FALL 2013 RAPTOR MIGRATION STUDIES AT THE GOSHUTE MOUNTAINS, NEVADA

HawkWatch International, Inc.
Salt Lake City, Utah

HAWK WATCH INTERNATIONAL
Conserving Raptors and Our Shared Environment

May2014

FALL 2013 RAPTOR MIGRATION STUDIES AT THE GOSHUTE MOUNTAINS, NEVADA

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INTRODUCTION

The Goshute Mountains Raptor Migration Project in northeastern Nevada is an ongoing, long-term effort to monitor long-term population trends of raptors using the Intermountain Flyway (Hoffman et al. 2002, Hoffman and Smith 2003, Smith et al. 2008a). HWI and its organizational precursors have been studying the fall raptor migration in the Goshute Mountains since 1980, when HWI founder Steve Hoffman and colleagues first began banding at the site. Standardized counts began in 1983 and have continued each year since. This is one of the longest running standardized, raptor-migration monitoring efforts in western North America, with the 2013 season marking the 34th consecutive season of banding and the 31st consecutive fall count at the site. Annual counts range between ~12,000–25,000 migrants of up to 18 species, making this one of the largest known concentrations of migrating raptors in the western U.S. and Canada (Bildstein 2006). This report summarizes the 2013 fall migration at the Goshutes.

The Goshute project was 1 of 8 long-term, annual migration counts, and 1 of 4 migration banding studies conducted or co-sponsored by HWI in North America during 2013. The primary objective of these efforts is to track long-term regional population trends of diurnal raptors in western North America and around the Texas Gulf Coast (Hoffman and Smith 2003; Smith et al. 2001, 2008 a, b). HWI partners with Hawk Mountain Sanctuary, the Hawk Migration Association of North America (HMANA), and Bird Studies Canada (BSC) to provide western US data for the Raptor Population Index (RPI), a collaborative standardized effort to monitor raptor migration across North America. Chelan Ridge falls within the Great Basin bird conservation region, the Intermountain West Joint Venture, and the Basin and Range Partners in Flight region. Raptors can serve as important biological indicators of ecosystem health (Bildstein 2001) and long-term migration counts can be a cost effective and efficient method for monitoring regional status and trends of multiple raptor species (Zalles and Bildstein 2000).

In addition to long-term counting and banding efforts, HWI conducts and supports other studies to further our knowledge about the biology of migrating raptors. Some of these efforts include: telemetry work to identify species' ranges, migratory routes and connectivity; and blood and feather sampling to track changes in raptor health and populations (e.g., Hoffman et al. 2002, Lott and Smith 2006, Goodrich and Smith 2008, DeLong and Hoffman 2004, McBride et al. 2004).

Beyond their scientific and conservation value, our migration study sites offer unique opportunities for the public to learn about raptors and the natural environment. Providing such opportunities is another important component of HWI's overall mission and the Goshutes Raptor Migration Project and our outreach efforts here reach hundreds of people from Nevada, Utah, and beyond each season.

STUDY SITE

The Goshute Mountains form a 100-km ridge that runs north–south along the Utah–Nevada border. The study site is located in the Goshute Wilderness Study Area approximately 40 km southwest of Wendover, Nevada, on land administered by the Elko Field Office of the Bureau of Land Management (40° 25.417' N, 114° 16.276' W; Fig. 1). The project site is located near the south end of the Goshute range and is reached via a primitive road that begins near Ferguson Springs, and then a primitive trail that ascends Christmas Tree Canyon from the east.

Prior to 2001, the main count site was located atop the highest point of ridge in the project area at an elevation of 2,743 m (OP1 in Fig. 1). This location provided an expansive 360° view of the surrounding landscape, but poor visibility at or below eye level hindered the view covering the east side. To compensate when winds blew from the east, during the first couple decades observers commonly moved about 250 m north to a second observation post (OP2 in Figure 1), which provided an unobstructed view along the lower eastern flanks of the ridge. In 2001 this second location became the permanent observation site with standardized counts taking place there in every year since (cf. Vekasy and Smith 2002).

Over the years, as many as 6 trapping stations have been operated at the Goshutes in a single year. Four primary stations have been used since 2000 and HWI has recently (including 2013) operated two stations: North and West (Fig. 1a).

METHODS

STANDARDIZED COUNTS

Two designated observers occasionally relieved or supplemented by other staff and volunteers conducted standardized daily counts throughout the season. Weather permitting, daily counts usually began between 0800 and 0900 H Mountain Standard Time (MST) and ended near sunset, usually between 1700 and 1900 H. Data gathering and recording followed standardized protocols used at all HWI sites. Observers routinely record:

1. Species, age, sex, and color morph of each migrant raptor, whenever possible and applicable (Appendix B lists common and scientific names for all species, information about the applicability of age, sex, and color morph distinctions, and two-letter codes used to identify species in some tables and figures).
2. Hour of passage for each migrant; e.g., the 1000–1059 H MST.
3. Wind speed and direction, air temperature, percent cloud cover, predominant cloud type(s), presence or of precipitation, visibility, and an assessment of thermal-lift conditions, recorded for each hour of observation on the half hour.
4. Predominant direction, altitude, and distance from the lookout of the flight during each hour.
5. Total minutes observed and the mean number of observers present during each hour (included designated observers plus volunteers/visitors who actively contributed to the count [active scanning, pointing out birds, recording data, etc.] for more than 10 minutes in a given hour), recorded on the hour.
6. A subjective visitor-disturbance rating for each hour, recorded on the hour.
7. Daily start and end times for each observer.

Calculation of "adjusted" (to standardize sampling periods and adjust for incompletely identified birds) passage rates (migrants counted per 100 hours of observation) and analysis of trends updated through 2012 follows Farmer et al. (2007). In comparing 2013 annual statistics against means and 95% confidence intervals for previous seasons, we equate significance with a 2013 value falling outside the bounds of the confidence interval for the associated mean.

TRAPPING AND BANDING

Banding crews operated 1-2 trapping stations on most days, generally between 0900 and 1700 H MST. Crews trapped raptors using mist nets, dho-gaza nets, and remotely triggered bow nets. Trappers lured migrating raptors into the capture stations from camouflaged blinds using live, non-native avian lures attached to lines manipulated from the blinds. Unless already banded, all birds were fitted with a uniquely numbered USGS Biological Resources Division aluminum leg band. Data gathering and recording followed standardized protocols used at all HWI migration-banding sites (Hoffman et al. 2002). All birds were released within 45 minutes of capture.

2013 RESULTS AND DISCUSSION

OBSERVATION EFFORT AND WEATHER SUMMARY

Observers counted on 80 of 83 possible days for a total of 641.75 observation hours between 15 August and 5 November during the 2013 season, the long term averages at the site are 79 ± 1.9 days and 675.55±

23.32 observation hours, Appendix XX). Five of the 80 days had abbreviated counts (< 4 hrs) due to weather. Weather varies throughout every migration season, in 2013 based on hourly recording of conditions during observation sessions; it was clear 30 % of the time, hazy 83% of the time, rainy 11 % of the time, and snowy 5% of the time.

2013 FLIGHT SUMMARY

Overall Flight:

Observers counted 11,994 migrants of 17 raptor species, which is a significant ($p < 0.05$) decrease of 16% compared to the site's historic average of 14,321 (Table 1). The composition of the overall flight broke down as follows: 45.7% accipiters, 34.6% buteos, 7.9% falcons, 2.7% vultures, 1.9% eagles, 1.2% harriers, 0.6% Ospreys, and < 1% unidentified raptors. The percentages of Buteos, Turkey Vultures, and Ospreys in the 2013 flight were above historic averages, while Accipiters, Falcons, and Northern Harriers made up a significantly smaller portion of the flight than usual (Fig. 2). Normally, Sharp-shinned Hawks are the most commonly observed species at the Goshutes but for the second straight season Red-tailed Hawks were counted the most (29.8% of the total count), followed by Sharp-shinned Hawks (27.3%), Cooper's Hawks (16.7%), Turkey Vultures (8.2%), American Kestrels (7%), Swainson's Hawks (2.4%), and Golden Eagles (1.8%). Other species made up only 1% or less of the total (Table 1).

The following sections summarize the 2013 count relative to historic means at the site, and any statistically significant ($p < 0.05$) or near significant ($p < 0.1$) population trends based on first and second order regression analysis. HWI only depicts significant trends for species with a historic average count rate greater than or equal to 10 individuals per 100 hours. The rationale is that trends for counts below this point likely do not contain biologically meaningful information on regional populations—species with counts this low likely have a dispersed migration, another primary migration route, or large portions of the population that are resident. We do include count information in the reports, as occurrences of rarer species are of interest to both managers and the general public, and could represent the beginning of meaningful long-term changes.

