meeting with landowners to provide technical assistance on private land beaver-mediated habitat restoration projects. Additionally, the MFWP Region 2 biologist has worked with local non-profit organizations to track, monitor, and respond to beaver conflict issues in the upper Clark Fork and Missoula Valleys. This includes working with a Beaver Conflict Resolution Technician hired through the Clark Fork Coalition. Increasing tolerance for beavers on the landscape is one of the most important issues to address for meaningful restoration of beaver activity at a large scale. Non-lethal beaver conflict resolution will be essential for maintaining a critically important segment of the beaver population, i.e., dispersing juveniles, for the colonization of sub-optimal habitats where beavers can do their best work.

Nongame specialists from MFWP Regions 2 and 3 have been working with Helena staff and other regional managers and biologists on developing guidelines, survey protocols, and management strategies for beavers in Montana. Part of this effort was helping plan and implement a "beaver meeting" that was held in Helena on August 24th. This meeting brought together MFWP staff and representatives from other state and federal agencies, staff of non-profit organizations, and restoration practitioners to discuss issues and policies regarding the use of beavers as a habitat restoration tool. The meeting was attended by over 100 people and has since spurred additional efforts to advance the science and methodology behind beaver-mediated habitat restoration in Montana. Currently, MFWP Region 2 staff are involved with developing an MFWP white paper clarifying policies and procedures for beaver-related projects.

MFWP Wildlife Management Area Plans

In 2018, MFWP Region 3 staff developed a management plan for the Bear Creek Wildlife Management Area south east of Ennis. The primary goal for the Bear Creek WMA is to provide habitat for a variety of wildlife including elk, mule deer, black bears, grizzly bears, mountain grouse, and nongame species along the face of the Madison Range. The secondary goal is to provide public opportunity for outdoor recreation, primarily for public hunting and wildlife-viewing. MFWP Region 3 wildlife staff are currently working on management plans for Canyon Ferry WMA, Porcupine-Gallatin WMA, Fleecer Mountain WMA and Mount Haggin WMA.

MFWP Region nongame specialists across the state are assisting with these plans or in some cases leading completion.

Citizen Science

MFWP involves volunteers, aka, citizen scientists in projects where extra eyes and ears can help fill data gaps. Citizen scientists contribute hundreds of hours of volunteer time and observations. These scientists have been involved in surveys for long-billed curlews, chimney and black swifts, short-eared owls, breeding birds, greater short-horned lizards, and bats. Mention of their contributions can be found within the appropriate sections below.

The Northern Rocky Mountain Grotto and Bigfork Highschool Cave Club received the annual Montana Wildlife Society Conservation award in 2019 for their contributions to WNS surveillance and bat monitoring.

See a 2019 Montana Outdoor report titled 'Chimney Swift' on YouTube for a glimpse into the commitment of some of these citizen scientists.

Species of Concern and Species in Greatest Need of Inventory Monitoring Projects

Wildlife conservation depends on understanding a species' status and distribution within a given range. Each species has its own habitat and management needs; therefore, the natural history of each species must be studied. Sometimes, during inventories and natural history observations, cryptic species are discovered.

Black-tailed Jack Rabbits

MFWP Region 3 staff developed and tested methods for detecting the presence or absence of black-tailed jackrabbits in southwest Montana to facilitate future monitoring efforts with the goal of removing black-tailed jackrabbit as a Species of Greatest Inventory Need. Historical records of lagomorph surveys and incidental observations from SW Montana were synthesized and data were used to create a habitat suitability map in GIS. A SWG funded intern also researched and produced a preliminary black-tailed jackrabbit monitoring protocol. This provided background information on species distribution and range, habitat use, species status, survey goals and objectives, and survey methodology. Study design was finalized in collaboration with a post-doctoral student from University of Montana and zoologists from MNHP. Initial field work and revision of survey protocols were implemented during the summer of 2019. More extensive surveys will occur during the summer of 2020.

The nocturnal spotlight protocol was implemented for seven nights on BLM property south of Dillon. After the second night, the protocol was changed to increase efficiency and the amount of area covered during the survey. Two daytime reconnaissance surveys were also conducted to determine if these would provide better detection rates. Overall, detection of lagomorphs was low, and species identification between black-tailed and white-tailed jackrabbit was challenging, particularly in dense sagebrush. Going forward we believe that setting up camera traps in areas where jackrabbits are detected may give a more precise assessment of presence /absence and species determination.

Long-billed Curlews

Some regions have conducted annual curlew monitoring since 2015 involving staff from across the Divisions. Objectives of this monitoring include: (1) assessment of curlew distribution statewide, (2) establish routes for a grassland indicator species that could be used as long-term trend areas, (3) coordinated large-scale statewide effort to fill in data gaps, target focal areas, and use new curlew observations to refine the current predictive habitat suitability model, and (4) use data on curlew distribution/density on the landscape to inform conservation efforts. Surveys were not designed to determine population trends. Survey effort in general has decreased for this species except for areas where volunteers remain engaged. Prior survey data is being analyzed. It is anticipated that these surveys will be conducted at 5-year intervals, using the same survey routes, to evaluate land uses changes and curlew distribution over time.

See the 2019 Montana Outdoor report titled 'Tracking Curlews' on YouTube for a summary of a radio telemetry project being conducted by the Intermountain Bird Observatory.

Grassland Birds

North American grassland bird populations have declined faster than any guild within the last 40 years. Baird's sparrow, chestnut-collared longspur, McCown's longspur, and Sprague's pipit are of conservation concern due to dramatic population declines. Northeast Montana is estimated to harbor between 25-50% of the U.S. breeding populations of these species. Conservation practitioners in this critical landscape are implementing management to benefit songbirds. This management includes easements, grassland restoration, improvements to grazing systems, and Candidate Conservation Agreements with Assurances. There is currently no method to quantify the biological results of these management efforts at local or regional scales.

Chestnut-collared Longspur

Short-eared Owls

In 2019, MFWP Region 4 selected short-eared owls as the next focal species for monitoring by citizen scientists, with the goal of better understanding distribution and habitat use in northcentral Montana. Sixteen volunteers from the Upper Missouri River Breaks Audubon Chapter completed 14 survey grids and found that short-eared owl occupancy varies widely; some grids had no owl detections while the grid with the highest occupancy had 19 owl detections. This effort was part of a larger west-wide effort to determine the distribution of this owl.

Targeted Local Grassland Bird Monitoring in MFWP Region 6: 2016-2019

Summary of 2018 survey effort

Sixty-one sites were surveyed in 2018 via 10-point transects, with participation of six agencies and organizations including MFWP, Pheasants Forever, The Nature Conservancy (TNC), USFWS Refuges, Partners for Fish and Wildlife, and the World Wildlife Fund. Of the sites, 43 were on private land, two on TNC land, 5 on USFWS wildlife refuges or waterfowl production areas, 10 on Bureau of Land Management (BLM) land and one on State land (DNRC). The bulk (33) were surveyed in the Northern Grasslands Conservation Focus Area (CFA), with 9 surveyed in the Musselshell Plains CFA and 19 in the Glaciated Plains CFA (Figure 3).

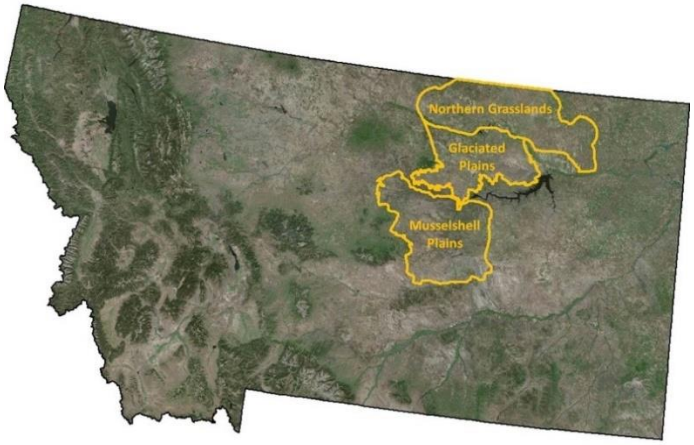


Figure 3. Geographic location of the three Conservation Focus Areas (CFAs) identified in the Montana Partners for Fish and Wildlife 2017-2021 Strategic Plan.

Of the 610 total point count surveys conducted, most (70%) were on native pasture without active projects. Six percent were on wildlife refuge lands with no active management and 2% were on refuge lands that had been grazed and/or burned. About 9% were on grassland restorations (reseeding), 8% on expiring Conservation Reserve Program (CRP) grazing systems and 3% on enhanced native grazing systems.

Results by geography and ownership

General patterns of distribution by CFA and ownership did not differ from 2017 data. The Northern Grasslands CFA had the highest abundances of Sprague's pipit, chestnut-collared longspur and Baird's sparrow. The Musselshell Plains had the highest abundances of McCown's longspur and Brewer's sparrow.

The highest observed total density of priority species in 2018 occurred on DNRC lands, followed closely by BLM lands. Private lands had a wide range of densities depending on site and project type. The Nature Conservancy's Matador Ranch as well as USFWS Refuge lands had the lowest total densities surveyed.

Surveyed DNRC, BLM and Tribal lands were particularly important for Sprague's pipit, chestnut-collared longspur and Baird's sparrow, although some private lands were also quite important for those species. Surveyed private and TNC lands were particularly important for McCown's longspur and Brewer's sparrow, respectively.

Trend analysis

A total of 13 transects were fully or partially on active restoration and enhancement project sites. Of these, 11 had at least two years of data collected. Table 3 summarizes the sample size on project sites by year and project type.

	Expiring CRP Grazing System	Grassland Restoration	Native Grazing System
2016	13 (2 sites)	25 (3 sites)	0
2017	33 (4 sites)	32 (5 sites)	20 (2 sites)
2018	33 (4 sites)	52 (7 sites)	20 (2 sites)

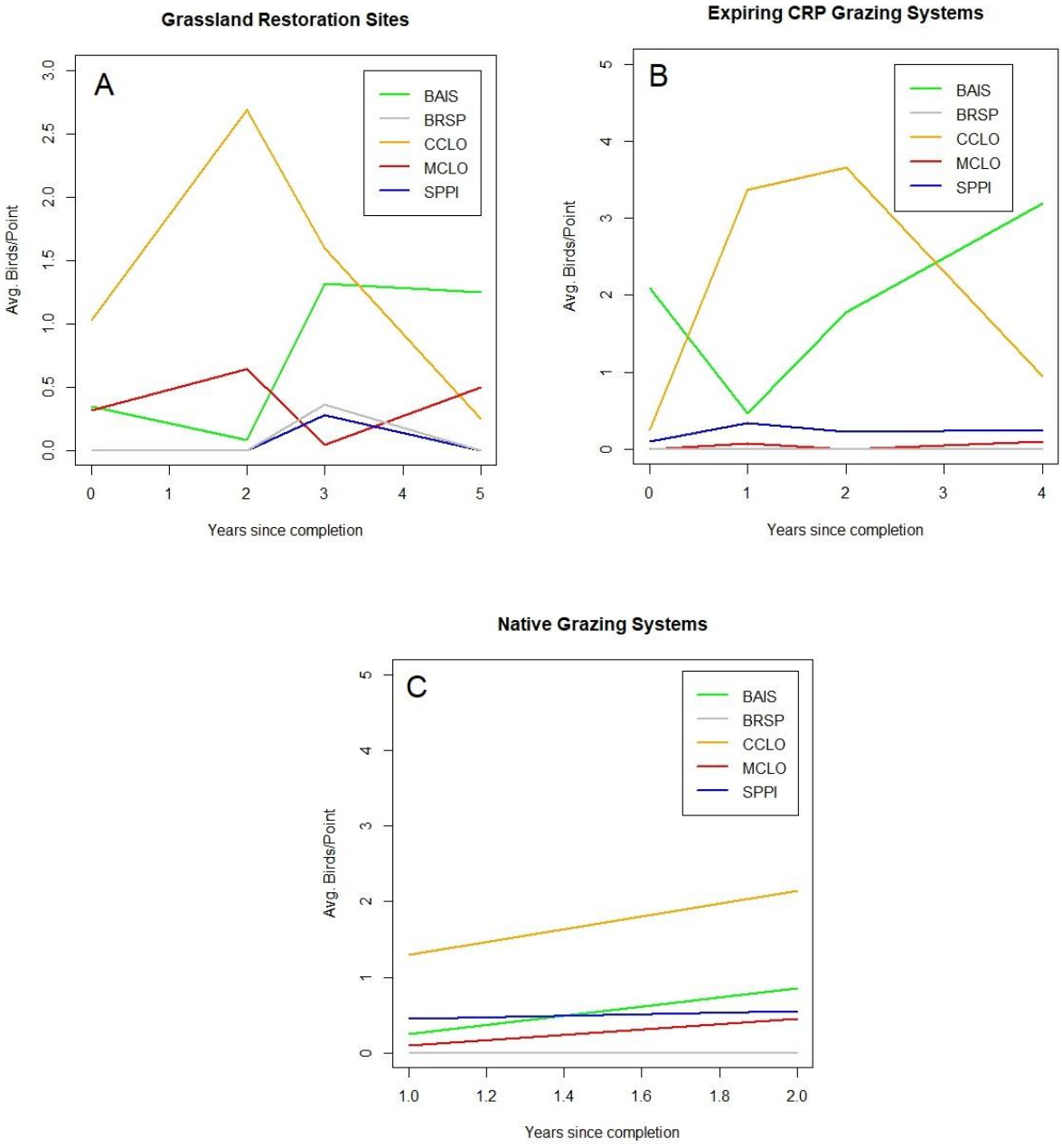
Table 1. Number of survey points on active project sites by type and year.

The sample size on project sites remains small and the time series relatively short, making it difficult to identify any statistical trends in the data. However, some rough patterns may be emerging in the data. Grassland restoration sites seem to experience a large "spike" in longspur (both chestnut-collared and McCown's) in approximately the 2nd year following reseeding, and then decline as the stand matures. By contrast, the abundance of Baird's sparrow seems to increase with stand maturity on restoration sites (Figure 4A). Implementation of grazing systems on idled CRP land seems to have a rapid, positive effect on chestnut-collared longspur abundance in years one and two (Figure 4B). This may be followed by a reduction in abundance, but the sample size in the past two years only includes a single site, thus the pattern of reduction may be an artifact of that particular survey. Similarly, Baird's sparrow density may increase over time following reintroduction of grazing to idled CRP. With only two years of data from project sites where grazing systems were installed on native rangeland, very little trend is currently apparent (Figure 4C).

Goals and future objectives

Surveys were repeated in 2019 but results are pending. Ideally over time, several new sites will be added, especially DNRC and Tribal lands to increase representation of those ownership types. As a longer-term goal, adding additional sites in the Glaciated Plains and Musselshell Plains CFA's would increase our ability to monitor trends independently for each CFA. In addition, an important future objective of this effort is to develop a method to effectively integrate our targeted local monitoring data with other ongoing, broad-scale bird monitoring efforts such as the IMBCR and Breeding Bird Survey. Broad-scale, long-term monitoring programs such as these can provide crucial context for observed local trends.

Barn Swallow (Lee Nelson)



Figures 4A-C. Average point-scale abundance of five priority species by year on three types of sites: grassland restoration via reseeding (A), restoration of grazing to expiring Conservation Reserve Program (CRP) lands (B), and grazing systems to enhance management of native rangeland (C). Baird's sparrow (BAIS), Brewer's sparrow (BRSP), chestnut-collared longspur (CCLO), McCown's longspur (MCLO), Sprague's pipit (SPPI).

Golden Eagles

Concern over declining golden eagle populations in North America has been growing over the past decade. Some nesting populations in the Intermountain West have been documented to be in decline in association with reductions in native habitat and in some cases prey populations. To get better Montana-specific population information for this species, the Golden Eagle Working Group and MFWP prioritized golden eagle nest surveys beginning in 2012.

MFWP Region 7 staff did not fly for golden eagles in 2018 but did in 2019. No occupied nests were documented but three old, unoccupied nests were. MFWP Region 5 staff surveyed in both 2018 and 2019. Additionally, a partnership with the Montana Peregrine Institute and citizen scientists provided additional data on activity at multiple nests near Montana rivers during surveys conducted for peregrine falcons.

