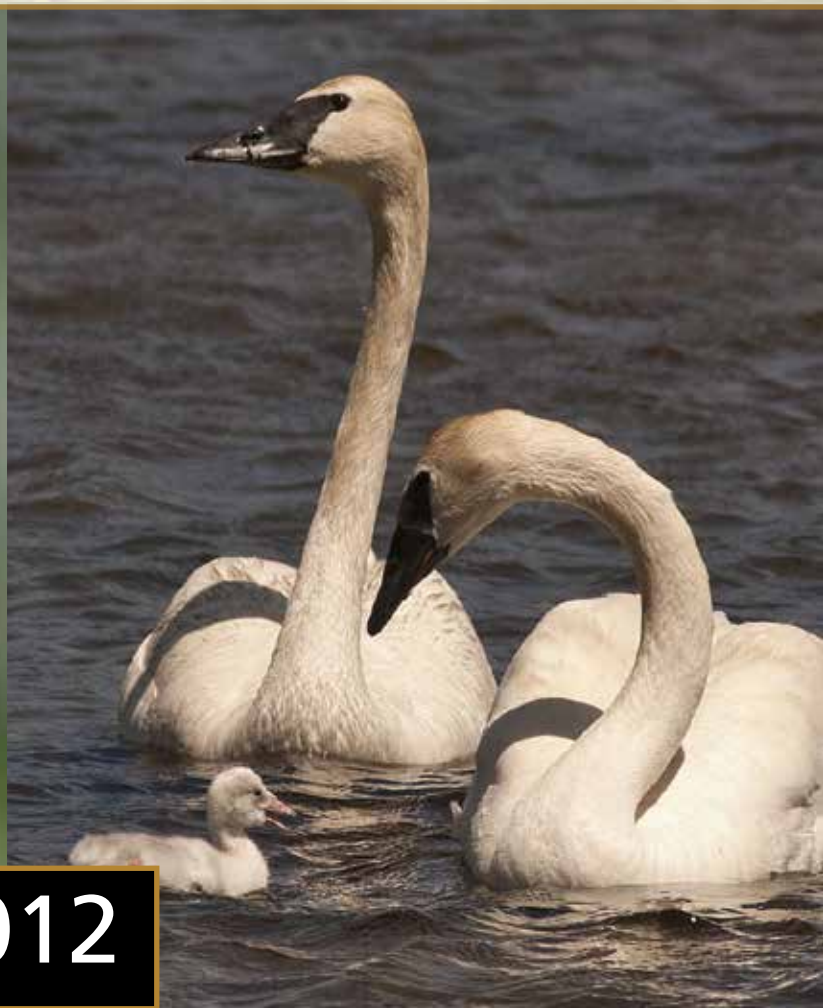
Yellowstone Center for Resources
Yellowstone National Park
Mammoth Hot Springs, Wyoming

National Park Service
U.S. Department of the Interior

YELLOWSTONE NATIONAL PARK
Natural & Cultural Resources
BIRD PROGRAM ANNUAL REPORT



2012

As you peruse the pages of the 2012 annual report, it is our hope that we inspire you to learn more about avian ecology and management in Yellowstone National Park. With every passing year we continue to be inspired ourselves and ask deeper questions that will help us understand the complexities of avian ecology in the Yellowstone region. We thank you for supporting the bird program and hope that you continue to do so. We welcome questions and comments regarding Yellowstone's avifauna and encourage you to contact Lisa Baril at 307-344-2218 with further inquiries. We hope you enjoy reading the report

Lisa Baril

National Park Service
Yellowstone Center for Resources
Yellowstone National Park, Wyoming
YCR-2013-01

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Executive Summary

This year marks the 25th year of formal monitoring and research of Yellowstone's avifauna. During 2012, Yellowstone National Park continued several long-term programs including surveys for formerly endangered bald eagles and peregrine falcons, ospreys, trumpeter swans, common loons, songbirds, and colonial nesting species. We also continued the Yellowstone Raptor Initiative for the third consecutive year. The Yellowstone Raptor Initiative complements core bird monitoring by focusing on the role of aerial predators (hawks, eagles, and owls) in the Greater Yellowstone Area (GYA) that are not monitored by the Core Bird Program. This summary highlights some of the important findings from this years' monitoring effort.

Peregrines in Yellowstone continue to be highly successful and may be a source from which to populate other areas in and around Yellowstone. We know of 33 current and historic peregrine territories, but were only able to monitor 23 . Of the 23 sites, 19 were occupied by at least one adult. We confirmed nesting at 14 of the 23 occupied sites, most of which (12) fledged at least one young (86% success) for a total of 26 young produced in 2012. Most bald eagle and osprey surveys were conducted via fixed-wing aircraft, but we also monitored some nest sites from the ground. We know of approximately 45 current and historic bald eagle territories, but were only able to monitor 22active bald eagle nests, 14 (64%) of which were successful producing a total of 21 young. Bald eagles nesting at Yellowstone Lake have generally experienced lower nesting success and productivity than bald eagles nesting elsewhere in Yellowstone; however, during 2012 nesting success was the same for both areas. Bald eagles are dietary generalists consuming a wide variety of prey items including ducks. The large number of ducks observed on the lake along with a greater number of fledging American white pelicans on the Molly Islands could have boosted the nesting success at Yellowstone Lake. Parkwide, the bald eagle population in YNP appears stable with approximately 50% of all nests fledging at least one young annually. Osprey nesting success has steadily increased since an all-time low in 2003. We monitored 25 active osprey nests, 15 (60%) of which were successful fledging a total of 28 young. Only five osprey pairs nested on Yellowstone Lake and only one nest was successful. The number of breeding pairs and nesting success has declined dramatically at Yellowstone Lake as a result of cutthroat trout declines since lake trout were introduced during the late 1980s. Of the 20 active nests in the remainder of Yellowstone however, 14 (70%) were successful. Overall, the population of ospreys in Yellowstone is stable despite declines at Yellowstone Lake.

Trumpeter swans were monitored in mid-winter and autumn as part of the tri-state annual survey coordinated by USFWS. We also monitored breeding swans in YNP and the Paradise Valley. During the winter survey (February 3), 175 swans were counted in YNP (55), on Hebgen Lake (94) and the Paradise Valley (26). The majority of wintering swans in Yellowstone are migrants from Canada. Yellowstone's summer swan residents do not migrate and are thus joined by Canadian birds during winter. During the autumn survey (September 12), 41 swans were counted in the three study areas: 25 in Paradise Valley, 16 in YNP, and 0 at Hebgen Lake. The autumn survey is designed to get a final count of resident adults and young birds produced that year, but we also closely monitor individual breeding pairs in the park during the breeding season. Currently, Yellowstone supports only two breeding pairs of trumpeter swans at Grebe and Riddle Lakes. The Grebe Lake pair nested on the artificial platform installed during 2011 and successfully produced the first cygnets (four) to fledge from Grebe Lake since 1952. A second pair of trumpeter swans nested at Riddle Lake and hatched three cygnets. The cygnets did not fledge, likely as a result of predation from bald eagles in the area.

We surveyed colonial nesting birds on the Molly Islands, including Caspian terns, American white pelicans, double-crested cormorants, and California gulls. The nesting success of double-crested cormorants and American white pelicans appears to be stable despite large year-to-year variability in weather and lake water levels. American white pelicans fledged 270 young from a total of 392 nest attempts, while double-crested cormorants fledged 21 young from 34 nests. California Gulls fledged 19 young this season with 11 observed nesting attempts. Caspian terns and California gulls have been decreasing on the Molly islands in recent years, with no Caspian terns observed on the Islands in 2012. Common loons were surveyed at 24 historically occupied sites during late July and August. We counted 25 adults on 14 lakes and a record of 8 loonlets. The number of adults observed in YNP remains stable; however, nesting pairs and

Harlequin ducks.

fledglings have decreased since 1987.

We continued to monitor songbirds via two surveys: willow point counts and the breeding bird survey (BBS). The willow-songbird study is now in its seventh year—the first three years with Montana State University (MSU). The study was designed to better understand songbird response to increased willow growth following wolf reintroduction and wasinitiated by MSU. We recorded a total of 22 species across the range of willow growth conditions this year and continue to document an expanding Wilson's warbler and willow flycatcher populationThe BBS survey is an international survey designed to index bird population trends through time and we annually monitor three routes. On these routes we recorded 4,429 individuals and 68 species during 2012. Due to staffing limitations we were unable to do the forest burn survey that is normally part of the Passerine and Near Passerine Monitoring Program.

We discovered two additional golden eagle territories over the 16 located in 2011 bringing the total to 18 known territories in YNP. We monitored 13 golden eagle territories for evidence of breeding. Only, five pairs made a nest attempt and all failed for unknown reasons. Golden eagles may forgo breeding in years when prey is limiting, particularly during late winter and early spring. Only long-term monitoring of both golden eagles and their prey will reveal patterns of reproduction as related to prey availability.

Red-tailed hawks appear to be highly successful in YNP's northern range. Of the 27 territories for which we could determine the outcome, 24 were successful yielding a nesting success rate of 89%. The high nesting success rates we observed over the last two years are unusual and indicate a healthy population that may be a source for less productive populations in and around Yellowstone. We finalized and implemented the raptor roadside survey for the northern range based on expert recommendations and pilot year (2011) data. The purpose of the roadside survey is to provide an annual index of population abundance for red-tailed hawks, Swainson's hawks, and American kestrels on the northern range. These data will also provide baseline information for detecting population changes over time. We counted 211 birds across 11 species. As expected, the red-tailed hawk was the most common species. Our autumn migration counts in Hayden Valley occurred from September 4 through October 26. We documented 953 migrants, substantially lower than the 1846 raptors counted during 2011. We attribute lower overall numbers to a reduced Swainson's hawk migration in the valley as well as long periods of smoky conditions caused by fires burning in Idaho which severely limited visibility. Regardless of the lower counts in 2012, observations during the last few years have indicated that migrant raptors are moving across the Yellowstone plateau, and that Hayden Valley may be serving as a key geographic feature along their route. Only continued surveys will confirm this.

Visitors and YNP staff submitted 604 raptor observations during 2012, bringing the total observations submitted to 1,338 since 2010. Most reports were observations of red-tailed hawks and some of these observations led to the discovery of new nests. In addition to our inventory and monitoring programs we participated in public outreach events including a raptor ecology discussion and observation field trip led by Interpretive Ranger K. Duffy on September 22. We also hosted a mid-winter bald and golden eagle survey that documented 57 eagles in YNP and the Paradise Valley. These programs served to foster enthusiasm and increase public appreciation for raptors in YNP.