Vultures, Osprey, and Northern Harriers (Fig. 3a):

The 2013 flight for both Turkey Vultures and Osprey were above historic averages for the Goshutes and regional populations for both of these species have increased over the long term ($r^2 = 0.55$, $p<<0.01$ and $r^2 = 0.25$, $p = 0.004$, respectively). This marked the third consecutive fall with below average Northern Harrier counts at the Goshutes site.

Accipiters (Fig. 3b):

Total accipiters counted during 2013 were low compared to long term averages (Table 1). Sharp-shinned Hawk and Cooper's Hawk counts in 2013were below historic averages for the Goshutes; and since 1999 regional populations for both species have been declining ($p=0.018$ and $p = 0.0005$, respectively). The Goshawk count for 2013 was average compared to historic counts, but regional populations have been declining over the long term ($r^2 = 0.25$, $p = 0.004$).

Buteoine Hawks (Fig 3c):

The 2013 flight was above average for buteos (Table 1), driven primarily by higher than normal numbers of Red-Tailed Hawks, Broad-winged Hawks, and Ferruginous Hawks. It was an average year for Swainon's and Rough-legged Hawks. Regional populations of Red-Tailed Hawks ($r^2 = 0.24$, $p = 0.006$),

Broad-winged Hawks ($r^2 = 0.46$, $p<<0.001$), and Swainson's Hawks($r^2 = 0.19$, $p = 0.015$) have increased over the long term.

Eagles (Fig. 3d):

Bald Eagle counts during the Goshutes fall migration were above historic levels for the second straight year. Golden Eagle numbers were in line with historic averages but a long-term decline of regional populations for this species based upon migration counts continued ($r^2 = 0.14$, $p = 0.038$).

Falcons (Fig 3e):

The 2013 flight was high forPeregrine Falcons and Merlins, average for Prairie Falcons, and low for American Kestrels compared to historic means. This marked the 8th straight year of below average counts for Kestrels at the Goshutes and long term trend analysis shows a steady decline that started in the late 1990's ($p = 0.000001$). This pattern of decline has been documented at other western HWI migration stations and other North American monitoring sites. HWI scientists, along with other researchers and citizen scientist have partnered to understand these declines both locally and at the continental scale under the umbrella of the American Kestrel Partnership (www.kestrel.peregrinefund.org).

TRAPPING EFFORT

Crews operated banding stations on 67 of 73 possible days between 20 August and 31 October 2013 with efforts totaling 576 station hours split between two stations (see Appendix D for annual capture history). The number of trapping days was above the 1980–2011 long-term average for the site, but due to significant reduction in crews in recent years, the number of station days (92) and hours (576) were significantly below historic averages (Appendix D).

Crews captured 1,078 raptors of twelve species, including one foreign recapture of a bird banded elsewhere (Appendix G). Sharp-shinned Hawks accounted for 54.3% of the total captures, followed by Cooper's Hawks (29.1%), Red-tailed Hawks (8.2%), American Kestrels (4.1%), Northern Goshawks (1%), and Merlins (1%). Each of the remaining species made up <1% of the total. Since inception of banding operation at the site, a total of 61,819 raptors have been captured, including 106 Goshute recaptures and 48 foreign recaptures (Appendix D). Notable capture events this season included seven Broad-Winged Hawks, to go along with above average buteo captures in general (Red-Tailed Hawks (88) and Swainson's Hawk (2)), and below average accipiter captures, all in line with general counting trends for these groups.

ENCOUNTERS WITH PREVIOUSLY BANDED BIRDS

A total of 376 raptors banded at the Goshutes have been encountered elsewhere as foreign encounters. During 2013 we received notice of eight Goshutes band recoveries: two Sharp-shinned Hawks, three Cooper's Hawk, two Red-tailed Hawks, and one Golden Eagle (Table 3). All birds except one Cooper's Hawk (a hatch year live recapture) were either found dead, or died in captivity due to injury. Recovery locations ranged from Canada to Baja, Mexico (Fig. 4).

SITE VISITATION

During the season, approximately 240 visitors came to the Goshute site originating from eight different states (i.e., Nevada, Utah, Oregon, California, Colorado, Montana, Pennsylvania, and Texas) and one foreign country (France). This was the second year of our Frontline Science program where, for a donation, visitors serve as part of the crew for a weekend helping with banding, observations, interpretation, cooking, and other camp chores. A class from the Jesuit College Preparatory School of

Dallas, TX also visited the site and learned about raptor migration ecology and what banding and counting efforts can tell us about regional raptor populations and the health of the landscapes they use.

ACKNOWLEDGMENTS

Financial support for the 2013 project was provided by the Walbridge Fund, My Good Fund Trust, Patagonia, REI (Salt Lake City), Nevada Energy, Schaffner Family Foundation, and HWI private donors and members. We especially want to thank the BLM Elko District Office, Fire, and Heli-tac crews for providing helicopter-airlift and other essential logistical support. We would like to highlight their contribution as imperative to the success of the Goshute Mountains operation and we greatly appreciate their service and professionalism! Zachary Pratt, the BLM-Elko's Outdooor Recreation/Wilderness Planner and his assistant Andrew McDonald also deserve special recognition and thanks for helping with planning efforts and field support as well.

As always, we are also grateful for the West Wendover Public Water Works for supplying the season's much needed drinking water and for the City of West Wendover Water Reclamation and Compost for allowing us to dump our lure bird and human compost waste and allow us to clean the waste buckets. We also want to thank the Wendover Nugget and the Knights Inn for providing discounted hotel accommodations to our crewmembers on off days. Thanks also to Einstein's Bagels for their continuous supply of delicious fresh bagels, as well as the Salt Lake Roasting Company of Salt Lake City for their ongoing generous donations of high quality coffee.

A number of dedicated volunteers helped out with various aspects of logistics, as well as donating their time to help with data collection and other support A number of these volunteers return on a regular or semi-regular basis to help with observations and trapping. We truly give special thanks to these folks for their continued support: Jenifer Callahan, Jeannie Montplasir, John Martin, Sue Ellen and John Lynn, Aaron Barna, Leo Chidester, and Jerry Liguori. Finally enormous thanks to all of the members of our 2013 field crew: Russell Seeley, Rya Rubenthaler, Toby Chipman, William Blake, Caitlin Davis, Melinda McFarland, Mike Shaw, and Leo Chidester. Without your skill, dedication, and willingness to brave isolation and the elements over the course of a long field season these efforts would not be possible.

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Table 1. Annual raptor migration counts and adjusted (truncated to standardized annual sampling periods and adjusted for incompletely identified birds) annual passage rates by species in the Goshute Mountains, NV: 1983–2012 versus 2013.

	Counts			Raptors/100 hours[1]		
Species	1983–2012[2]	2013	% Change	1983–2012[2]	2013	% Change
Turkey Vulture	388 ± 67.3	980	+153	107.0 ± 17.72	308.8	+189
Osprey	94 ± 14.6	117	+25	21.1 ± 2.99	28.6	+36
Northern Harrier	171 ± 23.3	88	-49	26.3 ± 3.21	13.8	-47
Sharp-shinned Hawk	4484 ± 650.9	3271	-27	987.2 ± 119.27	767.5	-22
Cooper's Hawk	2983 ± 480.2	1997	-33	740.2 ± 100.92	553.9	-25
Northern Goshawk	92 ± 20.3	92	0	15.2 ± 3.27	16.2	+6
Unknown small accipiter[3]	236 ± 93.6	112	-53	–	–	–
Unknown large accipiter[3]	8 ± 5.0	3	-65	–	–	–
Unknown accipiter	239 ± 81.2	1	-100	–	–	–
Total Accipiters	7888 ± 1090.5	5476	-31	–	–	–
Red-shouldered Hawk	0.2 ± 0.2	0	-100	–	–	–
Broad-winged Hawk	63 ± 20.6	204	+226	25.5 ± 8.91	88.4	+247
Swainson's Hawk	271 ± 82.9	285	+5	70.6 ± 21.90	76.7	+9
Red-tailed Hawk	3162 ± 317.6	3579	+13	517.2 ± 42.73	629.6	+22
Ferruginous Hawk	15 ± 2.4	18	+20	2.4 ± 0.37	3.2	+37
Rough-legged Hawk	14 ± 3.5	17	+18	6.0 ± 1.32	7.1	+19
Unidentified buteo	70 ± 16.5	41	-41	–	–	–
Total Buteos	3594 ± 376.1	4144	+15	–	–	–
Golden Eagle	247 ± 22.8	212	-14	38.5 ± 3.41	35.7	-7
Bald Eagle	12 ± 2.2	15	+25	2.4 ± 0.43	3.1	+31
Unidentified eagle	1 ± 0.4	1	+50	–	–	–
Total Eagles	259 ± 23.9	228	-12	–	–	–
American Kestrel	1737 ± 315.0	839	-52	365.4 ± 61.65	191.7	-48
Merlin	41 ± 8.4	57	+40	7.9 ± 1.64	12.7	+60
Prairie Falcon	24 ± 5.0	25	+3	4.0 ± 0.74	4.6	+14
Peregrine Falcon	14 ± 4.2	26	+80	2.6 ± 0.71	5.2	+100
Unknown small falcon[3]	2.8 ± 2.1	0	-100	–	–	–
Unknown large falcon[3]	2 ± 1.3	1	-59	–	–	–
Unknown falcon	5 ± 1.9	0	-100	–	–	–
Total Falcons	1824 ± 325.2	948	-48	–	–	–
Unidentified raptor	103 ± 31.3	13	-87	–	–	–
Grand Total	14321 ± 1664.9	11994	-16	–	–	–

[1] Adjusted for incompletely identified birds and to standardized, species-specific sampling periods.