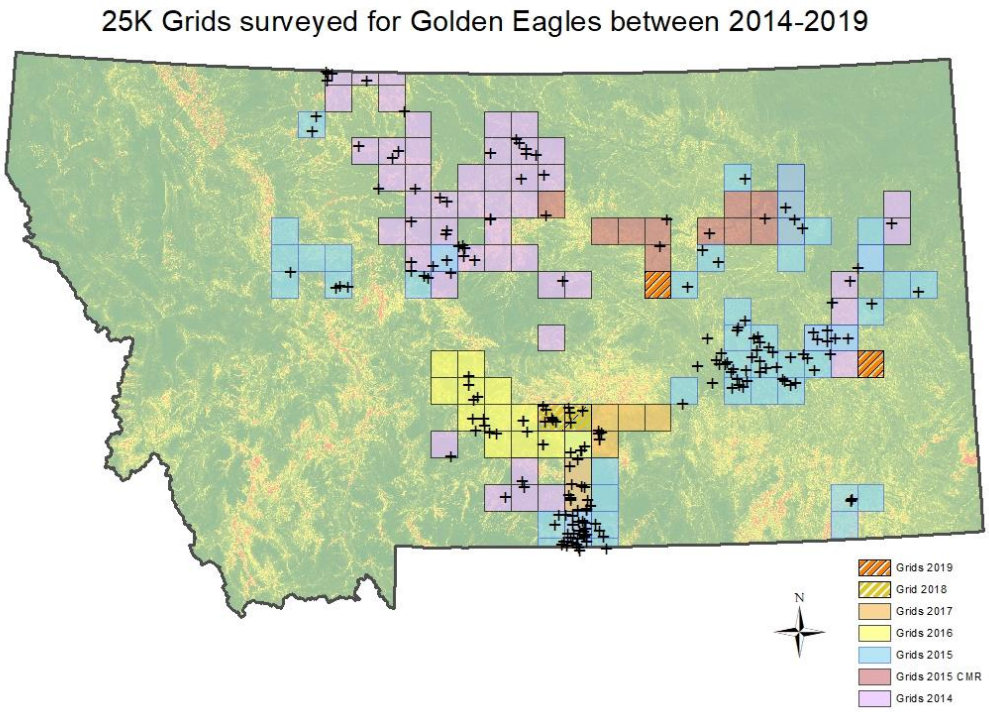


Figure 5. Surveys have been conducted in suitable habitat within the highlighted 25 km grid cells. Selection of the grids is based on quality of habitat and threat of wind development. Occupied nests are marked with a +.

Harlequin Ducks

MFWP and collaborators have been radio marking harlequin ducks since 2016 in attempts to 1) identify where birds from specific breeding populations spend the winter; track local movement patterns on breeding streams; identify timing of movement between inland breeding streams, coastal molting areas, and wintering grounds and 2) characterize habitat use on breeding and wintering grounds and identify home range characteristics.

In 2018, 10 pairs were marked: three in MFWP R1, five in R4, and two in R5. One mortality was attributed to capture in R4, and one male was harvested in Washington during the 2018 waterfowl season.

In 2019 five of ten geolocators were retrieved from females: one in MFWP R1, two in R4, and two in R5. One additional pair was marked in R4 on Birch Creek. The male was radio marked in addition to getting a geolocator. The female was marked with a geolocator only.

Incubation Dates for Harlequin Duck Females in Northwestern Montana				
Geolocator ID	**Stream Name**	**Incubation Start**	**Incubation End**	**Incubation Days**
597	Snyder Creek	5/15/2016	6/16/2016	33
598	Upper McDonald Creek	5/28/2016	6/13/2016	20
599	Grave Creek	6/1/2016	7/5/2016	35
600	Rock Creek	6/1/2016	7/2/2016	33
724	Teton River	5/28/2018	6/19/2018	22
728	Boulder River	5/29/2018	6/5/2018	8
734	Boulder River	6/4/2018	7/6/2018	33
739	Elk Creek	5/19/2018	5/30/2018	12

Table 2. Observed incubation dates for nesting harlequins in NW Montana.

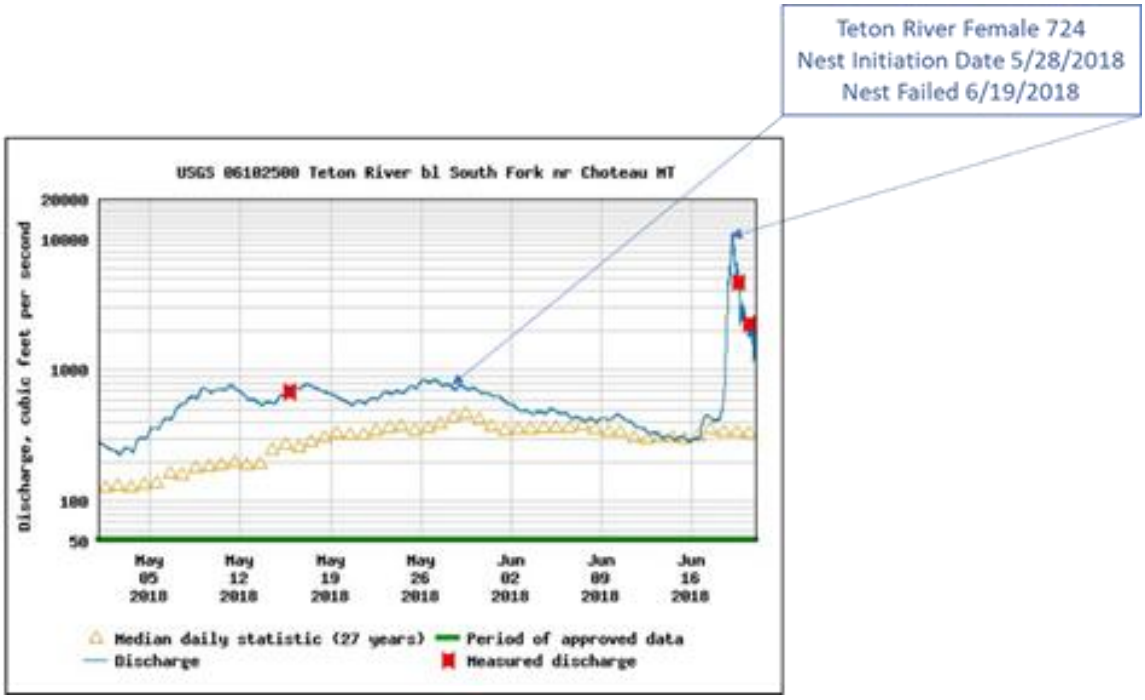


Figure 6. Example of nest incubation and nest failure relative to the hydrograph.

Excerpt from a 2018 project report as an example of movement data being collected: “The three male harlequin ducks with functional transmitters departed their breeding streams between June 4 and July 5. Since harlequin ducks typically return to Montana around May 1, these males resided on the breeding grounds for just 1 – 2 months – they truly are a sea duck. The Birch Creek male left on July 5th and flew 500 miles directly west, to the Salish Sea in WA, and does not appear to have stopped over. In a different strategy, one of the males from the Teton River left on June 11th, traveled northwest to Nelson, BC and stopped over for 5 days before continuing on to the Salish Sea, arriving by June 18th.”

Figure 7. Example movement data from two male harlequin ducks captured in Montana.

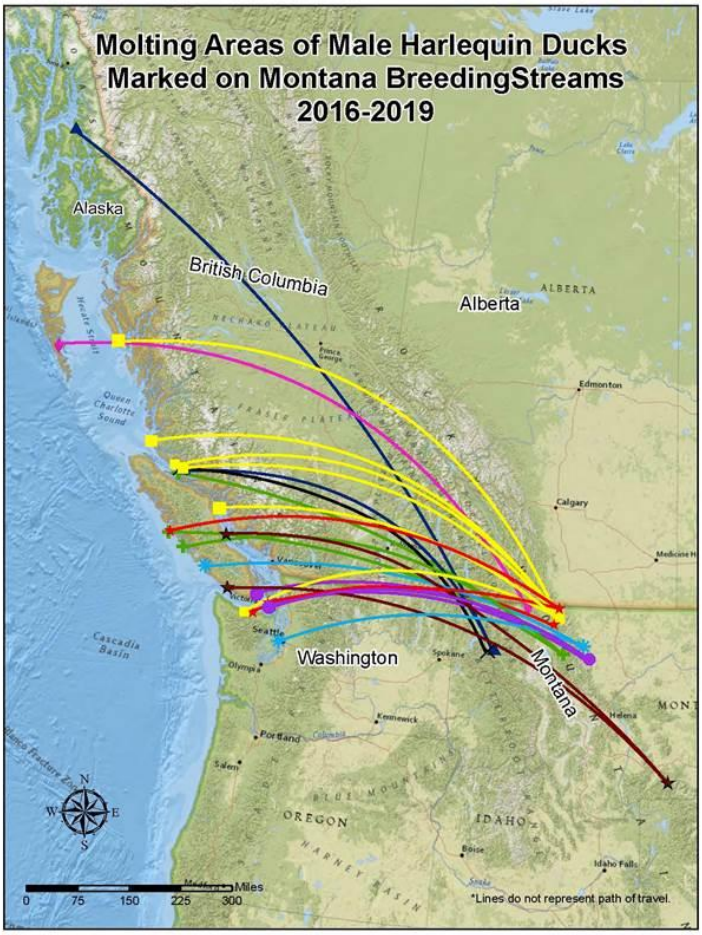


Figure 8. Molting areas and general movement of harlequin ducks captured in Montana.

See the 2018 Montana Outdoor report titled 'Harlequin Ducks' on YouTube.

Rosy Finch Monitoring

While a small number of black rosy-finch surveys were conducted in 2016 substantially more effort was put into mapping potential habitat to guide future surveys in 2017 and 2018. It is important to use existing data and knowledge to efficiently guide survey effort as this species most often inhabits high alpine cirques above 9,000 ft. where access is difficult. In 2018 and 2019 few surveys were conducted for this species as other species monitoring work was identified as a higher priority. Two surveys were conducted in R3 in 2018 with one detection of breeding birds in the Bridger mountains. These surveys will be prioritized by MFWP Regions 1-3 and 5 in the coming years.

Waterbirds

Waterbirds that nest on the Freezeout Lake Wildlife Management Area have been surveyed for the past 11 years to document general abundance and population trends (Figures 9 and 10).

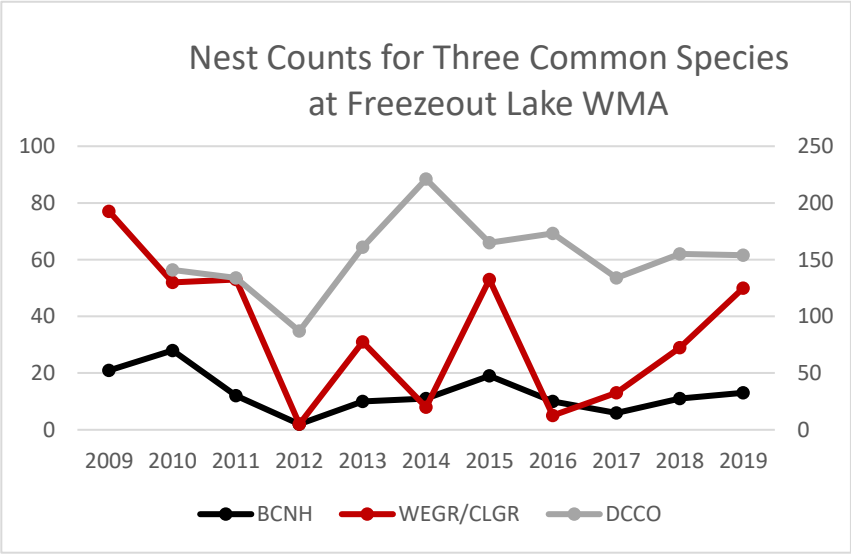


Figure 9. Nest counts for black-crowned night herons (BCNH), western and common grebes combined (WEGR/CLGR), and double crested cormorants (DCCO).

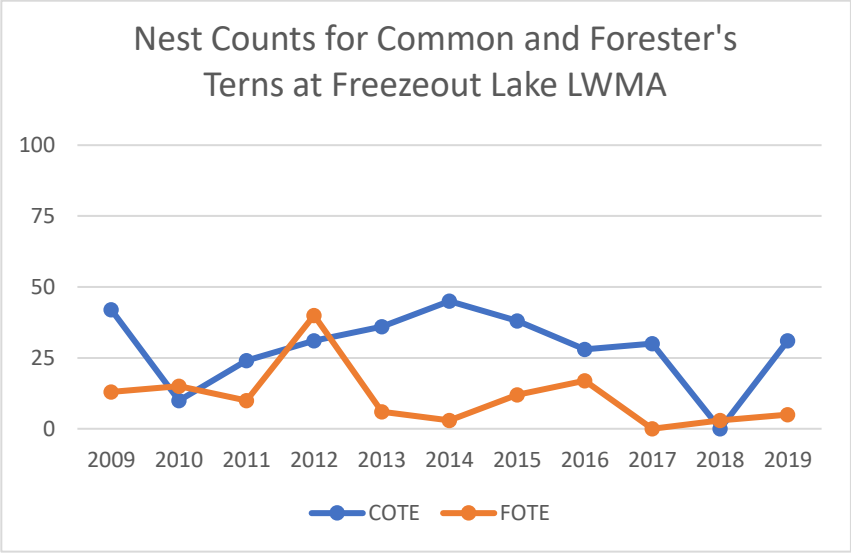


Figure 10. Nest counts for common (COTE) and Forester's (FOTE) terns.

Black Swifts

For the past two years the MFWP Region 1 nongame specialist has been an active member of an international black swift working group developing standardized black swift survey protocols. In 2018, MFWP Region 1 staff monitored existing colonies and continued surveying new waterfalls in northwest Montana. These expanded survey efforts yielded two new colonies. In 2019, R1 staff attempted to survey waterfalls in the Bob Marshall Wilderness in conjunction with biologist and warden work. Due to logistical challenges only one waterfall survey was completed. Occupied and previously occupied colonies were surveyed. No new colonies were discovered; however, one previously occupied colony that had no birds for three consecutive years did have black swifts present. Observations at two occupied colonies added one new nest each. We continued to use slow motion video to record our surveys and found that observers are still missing swifts during surveys. MFWP R2 staff and the nongame program technician conducted eight evening surveys for black swifts in 2019 with no confirmed sightings but several probable sightings. R2 staff will be exploring the use of an array of cameras in 2020 to better document and confirm potential swift sightings. R2 staff also evaluated and scored 17 waterfalls in 2019 including 15 that had not been adequately evaluated before. Flight data from previous years was used to prioritize waterfalls to investigate. After the 2019 field season data was compiled, MFWP and its partners determined that at least 48 black swift colonies have been identified in Montana. Thirty-six colonies are located in Glacier National Park while the remaining 12 are located in northwest and western Montana.

See the 2018 Montana Outdoor report titled 'Black Swifts' on YouTube.

Greater Short-horned Lizard Monitoring

Biologists in Regions 4-7 worked together to develop a survey protocol and sampling method to increase observations of greater short-horned lizards throughout the state (i.e. outreach within local communities, citizen science, etc.). Biologists worked with a GIS specialist to identify areas within the greater short-horned lizard's range that meets criteria for suitable habitat determined through literature review and expert opinion. MFWP Region 4 completed two greater short-horned lizard surveys in 2019 at the NW extent of range, near Cutbank and Conrad. No lizards detected. MFWP Region 5 conducted four surveys with one detection and six surveys with no detections in 2018 and 2019, respectively. MFWP Region 6 staff have conducted 23 surveys to date in MFWP Region 6 with only one survey successfully locating a short-horned lizard and one finding a prairie rattlesnake. An outreach effort, on social media and local papers, requesting short-horned lizard observations was targeted at mid-august for bow season and proved successful with approximately 40 people reporting observations state wide in 2019 alone. In 2018, MFWP Region 7 conducted 20 surveys and documented seven individuals, all found within the same site/survey. We were also able to document plains gartersnake, western rattlesnake, great plains toad, and common sagebrush lizards. These surveys prove to be challenging as these lizards are such a cryptic species and very difficult to observe.

An assessment by a University of Montana post-doc to determine the minimum number of greater short-horned lizard surveys required for commenting on species status is pending (see 'Research' section). We will use recommendations developed from these efforts to guide future survey efforts and will continue to solicit incidental observations from the public.

Chimney Swifts

In 2017, nongame specialists in MFWP Regions 5-7, the avian specialist, and personnel with MT Audubon worked to develop a survey protocol and sampling method to increase the observations of chimney swifts throughout their range within the state. Since 2017, 110 ten surveys have been conducted in 36 towns (Figure 11). Of those towns, 18 have been confirmed with chimney swifts. We've documented 39 chimneys as breeding roosts and observed 405 individuals over the course of three years in some very urban settings.

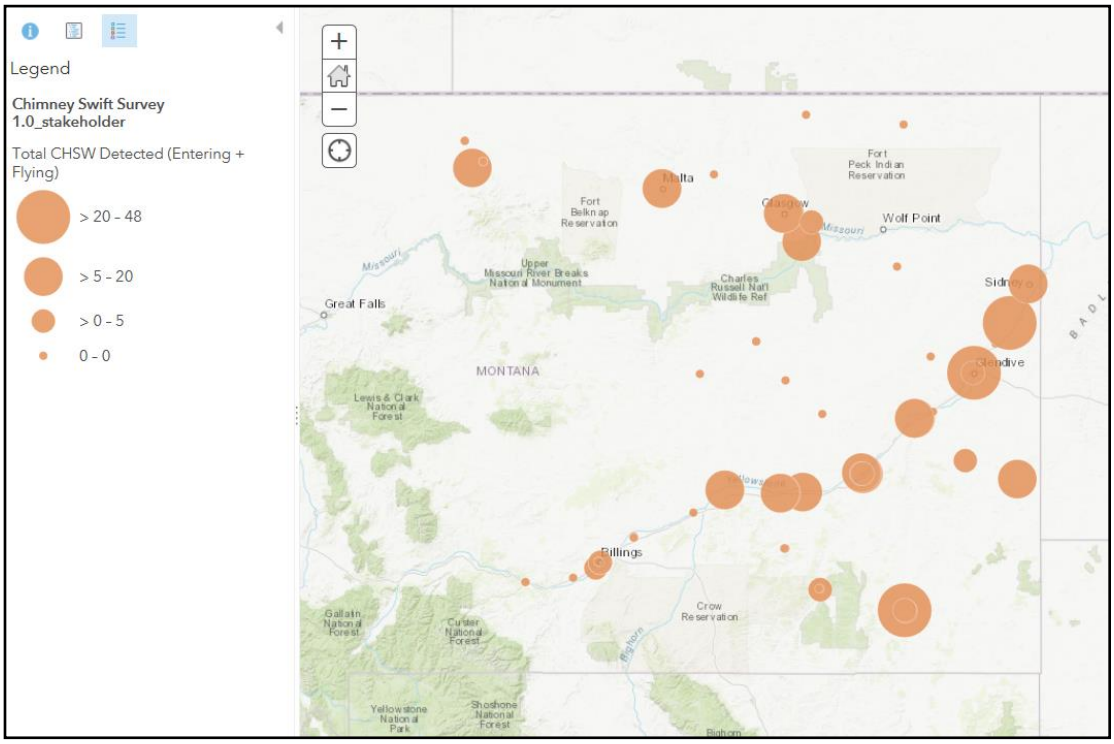


Figure 11. Locations of chimney swift surveys since 2017 showing 18 of 36 towns with documented swifts.