The Yellowstone Bird Program also fostered collaborative relationships with two leading raptor ecologists in the GYA to locate golden eagle, red-tailed hawk, and Swainson's hawk territories. Finally, we kept a species list that included all reliable bird sightings from the year in YNP. Yellowstone staff and visitors recorded 176 species of bird during 2012. Notable sightings from this year included a probable gyrfalcon, Ross's goose, lark bunting, lark sparrow, blue jay and several broad-winged hawks. The Yellowstone Bird Program welcomes and encourages observations of birds in the park. We are excited to continue our efforts over the years to come and look forward to all we will learn about the avifauna of Yellowstone National Park.

2012 Program Report

NPS/JIM PEACO

Bald eagle above Firehole River.

Introduction

More than 300 species of birds have been documented in Yellowstone National Park since the park's establishment in 1872. Approximately half of those regularly breed in the park. Yellowstone is surprisingly rich in bird diversity given the harsh environmental conditions that characterize the landscape. The variation in elevation and broad array of habitat types found within Yellowstone contribute to the area's relatively high diversity. The Yellowstone bird program monitors a small portion of its breeding bird species to gather information (e.g., reproduction, abundance, and habitat use) on multiple species from a wide variety of avian taxonomic groups, in support of maintaining long-term datasets (>20 years) for several species. Long-term monitoring efforts will help inform park staff of potential shifts in ecosystem function (e.g., climate change effects) for Yellowstone's bird community and may guide future management decisions and conservation of the park's birds and their habitats. Yellowstone hosts more than three million visitors every year, many of them avid bird watchers or interested in wildlife. The Yellowstone National Park Bird Program aims to share information with the public on Yellowstone's diversity of bird life and the status of its birds. This report summarizes data gathered for the program during 2012. Consult the 2011 annual report for details regarding field protocols and program history.

The Yellowstone National Park Bird Program monitors three broad classes meant to include species representative of Yellowstone's diversity under the Core Bird Monitoring Program: raptors, wetland birds, and passerine and near passerine birds. Three species—bald eagle, peregrine falcon, and osprey—are monitored by the Raptor Monitoring Program. With the removal of the peregrine falcon and bald eagle from the Federal List of Endangered and Threatened Wildlife and Plants in 1999 and 2007 respectively, there are currently no federally listed bird species in Yellowstone. However, monitoring efforts for these species will continue to contribute to Yellowstone's long-term dataset and to fulfilling the monitoring obligations outlined in the US Fish and Wildlife Service post-delisting monitoring plans.

Trumpeter swans, common loons, and colony nesting species, including double-crested cormorants and American white pelicans, are monitored by the Wetland Bird Monitoring Program. The trumpeter swan and common loon are of particular concern in Yellowstone due to a locally declining population and low reproductive success during the last several decades.

The breeding bird survey, willow-bird survey, and forest burn survey are part of the Passerine and Near Passerine Monitoring Program. This program was recently expanded to fill the gap in knowledge regarding the abundance and habitat use by passerines and closely allied species in Yellowstone. This program is particularly valuable because species in this group represent the majority of all species found within Yellowstone.

The Yellowstone Raptor Initiative is a new (2010), scientifically based project focused on raptors within Yellowstone. This effort was developed to compliment the Bird Program focused on the role of aerial predators in the Greater Yellowstone area. Yellowstone supports 12 diurnal and 7 nocturnal breeding species of raptor, and a further 14 species that have used or currently use the Yellowstone landscape during migrations and seasonal movements. Several are of growing conservation concern in the United States

including the golden eagle, Swainson's hawk, and northern goshawk. Despite Yellowstone's raptor diversity, large relatively undisturbed landscape, and heightened conservation focus for several species, little data exists regarding population size, productivity, and seasonal movements for raptors in Yellowstone other than for those monitored under the Bird Program. The Yellowstone Raptor Initiative is designed to fill this gap in knowledge by expanding inventory and monitoring efforts to select raptor species not traditionally covered under the Bird Program.

2012 Breeding Season Weather

Precipitation during April and May was similar to the 30-year average while June was substantially drier (fig. 1). July was uncharacteristically wet with frequent afternoon thunderstorms. Little precipitation fell during August. Monthly average temperatures were slightly warmer during April and August, but were average in May–July (fig. 2).

Climate Change

The phenology of ecological events, including timing of the availability of food sources for birds, may change with rising temperatures and fluctuating weather patterns. Birds are sensitive to shifts in seasonal weathers patterns and show a relatively rapid response to these fluctuations. For example, climate change has been shown to influence migration patterns, population size and distribution, and the timing of reproduction and nesting success for birds (Crick 2004). It is largely unknown how climate change has affected or will affect ecosystem processes within Yellowstone. Through monitoring of the arrival of species to the park, timing of nest initiation, incubation, and fledging for several raptor species, birds can be used to help managers detect changes in ecosystem functions so that appropriate management actions can be taken.

Since 2005, D.W. Smith has kept a record of spring arrival dates (migrants) in the Mammoth Hot Springs and Gardiner, Montana, areas for many common species. During spring 2012 we expanded the scope of this project by encouraging park staff to submit their first arrival sightings. The project was popular, with 55 observers contributing first arrival sightings for 82 species across Yellowstone and the surrounding towns of Gardiner and West Yellowstone, Montana. Among the first migratory species to arrive in Yellowstone were red-tailed hawks during late March followed by ospreys in early to mid-April (table 1). American robins remained in the park throughout the winter and were observed in February at Yellowstone Lake, the highest elevation recorded for this species in the park during winter. Large flocks of >60 robins were also observed along the Yellowstone River along the northern park boundary during February. Short-distance migrants, such as ruby-crowned kinglets, mountain bluebirds, and yellow-rumped warblers, arrived during March and April. Longer distance migrants like most warblers began arriving in mid-May, with some not arriving at the higher elevations until June.

Because of changes in how these data are collected and the relatively short duration of surveying (8 years), it

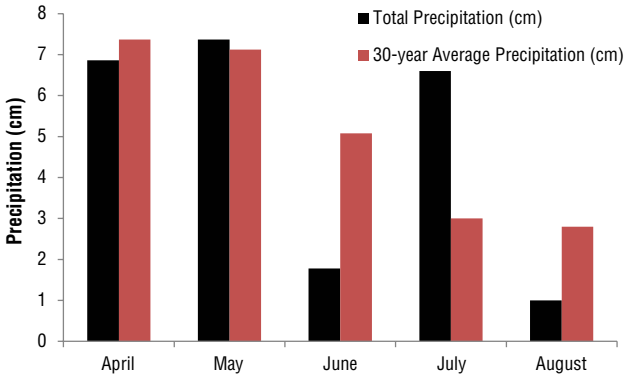


Figure 1. Monthly precipitation recorded at the Lake weather station during the core breeding season (April–August 2012). Data gathered from the Natural Resources Conservation Service (http://www.wcc.nrcs.usda.gov/nwcc/site?sitenum=816&state=wy).

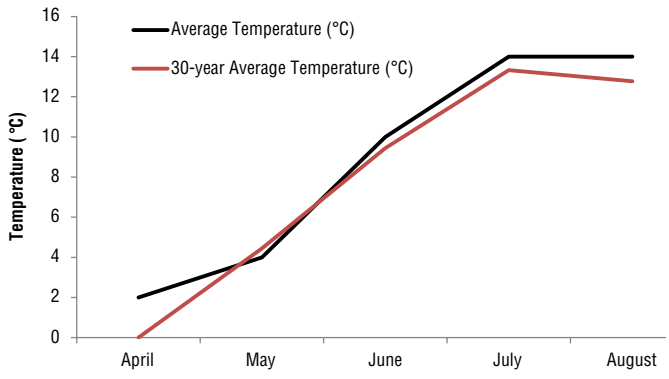


Figure 2. Monthly temperatures recorded at the Lake weather station during the core breeding season (April–August 2012). Data gathered from the Natural Resources Conservation Service (http://www.wcc.nrcs.usda.gov/nwcc/site?sitenum=816&state=wy).

Table 1. Spring arrival dates for common species in the Mammoth–Gardiner area from 2005 to 2012.

Species	2005	2006	2007	2008	2009	2010	2011	2012
Osprey		4/6		4/8	4/19	4/12	4/7	4/5
Red-tailed hawk		4/4	3/23	4/3		3/20*	3/18	3/19
American kestrel		4/4	4/12	4/14	4/30	4/17	4/18	4/16
Tree swallow		4/28	4/8	4/13	5/2	4/24	5/11	4/22
Ruby-crowned kinglet		4/28	4/29	4/21	5/3	4/17	5/10	4/9
Mountain bluebird	3/8	3/4	3/18	3/29	3/12	3/25	3/17	3/7
American robin	3/20	4/14	3/17	3/28	3/21	3/18	3/25	2/18
Yellow warbler	5/18	5/12	5/13	5/19	5/17	5/18	5/21	5/8
Yellow-rumped warbler		4/28	4/29	4/20	5/9	4/17		5/7
Vesper sparrow		5/3	5/13	5/4	5/6	5/7		
White-crowned sparrow				5/1	5/1	5/7		5/26
Western meadowlark		4/3	4/5	4/14	4/8	4/1		3/31
Red-winged blackbird	3/10	3/16	3/18	4/8	3/17	3/29	3/21	3/5

* indicates estimated arrival from Paradise Valley (March 24) and Phantom Lake, YNP (March 17)
Note that 2011 and 2012 observations were collected by multiple observers

is too early to determine trends in arrival dates for species. However, expanding the scope of the project to include area birders over the entire park will greatly improve the utility of these data. This dataset is intended to continue in support of determining any shifts in the mean arrival date for select species. In addition to first arrivals, the timing of nest initiation, incubation, and fledging will be monitored for several species of raptor and may be useful in determining the effects of climate change in Yellowstone.

Yellowstone Core Bird Program

Raptor Monitoring

Peregrine Falcon

We monitored 23 of the 33 known peregrine territories from late April through July to determine occupancy and reproduction. Nineteen of the 23 territories were occupied by at least one adult peregrine. We confirmed 14 nest attempts, 12 of which fledged at least one young yielding an 86% nesting success rate (fig. 3). Confirmed fledglings totaled 26, and productivity and brood size averaged 1.86 and 2.17, respectively (fig. 4); (see Appendix A for detailed nesting terminology used in this report). In general, peregrines begin incubation in early May and fledge young during mid-to-late July (table 2). Annual variability in egg laying is expected as birds respond to annual variation in spring weather conditions. Overall, Yellowstone's peregrine population experiences high rates of nesting success and is considered stable or increasing.

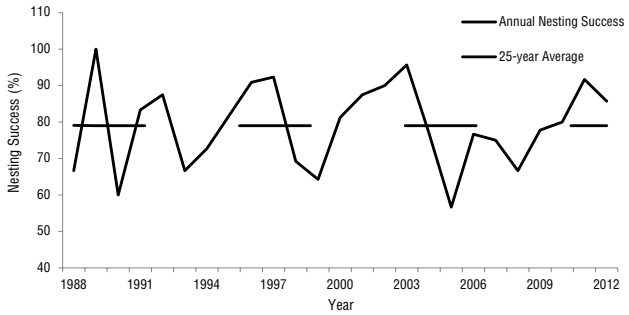


Figure 3. Peregrine falcon nesting success during 1988-2012 and comparison with the 25-year average.