[2] Mean ± 95% confidence interval.

[3] These categories represent new distinctions initiated as standard practice in 2001 (see Appendix B for classification details).

Table 2. Capture totals, rates, and successes for migrating raptors in the Goshute Mountains, NV: 1983–2012 versus 2013.

	Capture Total		Capture Rate[1]		Capture Success (%)[2]	
Species	1983–2012[3]	2013	1983–2012[3]	2013	1983–2012[3]	2013
Northern Harrier	6 ± 1.6	4	0.5 ± 0.1	0.7	3.5 ± 1.0	4.5
Sharp-shinned Hawk	1159 ± 222.3	585	100.6 ± 7.2	101.5	24.6 ± 3.6	17.5
Cooper's Hawk	580 ± 115.0	313	50.5 ± 4.0	54.3	18.1 ± 2.2	15.3
Northern Goshawk	27 ± 7.3	10	2.5 ± 0.6	1.7	29.5 ± 5.1	10.9
Broad-winged Hawk	1 ± 0.3	7	0.1 ± 0.04	1.2	2.8 ± 1.2	3.4
Swainson's Hawk	0.2 ± 0.2	2	0.02 ± 0.02	0.3	0.07 ± 0.08	0.7
Red-tailed Hawk	67 ± 11.4	88	6.8 ± 1.7	15.3	2.1 ± 0.3	2.4
Rough-legged Hawk	0.1 ± 0.1	0	0.010 ± 0.014	0.0	0.4 ± 0.6	0.0
Golden Eagle	4 ± 1.0	5	0.4 ± 0.1	0.9	1.7 ± 0.4	2.3
Bald Eagle	0.03 ± 0.07	0	0.01 ± 0.01	0.0	0.4 ± 0.7	0.0
American Kestrel	125 ± 39.3	44	9.1 ± 1.6	7.6	6.4 ± 1.5	5.2
Merlin	9 ± 2.3	11	0.8 ± 0.2	1.9	19.9 ± 4.4	19.3
Prairie Falcon	5 ± 1.1	6	0.4 ± 0.1	1.0	20.5 ± 3.4	24.0
Peregrine Falcon	1 ± 0.4	2	0.09 ± 0.04	0.3	7.6 ± 3.4	7.7
All Species	1983 ± 380.6	1077	171.9 ± 11.6	186.9	14.3 ± 2.0	10.2

[1] Captures / 100 station hours.

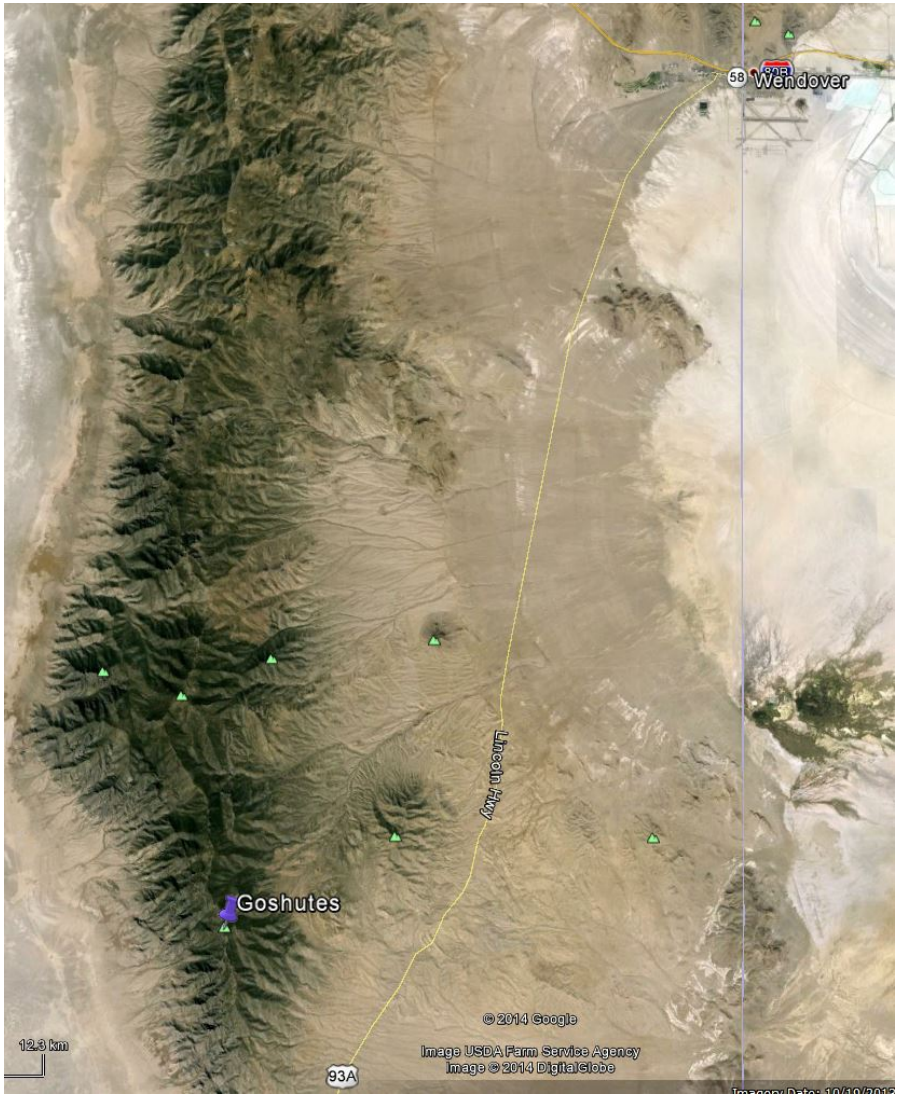
[2] Number of birds captured / number of birds observed * 100, with birds identified only to the generic group level (i.e., unknown accipiter, buteo, falcon, or eagle) allocated to relevant species in proportion to their occurrence. For calculating the "all species" values, non-trappable species and distant birds not identified at least to the generic group level were excluded.

[3] Mean of annual values ± 95% confidence interval. Limited to years when at least three trapping blinds were operated.

Table 3. Foreign encounters in 2013 of raptors banded in the Goshute Mountains, NV.

Species	Sex	Band #	Banding Date	Banding Age[1]	Encounter Date	Encounter Age[1]	Encounter Location	Distance (km)	Status
Sharp-shinned Hawk	F	1623-23842	05-Oct-12	SY	31-Mar-13	ASY	Camp Verde, AZ	600	found dead – cause unknown
Sharp-shinned Hawk	M	1232-39261	20-Oct-10	AHY	12-Nov-13	AHY	Baker, OR	554	presumed dead – found in alley
Cooper's Hawk	F	1075-00997	19-Sep-12	HY	April-13	AHY	Grandy, UT	110	found dead – cause unknown
Cooper's Hawk	F	1075-01783	11-Oct-12	SY	08-Jun-13	ASY	Kelowna, BC, Can.	1021	found dead – cause unknown
Red-tailed Hawk	U	1177-52321	16-Sep-13	SY	05-Dec-13	SY	Loreto, Baja California Sur, Mex.	1340	captured due to injury – died in captivity
Red-tailed Hawk	U	1687-24265	27-Oct-12	HY	24-Jul-13	AHY	San Jacinto Viejo, CA	673	found dead – cause unknown
Golden Eagle	F	1629-51543	10-Oct-10	HY	27-Aug-13	ATY	130 mi from Dawson, Yukon, Can.	3559	found dead – cause unknown