See the 2019 Montana Outdoor report titled 'Chimney Swifts' on YouTube.

Common Poorwills

MFWP R7 is conducting surveys within suitable habitat across the region to determine distribution and establish a baseline population. The initial survey protocol was adapted from the MPG Ranch's citizen science protocol and was adapted in 2018 to accommodate the Nightjar Survey Network protocol (a national effort to standardize protocols for nightjar surveys and monitor trends in populations). In 2018, R7 staff conducted 21 surveys and documented poorwills at 52 stops out of 208. They documented 161 individual poorwills with the survey protocol and an additional 22 incidentally between survey stops. They also documented 104 common nighthawks and other species including yellow-breasted chats, boreal chorus frogs, and Woodhouse's toads. MFWP R5 conducted five surveys in 2019 and observed only 22 common nighthawks incidentally in addition to yellow-breasted chats, boreal chorus frogs, Woodhouse's toads and American bullfrogs.

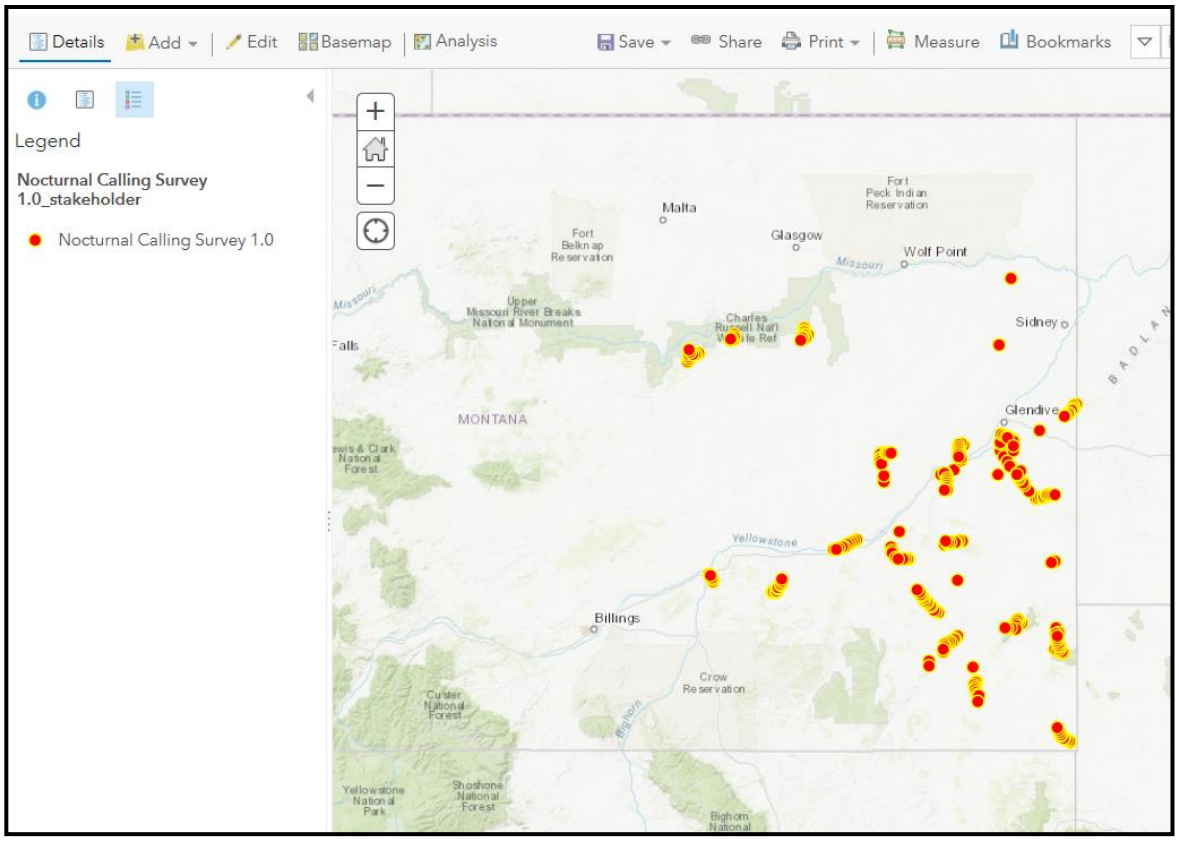


Figure 12. Common poorwill surveys conducted in 2018.

Great Gray Owl Monitoring, Protocol Development and Testing

MFWP Regions 1-5 surveyed for great gray owls again in 2019 and experimented with Automated Recording Unit (ARUs), which can be set to record continuously for up to 10 days. Research on great gray owl occupancy, nest success and habitat use in Western Wyoming has found that ARUs can have very high detection probability. ARUs were deployed in several regions in the center of a survey cell with the intent of collecting owl calls able to be identified to species. There was mixed success with these detectors with some battery failures resulting in little or no data collection.

Minor changes were made to the great gray owl survey protocol and a model of potential habitat was used to randomly select sites for survey during 2017, 2018 and 2019. Ten to twenty sites have been visited each year with great gray and boreal owls detected on around 20% of all cells. Biologists are working to create user friendly site maps and data entry options for volunteers prior to expanding survey efforts for 2020. Outreach to citizens and subsequent reporting has resulted in some beneficial observations of individual owls, nests and young.

An assessment by a University of Montana post-doc to determine the minimum number of great gray owl surveys required for commenting on species status is pending (see 'Research' section).

Bog Lemming Monitoring

Northern bog lemmings are a small, wetland mammal that are extremely difficult to capture using traditional live trapping methods. MFWP biologists have been collecting small mammal scat samples to develop DNA profiles that may help identify the presence of bog lemmings in western Montana. Scat samples collected in 2016 were finally analyzed in 2018. Several samples from Finley Fen, one from Mud Lake, and several from Boles Creek camp back positive as bog lemming scat. The Mud Lake and Boles Creek observations put two new wetlands on the map for positive bog lemming detections!

In 2019 northern bog lemming monitoring began in September following protocols developed by Kristi Dubois with insights from a recent paper by Zach Olson in Maine. We deployed scat boards at three fens/bogs in the southern Bitterroots during September through October. We only collected scats that were greenish in color, ≥5 mm in length, and that appeared to be relatively fresh and not contaminated by other scats on the boards. The Meadow Creek meadow had a confirmed bog lemming detected there in 1992 but subsequent monitoring efforts had not detected bog lemmings at this site. The Lost Trail Pass bog and the Como bog have not been monitored previously. Survey effort and scat collection totals are summarized below. Scat genetic identification will begin in winter 2020.

Wetland ID	Trap-nights*	Boards with Scat	Boards with possible NBL scat	Number of samples collected
Meadow Creek	2,622	71	24	34
Lost Trail Pass Bog	4,083	131	33	65
Como Lake Bog	1,585	11	1	2

Table 3. Summary of 2019 bog lemming surveys in MFWP Region 2. *Refers to 1 scat board set for 1 night. These numbers are not reflective of effective trap-nights because of constant rain/snow during the survey season that washed away or degraded scats on some boards and during some survey periods.

Bat Capture and Acoustic Monitoring

Although bat acoustic data is extremely important for determining species presence and distribution mist-netting surveys are important for validation of species, given the challenges with correctly identifying acoustic calls. Mist-netting surveys also provide valuable information on sex, age, and reproductive status of animals that is unobtainable from acoustic efforts. Previous mist-netting efforts in eastern Montana are limited but are now particularly critical based on the 2015 ESA listing of the northern myotis (*Myotis septentrionalis*) as a threatened species. Several 2019 captures of animals likely to be northern myotis in MFWP Region 6 by agency staff and one consulting firm has led the USFWS to propose new classifications.

From the USFWS Ecological Services office: The USFWS has identified McCone and Valley counties as areas where the species "may be present". If the genetic material from the individuals captured are genetically verified, the species' listed range map will also be expanded. This also affects how the white-nose syndrome (WNS) zone map is calculated. Under the species' 4(d) Rule, the only protections that the species has from incidental take is for known hibernacula and known maternity roost sites. We still do not have any known hibernacula or maternity roost sites in the state. These protections are only put in place in counties within the WNS Zone, which is defined as a county within 150 miles of a county known to have WNS or the fungus that causes WNS. Currently, all of the nine counties where the species is listed are within the WNS Zone. This Zone is only calculated within the species' known range. Knowing for sure that those are NLEBs will:

- Expand the species known range
- Expand the area for which the WNS Zone is mapped; and
- Help the USFWS office work with project proponents to minimize the risk of affecting the species by recommending that trees are cleared outside of the months of June and July.

See the research section for a summary of a project looking at alternate non-cave or mine hibernacula.

Bat Use of Bridges Across Montana

Bridge surveys remain one of the most efficient and effective ways to find bat roosts across large geographic areas. To date the MNHP has conducted six bridge-use monitoring projects (Figure 13) documenting 217 roosts, many of which represent the only known bat roost in a given county or area. MFWP partnered with MNHP in 2019 to conduct bridge surveys to wrap up efforts to have full coverage across the state. More than 700 bridges were surveyed across northern Montana for bat use. A number of bridges contained populations significant enough (>25 individuals) for spring white-nose syndrome surveillance or maternity colonies previously unknown (final results and updated map pending).

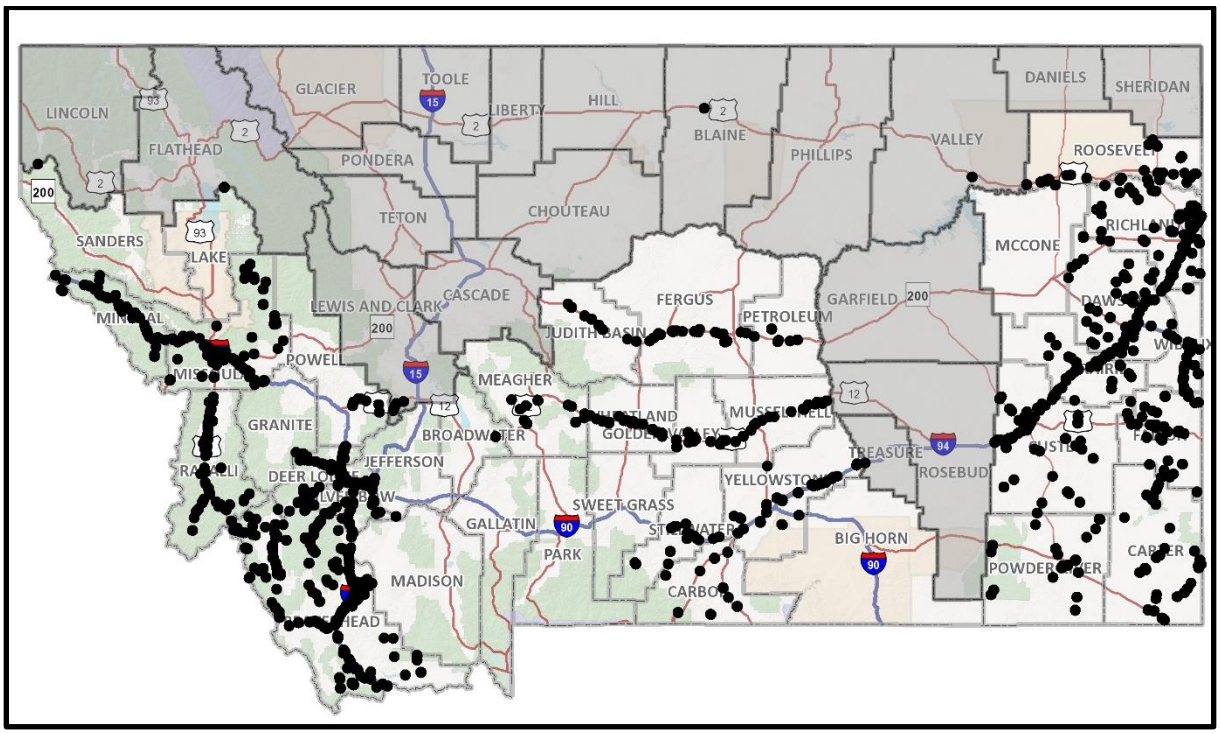


Figure 13. Surveys of bridges to assess bat use conducted in Montana between 2003 and 2017 (black circles). Priority counties for surveys in 2019 are highlighted in grey.

Long-term Species Monitoring

Least Tern/Piping Plover Monitoring

Least terns remain listed as federally endangered and piping plovers remain listed as federally threatened, however, little of the listed range for either species falls within Montana. A delisting proposal for the least tern across its range is expected sometime in 2020.

Annual surveys along the lower Yellowstone River have collected data on terns and plovers since the 1990s. Sandbars or gravel bars that are not attached to the mainland and contain a portion of unvegetated gravel or sand are surveyed but surveys are not standardized and are limited by water levels and staff availability. The highest numbers of both terns and plovers ever observed were recorded in 2019 (Figure 14).

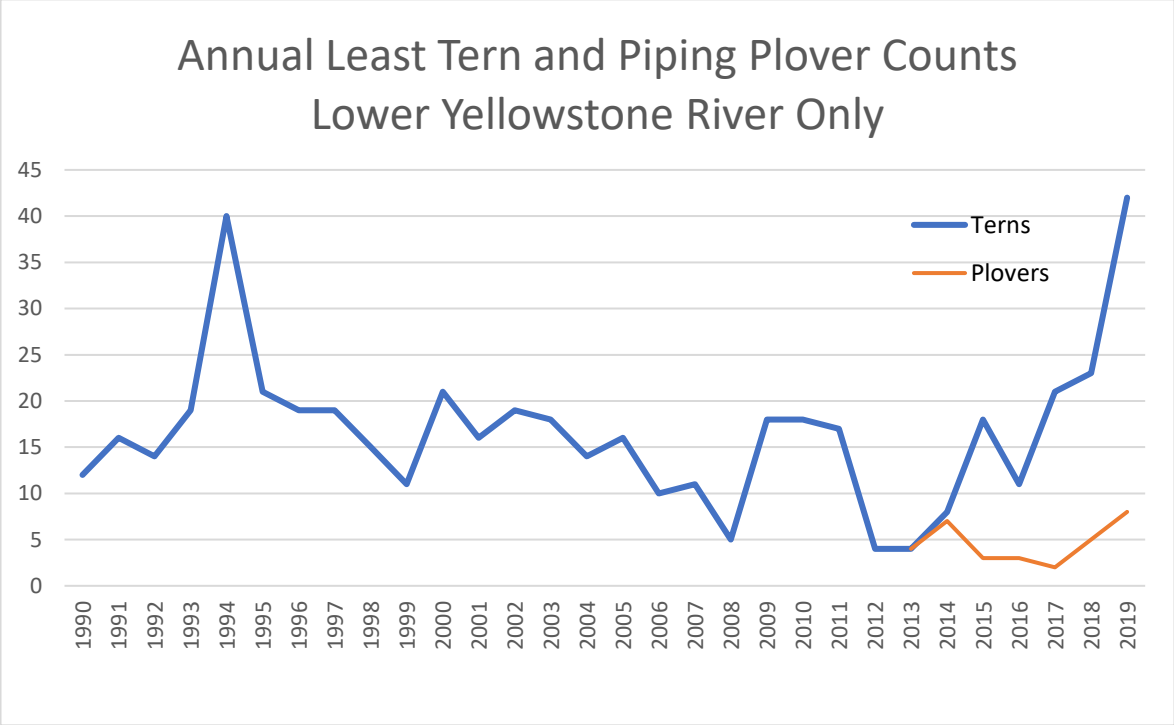


Figure 14. Annual least tern and piping plover counts on the lower Yellowstone River. Annual piping plover data is spotty or absent across this time period.

Common Loons

MFWP Region 1 and 2 staff continue to assist with the coordinating of conservation, management, and research of common loons in Montana. While survey techniques have remained the same, how biologists collect and share the information has changed. MFWP worked with partners to create a survey form in an application known as Survey123 that allows an individual to share survey results in real time when an internet connection is available. In the past it would take up to a year or longer for data to become available to partners. This application will greatly enhance MFWP's and its partners ability to summarize

demographic data and reduce the time it takes to respond to site specific conservation and management needs.