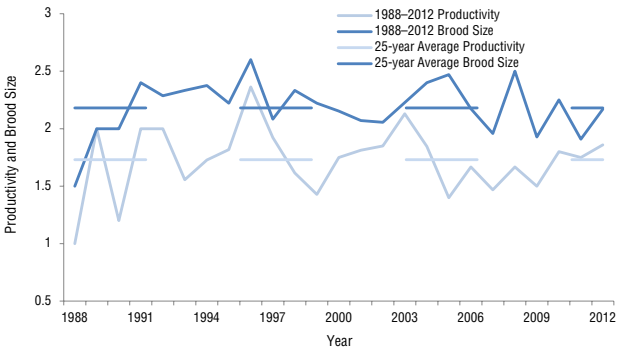


Figure 4. Peregrine falcon productivity and brood size during 1988–2012 and comparison with the 25-year average.

Table 2. Peregrine falcon nesting chronology in Yellowstone National Park during 2009–2012.

	Mean Incubation Range	Mean Hatching Range	Mean Fledging Range
average 2012 (n=12)	May 2–4	June 5	July 13–17
average 2011 (n=9)	May 9–12	June 10–15	July 19–24
average 2010 (n=11)	May 1–4	June 3–6	July 11–15
average 2009 (n=12)	May 5–8	June 10–13	July 20–23

Bald Eagle

We monitored 22 nesting bald eagle pairs and found evidence that 2 additional territories were occupied by at least 1 adult as observed during flights. Of the 22 active nests, 14 (64%) were successful, which is slightly higher than the 29-year average (fig. 5). The 14 nests produced 21 young and productivity across all active nests averaged 0.95 and the average brood size for the park was 1.50 (fig. 6). This year's productivity and nesting success rate were higher than in 2011. The reproductive rates of bald eagles in Yellowstone are stable but the productivity and success rates of birds found around the Yellowstone Lake area are generally much lower compared to the rest of the park; however, during 2012 nesting success for both areas was the same. Productivity and brood size were also similar between these two areas.

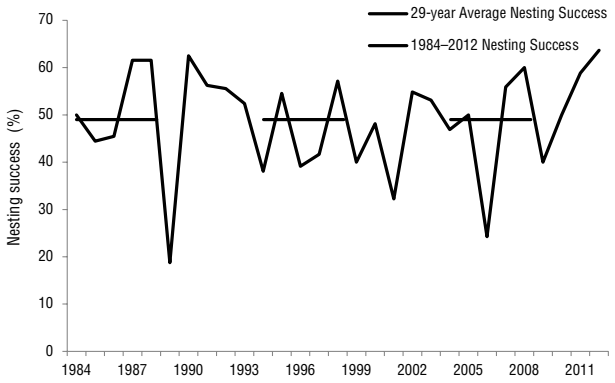


Figure 5. Bald Eagle nesting success during 1984–2012 and comparison with the 29-year average.

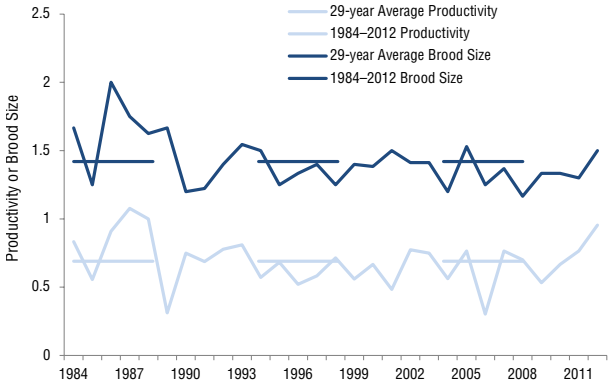


Figure 6. Bald eagle brood size and productivity during 1984–2012 and comparison with the 29-year average.

Osprey

We monitored 25 active osprey nests from mid-May through mid-August for activity. An additional three territories were occupied, but we did not find active nests in these territories. Of the 25 nesting pairs, 15 (60%) were successful, fledging a total of 28 young (fig. 7). The overall productivity in the park was 1.12 and the average brood size was 1.87 (fig. 8). In contrast with previous years, one of the active nests at Yellowstone Lake was successful. A recently completed study found a significant relationship between the declines in cutthroat trout and osprey reproduction at Yellowstone Lake. Recent increases in the number of young cutthroat trout caught by the Yellowstone Fisheries and Aquatic Sciences program during the fall netting assessment are encouraging and may lead to an increase in nesting

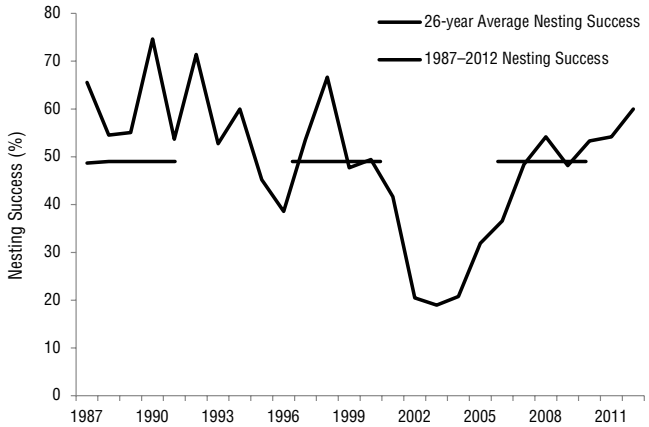


Figure 7. Osprey nest success during 1987–2012 and comparison with the 26-year average.

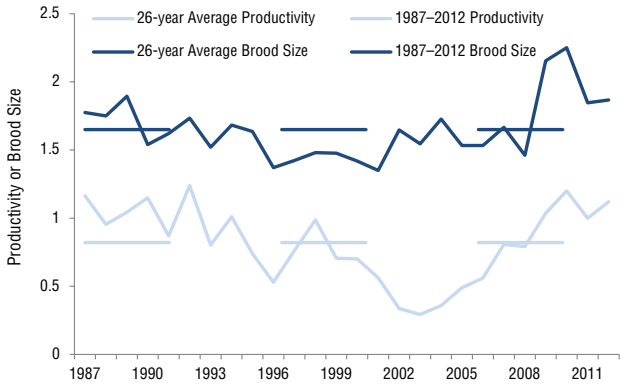


Figure 8. Osprey brood size and productivity during 1987–2012 and comparison with the 26-year average.

NPS/B. ERTEL

Golden eagle with unidentified prey.

pairs of ospreys and improved reproductive performance at Yellowstone Lake. Throughout the park, trends in nesting success and productivity continue to increase after reaching record lows during 2003.

Mid-winter Bald and Golden Eagle Survey

The mid-winter bald and golden eagle survey was initiated by the National Wildlife Federation in 1979, and has been organized by the US Geological Society since 1992. The objectives are to establish an index of the winter population, determine winter distribution, and identify important wintering habitat for eagles. Yellowstone has participated since at least 1987, though there were a few years surveyed prior to 1987. On January 14, 43 volunteers participated in this one-day event to count golden and bald eagles in select portions of Yellowstone and Paradise Valley. Observers recorded 57 total eagles (table 3) most of which were adult bald eagles in the Gardiner Basin, in the northern portion of the park into Montana, and Paradise Valley. For more information about golden eagles, see the section about the Yellowstone Raptor Initiative later in this report.

Table 3. Results of the mid-winter bald and golden eagle survey conducted January 14, 2012.

Survey Route	Adult Bald	Immature Bald	Adult Golden	Immature Golden	Unknown Eagle
Gardiner to Yankee Jim Canyon	8	0	3	0	1 (poss. Imm. Golden)
Swan Lake to Madison Junction	0	0	0	0	0
Mammoth to Lamar Stock Trailhead	1	0	1	0	1
Slough Creek Road to 1st meadow	0	0	0	0	0
Gardiner and Jardine area	3	0	2	0	0
Emigrant to Livingston	6	2	1	0	0
South Entrance to West Thumb	0	0	0	0	0
Canyon to Fishing Bridge	4	1	0	0	0
Emigrant to Yankee Jim Canyon	12	1	0	3	0
West to Madison then Fountain Flats Bridge and Riverside Trail	3	1	0	0	0
Old Faithful to Goose Lake	1	0	0	0	0
Lamar Stock Trailhead to Cooke City	0	0	0	0	0
North Entrance to Mammoth	2	0	0	0	0
Total	**40**	**5**	**7**	**3**	**2**

NPS

Trumpeter swans with cygnets.

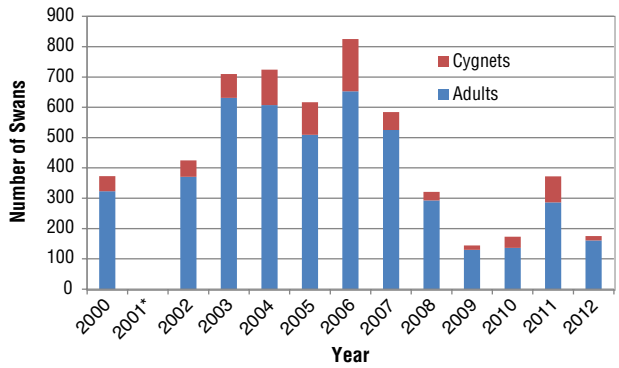


Figure 9. Summary of the total number of adult and cygnet trumpeter swans observed during the mid-winter aerial survey in YNP, the Paradise Valley and on Hebgen Lake during 2000–2012. Data from 2001 was censored because Hebgen Lake was not surveyed that year.

Wetland Birds

Trumpeter Swan

Winter Count

During the mid-winter survey flights conducted on February 3 and 5, we counted 26 swans in Paradise Valley, 55 swans in Yellowstone, and 94 swans on Hebgen Lake for a total of 175 swans (table 4). The number of swans counted in Yellowstone and Hebgen Lake decreased significantly from last year, while the number of swans in Paradise Valley was approximately the same. In the last 15 years, total swan numbers were highest during 2006 and lowest during 2009, although numbers tend to fluctuate from year to year (fig. 9).

Reproduction and Breeding Season Observations

During the 2012 breeding season two pairs of trumpeter swans nested in Yellowstone and one successfully raised fledglings. The pair at Grebe Lake nested on the floating platform installed on October 18, 2011. As part of a new

Table 4. Results of mid-winter aerial survey for Trumpeter swans at Hebgen Lake, Paradise Valley, and YNP.