[1] L = local or nestling; HY = hatching year; SY = second year; TY = third year; AHY = after hatching year; ASY = after second year; ATY = after third year; otherwise self-explanatory.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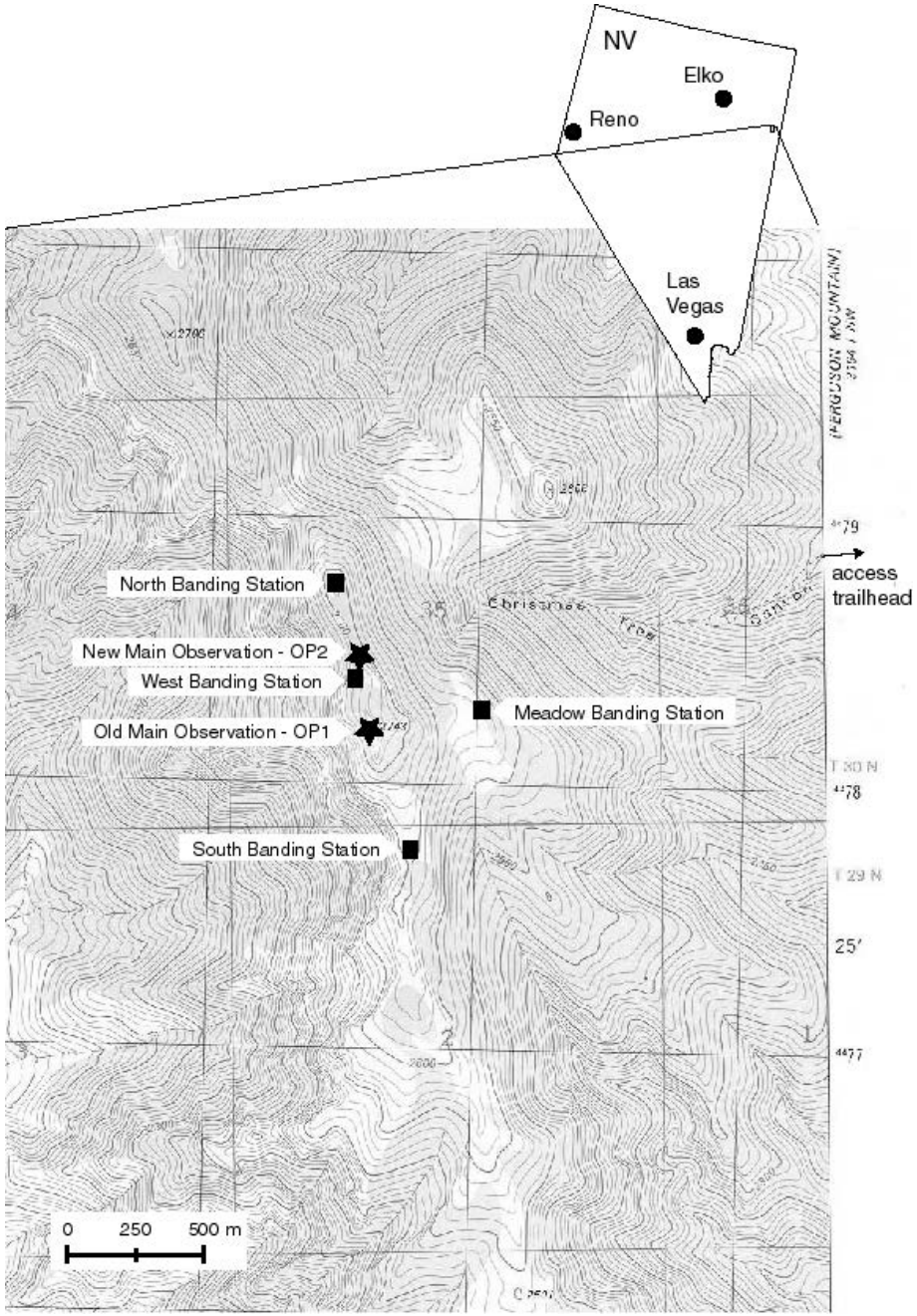

Figure 1. Location of the Goshute Mountains Raptor Migration Project study site.

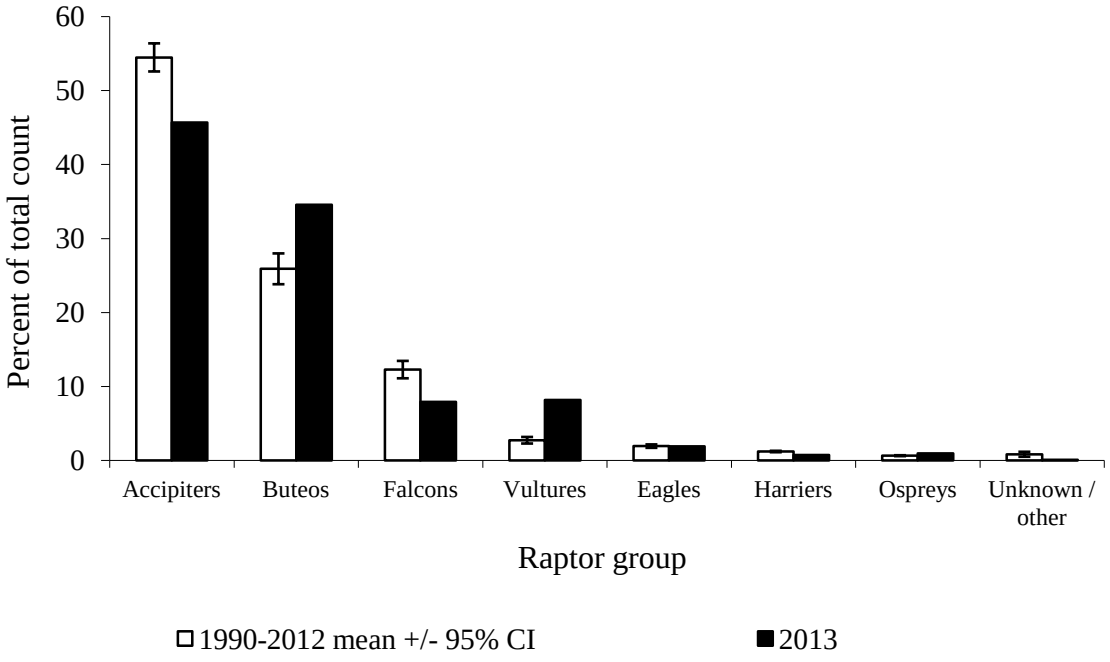

Figure 2. Fall migration flight composition by major species groups in the Goshute Mountains, Nevada: 1983–2012 versus 2013

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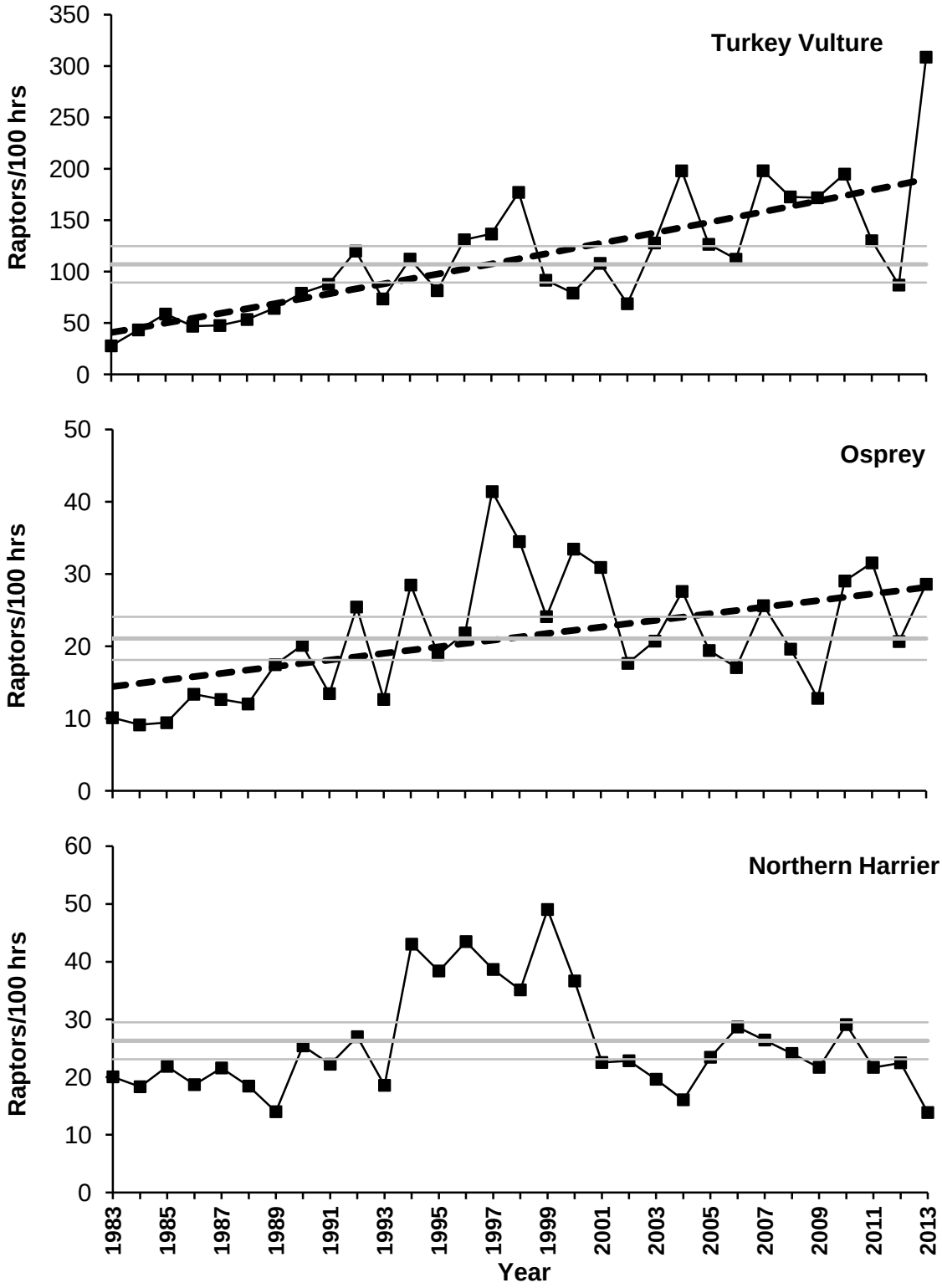

Figure 3a. Adjusted fall-migration passage rates at the Goshute Mountains, NV for Turkey Vultures, Ospreys, and Northern Harriers: 1983–2013. Dashed lines indicate trends for significant ($p < 0.05$) linear or quadratic regressions. Solid grey lines represent mean (thick) and upper and lower 95% confidence intervals (thin) of historic counts (1983-2012).