One challenge that we continue to face is mortality of common loons caused by lead fishing weights. Necropsies of five common loons from Montana breeding lakes indicated two loons had died from lead poisoning. Our partner, the Montana Loon Society, continues to purchase non-toxic fishing weights that interns and technicians handout as part of outreach efforts. In addition, MFWP staff are using a large quantity of non-lead fishing tackle purchased with year end funds to begin efforts to incorporate the use of non-lead fishing weights into the Hooked-on Fishing curriculum in northwest Montana.

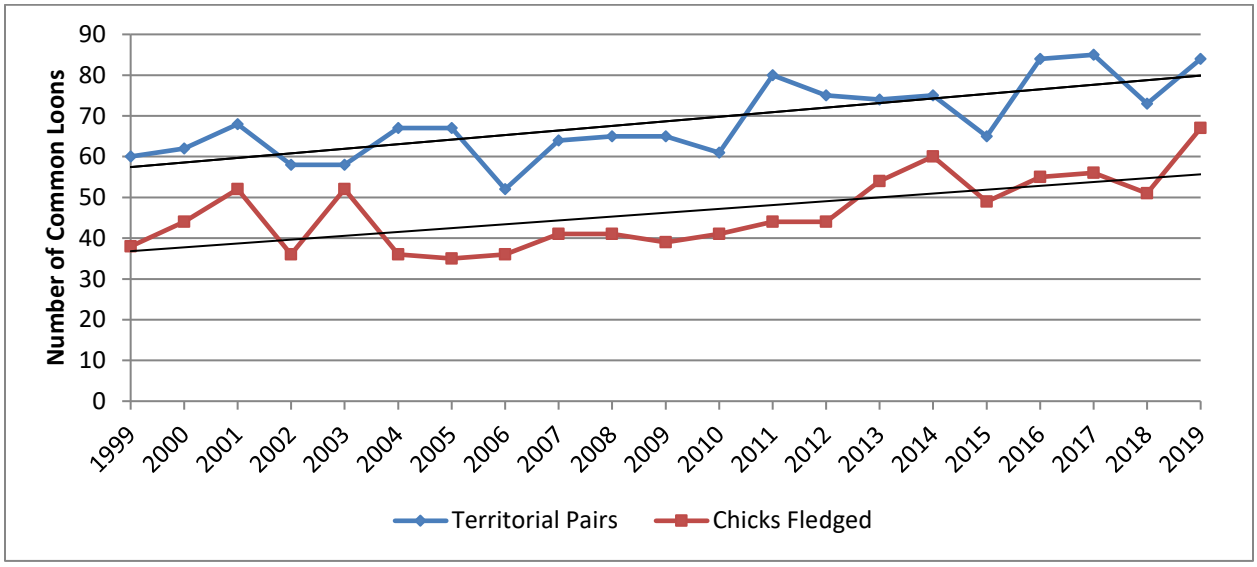


Figure 15. Overall productivity of common loons in western Montana.

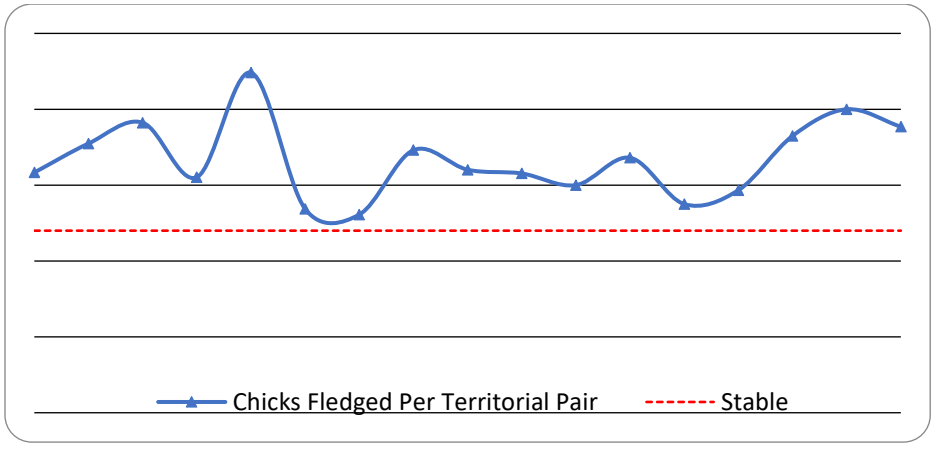


Figure 16. Chicks per fledged territorial common loon pair over time.

Pelicans and Cormorants

Pelican and cormorant nests have been monitored at Canyon Ferry WMA since the late 1980's with zero nests of each species documented in the initial years. Since the early 90's the number of cormorant nests increased steadily to ~840 in 2003 but declined since then to only 162 cormorant nests in 2017 and even further to 72 in 2019. The number of pelican nests also increased precipitously since the early 90's to an all-time high of 2,556 in 2013 then declined to approximately 1,640 pelican nests in both 2017 and 2018, then to 688 nests in 2019. This most recent decline is likely correlated to the draining of pond 3 to remove carp several years ago; this project has been successful at reducing carp, making the water clearer and allowing aquatic vegetation to flourish. This provides more suitable conditions for waterfowl and other nesting shorebirds. Caspian tern nests are also recorded during this survey with only one or two nests counted per year.

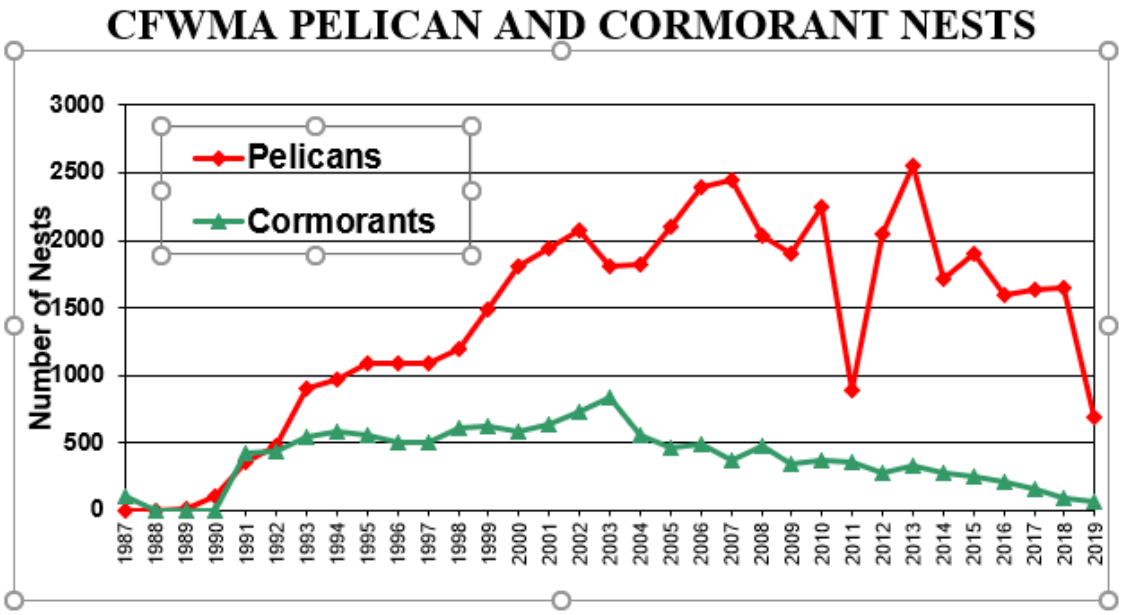


Figure 17. American white pelican and double-crested cormorant nesting has been documented by MFWP Region 3 personnel at Canyon Ferry Wildlife Management Area since 1987 (F. Jakubowski).

Pelicans and double-crested cormorants are also being monitoring at Arod Lake by the US Fish and Wildlife Service as part of the monitoring plan for the Western population of American White Pelicans through the Pacific Flyway Nongame Migratory Bird Technical Committee. (http://pacificflyway.gov/Documents/Awp_strategy.pdf).

Peregrine Falcons

The Montana Peregrine Institute enlists volunteers and some agency biologists to monitor a portion of peregrine falcon eyries each year. Monitoring has been focused in western and central Montana, but falcons are likely nesting in parts of the state not indicated in Figure 18. Eyries are found today in much greater number and much greater distribution than in the past indicating a stable to increasing population.

Figure 18. Statewide peregrine territory map taken from the Montana Peregrine Institute website.

MFWP has been contacted by the Montana Falconers Association with a request to remove the peregrine falcon take quota. The quota of no more than 10 birds for resident falconers and one bird for a nonresident over any biennium was put in place in 2012 after four years of permit only take. Take since the beginning has been well below that allowed with an average of two birds taken per year; low of zero and high of five.

Bald Eagles

Statewide bald eagle populations have been monitored by MFWP for over 30 years. However, monitoring of the more than 750 nests across the state has been significantly reduced since population recovery. Some regions are relying on volunteers to monitor nests. Bald eagle populations statewide appear stable to increasing.

MFWP Region 6 and 7 continue to monitor expansion areas in eastern Montana. MFWP Region 6 surveys along the Missouri river every other year. During the last flight on 5/7/2018, 19 adults were near or on nests. Six of the locations had an adult incubating and seven young were counted in the nests. Eaglets at this date are small and well camouflaged, therefore this should be considered a minimum count. Twelve total occupied nests were observed. Comparatively, in 2014 there were eight occupied nests with 16 young in the same survey area (6/28/2014). MFWP Region 7 conducted an aerial survey for occupancy in 2019 along the Yellowstone River from Miles City to the confluence with the Bighorn River in late April. During the survey, we monitored 39 previously known nests with 30 nests classified as active and nine as inactive. For the inactive nests, two were occupied by Canada geese. We observed four new nests with two classified as active and two as inactive. We observed a total of 35 adults and eight juveniles. Productivity (number of successful fledglings) is unknown because of reduced survey efforts.

Multi-taxa Monitoring

Fleecer Mountain Wildlife Management Area

MFWP recently purchased a 200-acre addition to the Fleecer Mountain Wildlife Management Area 20 miles south of Butte. Approximately 100 acres of the property consist of wetlands that are encumbered with a Wetland Reserve Program (WRP) conservation lease held by Natural Resource Conservation Services (NRCS). Two miles of Divide Creek runs through this portion of the property. The remaining acres are irrigated meadows containing smooth brome and other tame grasses, along with native vegetation. Because of the decreased grazing pressure on the wetlands following the WRP conservation easement (beginning in 2012), the riparian plant community is trending back toward a sedge-dominated system.

One of the property management objectives is to improve the wetland conditions. As part of the monitoring of management actions to meet this objective, a herptile survey was conducted during the first year of MFWP ownership to evaluate the health of the riparian area and establish a baseline. In 2019, dip net surveys and nocturnal calling surveys were completed with the majority of the survey areas either irrigation ditches or backwater and overflow from Divide Creek. A potential Columbia spotted frog was seen jumping into the water but was not positively identified, algae growth that could be confused with amphibian eggs was observed and a number of small fish, likely rainbow trout, were seen swimming in clusters. There were also many clusters of black-shelled snails in softer mud-bottoms. During the nocturnal calling surveys, a frog was potentially heard once, but was not positively identified. This work will be repeated at a defined interval to monitor amphibian and reptile presence and abundance over time and as management activities and habitat quality changes.

Porcupine-Gallatin Wildlife Management Area

In collaboration with MNHP biologists we located mountain lakes in MFWP Region 3 to verify presence of herptile species, particularly on state-owned WMA's. Collected using MNHP standardized herptile survey methodology these data are intended to provide a baseline for future monitoring of population trends. Ramshorn Lake located in the Gallatin mountain range at 8,400 feet was one of the lakes surveyed in 2019. The perimeter of the lake was surveyed with dip nets resulting in no detections of herptile species. Because access into these high alpine lakes occurs so late during the summer and generally after the herp mating period, nocturnal calling surveys are not effective.

Sun River Wildlife Management Area

MFWP Region 4 staff have been and continue to monitor birds within a conifer encroachment treatment project. Staff conduct point counts pre- and post-treatment to evaluate change. We have one year of pre-data on two units and two years of post-data on one unit. 2019 was the third year of monitoring, work will continue in 2020.

Spotted Dog Wildlife Management Area

Bird surveys using the Integrated Monitoring at Bird Conservation Region protocols are being conducted at the MFWP Region 2 Spotted Dog Wildlife Management Areas. See IMBCR section.

The MFWP Region 2 nongame specialist has conducted beaver activity and historic-use surveys on Spotted Dog Creek and all of its tributaries. These surveys also include qualitative surveys of stream and riparian habitat conditions. The surveys are meant to support a future effort to restore beaver-mediated riparian habitat in these drainages, piggy-backing off a large-scale wet-meadow and riparian restoration project funded by the Natural Resources Damage Program which is slated to start in 2020.

Rubber Boa (Craig Barfoot)

Raptor Migration Counts

Working with Last Chance Audubon and Flathead Valley Audubon, MFWP supported volunteers assisting HawkWatch efforts at the Big Belts and Jewel Basin sites, respectively. Jewel Basin observers counted more than 1,600 birds of 16 raptor species in September and October of 2018. This includes almost 700 sharp-shinned hawks, and more than 200 golden eagles. The Big Belts site counted almost 2,300 birds of 22 species, including more than 1,500 golden eagles during an abbreviated fall count. More detailed count information can be found at www.hawkcount.org. Both sites provide additional opportunities for citizens to get a unique look at a variety of raptor species through formal tours and individual trips to the observation sites.

Monitoring Avian Productivity and Survivorship

Monitoring Avian Productivity and Survivorship (MAPS) is an international monitoring program coordinated by the Institute for Bird Populations (IBP), which uses bird capture and banding data to compile basic demographic parameters of resident and migratory species, many of which are imperiled regionally and even globally. In 2019 MFWP Region 3 Butte area biologist, Vanna Boccadori completed her eighth year of running a MAPS station at the Mount Haggin Wildlife Management Area (MHWMA). Over the long term this intensive monitoring work will be used to evaluate habitat improvements on MT Haggin close to the Anaconda damaged area. This MAPS station is designed to monitor how the diversity of bird species changes over time as new vegetation inhabits the area. Re-capturing birds in the future can provide important information such as reproductive rates, survival, movement patterns, and habitat preference of bird species. Just in 2019 alone, 178 individuals of 25 different species were handled. This included 117 new birds which were banded, 50 re-captures, and nine hummingbirds (which were handled but too small to be banded). The re-captures included some which were first banded as far back as 2014. The intent is to run the Mount Haggin MAPS station for a minimum of 15 years.

Another of the Montana MAPS stations is located on the Beartooth WMA in MFWP Region 4, and has been run by retired Region 4 Wildlife Manager, Graham Taylor (right) since 1995. Even after retirement Graham remains committed to the MAPS station. Graham, thank you for your decades of hard work catching, teaching and inspiring!

(Photo credit, Allison Begley)

For more information on the MAPS program, visit https://www.birdpop.org/pages/maps.php.

Breeding Bird Surveys

The Breeding Bird Survey (BBS) program began in 1966, and in Montana there are 106 road-based routes, including 42 new routes established in 2015. A new coordinator began in 2017 (Elizabeth Madden, Bozeman), and with additional outreach from MFWP and Montana Audubon, there are currently 18 vacant routes. Most of the vacant routes occur in central and eastern Montana. Fifteen MFWP staff run BBS routes, as well as dozens of bird watchers that volunteer their time. Results can be found at https://www.pwrc.usgs.gov/bbs/index.cfm. BBS data continues to be the foundation of many landbird trend estimates.

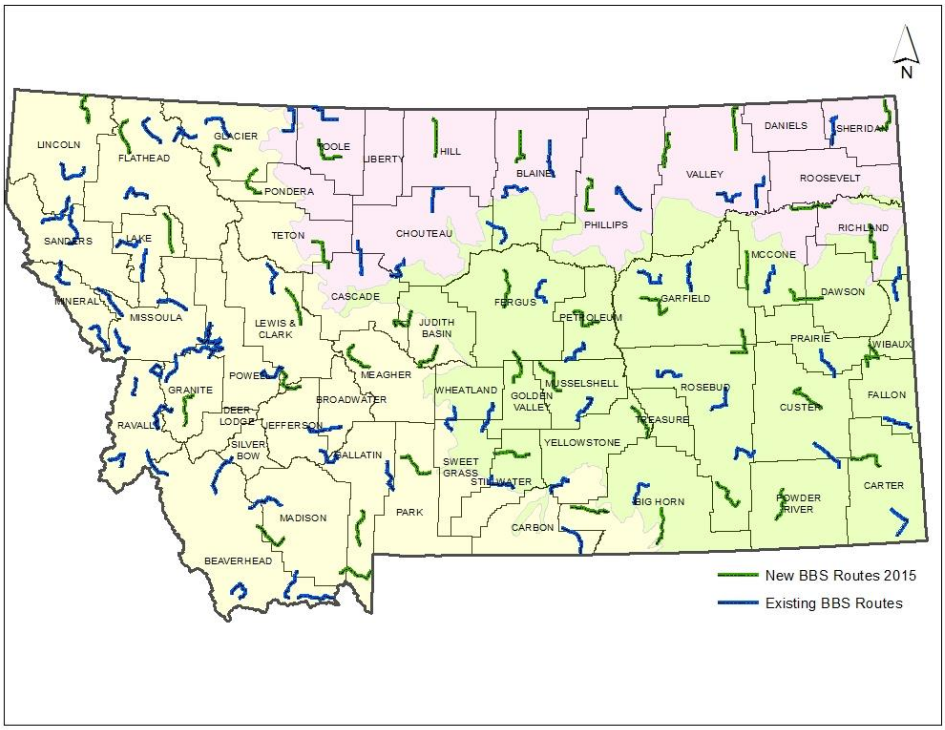


Figure 19. Locations of BBS routes in Montana.