Year	Hebgen Lake		Paradise Valley		YNP		
	Adults	Cygnets	Adults	Cygnets	Adults	Cygnets	Total
1999	Not Surveyed		14	3	292	48	357
2000	220	31	16	6	87	13	373
2001	Not Surveyed		28	1	53	11	93
2002	121	12	17	7	233	35	425
2003	462	40	23	5	146	34	710
2004	423	69	35	15	149	33	724
2005	367	72	18	6	124	30	617
2006	503	153	29	5	121	14	825
2007	340	31	41	3	144	25	584
2008	202	11	26	10	65	7	321
2009	4	0	38	12	88	2	144
2010	87	17	31	15	18	5	173
2011	136	44	25*	0*	125	42	347
2012	86	8	24	2	51	4	175

*adults and cygnets were not differentiated

management plan implemented this season, the four eggs laid by the pair were removed from the nest to be incubated. The four eggs were replaced with wooden eggs so the female would continue nesting behaviors. Three cygnets from a captive swan pair and one of the original cygnets from Grebe Lake were placed in the Grebe Lake nest within 48 hours of hatching in captivity and the pair at Grebe Lake raised the cygnets as their own and all four survived to fledging age. The Riddle Lake swan pair successfully nested and produced three cygnets; however, all three cygnets were predated at approximately four weeks of age. Based on aerial evidence shortly after one of the mortalities, it was suspected that the cygnets were predated by bald eagles that frequented the area. The production of four cygnets makes 2012 the most successful breeding season in Yellowstone since 2003 (fig. 10).

In addition to the two territorial pairs of swans in Yellowstone, we observed five other adult swans. Two of the five swans were unmated, with one swan spending the breeding season at Lake of the Woods and the other at Delusion Lake. The remaining three swans were usually observed together, often in the Yellowstone Lake area. It is unknown if these swans recruited from areas outside of Yellowstone or if they were produced from successful nests in Yellowstone. We were unable to introduce the four captive swans to either of the unmated swans since neither could be located during the flightless molting period occurring in late summer. The captive swans were held by the Wyoming Wetlands Society Trumpeter Swan Captive Breeding Program for release in 2013. Introducing captive swans to unmated swans during the flightless molting period increases the likelihood of bond formation by keeping the swans in close proximity to each other.

Bill Long, Doug Smith, and Amanda Boyd monitoring swans.

Autumn Count

We counted 25 swans (17 adults and 8 cygnets) in Paradise Valley, 16 swans (12 adults and 4 cygnets) in Yellowstone, and 0 swans on Hebgen Lake for a total of 41 swans during the September 12 survey (table 5). The number of swans observed during the autumn counts has declined although the number of cygnets has increased from the past several years (fig. 11).

Table 5. Autumn 2012 survey results for trumpeter swans.

Location	Adults	Cygnets
Paradise Valley	17	8
Yellowstone	12	4
Hebgen Lake	0	0
Total	**29**	**12**

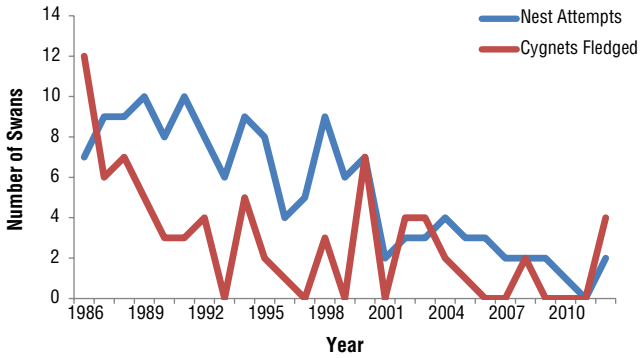


Figure 10. Trumpeter swan nest attempts and cygnets fledged from 1986–2012 in YNP.

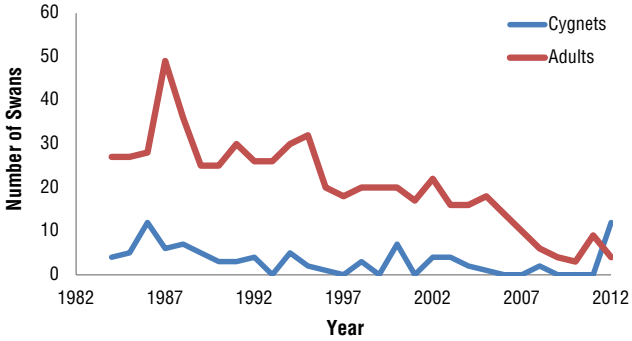


Figure 11. YNP autumn counts of trumpeter swans, 1983–2012.

Common loons near Peale Island in the South Arm of Yellowstone Lake.

Colony Nesting Birds

Through photographic interpretation (counting birds via photographs) from six visits made to the Molly Islands during May through August 2012 we observed approximately 392 American white pelican nests and an estimated 270 fledged young (table 6). We counted 34 nesting double-crested cormorants that fledged an estimated 21 young. We observed eleven California gull nests with an estimated 19 young fledging. None of the six photosets show Caspian terns nesting on the Molly Islands.

Table 6. Young fledged from the Molly Islands, 1989–2012.

Year	California gull	American white pelican	Caspian tern	Double-crested cormorant
1989	270	535	25	20
1990	295	572	28	203
1991	51	466	10	156
1992	70	522	0	210
1993	141	344	9	141
1994	240	210	22	240
1995	220	265	14	298
1996	0	3	0	61
1997	0	42	0	140
1998	21	295	3	147
1999	90	102	2	225
2000	255	584	0	152
2001	95	105	3	75
2002	65	180	3	280
2003	77	328	6	214
2004	207	237	3	154
2005	58	234	0	86
2006	81	362	0	261
2007	No data	No data	No data	No data
2008	0	13	0	16
2009	0	54	0	30
2010	0	184	0	59
2011	0	0	0	0
2012	19	270	0	21

Common Loon

Loons were surveyed for territory occupancy and productivity primarily via fixed-wing aircraft supplemented by information submitted by park staff, volunteers, and visitors. We checked 24 lakes for loon activity (some lakes had more than one loon territory, e.g., Yellowstone Lake). Fourteen of these lakes were occupied with at least one loon and we estimated a total of 28 adult loons and 8 loonlets (fig. 12). It should be noted that loons can be difficult to observe from the air because they dive and sometimes take cover in vegetation. Also, loons were recorded by multiple observers on multiple days. Although the total likely reflects a good estimate of the number of loons in the park, it is possible that some may have been counted twice. Much of the Wyoming population of common loons resides in Yellowstone and we intend to monitor this species closely.

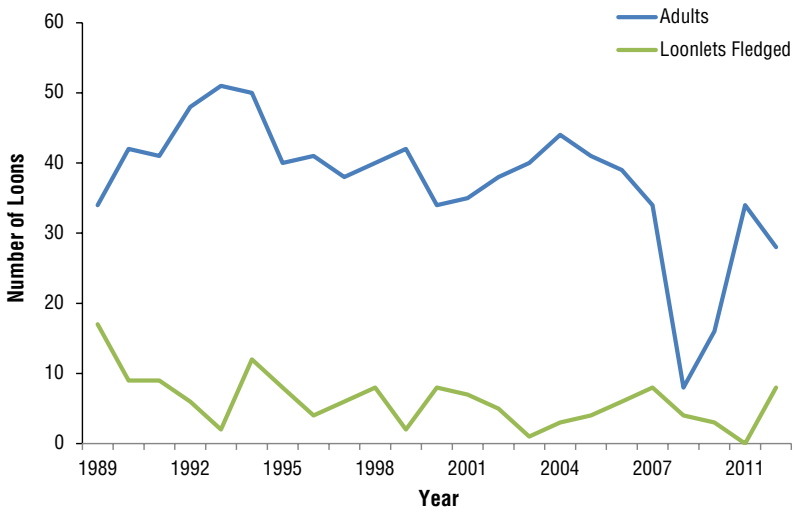


Figure 12. Common loon adults and fledgings during 1989–2012.

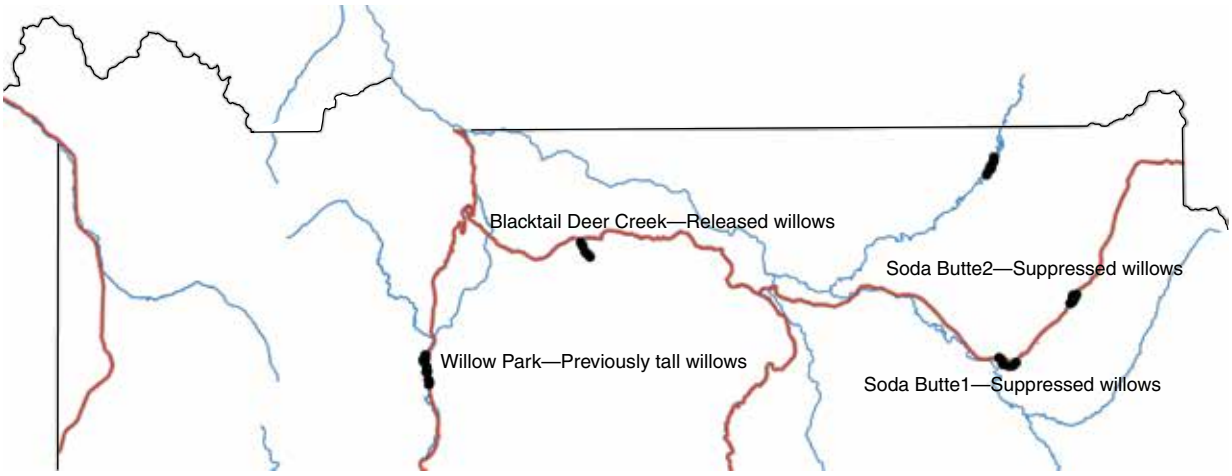


Figure 13. Map of willow point count locations in YNP.

Passerine and Near Passerine Birds

Willow-songbird Surveys

This season was the eighth consecutive year of monitoring willow-songbird communities in Yellowstone. For details of protocol and sample plots, refer to Baril et al. (2011). In most years, three types of willows were surveyed for breeding passerines including previously tall (averaging >1.5 meters in height and experiencing little browsing), suppressed (generally <1 meter and experiencing heavy browsing), and released (formerly height suppressed, now similar in height to protected willows but with lower overall canopy cover) (fig. 13).

A total of 22 species was recorded across the range of willow growth conditions. Yellow warblers and Lincoln's sparrows were the most abundant species in previously tall and released willows while Savannah sparrows were the most abundant species observed in suppressed willows (table 7). Gray catbirds continue to be found only in released willows while fox sparrows are found only in previously tall willows. Overall bird abundance was greater in released willows than in either suppressed or previously tall willows. Since surveys began in 2005, abundance has increased across all three willow types (probably as a result of increased willow growth, especially in suppressed and released willows) (fig. 14). The greater amount of structure provided by taller, more robust willows allows for more foraging and nesting opportunities.