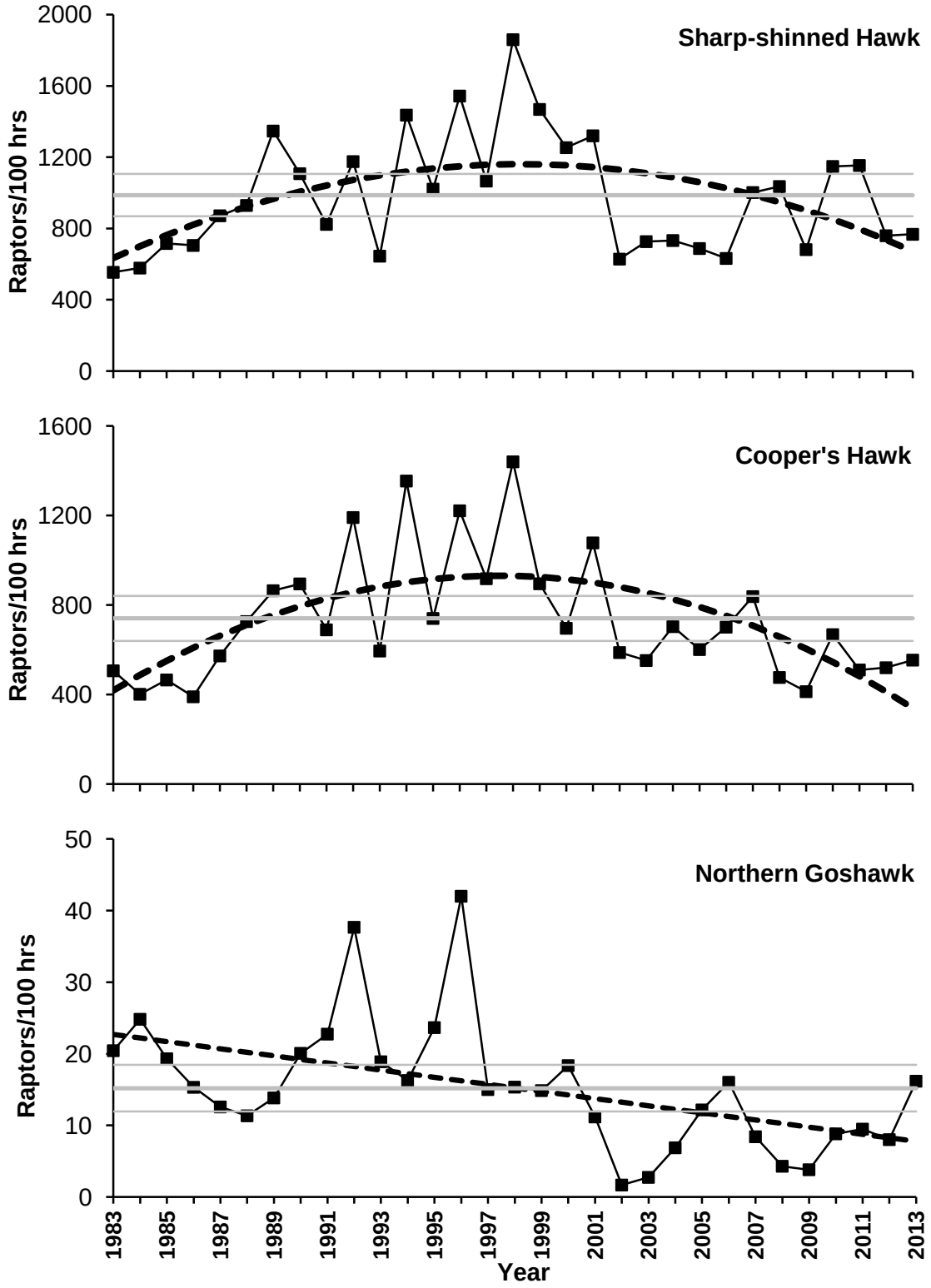

Figure 3b. Adjusted fall-migration Accipiter passage rates at the Goshute Mountains, NV: 1983–2013. Dashed lines indicate trends for significant ($p < 0.05$) linear or quadratic regressions. Solid grey lines represent mean (thick) and upper and lower 95% confidence intervals (thin) of historic counts (1983-2012).

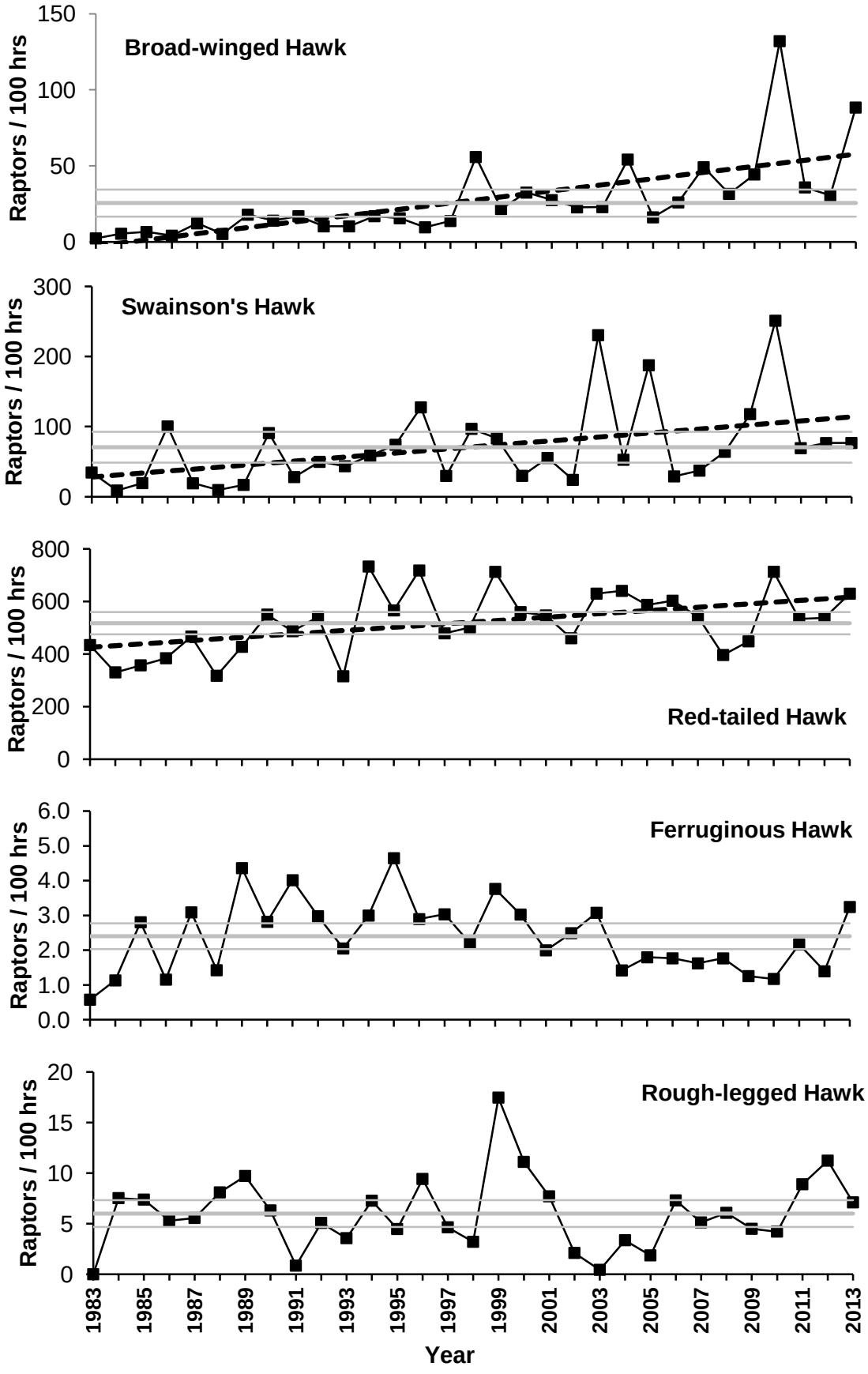
Broad-winged Hawk
Swainson's Hawk
Red-tailed Hawk
Ferruginous Hawk
Rough-legged Hawk
Raptors / 100 hrs
Year
150
100
50
0
300
200
100
0
800
600
400
200
0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
20
15
10
5
0
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013

Figure 3c. Adjusted fall-migration buteo passage rates at the Goshute Mountains, NV: 1983–2013. Dashed lines indicate significant ($p < 0.05$) population trends based on linear regression. Solid grey lines represent mean (thick) and upper and lower 95% confidence intervals (thin) of historic counts (1983-2012).