Integrated Monitoring in Bird Conservation Regions

Through a partnership between MFWP, US Forest Service, Intermountain Bird Observatory (IBO), Bird Conservancy of the Rockies, Bureau of Land Management, and 12 other states, statewide bird monitoring (primarily for landbirds) was implemented for the 10th year in Montana in 2019. The Integrated Monitoring in Bird Conservation Regions survey known as IMBCR is stratified by land ownership and Bird Conservation Regions (10, 11, and 17) (Figure 20). A total of 187 transects (totaling 2,203-point counts) were surveyed between May and July 2018, 15% of which were in part or in whole on private lands. The effort resulted in 28,794 detections of 200 bird species. In 2019, IBO technicians completed 161 out of 162 selected surveys for a total of 1,768 point-counts. IBO tallied 22,245 individual detections representing 198 total bird species. Of these, 56 bird species had $\geq$ 80 detections, a threshold which generally allows for density estimates to be generated for those species.

In 2018 and 2019, MFWP also contributed to an additional set of IMBCR surveys to assess the efficacy of grassland conservation projects. As part of a multi-year, integrated dataset, this information collected through IMBCR contributes to distribution and population trends across Montana and the western US. A detailed report is available at www.birdconservancy.org. After 10 years of survey in Montana, there are more than 100 species for which density and trend can be estimated with confidence.

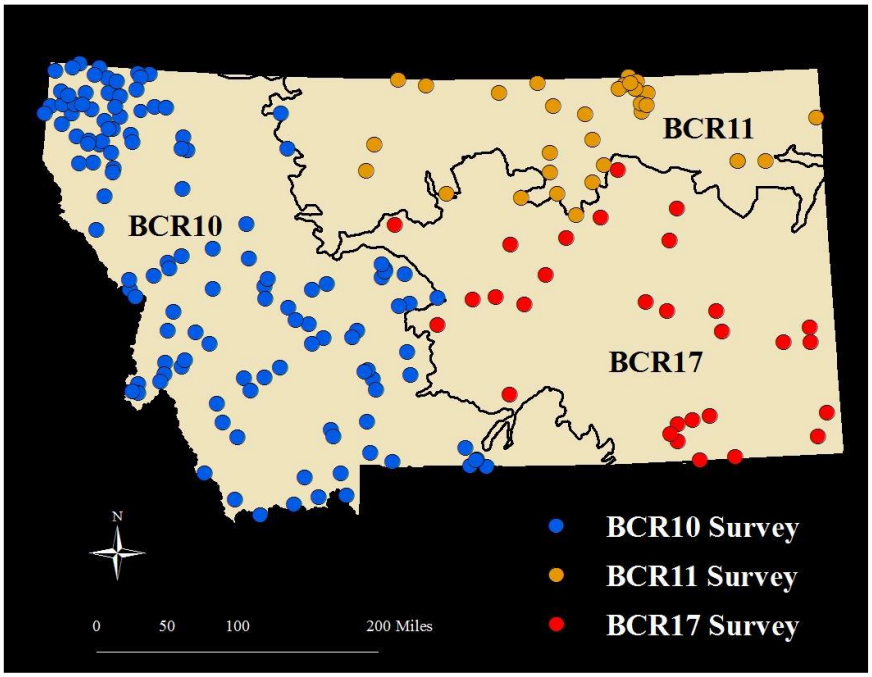


Figure 20. The 2018 distribution of 186 IMBCR surveys by Bird Conservation Region (Avian Data Center 2019).

Biologists in MFWP Region 2 used the IMBCR protocol to establish point count grids in grassland habitats and point count transects along riparian areas in the Spotted Dog Wildlife Management Area. The objectives of this effort were to: 1) establish surveys to monitor changes to grassland and riparian habitats on the WMA and on adjacent private lands entering an exchange-of-use, rotational grazing program with birds as a surrogate for habitat conditions, and 2) repeat IMBCR surveys that were conducted in 2012 after acquisition of the WMA to monitor changes in bird communities since the WMA was established. In total, the MFWP Region 2 nongame specialist and a volunteer conducted 70 point counts in grassland habitats representing two grids on the WMA and two grids on adjacent private lands, as well as 34 point counts along riparian areas on the WMA and 26 along riparian areas on private lands. The long-term plan is to repeat these surveys after the grazing rotation has been in place for at least two cycles to document changes in the bird community that will provide insight into whether the grazing plan is achieving goals for rangeland health. These point counts will be further incorporated into a broader effort to conduct point count surveys conducted across the WMA every 8-10 years. In 2020, this effort will be expanded by repeating previous IMBCR surveys on other portions of the WMA to monitor changes over the past 8 years and to establish a baseline to compare after future restoration work and other management actions on the WMA.

Species Restoration

Black-footed Ferrets and Prairie Dogs

There are currently about 30 ferrets in the wild in Montana. The Fort Belknap reservation currently has ~1,600 acres of prairie dogs. Dusting was done in 2018 to include 184 acres at ferret reintroduction sites. Ferret kit surveys and trapping were conducted in 2018 and found ≥2 adult males, ≥6 adult females, ≥3 kits. All adults and kits are wild born as the last ferret release occurred in 2015. Prairie dog mapping, prairie dog counts, kit surveys, trapping and dusting continue on site. The Crow reservation currently has ~5,000 acres of prairie dogs, with likely more. Dusting was done in 2018 on 546 acres. At least 20 ferrets including kits were detected in 2018. Plague mitigation, kit surveys and trapping planned in 2019. The Northern Cheyenne reservation experienced a drop from 7,000 acres to <300 acres of prairie dogs in 2018 due to plague. Work is underway to increase those acres. Translocations, mapping and dusting are planned for 2019. The tribe and partners are hoping to get ferrets out again after prairie dog populations increase.

First People's Buffalo Jump State Park

Over 700 acres occupied by prairie dogs were mapped in September 2019 at First Peoples Buffalo Jump State Park. The prairie dog management plan currently in place for the park calls for a balance between wildlife and historical artifacts. The park is designated as a National Historic and Cultural site, yet prairie dogs are damaging cultural artifacts like buffalo jump drive lines. There is sensitivity to lethal removal of prairie dogs on state park lands but also concerns about damage and colony expansion. Some small control efforts, CO2 cartridges and kill box traps, have been conducted around the most sensitive artifacts. Lethal capture with kill traps was not successful in 2018. An Environmental Analysis is needed for any translocation of prairie dogs from the park as is the case with all wildlife movement under jurisdiction of MFWP. The Fish and Wildlife Commission as well as the Parks board will need to approve any translocation.

Disease Management

Development of sylvatic plague control techniques continues with the addition of an experimental fipronil bait to kill fleas. Fipronil is the same active ingredient found in many domestic dog flea control drops. The addition of this treatment would mean sylvatic plague vaccine, fipronil bait and Deltamethrin dust could all be used for plague control.

Landowner Incentive Programs

MFWP, the USFWS and partners are still looking to finalize a program for incentivizing private landowners for prairie dog presence and reintroduction of black-footed ferrets through a USFWS safe harbor. Some promising leads and interested landowners in Rosebud County may make this dream a reality if funding can be secured for incentives.

Conservation Lease Program

The MFWP 30-year Working Grasslands Initiative lease program is available to willing, eligible landowners who agree to protect native grassland, sagebrush, and wetlands. Criteria for project consideration includes the following: Property has adequate habitat for specific wildlife recovery needs, such as 1,500 acres of prairie dog habitat suitable for potential black-footed ferret reintroduction. There are 7 other criteria listed in the program proposal. Three completed conservation leases in Garfield county have great grassland bird habitat equal to ~16,000 acres, but it is fair to say the ~40,000 acres of leases completed since 2017 provide habitat for lots of species including prairie dogs.

Trumpeter Swan

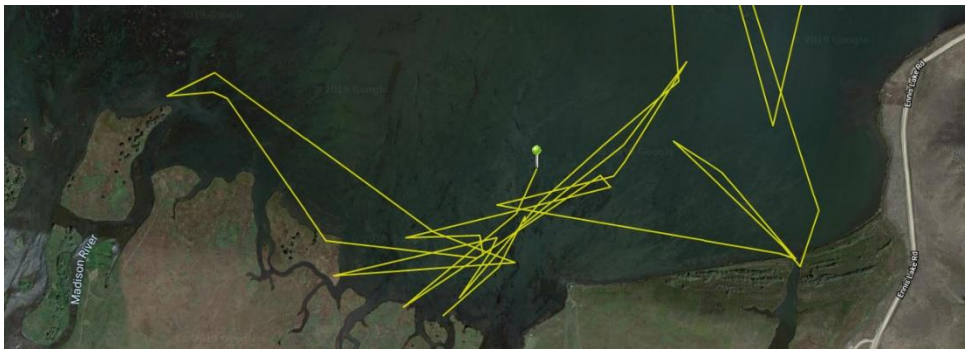
In 2002, the Pacific Flyway Council issued its *Rocky Mountain Population Trumpeter Swan Implementation Plan (TSIP)* that includes a goal to increase the number of breeding pairs of trumpeter swans in suitable habitats. Numbers of swans within the U.S. portion of the Rocky Mountain population are in continual decline. State wildlife management agencies in Montana, Wyoming, and Idaho agreed that increased efforts to restore these birds was needed and agreed to work together to develop suitable breeding areas and partnerships to implement TSIP restoration efforts. These efforts are to include releasing trumpeter swans into suitable sites. In Montana specifically, the objectives of this work are to: (1) restore breeding trumpeter swans to their historic breeding range in the Upper Missouri watershed, (2) release five birds annually, with the goal of establishing a breeding flock of five nesting pairs within a 5-10-year time frame, (3) encourage other swans to select the middle Madison as a nesting location, (4) increase the geographic extent of the Montana trumpeter swan flock and connect areas in MT, ID, WY and Yellowstone National Park, and (5) engage the community in swan conservation and encourage reporting of trumpeter swan observations and marked birds.

Madison Valley releases began in 2012. Blackfoot Valley releases began in 2005. To date 207 swans (including cygnets and adults) have been released in the Blackfoot valley and 29 (cygnets and adults) released in the Middle Madison. The Blackfoot valley has an average of five nesting pairs (with a high of eight nesting pairs in 2016). Over 80 cygnets have been produced since the project started in the Blackfoot. While no documented nests have been recorded in the Middle Madison, several adults with young have been observed during subsequent springs, implying that birds are nesting in the valley. In 2018 two adults and two yearling birds were observed in a pond south of Ennis, and in 2019 one adult bird and five yearlings were observe on Ennis Lake.

The Wyoming Wetlands Society (WWS) in collaboration with the Ricketts Conservation Foundation, MFWP and the USFWS caught and equipped four trumpeter swans with OrniTrack GPS-GSM collars in late July 2019 in order to better understand swan movements, habitat use, and connectivity between restoration areas. Two adult swans were captured in the Blackfoot Valley and two were captured in the Middle Madison valley (one yearling and one adult). Molting swans were located by an aerial flight and ground surveys several days prior to capture. The birds were caught by hand using a kayak, banded with a USGS metal locking band, sampled for genetic sexing, and collared with the OrniTrack solar collars. The GPS-GSM collars are white with a red stripe painted on the top and bottom of the collar horizontally (Figure 21). GPS-GSM collars that are within range of cellphone towers are reporting information daily (Figure 22). One of the Madison valley swans moved from Ennis to Rexburg, Idaho in less than 24 hours once fall migration began.

Figure 21. Trumpeter swan with GPS-GSM collar. Note red striping and black numbering.

Figure 22. An example of collar data from the molted yearling trumpeter swan captured on Ennis Lake.



Tailed-Frog Response to Rotenone Treatment

MFWP Fisheries staff began a brook trout removal project in Overwhich Creek in the south Bitterroots in 2017. Rotenone was applied to a ~5 mile stretch of river and its tributaries in 2017 and 2018. An ideal study would have collected amphibian abundance and distribution in this stretch pre-treatment, unfortunately, no pre-treatment data was collected.

To get a general idea of the current condition, a small crew of MFWP and MNHP staff conducted a kick-net survey of the treatment area days in advance of the 2019 treatment. Second and third year rocky mountain tailed-frog larvae along with some older life stages (metamorphs) and adults were observed. We did not expect to find any reproduction from 2019 with the methods used. The numbers observed and reported appear to be much lower than the large numbers anecdotally reported by some of the treatment team in year one prior to treatment.

Based on the findings of seemingly adequate numbers of larvae, metamorphs and adults it was determined that 'bucketing' of larvae and metamorphs to protect them from the third Rotenone treatment was not necessary. Instead, a small experiment was conducted using structures that could contain the larvae and metamorphs while allowing treated water to pass through.

While there are a large number of variables that influence whether a larvae or metamorph survives treatment we hoped this test would tell us something about survival during a rotenone treatment. Fisheries staff counted larvae and metamorphs within three containers following the treatment: Of 41 larvae and metamorphs found in the hampers after treatment only six were still alive. While this is only a 15% survival rate it may not accurately reflect true survival as some tadpoles that reportedly appeared dead but maintained suction on rocks or parts of the hamper were likely still alive. A survey to look for larvae, metamorphs and adult frogs is planned for 2020 and possibly 2021 to see if numbers increase in years post Rotenone treatment.

Rocky Mountain Tailed Frog (Torrey Ritter)

Research

Bat Habitat Use (Montana State University)

Update from the Montana State University student for the 3rd and 4th year of this work:
Mountain pine beetle (MPB, *Dendroctonus ponderosae*) outbreaks have resulted in large-scale changes in forest structure throughout the western United States. These changes can have large impacts on wildlife, but have not been studied in bats. Given that foraging and roosting sites may limit the distribution and abundance of bat populations, a graduate student from Montana State University has been looking to meet the following objectives 1) quantify characteristics of these sites in forests during the summer and 2) evaluate how the availability of these characteristics changes with different intensities of MPB disturbance.

Mist netting was conducted for bats in forests dominated by lodgepole pine (*Pinus contorta*) that exhibited varying degrees of tree mortality due to MPB. Thirty-five net nights between June and August of 2017 and 34 net nights between June and August of 2018 yielded 222 bats comprised of seven species during both sampling seasons. Little brown myotis ((*Myotis lucifugus*), 32%) and silver-haired bats (*Lasionycteris noctivagans*, 29%) comprised the majority of captures. Radio-transmitters were attached to 40 male bats (34 little brown myotis, four long-legged myotis [*Myotis volans*], and two long-eared myotis [*Myotis evotis*]) in addition to a single female little brown myotis. At least one roost for 25 individuals (total roosts = 74) were identified. The majority of bats roosted in crevices and cavities within rock features (72%). However, some bats used snags of lodgepole pine and Douglas fir (28%).

Conditional logistic regression models were used to explore resource selection at four spatial scales (i.e., microclimate, roost, roost plot, and landscape) for male little brown myotis that roosted in rock features. Sample sizes for tree roosts, long-legged myotis, and long-eared myotis were limited making it impossible to model these observations. Final data analysis and results regarding roosts and modeling should be available by the winter of 2019.

To characterize foraging, 39 acoustic detectors were placed in forest stands (16 in lodgepole pine, 12 in lodgepole pine and Douglas fir mixture, and 11 in ponderosa pine) across the Helena Lewis and Clark National Forest with varying degrees of MPB-caused tree mortality between June and August 2017 and 2018. During summer 2017, these detectors recorded 902 GB of data resulting in 30,693 sound files, or bat passes. In 2018, 1.06 TB of data resulted in 23,308 bat passes. The process of identifying the number of feeding buzzes and quantifying foraging activity relative to overall bat activity is ongoing. Both years of data are being considered to understand how bat foraging activity varies with MPB severity. Final data analysis and results regarding foraging and overall activity should be available by the winter of 2019.

Silver-haired Bat (Lauri Hanauska-Brown)

Shannon Hilty, the Montana State University graduate student on this project received the $5,000 Nongame Checkoff stipend in FY18.

Songbird Response to Rest Rotation Grazing (University of Montana)

Part I of this project wrapped up in 2019 with student Jessie Golding and Victoria Dreitz completing the following reports found on the MFWP research pages.

- J. D. Golding and V. J. Dreitz. 2017. Songbird response to rest-rotation and season-long cattle grazing in a grassland sagebrush ecosystem.
- J. D. Golding, J. J. Nowak and V. J. Dreitz. 2017. A multispecies dependent double-observer model: A new method for estimating multispecies abundance. Ecology and Evolution 7:3425-3435.
- J. D. Golding and V. J. Dreitz. 2016. Comparison of removal-based methods for estimating abundance of five species of prairie songbirds. Journal of Field Ornithology 87: 417–426.