Species richness (the average number of species found in a particular habitat) was slightly greater in released than in previously tall willows, while suppressed willows had the fewest species. Since 2005, richness has increased in both suppressed and released willows and released willows now support a greater number of species than previously tall willows (fig. 15). Although previously tall willows have a more complex structure which generally allows for greater richness and abundance, the tall-but-patchily-distributed released

Table 7. Relative abundance of select species observed in previously tall, released, and suppressed willow stands during 2012.

	Previously tall	Released	Suppressed
American robin	0.88	0.88	0.14
Brewer's blackbird	0.09	0.66	0.83
Common yellowthroat	0.91	0.69	0.64
Fox sparrow	0.16	–	–
Gray catbird	–	0.13	–
Lincoln's sparrow	2.10	1.80	1.30
Red-winged blackbird	0.50	0.03	0.31
Savannah sparrow	0.09	0.5	2.25
Song sparrow	0.19	0.72	0.19
Warbling vireo	0.81	0.81	0.06
White-crowned sparrow	0.16	0.27	0.08
Willow flycatcher	0.81	1.40	0.03
Wilson's warbler	0.16	0.09	0.03
Yellow warbler	2.16	2.38	0.92

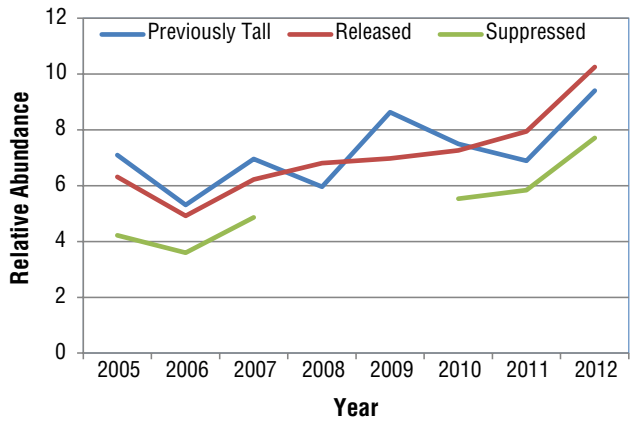


Figure 14. Average abundance across three willow growth conditions during 2005–2012.

N. BOWERSTOCK

Wilson's warbler.

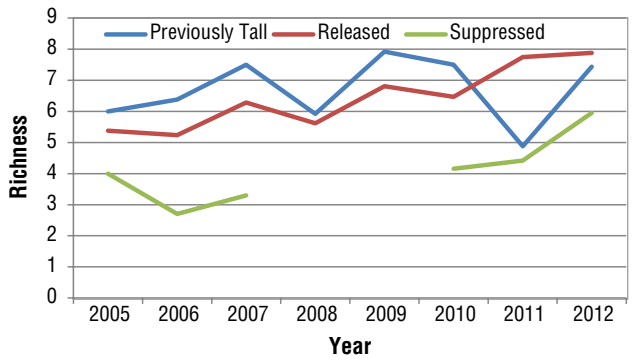


Figure 15. Species richness across three willow growth conditions during 2005–2012.

willows provide habitat for birds depending on either grass–sedge habitat or tall willow habitat therefore accommodating a variety of species.

In their *Ecological Applications* paper on willow–bird relationships in Yellowstone, Baril et al. identified seven species known to be associated with willows in Yellowstone's northern range: common yellowthroat, Lincoln's sparrow, warbling vireo, song sparrow, yellow warbler, willow flycatcher, and Wilson's warbler. We examined trends over time for these species (fig. 16). Common yellowthroat and Lincoln's sparrow appear stable over time in both released and previously tall stands with slightly greater abundance in previously tall willows than in released willows. Warbling vireo abundance was also stable over time, but with an unusually high abundance during 2011 and 2012. Yellow warbler, song sparrow, and willow flycatcher abundance increased over time with a greater rate of increase in released willows. Wilson's warblers were recorded during the first round of point counts at one of the suppressed sites but were not recorded during the second round, so it is probable that they did not breed there. Although these surveys are intended to only sample breeding birds in an area, it is possible that with the cold, wet spring that the Wilson's warblers recorded were delayed migrants or were still selecting a territory. Generally, Wilson's warblers are associated with tall, dense willows typical of previously tall stands. Wilson's warblers do, however, appear to be expanding into released sites. During 2008, the first Wilson's warbler was detected at Slough Creek and in 2010 Wilson's warblers were recorded at both Slough Creek and Blacktail Deer Creek. Wilson's warblers had not been recorded in released sites previously (Baril et al. 2011).

N. BOWERSTOCK

Brewer's blackbird.

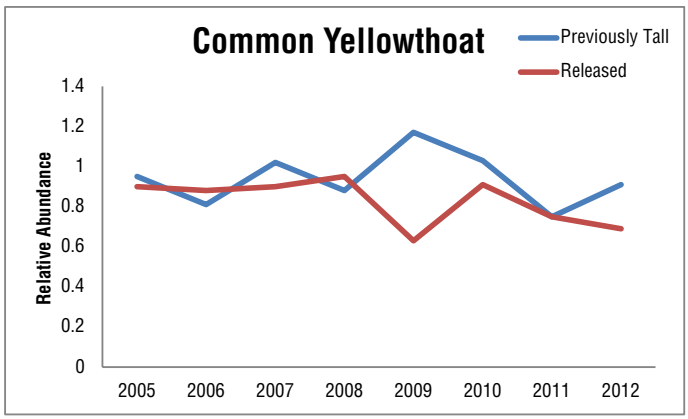
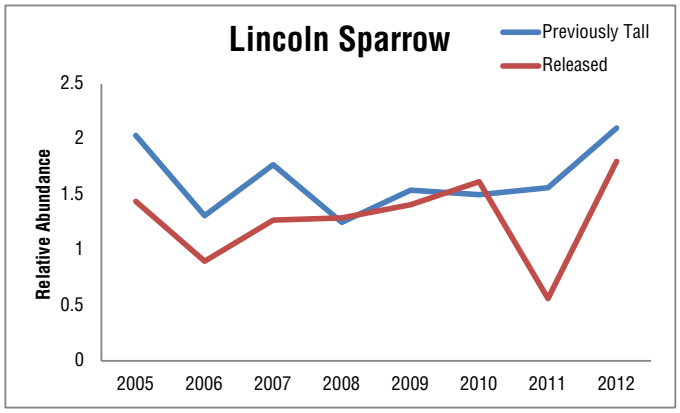
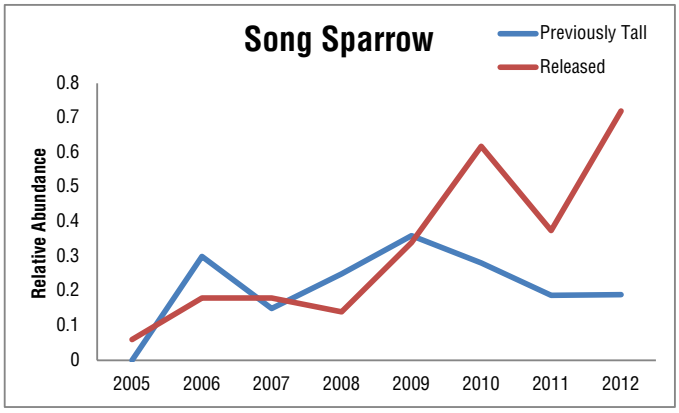
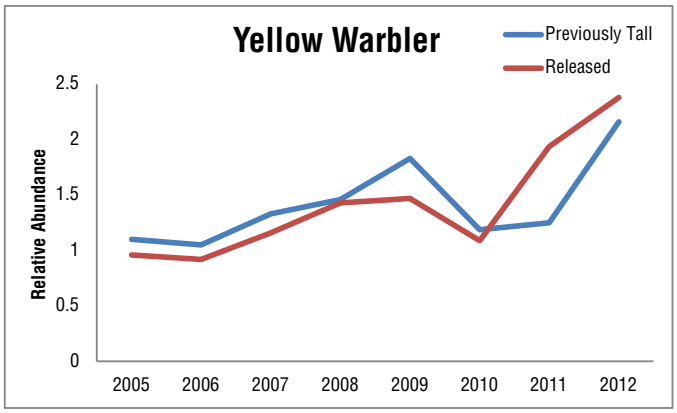
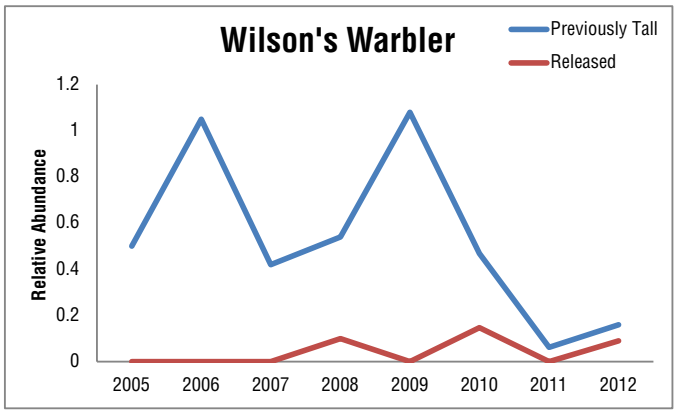


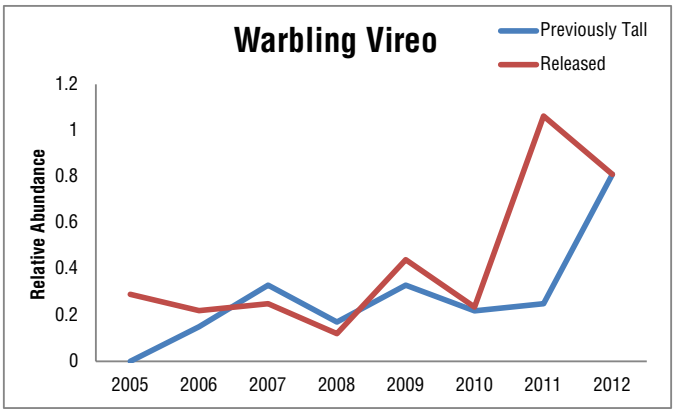
Figure 16. Relative abundance for seven species associated with willows in Yellowstone's northern range from 2005–2012. Note the different scales on each panel.