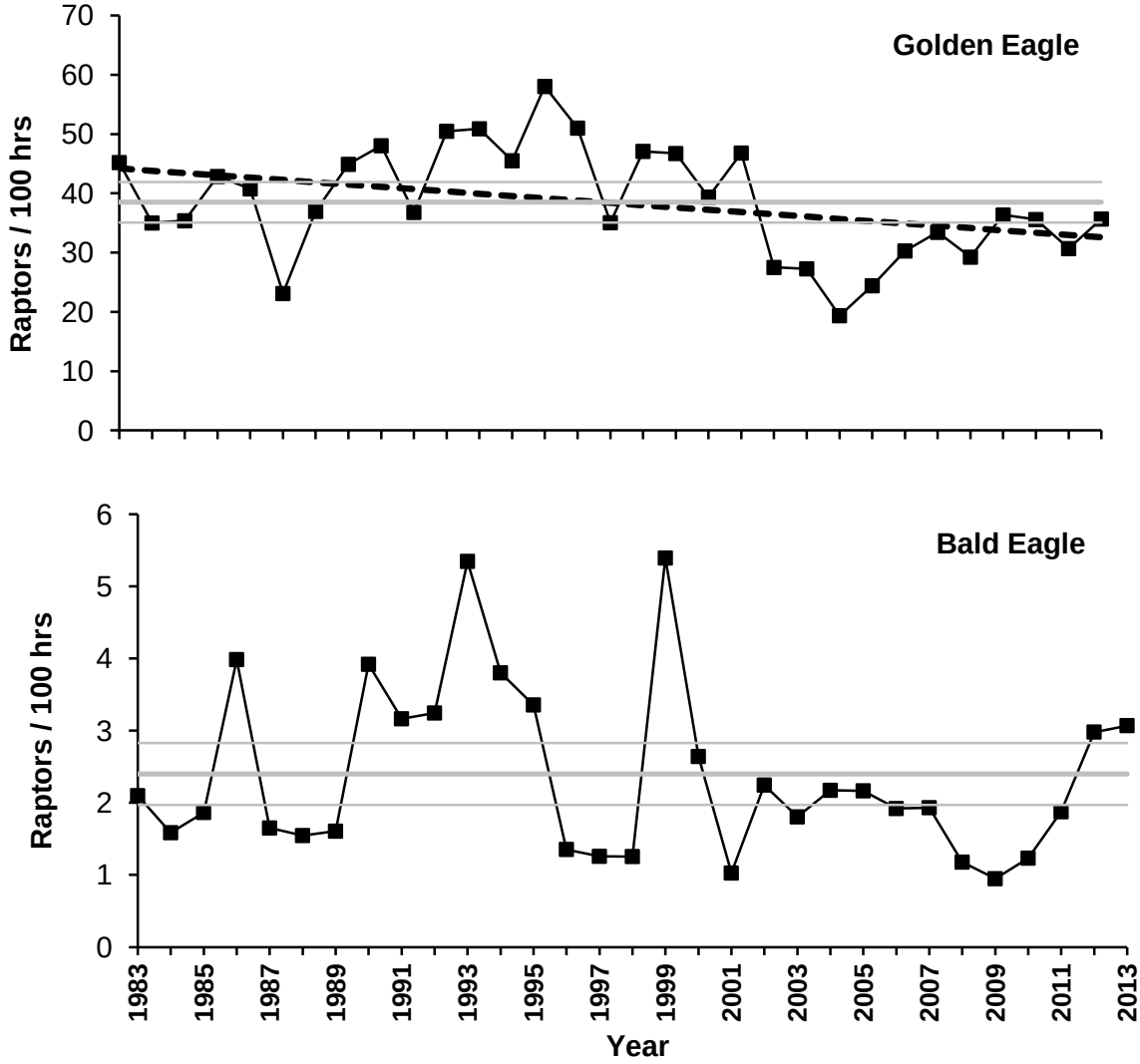

Figure 3d. Adjusted eagle passage rates for the fall migration at the Goshute Mountains, NV.: 1983–2013. Dashed lines indicate significant ($p < 0.05$) population trends based on linear regressions. Solid grey lines represent mean (thick) and upper and lower 95% confidence intervals (thin) of historic counts (1983-2012).

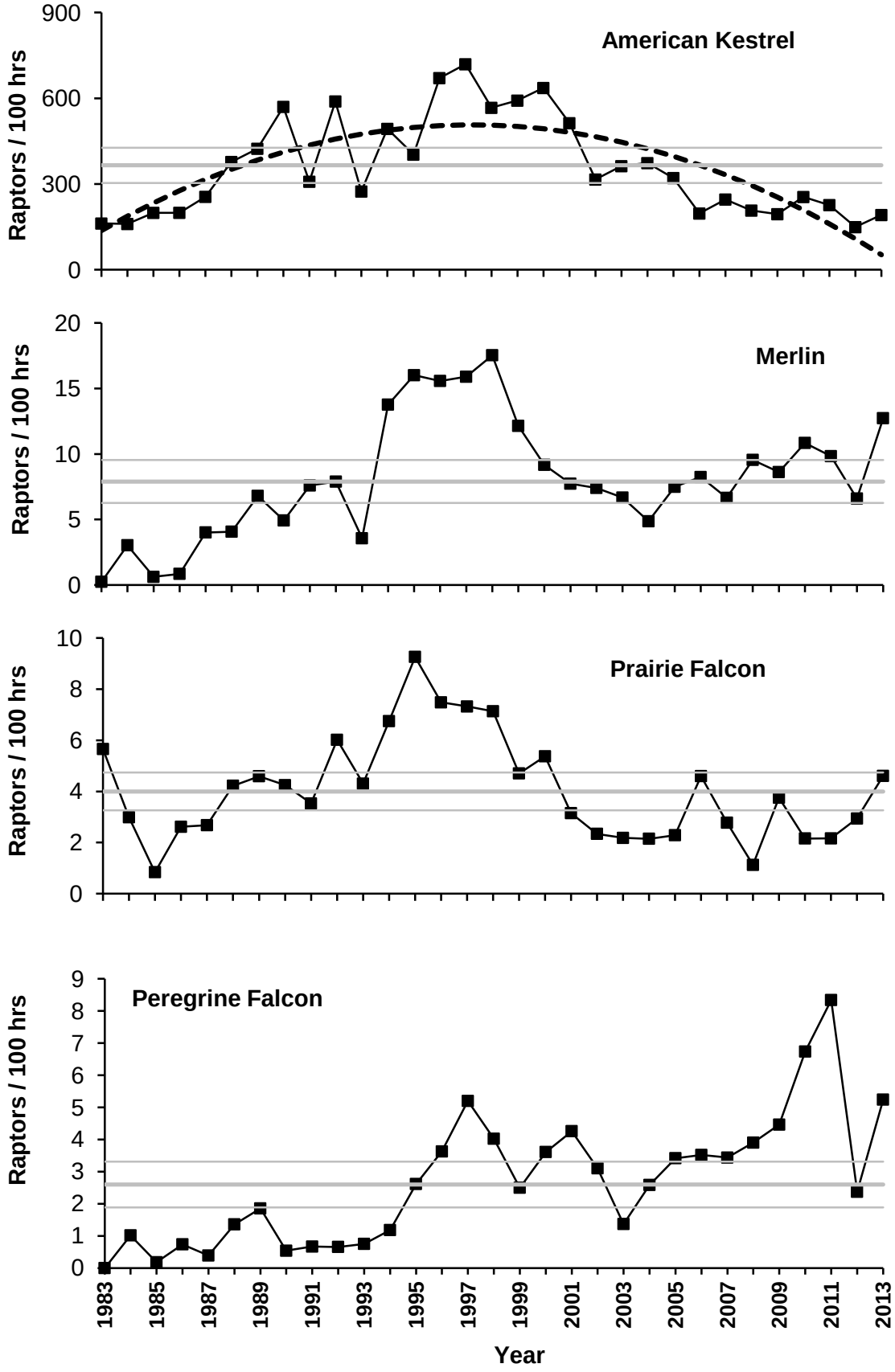
American Kestrel
Merlin
Prairie Falcon
Peregrine Falcon
Raptors / 100 hrs
Year
900
600
300
0
20
15
10
5
10
8
6
4
2
9
8
7
6
5
4
3
2
1
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013

Figure 3e. Adjusted fall-migration falcon passage rates at the Goshute Mountains, NV: 1983–2013. Dashed lines indicate significant ($p < 0.05$) population trends based on linear or quadratic regressions. Solid grey lines represent mean (thick) and upper and lower 95% confidence intervals (thin) of historic counts (1983-2012).