Results generally show that the species studied exhibit mixed responses to different grazing systems. The sagebrush obligates (Brewer's sparrow), generalist (vesper sparrow), and two grassland associated species (horned lark and chestnut-collared longspur) were equally abundant on both grazing systems, suggesting grazing system had no effect on their abundance. However, the remainder of the grassland associated species showed a response to grazing: three (brown-headed cowbird, lark bunting, and Western meadowlark) were more abundant in season-long than rest-rotation, whereas one (McCown's longspur) was more abundant in rest-rotation. These results suggest that differences in grazing management affect a subset of grassland obligate species and that only one species, McCown's longspur, preferred conservation grazing. Our findings provide useful information for assessing the suitability of grazing as a conservation tool for songbirds.

Part II of this project was tackled by graduate student Kayla Ruth with the following objectives for understanding songbird responses to grazing and the mechanisms that drive songbird populations:

- Describe migratory songbird community composition (i.e., abundance and diversity) between rest-SGI and non-SGI during the breeding season.
- Measure nest density across the study area in response to rest-SGI and non-SGI grazing treatments.
- Measure nest success of songbird species across the study area and in response to rest-SGI and non-SGI grazing treatments grazing treatments.
- Assess the relationships among adult abundance, nest density and nest success within and across species in response to rest-SGI and non-SGI grazing treatments.

This project will aid MFWP in reaching current and future wildlife management goals. Many of the above objectives reflect MFWP goals for nongame species, such as keeping common species common and helping to conserve populations of species in decline. By understanding how songbirds respond to differing grazing regimes, future management plans may be put into place to prevent species in decline from becoming listed. For songbird species of concern, such as Sprague's pipit (*Anthus spragueii*), Baird's sparrow (*Anthus spragueii*), Brewer's sparrow (*Spizella brewerii*) and sage thrasher (*Oreoscoptes montanus*) (Montana Field Guide, MFWP 2015), this project will help develop future conservation efforts.

Kayla Ruth, the University of Montana graduate student on this project received the $5,000 Nongame Checkoff stipend in 2019.

Effects of Conifer Removal on Songbirds in Sage Grouse Habitat (University of Montana)

A study begun in 2018 at the University of Montana is looking to examine whether:

- Abundance and reproductive output of sagebrush-obligate songbirds increase with conifer removal,
- Abundance and reproductive output of other songbirds of management concern may be negatively impacted by conifer removal, and
- Distance from woody vegetation impacts nesting success and population trajectories (i.e., lambda) of songbirds.

Work will be conducted in the Medicine Lodge Valley south of Dillon within a MFWP-designated Core Area for sage grouse in Montana, and a high priority for sagebrush conservation. Within this part of Montana, conifer encroachment is one of the primary threats to habitat, unlike other parts of the state. The Nature Conservancy, in coordination with the Bureau of Land Management and the Natural Resources Conservation Service, has invested in extensive sagebrush habitat management through conifer removal on public and private lands in Medicine Lodge Valley, where active sage grouse leks exist. This work will take advantage of this extensive habitat management to compare nesting success in treated (conifers removed) and untreated (with conifers) sagebrush habitat controlling for elevation and aspect in Medicine Lodge Valley. The study will be designed to further examine the spatial patterns of nest success with respect to distance from conifer and riparian habitat to aid future management actions. This work will also document whether, and to what extent, any songbird species of management concern might be negatively impacted by conifer removal.

Yellow-rumped Warbler (Lee Nelson)

Elise Zarri, the University of Montana graduate student on this project received the $5,000 Nongame Checkoff stipend in FY20.

Species of Greatest Inventory Need Monitoring Assessment (University of Montana)

MFWP embarked on a partnership with University of Montana post-doc, Hannah Specht and professor, Josh Millspaugh in 2018 to address the following objectives:

- Determine the effective survey methods and minimum effort required to meet the information needs of the Species of Concern/Species in Need of Inventory assessment in order to rank species, and
- Determine the ability of Integrated Monitoring by Bird Conservation Region (IMBCR) and project-specific monitoring frameworks to adequately detect changes in populations of nongame bird species as a result of state habitat management programs.

This work will help us understand how much survey effort is needed to accurately rank species status in Montana and to accurately estimate species occupancy. In addition to general guidance on sampling effort required for species classification, this project will also help to determine the amount of data and survey effort required to accurately estimate habitat requirements and associations for Species of Concern/Species in Need of Inventory. It will also help us to understand whether there is a way to combine

incidental observations with structured survey data such that it doesn't introduce large amounts of bias to assessments of habitat use. This work will also inform decisions on whether MFWP should use project-specific and species-specific monitoring or adopt an existing monitoring technique such as IMBCR to monitor the effects of habitat management.

In the first year of this work the post doc has accomplished a great deal with the following being completed for many of the species of interest (great gray owl, greater short-horned lizard, black swift, black-tailed jack rabbit, chimney swift and rosy finches). Some of the following work was very specific to an individual species as noted: 1) Entered, compiled and cleaned data, 2) Analyzed existing survey data, 3) Evaluated existing protocols being used and their effectiveness, 4) Developed a Habitat Suitability Index model using existing data to identify high probability habitat, 5) Identified a survey approach flexible to use with in-person surveys or Automated Recording Units (great gray owls), 6) Compared whether additional effort should be distributed to new or old sites to improve estimates, and how much effort is needed, 7) Explored time-to-detection data analysis framework, 8) Assessed drivers of detection and occupancy probability, identified sites with high suitability but where survey conditions resulted in poor detection conditions for re-survey, 9) Contributed to a multi-partner Population Estimation Working Group (black swift), 10) Began compiling data on site accessibility and water source type (black swift), 11) Worked to design roadside nocturnal spotlight survey pilot work (black-tailed jack rabbit), and 12) Assessed ineffective and inefficient pilot work and proposed new camera trap option (black-tailed jack rabbit).

The following is work yet to be done for all or some portion of the species being assessed: 1) Analyze 2019 field data to compare efficacy of new approach, 2) Complete trend power analyses and/or just occupancy estimates, 3) Determine whether new survey techniques and power assessment of those techniques should be considered, 4) Confirm the appropriate unit of assessment for data, 5) Determine how to leverage citizen science observations, 5) Identify the best uses of 'unstructured wildlife observation data' and consider effort allocation needed across sites to consider effort adequate.

The following is an example of a more detailed product from this first year of project effort.

In 2019 post-doc Hannah Specht did a monitoring assessment of the great gray owl data collected from 2016 – 2018. The estimated detection probability from a single-season occupancy model with variable numbers of surveys per township was 0.04 (95% Credible Interval: 0.007-0.150), meaning that an observer has ~4% probability of detecting a GGOW with a single call-playback survey given that an owl is present in the township.

The recommendations from this analysis were to (1) build a Habitat Suitability Index model for great gray owls to ensure that survey units were placed in habitats most likely to support owls and (2) design smaller survey units ($1km^2$), based on the approximate size of a territory, and increase sampling intensity by placing survey points closer together with repeat visits with the goal of 12 – 18 samples per 1km grid cell. Observers would conduct a call-playback survey at each point composed of a series of silent listening and broadcast calls of boreal and great-gray owls.

To build a Habitat Suitability Index model, the locations of 62 great gray owl nests were used to identify four variables thought to contribute to habitat selection: slope, landcover, and vegetation height and cover.

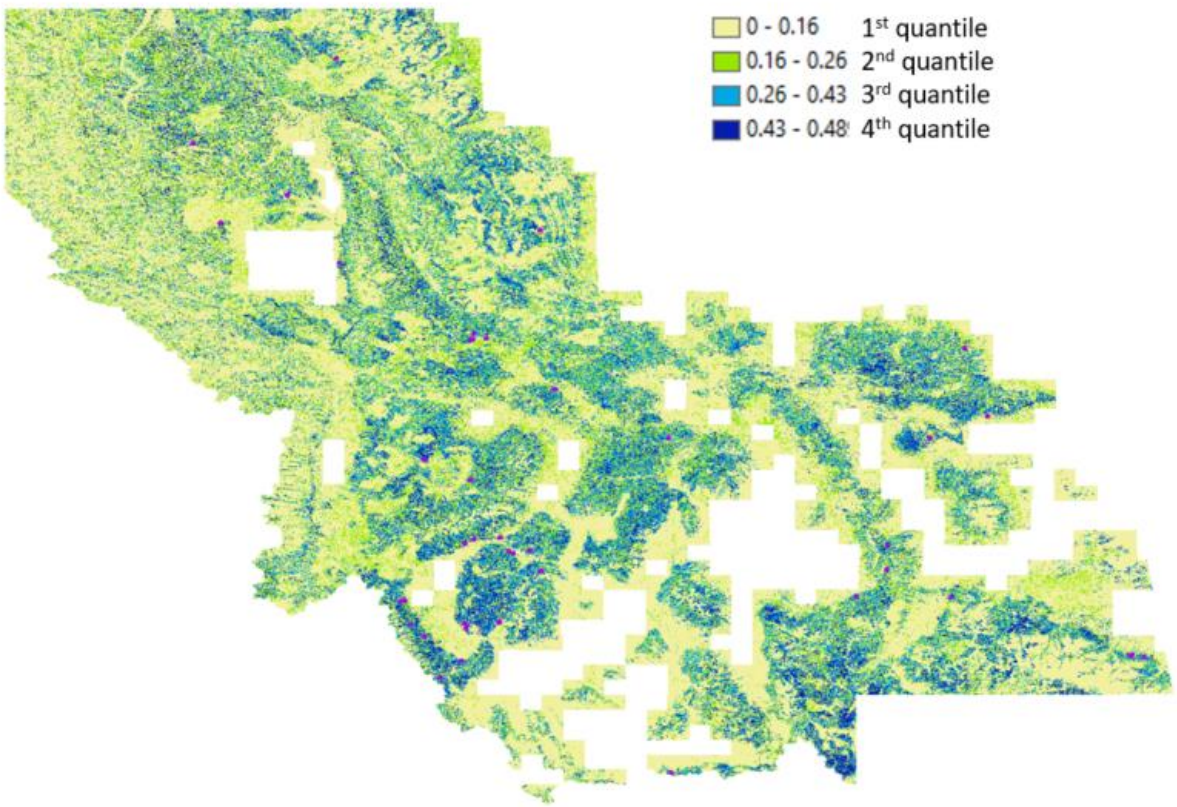


Figure 23. Habitat Suitability Index model for great gray owls in Western Montana, clipped to extent of previous great gray owl monitoring townships. Known breeding locations indicated by small fuchsia points.

Bat Population Monitoring and Disease Surveillance Analysis (US Geological Survey/Montana State University/MFWP/MNHP)

White-nose syndrome (WNS) is a fungal disease that has decimated bat communities overwintering in large cave hibernacula in the eastern and central United States. These losses have led directly to the listing of some bat species (including one that has a range extending into Montana) as well as petitions to list others. Almost all of the bat species that overwinter in Montana are known or thought to be susceptible to WNS. Predicting the effects of WNS on bat populations in western states is currently difficult due to the lack of knowledge regarding the ability of the fungus to persist in western microclimates and affect bats overwintering in smaller colonies. Estimating these effects will provide important information for bat conservation and potentially guide ESA listing petitions and decisions.

MFWP, USGS, and MSU partnered on a study to address the following objectives;

- Design a WNS surveillance protocol that accounts for both cave hibernacula and other habitats so we can optimize WNS surveillance efforts to detect the disease, and
- Develop a bat monitoring scheme so that the effects of WNS on bat populations in Montana can be elucidated with future, repeated monitoring efforts once the disease is present.

Results of this work are summarized in three separate reports:

Estimating occupancy for Montana bat species prior to the arrival of white-nose syndrome

The spread of white-nose syndrome (WNS) across the eastern United States has raised conservation concerns and provided motivation for efforts to monitor the impacts of this disease. Currently, WNS has not yet been detected in Montana, or any other western state besides Washington, and it is unknown how severe it will impact species in this region once it arrives. Within an occupancy model framework, we analyzed mist netting and acoustic records for eight bat species in Montana to estimate baseline distributions across the state prior to the arrival of WNS. Heterogeneity in the probabilities of occupancy for each species was explained with covariates for forest cover (%), elevation, ruggedness, and average degree days. Our analysis provided no evidence of spatial correlation among occupancy probabilities within each species, but did suggest spatial correlation among detection probabilities likely related to timing of surveys. We incorporated spatially-correlated random effects in the model for detection probabilities to account for these patterns. The species distribution maps resulting from this analysis can be compared to future distribution maps, after the arrival of WNS, to better understand impacts of the disease in the state. Estimates from this model can also provide guidance for future bat monitoring within the state by helping to focus surveillance efforts on areas with high predicted probabilities of occupancy or optimizing surveys to reduce uncertainty in subsequent analyses.

Modeling overall bat activity at acoustic detectors in Montana

Bat activity is potentially a useful and informative metric for monitoring populations over large spatial scales. As an index of relative abundance, changes in bat activity can occur after white-nose syndrome (WNS) arrives in an area (Ford et al. 2011) and could be more sensitive to population declines than species occupancy alone. Bat activity is also known to vary temporally across seasons and be affected by nightly weather (Hayes 1997), but the specific details about these patterns are not well understood. Modeling bat activity with ecologically meaningful covariates could provide more information about when and where bats are most active.

We analyzed bat acoustic data collected at detectors deployed in Montana for long time periods (i.e., multiple years at a single location). To avoid the issues associated with species identification errors in the acoustic files, we focused on overall bat activity (i.e., from any species). We modeled patterns in overall bat activity with night-level weather covariates while also incorporating variation within and across different years. Identifying locations of high bat activity is useful information for WNS surveys because targeting these locations could help biologists efficiently sample a large number of individual bats. This model also provides pre-WNS activity estimates for surveyed locations.

Study design and sampling effort recommendations for acoustic monitoring of bat populations in Montana

Effectively designing studies is crucial to help ensure the data collected can adequately inform conservation and management decisions. Based on previous data analyses of bat populations in Montana, we used simulations to evaluate how sampling effort should be allocated to monitor bat populations across the state. We assume future bat data will be synthesized to species-level detection/non-detection and a measure of over- all bat activity (all species) for statistical analyses. For occupancy-based analyses, we explored different sample sizes of spatial units (sites) selected using the NABat master sample probability design. Since these models require replication within a spatial unit to estimate detection probabilities, we also explored the number of replicates required to minimize the uncertainty in occupancy estimates. We compared different sample sizes in their ability to detect declines in occupancy or overall activity over multiple years, motivated by potential population changes resulting from the spread of white-nose syndrome. Due to low detection probabilities, we recommend eight visits per spatial

unit when estimating occupancy. Surveying at least 100 spatial units appears to result in adequately precise occupancy estimates and high power to detect changes in occupancy. This sampling effort is also conducive to collecting overall activity data and detecting changes in this metric over time. We discuss other important aspects of the study design, such as measuring covariates and obtaining spatially balanced samples, that should also be considered for monitoring bats in Montana.

Future Research - Bat Population Monitoring and Disease Surveillance Analysis

MFWP is currently fund raising and planning for a project to implement an acoustic monitoring plan designed to measure the impacts of WNS on Montana's bat species. This plan incorporates the suggestions of Wright et al. (2019), follows the NABat Program grid and guidelines, and is proposed to begin in 2020 for no less than 5 years post-detection of WNS-impacted bats. While the acoustic monitoring will be paired with *Pd/*WNS surveillance with the intent of measuring disease impacts, the monitoring will also be useful for identifying declines in occupancy unrelated to disease. For example, wind development, land use changes such as development or agricultural conversion, changes in fire frequency and intensity, and changes in pesticide use could all contribute to changes in occupancy of Montana bat populations. Monitoring of species through other methods such as bridge surveys or mist netting will be considered to supplement this work particularly for species difficult to monitor with acoustic detection, but, that monitoring is outside the scope of this current proposal.

Additional information gathered through this effort will more broadly inform conservation needs for Montana's bats. Understanding the distribution and impacts of WNS on Montana's bat populations has been identified as a priority for the MFWP Wildlife Health Program by the MFWP Regional Wildlife Program Managers. Data collected from this project will directly inform decisions about how aggressively we pursue bat management and conservation strategies—whether it be treatments specific to WNS (Hoyt et al. 2015, Cheng et al. 2017, Rocke et al. 2019), ecological approaches towards bolstering the health of our existing populations to improve their survival in the face of WNS (Cheng et al. 2018), additional public outreach and education, or how we structure management to conserve habitat and mitigate other sources of mortality such as that from wind development (Baerwald et al. 2009, Arnett et al. 2011). In summary:

- Better information on disease distribution provides land managers with more proactive options for controlling the spread of disease. Responding earlier in an epidemic cycle results in an improved ability to mitigate harmful effects of disease through direct treatment of individuals or indirect management of habitat.
- Designed surveillance provides the opportunity to identify characteristics of individuals and populations that are associated with high risk of disease and target those demographics appropriately. By sampling in a consistent manner across jurisdictions, designed surveillance allows for direct comparisons of presence/absence rates.
- Model-assisted sampling strategies leverage all available information on the growth and spread of Pd from on-going surveillance efforts and result in targeted surveillance of high-risk areas, making better use of limited resources while reducing the time to detect the spread of Pd to new geographic areas.