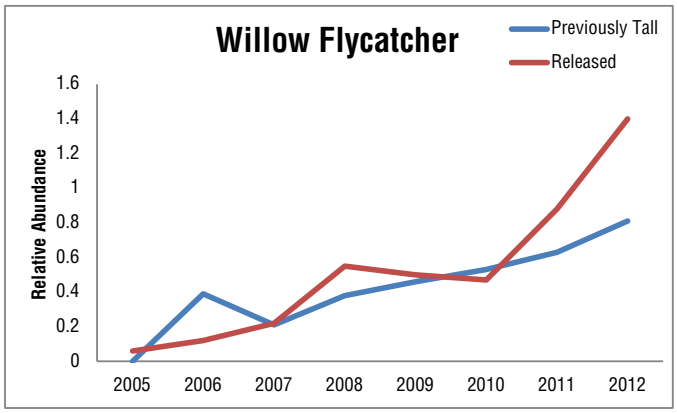












Breeding Bird Survey

We performed breeding bird surveys at Mammoth on June 14, Northeast Entrance on June 22, and the Yellowstone route on July 2. In total, we documented 4,429 individuals and 68 species (figs. 17, 18). The Yellowstone route had both the greatest diversity and number of individuals, and had more than four times the number of individuals than the other two routes. We attribute this, in part, to large flocks of Canada geese along the Yellowstone River, which accounted for 40% of all observations along this route. Canada geese numbers vary widely from year to year; however, their numbers have increased recently and we recorded the highest number of Canada geese in 2012 since the surveys began in 1987. Of note, 2012 had the greatest number of ruby-crowned kinglets, red-tailed hawks, American coots, northern flickers, warbling vireos, red-breasted nuthatches, mountain bluebirds, and pine siskins counted since the surveys began in 1987.

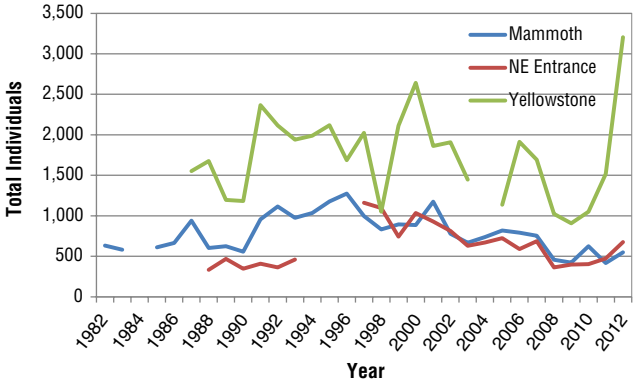


Figure 17. Number of total individuals observed during the 2012 surveys by route.

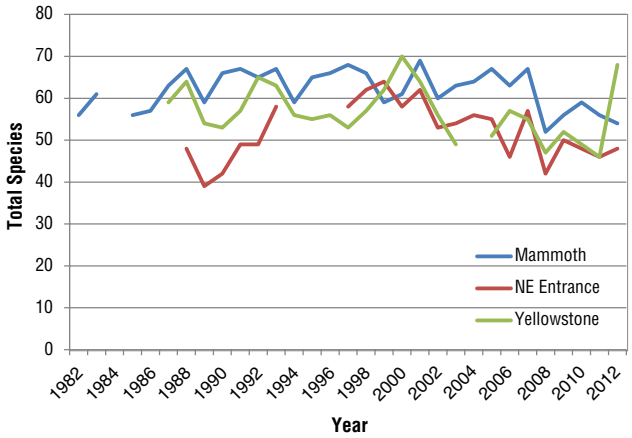


Figure 18. Number of total species observed during the 2012 surveys by route.

N. ROWENSTOCK

Yellow-headed blackbird.

Western tanager.

Yellowstone Raptor Initiative

Golden Eagle

Our objective for golden eagle surveys during 2012 was to determine occupancy and breeding status for the 16 confirmed territories identified during 2011 (table 8). Little effort was made to locate new territories due to time limitations. Surveys for territorial golden eagles began in April and continued through July. The majority of surveys were conducted from the ground; however, an aerial survey to locate birds and nests was conducted on May 15, by A. Harmata, a local golden and bald eagle expert. A previously unknown

Table 8. Summary of golden eagle territories surveyed in Yellowstone National Park during 2011 and 2012.

Year	Occupied territories	Active territories	Active territores that were successful	Fledglings	Productivity†
2011	15	5	4	5	0.56
2012	16	5	0	0	0

† estimate is based on 9 occupied territories for 2011 and 13 for 2012 because these are the territories for which enough information was collected to calculate productivity estimates from.

territory was located during this flight. Prior to this flight, the same territory was located by pilot R. Stradley during a wolf monitoring flight bringing the total known territories in Yellowstone to 18. We monitored 13 of these for evidence of breeding, but only 5 pairs initiated nests, all of which failed for unknown reasons. We could not determine nesting status in the remaining five territories; however, three of them were occupied by at least one adult. In other populations golden eagles cycle with their primary prey species (McIntyre and Adams 1999) so the low productivity observed during the last two years is not necessarily cause for concern, but will continue to be monitored closely. A future objective is to determine prey density for Yellowstone's eagle population and whether the park's eagle population also cycles with its primary prey.

NPS/H. ENGELS

Red-tailed hawk with two chicks.

Red-tailed Hawk

We monitored 34 red-tailed hawk territories, all of which were occupied by at least one adult. Of the 27 territories for which we could determine the outcome, 24 were successful yielding a nesting success rate of 89%. The 24 successful nests fledged 47 young in total. Productivity (number young fledged per occupied nest with a known outcome) was 1.7 and brood size (young fledged per successful nest) averaged 2.0. Together, these estimates of reproductive success indicate a stable or increasing population that may be a source for other, less productive populations.

From aging red-tailed hawk nestlings then backdating we determined average range of incubation initiation, hatch date, and fledging date. During 2012, we determined that red-tailed hawks began incubation approximately May 6–8 (table 9). Red-tailed hawks began incubation a few days earlier on average during 2012 than during 2011. The average incubation period is 28–35 days and hatching generally occurred during the week of June 2. Fledging occurs on average of 42–46 days after hatching and occurred around July 13–17. These dates are somewhat later than others have reported for the Rocky Mountains; however, Yellowstone is a high-elevation area compared with other locations.

Table 9. Red-tailed Hawk nesting chronology during 2011 and 2012.

Nesting chronology	2011 Average (n=10)	2012 Average (n=24)
Mean incubation	May 8–10	May 6–8
Mean hatching	June 8–10	June 2
Mean fledging	July 22–24	July 13–17

Swainson's Hawk, Prairie Falcon, and American Kestrel

Yellowstone Raptor Initiative staff surveyed for Swainson's hawks and American kestrels primarily via road-based surveys in the northern range (see Raptor Roadside Survey). We conducted territory searches to determine occupancy and locate active nests in a limited number of territories. Most of the Swainson's hawk work was done by collaborator J. Kirkley, a raptor ecologist and biology professor at University of Montana Western. Kirkley established survey routes along the north and west shores of Yellowstone Lake and in Hayden Valley. Kirkley identified 10 territories occupied by a mated pair of Swainson's hawks and made numerous additional Swainson's hawk sightings. In two of these territories nests were located and monitored. Yellowstone Raptor Initiative staff located an additional active nest in the northern range. All three nests were successful, fledging a total of five young. Kirkley also made numerous observations of red-tailed hawks and a limited number of American kestrel sightings.

Due to staffing limitations we only surveyed two suspected prairie falcon cliff sites. We confirmed occupancy and breeding at one of the suspected sites. Only two of the five known sites were surveyed for breeding and both were successful, fledging a total minimum of four young. We located an American kestrel nest while searching for Swainson's hawks and recorded the locations of suspected nest sites for future nest searching.

Raptor Roadside Survey

The Yellowstone Raptor Initiative conducts roadside surveys to estimate raptor density for select species within the northern range of Yellowstone. The surveys are meant to complement nest monitoring surveys. By the end of 2015, the Yellowstone Raptor Initiative plans to have a complete estimate of the adult red-tailed hawk, Swainson's hawk, and American kestrel populations on the northern range, including an estimate of the number of breeding pairs. The survey consists of points of unlimited distance beginning at Indian Creek Campground and ending at Barronnette Peak. We reduced the number of points on the Mammoth route from 21 to 18 due to visibility issues. We also extended the survey time at each point to 20 minutes to increase the likelihood of detecting raptors. Each point is surveyed twice: once in May and once in June. For more details regarding this survey, please refer to the 2011 Yellowstone bird annual report.

Table 10. Results of the raptor roadside survey for 2012.

Species	Total abundance	Percent
Red-tailed hawk	153	72.5
American kestrel	17	8.1
Swainson's hawk	15	7.1
Golden eagle	8	3.8
Bald eagle	6	2.8
Osprey	6	2.8
Sharp-shinned hawk	2	0.9
Turkey vulture	1	0.5
Cooper's hawk	1	0.5
Northern goshawk	1	0.5
Praire falcon	1	0.5
Grand Total	**211**	**100**

At the end of two cycles between the two routes we recorded 211 detections across 11 species. As in the pilot survey, red-tailed hawks (73%) comprised the majority of the detections followed by American kestrels (8%) and Swainson's hawks (7%) (table 10). We suspect the Swainson's hawk population is low through the northern range due to competition with red-tailed hawks. On average more Swainson's hawks are observed at higher elevations in Yellowstone, such as the Thorofare region, Hayden Valley, and the Mirror Plateau where red-tailed hawk abundance appears lower (Yellowstone Raptor Initiative staff observations).

Raptor Sightings Program

Since the raptor sightings program began in 2010, we have received more than 1,300 sightings from visitors and park staff across 22 raptor species (fig. 19). Red-tailed hawks continue to be the most commonly reported raptor species followed by bald eagles and ospreys. Observers ranged from park staff to visitors exploring Yellowstone. Report forms assisted in narrowing Yellowstone Raptor Initiative staff search efforts for breeding raptors and contributed to locating several of the red-tailed hawk nests monitored during 2011 and 2012. In general, owls and accipiters (sharp-shinned hawk, Cooper's hawk, and goshawk) are infrequently reported in large part because of their secretive nature and/or nocturnal behavior (most owls). Sightings of these species are especially important because little is known about their distribution and abundance in

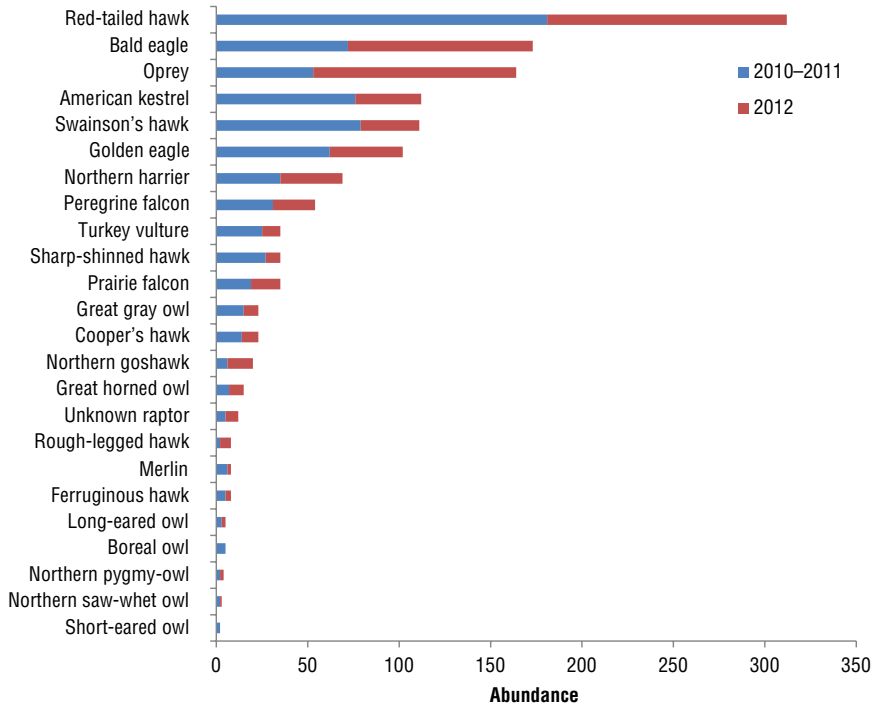


Figure 19. Raptor observations reported by visitors and staff during 2010–2012.