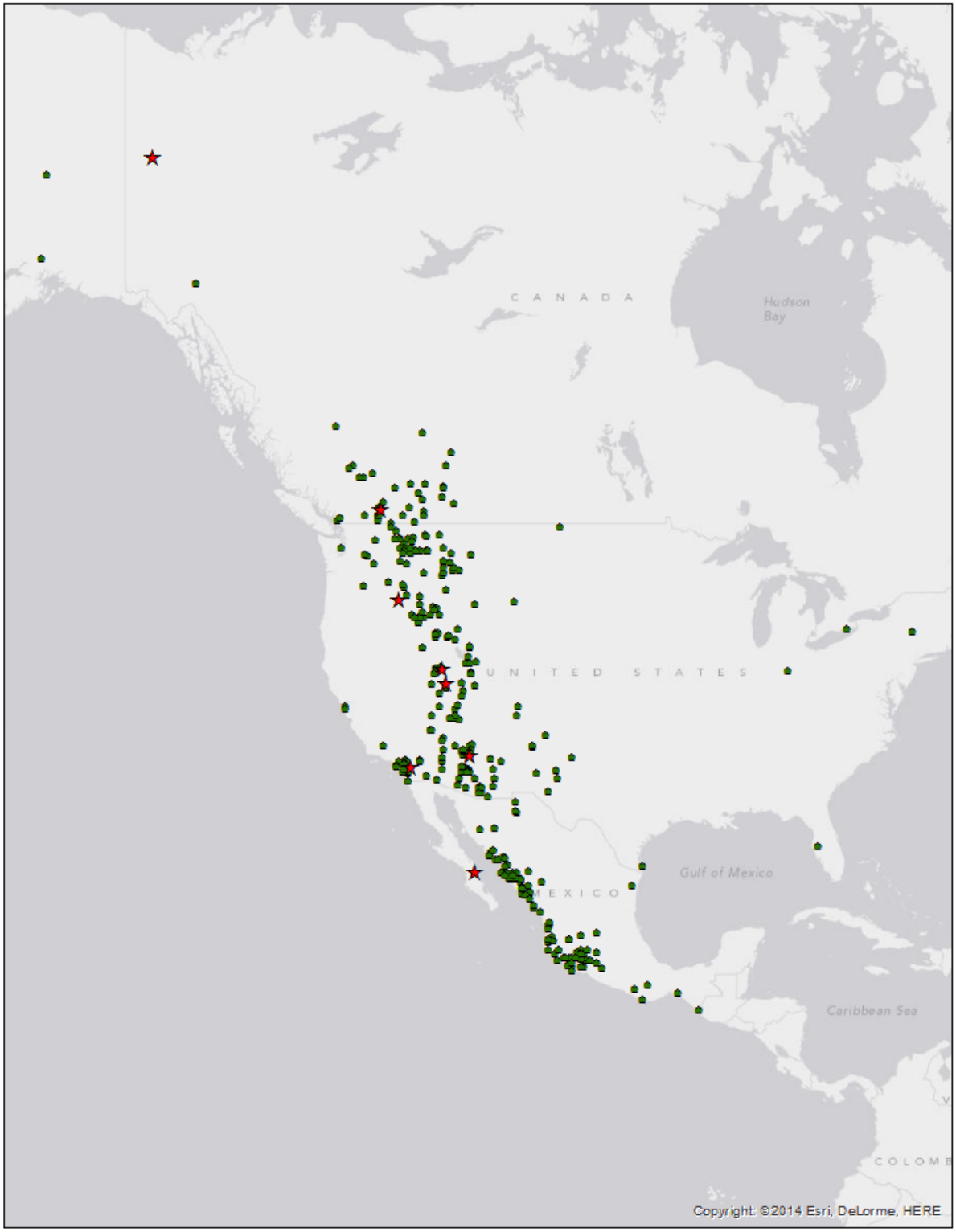

Figure 4. Recovery locations of raptors banded at Goshutes, NV. Circles indicate recoveries from 1981-2012, red stars are 2013 recoveries.

Appendix A. History of official observer participation on the Goshute Mountains Raptor Migration Project.

1983-1986: Single observer throughout with occasional scribe. Principal observers: 1983, David Sherman (0)[1]; 1984, Jim Daly (0), Jeff Smith (0), and Fred Tilly (14); 1985, Jim Daly (1) and Fred Tilly (15); 1986, John Lower (0).

1987-1989: Single observer throughout, two observers during the peak month. Principal observers: 1987, Victor Fazio (2) and Fred Tilly (16); 1988, Brian Mongi (2) and Fred Tilly (17); 1989, Brian Mongi (3) and Fred Tilly (19).

1990: Two observers throughout with two teams of two for a comparison count during the peak month. John Martin (1), LisaBeth Daly (2), Fred Tilly (21), and Cathy Tilly (1).

1991: Two observers throughout except 30 October - 5 November, with a scribe throughout. Principal observers: Steve Engel (1) and Dale Payne (0).

1992: Two observers throughout, three observers during the peak month, with a scribe throughout. Principal observers: Steve Engel (2), Maureen O'Mara (0), and Fred Tilly (24).

1993: Two observers throughout with a scribe throughout. Principal observers: Emily Teachout (1) and Jeff Maurer (0).

1994: Two observers throughout, three observers during the peak month, with a scribe throughout. Principal observers: Steve Engel (3), Jeff Maurer (1), and Fred Tilly (27).

1995: Two observers throughout with a scribe through 17 October. Principal observers: Robert Clemens (3) and Susan Salafsky (2).

1996: Two observers throughout except 27 October - 4 November, three observers for the peak month with a scribe until 27 October. Principal observers: Fred Tilly (29), Cathy Tilly (4), Robert Clemens (4), and Aaron Barna (1).

1997: Two observers throughout with a scribe from 10 September - 15 October. Principal observers: Jessie Jewell (9) and Neils Maumenee (2).

1998: Two observers throughout. Jerry Liguori (15) and Mike Lanzone (0).

1999: Two observers throughout. Jerry Liguori (17) and Aaron Barna (4).

2000: Two observers throughout. Jerry Liguori (19), Jeff Maurer (3), Nathan McNett (4), and Aaron Barna (5).

2001: Two observers throughout. Jerry Liguori (21) and Nathan McNett (5).

2002: Two observers throughout. Nathan McNett (6) and Greg Levandoski (2).

2003: Four observers throughout rotating duties at two sites for comparison count. Nathan McNett (7), Adam Hutchins (4), Allison Cebula (3), Eric Hallingstad (2).

2004: Two observers throughout. Allison Cebula (4), Ricardo Perez (1+), and Nathan McNett (8).

2005: Two observers throughout. Ken McEnaney (1), Chris Jager (+), and Allison Cebula (5).

2006: Two observers throughout. Christian Nunes (+), John Bell (1), and Jeremy Russell (+).

2007: Two observers throughout. Steve Seibel (5+), Greg Levandoski (4), and Adam Hutchins (5).

2008: Two observers throughout. Steve Seibel (6+) and Jeremy Russell (1+).

2009: Two observers throughout. Aaron Viducich (2) and Laurel Ferreira (1).

2010: Two observers throughout. Rachel Smith (1+), Megan Shaub (0), and Kerry Ross (1+).

2011: Two observers throughout. Rachel Smith (2+), and Kerry Ross (2+).

2012: Two observers throughout. Steve Seibel (7+), Bryce Robinson (0), and Caitlin Davis (0)

2013: Two observers throughout. Russell Seeley (3), Rya Rubenthaler (1), and Toby Chipman (0)

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[1] Numbers in parentheses indicate the number of seasons of previous experience conducting migratory raptor counts (+ indicates less concentrated previous exposure).

Appendix B. Common and scientific names, species codes, and regularly applied age, sex, and color-morph classifications for all migrant raptors seen in the Goshute Mountains, Nevada.