Identification of Bat Hibernacula Outside of Caves and Mines Across Montana (MFWP/MNHP)

MFWP is working with the MNHP to address the following objectives;

- Identify hibernacula in rock outcrops, badlands and other suitable non-cave/mine landscape features at sites across Montana before WNS reaches the state to inform future surveillance efforts and facilitate future exploration of the role of hibernacula type on WNS impacts and spread.
- Provide information on these hibernacula to land managers and biologists to inform bat conservation activities and assist in site selection for future white-nose syndrome surveillance efforts.

Capture and Tracking in 2018 and 2019

Twenty nights of bat capture with over 15 people took place in eastern Montana during October and November 2018. Twelve bats were captured and 10 were radio-marked. Species captured included *Eptesicus fuscus, Myotis ciliolabrum*, *Corynorhinus townsendii*, and *Myotis evotis*. Most of the capture sites had badland type rock outcrops, sandstone cliffs and/or mudstone cliffs nearby. The four sites were near the towns of Ashland, Colstrip, Fort Peck and Culbertson. The Culbertson site showed promise based on known winter bat activity but weather in the area was never conducive to trapping. A site in the city of Glasgow provided an alternate opportunity to capture, radio mark and refine the techniques of radio telemetry monitoring. Eight of the 12 bats were captured in mist nets, one was captured through a visual encounter survey, i.e., turning over rocks, and three bats were captured from under a flower box on a house in Glasgow.

Results of radio tracking varied with some bats not being relocated after marking and some bats being tracked daily for 12 days. Aerial telemetry found three bats that were never located from ground telemetry. An example of movement data is shown in Figure 24.

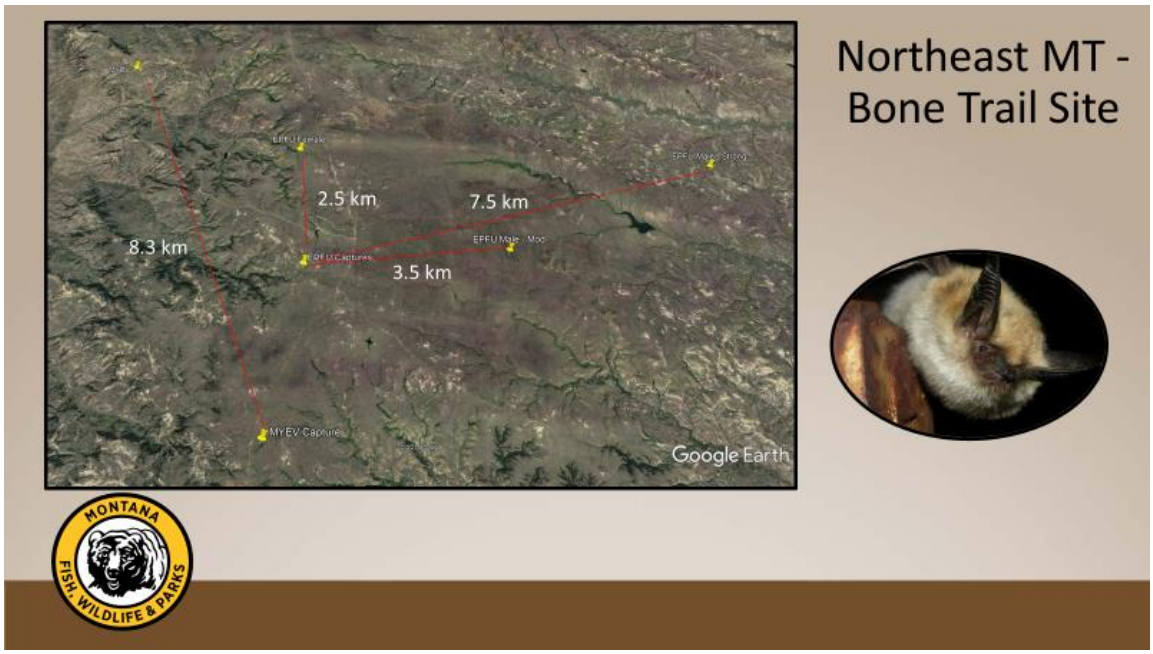


Figure 24. Movement of four individual bats. Two bats located on day 7 post-capture from aerial telemetry were not found with ground telemetry on days 8 and 9 likely due to rugged terrain but possibly because they were simply no longer in the area.

Acoustic Records

Acoustic detectors were deployed at seven sites across the study area with each site associated with roosting bats detected during telemetry work. Of these detectors six recorded bat calls for some or all the deployment period. The detector placed at Site 1 did not record any bat calls. This lack of recordings was likely related to issues with the detector, microphone, or both as almost all areas had some bat activity during the project period. The detector placed at Site 2 only recorded bat calls between April 5th and June 1st, although it was active across the winter. The detector at Site 3 recorded calls for one month between mid-November and mid-December. We hypothesize that there was equipment failure as units can run for one month without a functioning solar panel and because only one month of calls was recorded. The detectors at Sites 4-6 appeared to function across the entire winter.

We were only able to definitively identify two species across all detectors, i.e., silver-haired bat and western small-footed myotis. Sequences that were likely produced by big brown bats and hoary bats were also recorded but could not be confirmed due to shared attributes with other species or poor call quality. Consistent with detectors deployed across the state, the winter activity at project detectors was infrequent and decreased through February before increasing in March (Bachen et al. 2018).

As with total activity, the timing of nightly activity varied by detector and month in the winter. As most detectors recorded data for only part of the winter, proximity to a suspected hibernaculum is difficult to assess based on activity patterns. However, we did record enough data to confirm activity at five sites. A full reporting of all data from each acoustic detector is summarized in Bachen et al., in prep.

Microclimate

Seven HOBO loggers were placed within roosts at six sites. Sensors were deployed as far as possible into the roost feature as possible (approximately 1-2 m). Units were deployed in fall or winter and retrieved the following summer. To assess the temperature and humidity profile we examined low, high and average temperatures. Data were limited to November through March. To assess temperatures outside of the roost we used the temperature logger in the SM2 BAT+ acoustic detector.

Across all but one site the HOBO loggers recorded nominally higher and more variable temperatures than the sensors in the detector/recorder units. This is unexpected as we hypothesized that the roost feature would mitigate the effects of temperature variation. Relative humidity was also variable, but most roost features measured moderate to high average relative humidity. Only the logger placed at a southeast Montana site recorded humidity levels that are similar in value and stability to cave and mine roosts. A full reporting of all data from each HOBO detector is summarized in Bachen et al., in prep.

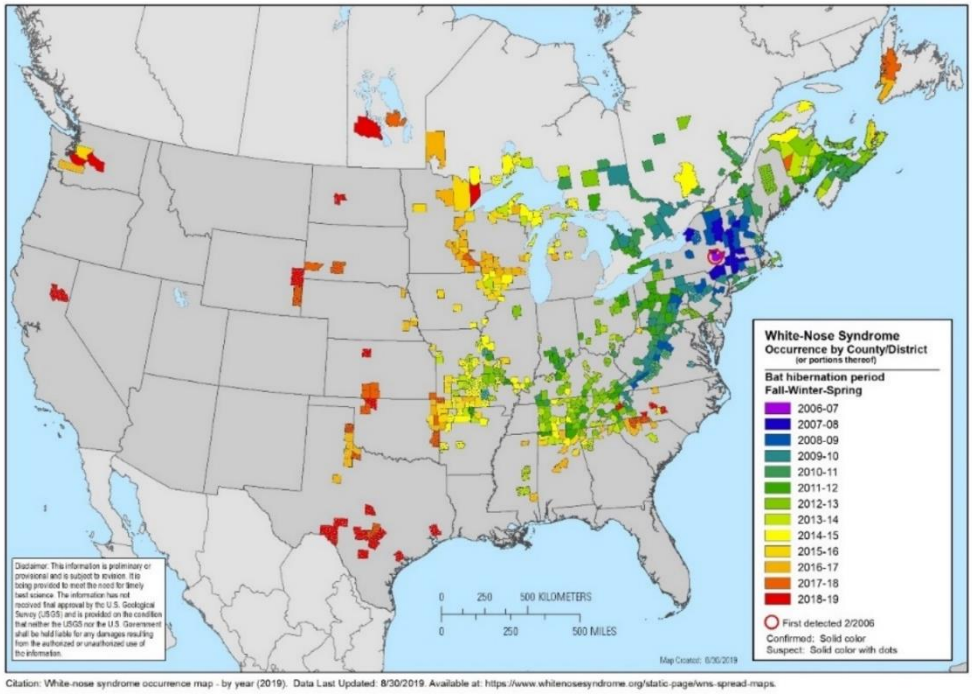
Data will be provided to wildlife and land managers seeking information on what features or areas may be used as winter hibernacula through the MTNHP's Map Viewer web application http://mtnhp.org/mapviewer/ which displays species observation and structured survey data in an online interactive map application. Data will also be incorporated into Environmental Summary reports which are used in environmental reviews to inform projects throughout the state. The data will also complement existing projects currently underway to design effective WNS/*Pd* surveillance and to identify suitable areas of the state for spring emergence surveys and acoustic surveillance.

Nongame Disease Monitoring

White-nose Syndrome

Bats and/or sediment from five bat hibernacula were sampled and tested in the early winter of 2018 and three hibernacula, a spring population at a bat box, and # spring migrating bats were sampled in 2019 in search of *Pseudogymnoascus destructans* (*Pd*) the fungus that causes white-nose syndrome (WNS). All samples, from bat swabs to sediment tested negative for *Pd*. Our largest known hibernacula remains Azure Cave near Zortman with over 1,500 bats. Spring surveillance at the bat box proved successful and is considered adequate for disease surveillance as signs of WNS and *Pd* are being found on bats in infected areas through May and June. Spring capture efforts also proved successful however require significant resources and staff time: Sites were chosen based on previous knowledge of successful mistnet locations and occupancy prediction models developed by Wilson Wright et al. We mistnetted for three nights at three locations near the Tongue River Reservoir State Park near Decker, MT. We caught 33 bats including five species (*Myotis lucifugus, Eptesicus fuscus, Myotis evotis, Myotis ciliolabrum*, and *Lasiurus cinereus*). We skin swabbed and collected guano samples on 30 bats (everything except *Lasiurus cinereus*).
Long term

Plans for surveillance and long-term monitoring are being assessed in order to determine need and work in the most efficient manner. The National USGS Wildlife Health Center focus at this time is to track the leading edge of disease presence putting a spotlight for surveillance across all of Montana. The fungus that causes WNS is typically detected first from bat swab samples, sometimes a year or two earlier than it is detected in soil or guano samples. In other words, we need to continue to handle and swab bats for the best odds of early detection. Some level of surveillance will occur in 2019 and may be significantly more than in previous years.



Citation: White-nose syndrome occurrence map - by year (2019). Data Last Updated: 8/30/2019. Available at: https://www.whitenosesyndrome.org/static-page/wns-spread-maps.

Figure 25. White-nose syndrome occurrence map as of August 2019.

Note the Washington state detection in 2015-17 and the detections in states bordering Montana in 2018-19.

Education and Outreach Programs

Working with Teachers, Volunteer Naturalists and Kids

Teachers attended MEA-MFT workshops in Helena and Billings and Belgrade led by R5 and R7 staff to learn fun, interactive ways to educate students about bird and bat biology and conservation. Teachers earned a certificate of renewable units for professional development activities. Region staff have conducted "teach the teacher" workshops with Montana Wild Staff to promote use of our educational trunks. Teachers earn continuing education credits for attendance.

Eagle Education Trunk

As part of a DNRC mitigation obligation, funds were allocated to the MFWP nongame program to develop an eagle education component to our work. An eagle education trunk was created which can easily be used by MFWP staff and/or made accessible to teachers and birding groups. The trunk was created to include hands on educational material on bald eagles and show the comparison with golden eagles; it contains a teacher's manual, a flash drive with an education curriculum PowerPoint and a tri-fold handout for students, developed by Region 3 nongame staff. In addition, the trunk has replica eagle skulls, talons, eggs, and other bird books and bird identification material. The trunk was designed to be modified for different age classes and promote viewing of eagles, particularly encouraging viewing nests at a distance. Optics can be loaned out as part of the class material.

A Birder's Gift

Montana Fish, Wildlife & Parks received a generous donation from the Jean Smith Estate that will help enhance bird conservation education across the state. Smith was an ornithology professor at Carroll College in Helena and an avid sportswoman who enjoyed hiking, fishing, hunting and bird watching. Her donation provided the funding for the development of birding trunks that will be distributed statewide. Each trunk contains a minimum of 20 pairs of Vortex 8.5x32 Raptor binoculars with harnesses that can easily be adjusted to fit children and adults. The trunks also contain copies of "Sibley's Birds West" and "Flying WILD, An Educator's Guide to Celebrating Birds." The trunks will benefit classroom teachers, youth group leaders, resource agency personnel, and outdoor recreational group leaders interested in providing birding experiences for youth and adults.

Photo credit (Ryan Williamson)

Many thanks to the estate of Jean Smith and all those others who inspire a love of birds in our kids!

See the 2019 Montana Outdoors report titled 'A Birder's Gift' on YouTube.

Community Events

Some examples of community events where the nongame species conservation message was spread include the following: Biologists staffed booths at events such as the Montana Bird Festival, Montana Audubon Center for International Migratory Bird Day, the Billings Arbor Day Festival to help educate attendees about the importance of different habitat types for various wildlife species, Camp POSTCARD to teach 5th and 6th graders about bird migration, STEM events for students to learn about bird migration, and annual Earth Day events at Spring Meadow State Park.

Region 3 staff attended and presented at "Camp Whittier"; the outdoor themed family event at Whittier school in Bozeman. This event is held annually, and students and children participate in hands-on and outdoor events and learn about living and enjoying the outdoors. MFWP presented hands-on wildlife material and gave nongame talks throughout the day to students representing kindergarten through 6th grade. MFWP Region staff attend many other events to include monthly Audubon meeting, 'Outdoor Days', rotary meetings, Arbor day events, garden group meetings, outdoor club meetings, etc. upon request or simply to share information on current work.

Sharing our Knowledge on the Importance of Montana Bats

Two eight-hour, for credit, trainings targeted at wildlife pest control operators on the most effective and humane way to rid human structures of bats was offered in 2018 through a cooperative effort of MFWP and the National Wildlife Control Operators Association. Eight Montana pest companies were represented and several MFWP staff attended. Practices learned in these classes were put into use many times by biologists and one of the operators has requested follow up training and discussion with MFWP.

In 2018 and 2019 MFWP partnered with MNHP and volunteer extraordinaire, Matt Bell, to offer educational 'bat cruises' through Gates of the Mountains on the Missouri River. Hundreds of people attend these cruises which are basically tour boat rides to learn about the thousands of bats using the canyon. The four tour opportunities offered in 2019 sold out within weeks of being advertised.

See the 2019 Montana Outdoor report titled 'Bat Cruise' on YouTube.

'Bat walks' have become popular in some regions to get people out at night with acoustic detectors that allow them to 'see' the echolocation calls bats around them are making. MFWP staff across the state including nongame specialists and communication education staff led bat walks and bat field trips annually or periodically for special requests or events to teach people about bat biology and conservation.

Giant Springs State Park began offering "Bat-tastic" bat walks in 2017 and attendance has grown from 40 to 248 participants in 2019!! Park staff credit announcements on Facebook with drawing the crowd in 2019 and plan to offer several events in 2020, with a cap on the number of participants.

Bat Week

MFWP partnered with the Montana Lifetime Learning librarian in 2018 to plan and implement activities celebrating national Bat Week. Classrooms and kids from Broadus to Culbertson and Whitefish to Dillon were treated to classroom lessons, bat stickers, fun videos and more. More than 800 children received information and/or materials celebrating bats and their important role in our ecosystem! Tens of adults received information as well either along with their kids or in adult targeted presentations. Note: Only 60% of libraries reported numbers of those who attended programs in 2018 so actual numbers of people reached are likely much higher!!

Summary of the combined efforts of MFWP staff and librarians across the state:

- At least 35 classes received a bat themed presentation.
- The book 'Stella Luna' was read to hundreds of kids.
- More than 650 'kits' containing some combination of bat posters, bat pencils and erasers, bat tattoos, bat stickers, and crafting material were distributed.
- Craft and information tables were set up in many region offices and public libraries where countless bat cartoons, bat masks and book marks were colored, hundreds of words were found in bat themed word searches, bat origami was folded and 'bat math' was calculated. 80 kids participated in a bat themed coloring contest.
- The 'echolocation' song was heard by dozens of children. (https://www.youtube.com/watch?v=8OYmHVuguWI) – you want to click this!
- The Bats Aren't Scary 'nom nom' video was watched by dozens more. https://vimeo.com/batsarentscary
- Facebook posts promoting bat appreciation were found throughout MFWP websites.

Similar success was achieved in 2019! The below is a summary from the state learning librarian who coordinated efforts at public libraries across the state. Thank you Amelea Kim and Kurt Cunningham (MFWP). MFWP region offices also participated with pencils, sticker and erasers (and in some cases candy) at front offices for visiting kids. Several presentations were also given by MFWP staff including nongame specialists and conservation education staff.