Yellowstone. In addition to aiding Yellowstone Raptor Initiative staff in understanding raptor distribution throughout Yellowstone, the raptor sightings program stimulates interest in Yellowstone's raptors and enables visitors to contribute to scientific research within Yellowstone. Many of the raptor species observed and reported by visitors in Yellowstone also occur and can be recognized and appreciated in visitors' own states and backyards.

Raptor Migration Count

The raptor migration count in Hayden Valley was initiated during autumn 2010. The goal of collecting this data is to provide long-term information on populations of raptors migrating through the Hayden Valley during autumn. The Hayden Valley migration site is located within the northern portion of the Rocky Mountain Flyway , a migration corridor for raptors moving through the region. We moved the observation point to the original location identified in 2010 following the reopening of Hayden Valley, which was closed due to bear attacks. This observation point affords a greater viewshed from which to observe migrating raptors.

Observations began on September 4 and continued through October 24. We observed on 38 of the 51 available observation days. Counts typically began at 10:00 AM and were completed by 4:00 PM (Mountain Daylight Time). Ten observers participated in the count over the study period with an average of 2–3 observers per day. The observation point was staffed for 194 observation hours and observer hours (total hours multiplied by number of observers per day then summed over all days) totaled 564 hours. Effort during 2012 was similar to the effort in 2011.

A total of 953 raptors across 17 species were recorded. The majority of all raptors observed were buteos (47%), eagles (21%), accipiters (12%), falcons (11%), harriers (3%), ospreys (2%), turkey vulture (2%), and unknown raptors (2%). Of the total birds that were identified to species the most abundant species were red-tailed hawks (26%), rough-legged hawks (14%), and golden eagles (14%). All other species represented <10% of the total (fig. 20).

The results of the 2012 season were drastically different from the previous year despite similar effort (fig. 20). Despite the slightly greater effort in 2012 (194 hours) compared to 2011 (177 hours), far fewer birds were recorded in 2012 than during 2011. The number of Swainson's hawks recorded migrating through Hayden Valley decreased substantially since the pilot study began in 2010 despite increasing effort. In 2010 we observed 526 Swainson's hawks during just 20 hours of observation, 357 in 2011, and just 46 in 2012, despite increasing effort over the three years of surveys. Variability in Swainson's hawk numbers is most likely attributed to their notoriously unpredictable migration routes resulting in considerable variation in abundance among years at any given site. Rough-legged hawk abundance nearly doubled between 2011 and 2012 and twice as many turkey vultures were observed in 2012 as in 2011. Although uncommon in the western United States, we observed seven broad-winged hawks in 2012. A common migrant through the east, broad-winged hawks can be seen in large groups (called kettles) numbering in the hundreds, and can even total in the tens of thousands for a single day at migration sites such as Duluth, Minnesota, and along the western shore of Lake Erie, Michigan.

During 2012, visibility was severely limited on 16 of the 38 observation days due to high smoke concentrations from fires burning in and outside the park. Hayden Valley is generally a difficult site to count because a migration flight is spread out and requires distant horizontal visibility. We believe that this was the primary factor that reduced the total count. Only continued surveys will show if Hayden Valley serves as a consistent corridor for migrants as they move through Yellowstone.

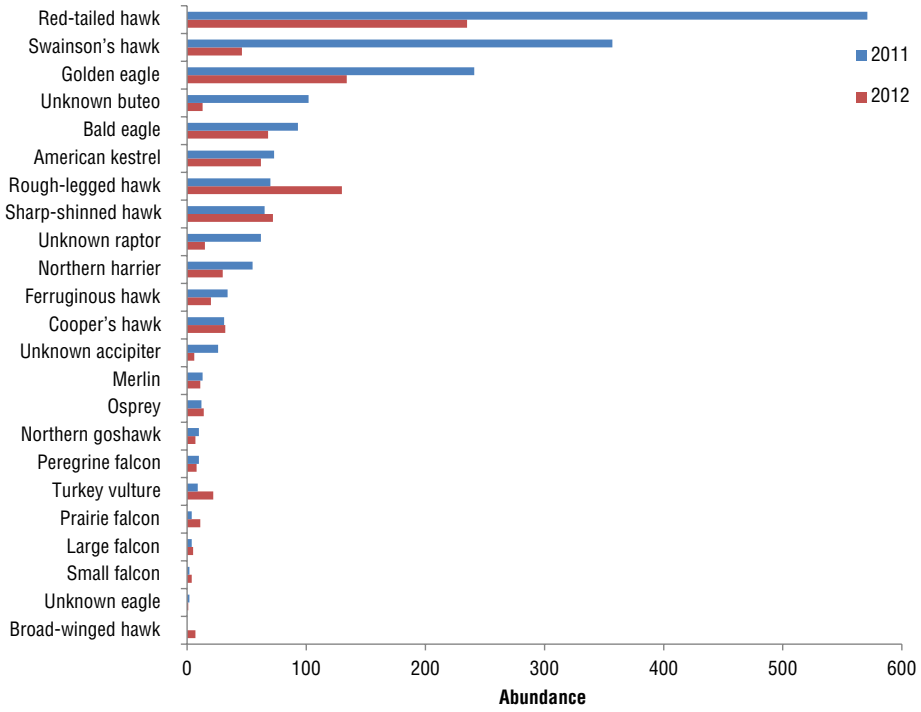


Figure 20. Raptor migration observations recorded during 2011 and 2012.

Partnerships

The Yellowstone Raptor Initiative continued partnerships developed in 2011 with local raptor ecologists. J. Kirkley, University of Montana Western, surveyed for Swainson's hawks in the Yellowstone Lake area during July and August. Yellowstone Park Foundation funding provided trailer rental space as well as reimbursement for travel expenses during July and August. The Yellowstone Raptor Initiative also continued a partnership with C. Preston with the Draper Natural History Museum in Cody, Wyoming, and established a new partnership with B. Bedrosian, Craighead Beringia South, and R. Crandall, University of Montana, to better assess how golden eagle productivity varies across multiple land-use types in the Greater Yellowstone area.

Public Outreach

For the third year, Interpretive Planner K. Duffy led a hawk ecology and identification program on September 22 that involved more than 60 people. Visitors met at the Fishing Bridge Visitor Center to learn about raptor ecology and identification using mounts of raptors. The talk was followed by a field trip to Hayden Valley where Duffy pointed out migrating raptors and discussed identification tips and the ecology of migration. Duffy also taught a raptor ecology and identification class for the Yellowstone Association Institute on September 7–9 at the Lamar Buffalo Ranch, and educated more than 40 visitors on winter raptor ecology at the Winter Speaker Series at the West Yellowstone Visitor Information Center on February 10. Yellowstone Raptor Initiative staff gave training sessions at the park's winter and spring Resource and Education staff meetings with more than 120 attendees. The Yellowstone Raptor Initiative also hosted a winter bald and golden eagle volunteer survey on January 14 to document winter use in Yellowstone, Gardiner, and Paradise Valley. More than 40 volunteers participated in this one-day event during which 57 eagles (45 bald eagles, 10 golden eagles, 2 unknown eagles) were observed (see above). From September to October, the Yellowstone Raptor Initiative hosted volunteers at the hawk-watch site in Hayden Valley. Finally, the Yellowstone Raptor Initiative presented a poster at the 11th Biennial Scientific Conference on the Greater Yellowstone Ecosystem on October 8–10, 2012. These programs help raise awareness of raptors in Yellowstone while contributing to the larger goal of increased knowledge regarding these species.

2012 Noteworthy Birds

Several reports of pileated woodpeckers along the Beaver Ponds Trail were received for the fourth year in a row. Bird program staff also observed pileated woodpeckers excavating a nest cavity. In the Rocky Mountains pileated

Pileated woodpecker.

woodpeckers generally occur in northern Idaho and northwest Montana, but may be undergoing range expansion. A vagrant blue jay was observed four miles south of Canyon during late September and in Gardiner during November and December. Blue jays are observed during fall and early winter in most years. A lark sparrow was observed east of Tower Junction during mid-May. Five black-necked stilts were observed at Floating Island Lake at the end of June. Black-necked stilts are known to breed in Southern Idaho and in Central Montana; the birds seen at Floating Island were most likely foraging on their way back to their breeding grounds.

Members of the bird staff observed what appeared to be a gyrfalcon in Hayden Valley during fall migration.

A Ross's goose was observed by the bird staff during late October at Swan Lake with 40 tundra swans migrating through the park. Lastly, observations of turkey vultures appear to be increasing throughout the park, particularly in the Firehole River drainage.

In previous years turkey vultures were observed during spring and only rarely during the summer; however, over the last several years this species has been observed frequently during the summer months and is potentially breeding in Yellowstone. We also received reports of an arctic tern, rusty blackbird, laughing gull, Baird's sandpiper, American avocets, long-billed curlew, and a flock of 25 rarely reported Franklin's gulls near Alum Creek.

Finally, bird program staff and a visitor observed a Eurasian collared dove in two separate locations indicating this introduced species is expanding into the park. Eurasian collared doves are common in Livingston, Montana, some areas south of Livingston, and in Cody, Wyoming. All bird sightings of note are forwarded to the Wyoming Bird Records Committee, the group responsible for assessing the reliability of rare or unusual bird sightings for the state. We encourage park staff and visitors to report rare or unusual bird sightings.

Acknowledgments

We would like to thank K. Duffy for many hours volunteering to monitor peregrine falcons, prairie falcons, and ospreys in addition to aiding in the development and implementation of Yellowstone Raptor Initiative program goals; Yellowstone Raptor Initiative interns J. Dahl and A. Metea; Yellowstone Raptor Initiative collaborators C. Preston, B. Bedrosian, and R. Crandall; A. Harmata and pilots R. Stradley and S. Ard; B. Long and D. Reed from the Wyoming Wetlands Society for their expertise and help with trumpeter swan activities; J. Kirkley for Swainson's hawk nest searching and monitoring; and all visitors, Yellowstone National Park staff, and Yellowstone Association staff who submitted bird sightings. We also want to recognize Bob and Annie Graham for funding the raptor initiative. We appreciate interest in the birds of Yellowstone National Park and are open to input and volunteering efforts to help with monitoring the park's birds.

David Haines, Julie Dahl, and Lisa Strait.

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Appendix A. Raptor Nesting Terminology (adapted from Postupalsky 1974)

Active nest. A nest in which eggs have been laid. This definition is more restrictive than the definition for an occupied nest and is only used if sufficient observations were made early in the breeding season to definitively determine the presence of eggs.

Breeding territory. An area that contains, or that was previously known to contain, one or more nests or eyries within the territorial range of a mated pair of birds. Breeding areas often contain multiple nests or eyries.

Brood size. The average number of young fledged per successful nest.

Occupied territory (nest). A territory where either a mated pair of birds is present, or a single bird that exhibits territorial display or other reproductive-related activity is present. A territory is also considered to be occupied if evidence of reproduction (e.g., one adult is observed sitting low in the nest, eggs or young are seen, or food is delivered into the eyrie [nest site]). Fresh nesting material added to a nest structure may also indicate occupancy, but care must be taken to be sure these materials were added by the species in question. Occupancy within a region is the number of occupied territories divided by the number of territories that were checked for occupancy.

Nest or eyrie. A structure built or occupied by birds for the purposes of breeding. For cliff-nesters, this definition denotes an individual scrape or ledge.

Nesting success. The percentage of active nests in a monitoring region in which one or more young fledges successfully. Nesting success for peregrine falcons is measured by the presence of young greater than 28 days old. Nesting success for eagles and ospreys, is measured by the presence of young fledges at 80% of fledging age that are expected to fledge.

Productivity per active nest. The total number of young fledged per active nest (definition used for peregrines, ospreys, and bald eagles). Although accurate, a better measure would be productivity per occupied territory (also in this appendix). However, it is not possible to calculate productivity per occupied territory because these data were historically calculated per active nest.

Productivity per occupied territory. Used for all raptors except peregrines, ospreys, and bald eagles. This is a better measure of productivity since not all raptors, particularly eagles, nest annually. Including non-breeding territorial pairs in measures of productivity is important for understanding population health. It also allows for the inclusion of nesting pairs that failed early or territorial pairs discovered late in the season that may have nested, but did not produce young.

Unoccupied breeding territory. A nest or group of alternative nests at which none of the activity patterns diagnostic of an occupied nest were observed.

Appendix B. Yellowstone Bird Species List, 2012

Species Common Name	Latin Name
Common loon	*Gavia immer*
Canada goose	*Branta canadensis*
Trumpeter swan	*Cygnus buccinator*
Ross's goose	*Chen rosii*
Wood duck	*Aix sponsa*
Gadwall	*Anas strepera*
American wigeon	*Anas americana*
Mallard	*Anas platyrhynchos*
Blue-winged teal	*Anas discors*
Cinnamon teal	*Anas cyanoptera*
Northern shoveler	*Anas clypeata*
Northern pintail	*Anas acuta*

Species Common Name	Latin Name
Green-winged teal	*Anas crecca*
Canvasback	*Aythya valisineria*
Redhead	*Aythya americana*
Ring-necked duck	*Aythya collaris*
Lesser scaup	*Aythya affinis*
Harlequin duck	*Histrionicus histrionicus*
Bufflehead	*Bucephala albeola*
Common goldeneye	*Bucephala clangula*
Barrow's goldeneye	*Bucephala islandica*
Hooded merganser	*Lophodytes cucullatus*
Common merganser	*Mergus merganser*
Ruddy duck	*Oxyura jamaicensis*
Gray partridge	*Perdix perdix*
Ruffed grouse	*Bonasa umbellus*
Dusky grouse	*Dendragapus obscurus*
Pied-billed grebe	*Podilymbus podiceps*
Red-necked grebe	*Podiceps grisegena*
Eared grebe	*Podiceps nigricollis*
Western grebe	*Aechmophorus occidentalis*
Clark's grebe	*Aechmophorus clarkii*
American white pelican	*Pelecanus erythrorhynchos*
Double-crested cormorant	*Phalacrocorax auritus*
American bittern	*Botaurus lentiginosus*
Great blue heron	*Ardea herodias*
White-faced ibis	*Plegadis chihi*
Turkey vulture	*Cathartes aura*
Osprey	*Pandion haliaetus*
Bald eagle	*Haliaeetus leucocephalus*
Northern harrier	*Circus cyaneus*
Sharp-shinned hawk	*Accipiter striatus*
Cooper's hawk	*Accipiter cooperii*
Northern goshawk	*Accipiter gentilis*
Broad-winged hawk	*Buteo platypterus*
Swainson's hawk	*Buteo swainsoni*
Red-tailed hawk	*Buteo jamaicensis*
Ferruginous hawk	*Buteo regalis*
Rough-legged hawk	*Buteo lagopus*
Golden eagle	*Aquila chrysaetos*
American kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Peregrine falcon	*Falco peregrinus*

Species Common Name	Latin Name
Prairie falcon	*Falco mexicanus*
Virginia rail	*Rallus limicola*
Sora	*Porzana carolina*
American coot	*Fulica americana*
Sandhill crane	*Grus canadensis*
Killdeer	*Charadrius vociferus*
American avocet	*Recurvirostra americana*
Willet	*Tringa semipalmata*
Spotted sandpiper	*Actitis macularia*
Long-billed dowitcher	*Limnodromus scolopaceus*
Wilson's snipe	*Gallinago delicata*
Wilson's phalarope	*Phalaropus tricolor*
Franklin's gull	*Larus pipixcan*
California gull	*Larus californicus*
Caspian tern	*Sterna caspia*
Rock pigeon	*Columba livia*
Mourning dove	*Zenaida macroura*
Eurasian collared-dove	*Streptopelia decaocto*
Great horned owl	*Bubo virginianus*
Northern pygmy-owl	*Glaucidium gnoma*
Great gray owl	*Strix nebulosa*
Boreal owl	*Aegolius funereus*
Northern saw-whet owl	*Aegolius acadicus*
Northern pygmy-owl	*Glaucidium gnoma*
Common nighthawk	*Chordeiles minor*
White-throated swift	*Aeronautes saxatalis*
Rufous hummingbird	*Selasphorus rufus*
Belted kingfisher	*Ceryle alcyon*
Wiliamson's sapsucker	*Sphyrapicus thyroideus*
Red-naped sapsucker	*Sphyrapicus nuchalis*
Downy woodpecker	*Picoides pubescens*
Hairy woodpecker	*Picoides villosus*
American three-toed woodpecker	*Picoides dorsalis*
Black-backed woodpecker	*Picoides arcticus*
Northern flicker	*Colaptes auratus*
Pileated woodpecker	*Dryocopus pileatus*
Olive-sided flycatcher	*Contopus cooperi*
Western wood-pewee	*Contopus sordidulus*
Willow flycatcher	*Empidonax traillii*
Hammond's flycatcher	*Empidonax hammondii*
Dusky flycatcher	*Empidonax oberholseri*

Species Common Name	Latin Name
Eastern kingbird	*Tyrannus tyrannus*
Loggerhead shrike	*Lanius ludovicianus*
Northern shrike	*Lanius excubitor*
Warbling vireo	*Vireo gilvus*
Gray jay	*Perisoreus canadensis*
Steller's jay	*Cyanocitta stelleri*
Pinyon jay	*Gymnorhinus cyanocephalus*
Clark's nutcracker	*Nucifraga columbiana*
Black-billed magpie	*Pica hudsonia*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
Horned lark	*Eremophila alpestris*
Tree swallow	*Tachycineta bicolor*
Violet-green swallow	*Tachycineta thalassina*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Bank swallow	*Riparia riparia*
Cliff swallow	*Petrochelidon pyrrhonota*
Barn swallow	*Hirundo rustica*
Black-capped chickadee	*Poecile atricapillus*
Mountain chickadee	*Poecile gambeli*
Red-breasted nuthatch	*Sitta canadensis*
White-breasted nuthatch	*Sitta carolinensis*
Brown creeper	*Certhia americana*
Rock wren	*Salpinctes obsoletus*
House wren	*Troglodytes aedon*
American dipper	*Cinclus mexicanus*
Golden-crowned kinglet	*Regulus satrapa*
Ruby-crowned kinglet	*Regulus calendula*
Western bluebird	*Sialia mexicana*
Mountain bluebird	*Sialia currucoides*
Townsend's solitaire	*Myadestes townsendi*
Swainson's thrush	*Catharus ustulatus*
Hermit thrush	*Catharus guttatus*
Varied thrush	*Ixoreus naevius*
American robin	*Turdus migratorius*
Gray catbird	*Dumetella carolinensis*
Sage thrasher	*Orescoptes montanus*
European starling	*Sturnus vulgaris*
American pipit	*Anthus rubescens*
Bohemian waxwing	*Bombycilla garrulous*
Cedar waxwing	*Bombycilla cedrorum*

Species Common Name	Latin Name
Orange-crowned warbler	*Oreothlypis celata*
Yellow warbler	*Setophaga petechia*
Yellow-rumped warbler	*Setophaga coronata*
Townsend's warbler	*Setophaga townsendi*
Macgillivray's warbler	*Geothlypis tolmiei*
Common yellowthroat	*Geothlypis trichas*
Wilson's warbler	*Cardellina pusilla*
Western tanager	*Piranga ludoviciana*
Green-tailed towhee	*Pipilo chlorurus*
Spotted towhee	*Pipilo maculatus*
Chipping sparrow	*Spizella passerine*
Brewer's sparrow	*Spizella breweri*
Vesper sparrow	*Pooecetes gramineus*
Lark sparrow	*Chondestes grammacus*
Savannah sparrow	*Passerculus sandwichensis*
Fox sparrow	*Passerella iliaca*
Song sparrow	*Melospiza melodia*
Lincoln's sparrow	*Melospiza lincolnii*
White-throated sparrow	*Zonotrichia albicollis*
White-crowned sparrow	*Zonotrichia leucophrys*
Dark-eyed junco	*Junco hyemalis*
Snow bunting	*Plectrophenax nivalis*
Lazuli bunting	*Passerina amoena*
Red-winged blackbird	*Agelaius phoeniceus*
Western meadowlark	*Sturnella neglecta*
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*
Brewer's blackbird	*Euphagus cyanocephalus*
Brown-headed cowbird	*Molothrus ater*
Bullock's oriole	*Icterus bullockii*
Gray-crowned rosy-finch	*Leucosticte tephrocotis*
Black rosy-finch	*Leucosticte atrata*
Common redpoll	*Acanthis flammea*
Pine grosbeak	*Pinicola enucleator*
Cassin's finch	*Carpodacus cassinii*
House finch	*Carpodacus mexicanus*
Red crossbill	*Loxia curvirostra*
White-winged crossbill	*Loxia leucoptera*
Pine siskin	*Spinus pinus*
House sparrow	*Passer domesticus*

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Photo by Nate Bowersock