Participating organizations:
Participating organizations refer to any library that requested and received a Bat Week package. Not all participating organizations received a full Bat Week package – some only received partial packages, depending on availability of materials.
47 organizations participated and received some part of Bat Week materials from the State Library. The breakdown of participating libraries was as follows:

- 2 school/community libraries
- 2 tribal libraries
- 1 academic library
- 9 school libraries
- 32 public libraries

Bat Week Packages:
The 2019 Bat Week Packages had the following materials:

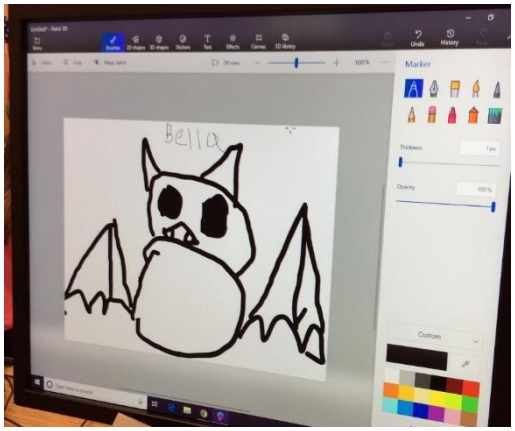
- 20 bat pencils
- 15 bat erasers
- 10 I'm Batty About Bats stickers
- 15 bat tattoos
- Bat posters (as many as libraries requested)

The materials were purchased by MFWP and we were able to create 39 complete Bat Week packages, with the bat erasers being the limiting factor. With the remaining materials, we were able to create 8 additional partial packages, with a total of 47 packages.

Supplementary materials were sent out on WIRED for anyone to use for Bat Week. It is unclear how many people used these resources as they were in a freely accessible PDF. The resources contained within included:

- Bat Information Websites
- Bat Book list
- Coloring pages
- Building a Bat House
- Bat Display Materials
- Bat Bingo Card Template
- Presentations from MFWP Wildlife Biologists
- Bat Videos
- Bat Crafts
- Montana Field Guides on Montana Bats
- Quick list of Bat Facts

Bat Week was again a very popular event – once the email regarding Bat Week packages was sent out, all packages were claimed within a few days. There was a lot of enthusiasm and excitement from participants, both from people who had participated in the year before, and those who were new to Bat Week.



Wildlife Viewing and Wildlife Appreciation

The Region 5 nongame specialist attended an International Urban Wildlife conference in 2019 and will attend a Wildlife Viewing and Nature Tourism Academy in 2020. These meetings are designed to inform and share techniques for reducing human-wildlife conflict and encourage wildlife appreciation, respectively. The academy is unique in bringing together professionals from state, federal, non-profit, and private organizations to share and discuss real-world examples, case studies, and processes for nature tourism programs and projects throughout North America. MFWP is trying to build more capacity in this topic area to stay current on national trends and successes in engaging the public in wildlife viewing.

Bat Boxes

Boxes at the home of Lewis Young with ~1,000 bats.

R6 staff worked with a Culbertson school shop class to build 12 bat boxes. They used the 4-chamber bat box plan. Some will be put around the local community and some will be given to MFWP to distribute as needed. The public frequently asks for boxes so these types of efforts greatly improve our ability to facilitate the placement of bat boxes across the state.

MFWP Region 5 joined forces with the Montana Audubon Center in 2019 for a family four-chamber bat house building day. MFWP provided all supplies and Audubon found volunteer carpenters to pre-cut all the wood. MFWP staff and Audubon staff painted the pieces and then solicited builders from the public. There was a great turn out and we ended up with 13 bat houses. Half will be kept by MFWP to provide an option for homeowners having bat exclusion work done.

North Shore Wildlife Viewing Area

Montana Fish, Wildlife & Parks (MFWP) owns and manages the 427-acre North Shore Wildlife Management Area (WMA) located in Flathead County, approximately seven miles southeast of Kalispell and just north of Flathead Lake. The WMA is a mix of cultivated grain fields, seasonally flooded grasslands, and wooded uplands. The property abuts the US Fish and Wildlife Service's (USFWS) 1,887-acre North Shore Waterfowl Production Area (WPA), and together they protect the lake's longest stretch of undeveloped shoreline and are part of the Audubon-designated Flathead Lake Important Bird Area (IBA). The IBA supports over 229 bird species, including 172 species that are common or seasonally abundant, and hosts tens of thousands of migrating waterfowl that rest and feed in the waters off Flathead Lake's north shore and within adjacent farm fields that flood during springtime.

The primary goal for the North Shore WMA is to manage seasonal wetlands and agricultural fields to provide resting and refueling habitat for migratory waterfowl during their spring migration. Secondary habitat goals include promoting habitat for upland game birds, migratory songbirds and shorebirds, and other nongame bird species. Finally, where compatible with wildlife management objectives, the WMA will also be managed to promote diverse public recreation, including hunting, nature walking, and wildlife viewing.

Discussions for a wildlife viewing area on the North Shore WMA began in 2010 when the first land parcels were purchased. With the completion of a management plan in the winter of 2019, MFWP determined that a wildlife viewing area was worth the investment on the WMA and began construction June 2019. The new viewing area is a raised gravel platform with railing (construction still in progress) that will the Americans with Disabilities Act specifications. In addition to general public use, the viewing area will be part of a circuit of viewing areas visited by Flathead Valley middle schools as part of bird conservation educational program designed with MFWP's partners to get students in touch with Montana's wildlife resources.

Program Scale Efforts

Statewide Avian Conservation Efforts

The reinterpretation of the Migratory Bird Treaty Act in December 2017 (see legal opinion) left Montana and other states uncertain as to how to effectively minimize and prevent incidental take of migratory birds. Nongame staff continue to provide recommendations to protect migratory birds as we always have, as the MBTA *as written* has not been altered.

> *The Migratory Bird Treaty Act makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. The migratory bird species protected by the Act are listed in 50 CFR 10.13.*

An AFWA-led evaluation of state laws interpreted Montana law to have some provisions regulating some form of incidental, indirect, or accidental take of migratory birds (for more information). Nongame staff have provided input to AFWA's Bird Conservation Committee as they developed and shared Best Management Practices for avoiding incidental take of migratory birds, and to develop model language for states wishing to clarify their legal authority in relation to incidental take of migratory birds. Currently, we are reviewing Montana's state laws to compare with AFWA legal interpretation.

The Avian Conservation Biologist serves to represent Montana (and MFWP) on the Pacific Flyway and Central Flyway Nongame Migratory Bird Technical Committees (TC). Current issues for the Pacific Flyway group include American white pelican flyway monitoring, peregrine falcon harvest, eagles, short-eared owl surveys, migratory pathways, rodenticides, and wetland connectivity. Each of these efforts is at a different state of completion. The Central Flyway TC is currently working on peregrine falcon harvest, changes to MBTA, depredation orders, eagles, grassland birds, and Bird Banding Lab operations. Both TCs have been working for more than 10 years and continue to work on developing topics of interest in common, and of greatest interest to the States.

The Montana Bird Conservation Partnership met in 2018 to discuss grassland bird conservation. The MBCP meeting in 2019 focused on the Northern Great Plains Joint Venture and ways to support the JV. Updates are being made to the group directory and to the website to increase and improve communication. The group continues to be a popular communication tool for biologists and interested parties to share information on bird conservation in Montana. www.montanabirdconservation.com

Other partnerships and groups that the biologist participates with/in include the HawkWatch sites in Montana, the Partners in Flight Steering Committee, the Species of Concern committee (with MNHP), an IMBCR partnership, the Technical Advisory Committee for the Spion Kop wind project (completed in 2019), the Western Working Group of Partners in Flight, and the Joint ventures.

Technical assistance continues to be a large role for this position for proposed wind projects and coordination with the US Fish and Wildlife Service, the development of a grassland conservation strategy for key grassland birds (US Fish and Wildlife Service), habitat management within the department (e.g. development of a fishing access site), and assistance to regional nongame coordinators and the development of survey protocols for Species of Greatest Conservation Need.

The USGS Master Bander permit continues to be updated and amended as need to accommodate new projects or new personnel, with allowance to band most species on an as needed incidental or project basis. Incidental banding is being implemented for any birds released from the MFWP rehabilitation center. Historically these birds were released without any identifying marker. In 2019, the biologist inventoried all nongame bands and updated our supply as needed. Additionally, efforts are being made to track data on bird injury and mortality in the state.

A large focus of 2018-2019 for the biologist has been a complete review of available data for all bird species that breed or migrate through Montana. The "state of the birds" continues, and will serve as a basis for a collaboration with an UM Post-doctoral researcher to assess how best to use bird data to assess habitat conservation efforts. The "state of the birds" has already provided information on species that are not captured by broadscale monitoring and resulted in targeted specie-specific surveys (e.g. mountain plover trend areas).

See the 2019 Montana Outdoor report titled 'The Copper Option' on YouTube for a report on non-lead ammunition options. A small blurb in the 2020 hunting regulations is expected to inform hunters of the ongoing non-lead ammunition discussion. MFWP is not taking a stand on this discussion rather providing information.

State Wildlife Grants and Other Federal Grant Programs

The Senate Appropriations Committee released a draft of its Federal Fiscal Year 2020 Interior Environment Funding bill in September of 2019. While the House bill included an increase of nearly 10%, the Senate bill increased the allocation by only 1%, all of which is for Tribal Wildlife Grants. Funding requests for North American Wetland Conservation Act, the Forest Legacy Program and Land and Water Conservation Fund are also higher in the Senate than the House bill compared to Federal Fiscal Year 2019. The proposed increase for the Neotropical Migratory Bird Conservation Fund (NMBC) is 25%! The NMBC program provides matching grants to neotropical migratory bird conservation projects throughout the Western Hemisphere, with at least 75% of funding going to projects outside the United States. The purpose of the Neotropical Migratory Bird Conservation Act is to provide financial support and foster international cooperation for initiatives that will perpetuate healthy bird populations.

White-faced Ibis (Lee Nelson)

Alliance for America's Fish and Wildlife

From a July 2019 MFWP news release:

Montana would get a significant boost from Congress with a new piece of bipartisan legislation introduced last Friday. The Recovering America's Wildlife Act was introduced again on July 12 by U.S. Rep. Debbie Dingell, (D-Mich.) and U.S. Rep. Jeff Fortenberry (R-Neb.) along with 40 Democratic and 20 Republican cosponsors. Passage of this bill could provide $1.3 billion in annual funds to state wildlife agencies for conserving wildlife and habitat, increasing wildlife associated recreation opportunities, and increasing conservation education programs. Funding for the legislation would require a 25 percent non-federal match.

The legislation is the result of the Blue Ribbon Panel on Sustaining America's Diverse Fish and Wildlife Resources, which met three times in 2015 to come up with ways to diversify wildlife management funding in America. The panel was comprised of people representing various interests including the energy industry, retail giants and some of the nation's most influential conservation leaders. The panel was co-chaired by John Morris, founder of Bass Pro Shops, and David Freudenthal, former governor of Wyoming.

"Today we find ourselves facing wildlife species declines that could alter our children's and grandchildren's opportunities to enjoy these resources," said Ed Carter, President of the Association of Fish and Wildlife Agencies and Executive Director of the Tennessee Wildlife Resources Agency. "By investing in our State Wildlife Action Plans, which contain prioritized actions for restoring and managing the most imperiled species within our states' borders, we will be ensuring future generations can enjoy our rich wildlife heritage. In essence, we are performing preventative maintenance, addressing concerns before they become a crisis. It is by far the most economical way to proceed and the chance of success is exponentially greater."

Most wildlife falls under management of the state wildlife agencies, like Montana Fish, Wildlife & Parks. These agencies are largely funded by hunter and angler dollars, collected through a variety of sources including license and user fees and federal excise taxes on hunting, angling and sporting equipment. Over the last 80 years, this money has funded the recovery of many game species across the West, including westslope cutthroat trout, elk, and bighorn sheep, as well as nongame species such as the bald eagle and peregrine falcon. In Montana, this funding also goes toward monitoring species critical to our economy, livelihood, and unique Montana landscape such as bats, sage grouse, and golden eagles. Expenditure of any new funds would be guided by the State Wildlife Act Plan, direction from the citizen commission and legislative approval.

The bill introduced in the 116th Congress looks different from the bill introduced previously in order to honor conservation efforts by entities other than state wildlife management agencies and to allow for a more flexible funding source. In this version of the bill, tribal nations would receive $97.5 million annually to fund proactive wildlife conservation efforts. A minimum of 10 percent of the funding apportioned to states must be used to recover federally threatened or endangered species. Ten percent of the total funding apportioned to states must be allocated through a competitive grants program. Grants will be awarded to state and U.S. territory fish and wildlife agencies, or regional fish and wildlife associations implementing the most effective and innovative projects for conservation of fish and wildlife. Instead of the funding coming specifically from energy development revenues and fees, it will come from the general U.S. Treasury fund. Even with these changes, Montana would receive more than $25 million dollars for proactive conservation and recovery of federally listed species.

"Imagine a source of funding that allows states to better steward wildlife and habitat so that the species won't need the protection of the Endangered Species Act," said MFWP Director Martha Williams. "Imagine a renewed focus on partnerships in wildlife education so that we can help get kids outside. Or even, imagine Montana having the funds to best steward the resources that make Montana so special."
Visit MFWP's website for more information on Recovering America's Wildlife Act and the great work Montana has done with existing sources of funding. http://fwp.mt.gov/

As of November 2019, over 150 members of Congress have signed on to cosponsor the bill. The Montana Fish and Wildlife Commission as well as the Parks Board have signed resolutions in support of this legislation. The Nongame Wildlife Management Bureau Chief is leading efforts for MFWP to stay engaged in efforts to secure new funds through initiatives such as this one.

See the 2019 Montana Outdoor report titled 'Recovering America's Wildlife Act' on YouTube.

See also the Montana Outdoors story An Act of Finding Common Ground by Tom Dickson in the March-April 2019 issue.

Pika (Shannon Hilty)

Nongame Checkoff Funds

Nongame tax checkoff contributions are often used to match federal funding sources. At least $5,000 are awarded to a Montana graduate student each year exploring a nongame species related research question and the remaining dollars are used to support habitat restoration, species monitoring, wildlife viewing projects, conservation education, and research.

Black-footed Ferret (USFWS)

Specific Fish and Wildlife Commission approved expenitures from 2018 and 2019:

FY19 and FY20	Inventory, monitoring and conservation work on Species of Concern and Species in Need of Inventory ($5,000).
FY19 and FY20	Wildlife viewing and outreach projects that encourage more Montanans to appreciate Montana wildlife ($5,000).
FY19 and FY20	Competitive graduate student stipend for nongame research ($5,000).
FY19 and FY20	Non-federal match for State Wildlife Grants to support the statewide avian conservation coordinator ($10,000).
FY19 only	Non-federal match for a project to learn more about bat roost sites and winter hibernacula in the face of an impending disease ($10,000).
FY20 only	Non-federal match for disease control of sylvatic plague in the interest of prairie dog and black-footed ferret conservation ($10,000).
FY20 only	Non-federal match for incentivizing private land conservation ($5,000).

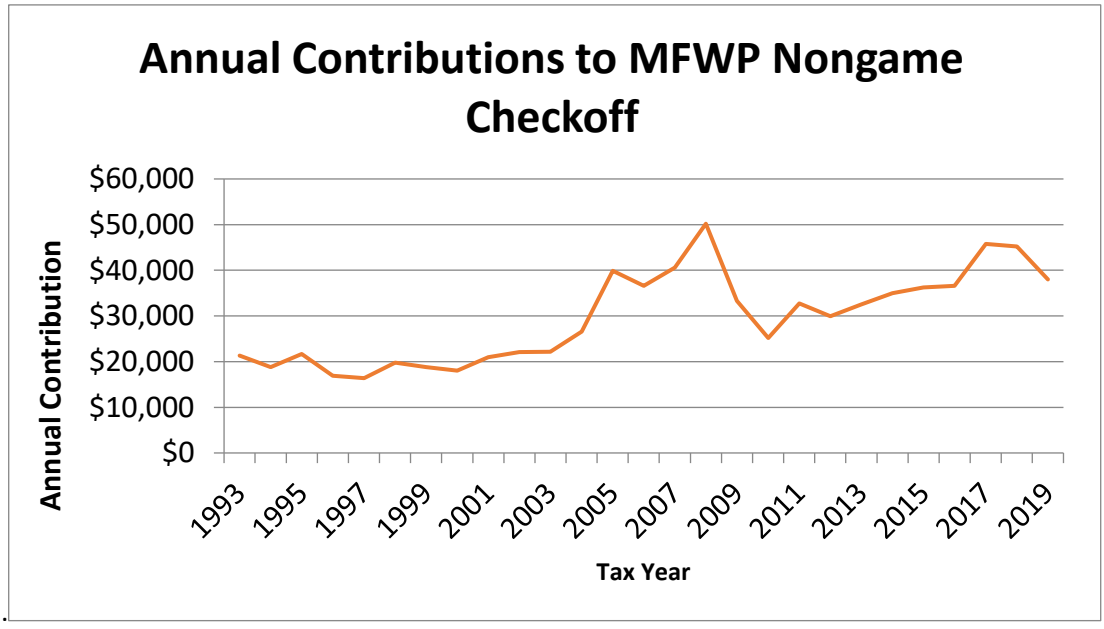


Figure 26. Annual contributions from the Montana Nongame Tax Checkoff