Common Name	Scientific Name	Species Code	Age[1]	Sex[2]	Color Morph[3]
Turkey Vulture	*Cathartes aura*	TV	U	U	NA
Osprey	*Pandion haliaetus*	OS	U	U	NA
Northern Harrier	*Circus cyaneus*	NH	A I Br U	M F U	NA
Sharp-shinned Hawk	*Accipiter striatus*	SS	A I U	U	NA
Cooper's Hawk	*Accipiter cooperii*	CH	A I U	U	NA
Northern Goshawk	*Accipiter gentilis*	NG	A I U	U	NA
Unknown small accipiter	*A. striatus* or *cooperii*	SA	U	U	NA
Unknown large accipiter	*A. cooperii* or *gentilis*	LA	U	U	NA
Unknown accipiter	*Accipiter* spp.	UA	U	U	NA
Red-shouldered Hawk	*Buteo lineatus*	RS	A I U	U	NA
Broad-winged Hawk	*Buteo platypterus*	BW	A I U	U	D L U
Swanson's Hawk	*Buteo swainsoni*	SW	U	U	D L U
Red-tailed Hawk	*Buteo jamaicensis*	RT	A I U	U	D L U
Ferruginous Hawk	*Buteo regalis*	FH	A I U	U	D L U
Rough-legged Hawk	*Buteo lagopus*	RL	U	U	D L U
Unknown buteo	*Buteo* spp.	UB	U	U	D L U
Golden Eagle	*Aquila chrysaetos*	GE	I, S, NA, A, U[4]	U	NA
Bald Eagle	*Haliaeetus leucocephalus*	BE	I, S1, S2, NA, A, U[5]	U	NA
Unknown eagle	*Aquila* or *Haliaeetus spp.*	UE	U	U	NA
American Kestrel	*Falco sparverius*	AK	U	M F U	NA
Merlin	*Falco columbarius*	ML	AM Br	AM U	NA
Prairie Falcon	*Falco mexicanus*	PR	U	U	NA
Peregrine Falcon	*Falco peregrinus*	PG	A I U	U	NA
Unknown small falcon	*F. sparverius* or *columbarius*	SF	U	U	NA
Unknown large falcon	*F. mexicanus* or *peregrinus*	LF	U	U	NA
Unknown falcon	*Falco* spp.	UF	U	U	NA
Unknown raptor	Falconiformes	UU	U	U	NA

[1] Age codes: A = adult, I = immature (HY), Br = brown (adult female or immature), U = unknown age.

[2] Sex codes: M = male, F = female, U = unknown.

[3] Color morph codes: D = dark or rufous, L = light, U – unknown, NA = not applicable.

[4] Golden Eagle age codes: I = Immature: juvenile or first-year bird, bold white wing patch visible below, bold white in tail, no molt; S = Subadult: white wing patch variable or absent, obvious white in tail and molt or tawny bar visible on upper wing; NA = Not adult: unknown age immature/subadult; A = Adult: no white in wings or tail; U = Unknown.

[5] Bald Eagle age codes: I = Immature: juvenile or first-year bird, dark breast and tawny belly; S1 = young Subadult: Basic I and II plumages, light belly, upside-down triangle on back; S2 = older Subadult: Basic III plumage, head mostly white with osprey-like dark eye line and dark band on tail; NA = Not adult: unknown age immature/subadult; A = Adult: includes near adult with dark flecks in head and dark tail tip, and adult with white head and tail; U = Unknown.

Appendix C. Annual summaries of observation effort and unadjusted raptor counts by species at the Goshute Mts, NV: 1983–2013.

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Start Date	15-Aug	16-Aug	20-Aug	16-Aug	17-Aug	17-Aug	18-Aug	15-Aug	16-Aug	16-Aug	16-Aug	16-Aug	15-Aug	15-Aug
End Date	23-Oct	17-Nov	5-Nov	31-Oct	27-Oct	9-Nov	4-Nov	31-Oct	5-Nov	10-Nov	5-Nov	5-Nov	5-Nov	4-Nov
Observation days	68	83	76	67	66	85	76	78	79	85	80	78	83	74
Observation hours	561.08	638.66	654.50	485.00	564.25	734.66	567.50	667.00	707.67	743.42	659.50	709.58	694.92	620.17
Raptors / 100 hours	1,517	1,130	1,427	1435	1,921	1,704	2,397	2,527	1,879	2,703	1,510	3,122	2,276	3,514
SPECIES	RAPTOR COUNTS													
Turkey Vulture	92	141	211	131	165	198	200	278	314	473	270	418	289	486
Osprey	41	39	40	43	51	54	65	80	62	119	54	130	92	99
Northern Harrier	109	105	139	89	120	125	77	147	152	184	116	291	252	255
Sharp-shinned Hawk	2,021	2,067	3,177	2,233	3,537	4,405	5,404	3,994	3,677	5,931	2,838	6,835	4,752	6,773
Cooper's Hawk	1,698	1,378	1,741	1,149	2,042	3,012	3,074	2,945	2,728	5,071	2,298	5,576	3,252	5,075
Northern Goshawk	105	146	119	65	65	74	80	84	144	259	120	106	150	241
Unknown small accipiter[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown large accipiter[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown accipiter	562	362	311	251	710	295	204	402	647	639	348	522	416	464
TOTAL ACCIPITERS	4,386	3,953	5,348	3,698	6,354	7,786	8,762	7,425	7,196	11,900	5,604	13,039	8,570	12,553
Red-shouldered Hawk	0	0	0	1	1	0	0	1	0	0	0	0	0	2
Broad-winged Hawk	6	13	15	7	30	16	37	34	44	26	27	41	40	27
Swainson's Hawk	116	34	78	276	69	43	60	238	105	208	159	244	287	498
Red-tailed Hawk	2,105	1,765	2,132	1,663	2,317	2,048	2,263	3,147	2,992	3,489	1,827	4,663	3,572	3,990
Ferruginous Hawk	3	6	17	5	15	9	23	21	27	19	15	20	29	16
Rough-legged Hawk	0	17	17	10	9	23	21	13	4	13	7	17	11	17
Unidentified buteo	185	74	65	42	156	44	47	33	149	70	128	110	69	62
TOTAL BUTEOS	2,415	1,909	2,324	2,004	2,597	2,183	2,451	3,487	3,321	3,825	2,163	5,095	4,008	4,612
Golden Eagle	239	206	230	196	221	154	203	275	334	263	317	338	299	344
Bald Eagle	8	10	9	13	7	8	9	19	16	21	26	19	17	6
Unidentified eagle	2	0	0	1	0	0	0	1	5	1	1	1	1	1
TOTAL EAGLES	249	216	239	210	228	162	212	295	355	285	344	358	317	351
American Kestrel	731	697	934	708	1,099	1,844	1,669	2,279	1,562	2,982	1,234	2,461	1,964	3,199
Merlin	4	14	3	3	17	20	33	28	37	43	19	72	86	71
Prairie Falcon	31	16	5	11	15	27	24	12	20	40	26	45	58	44
Peregrine Falcon	0	5	1	3	2	8	9	2	6	4	4	7	15	21
Unknown small falcon[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown large falcon[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified falcon	6	7	2	8	6	7	5	12	14	4	6	9	18	21
TOTAL FALCONS	772	739	945	733	1,139	1,906	1,740	2,333	1,639	3,073	1,289	2,594	2,141	3,356
Unidentified raptor	446	113	94	53	186	107	96	101	192	234	117	229	149	83
GRAND TOTAL	8,510	7,215	9,340	6,961	10,840	12,521	13,603	14,146	13,231	20,093	9,957	22,154	15,818	21,795

[1] Designations used consistently beginning in 2002.

Appendix C. continued

	1997	1998	1999	2000	2001	2002	2003
Start Date	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug
End Date	5-Nov	31-Oct	5-Nov	5-Nov	5-Nov	5-Nov	5-Nov
Observation days	79	71	82	78	83	81	79
Observation hours	673.58	719.50	748.08	681.50	787.30	725.67	688.21
Raptors / 100 hours	2,541	3,515	3,003	2,542	2,662	1,564	2,001
SPECIES	RAPTOR COUNTS						
Turkey Vulture	482	732	349	297	441	243	466
Osprey	187	176	110	152	152	83	96
Northern Harrier	255	247	356	233	178	154	127
Sharp-shinned Hawk	4,677	9,598	7,236	6,071	7,429	3,009	3,460
Cooper's Hawk	3,848	6,736	3,689	3,022	5,110	2,369	2,281
Northern Goshawk	97	99	84	123	80	11	16
Unknown small accipiter[1]	-	-	-	-	-	246	268
Unknown large accipiter[1]	-	-	-	-	-	4	3
Unknown accipiter	368	75	132	87	56	7	0
TOTAL ACCIPITERS	8,990	16,508	11,141	9,303	12,675	5,646	6,028
Red-shouldered Hawk	0	0	0	1	0	0	0
Broad-winged Hawk	37	160	59	87	79	58	58
Swainson's Hawk	143	507	334	132	251	91	908
Red-tailed Hawk	2,922	3,329	5,137	3,446	3,926	3,008	3,903
Ferruginous Hawk	18	16	25	19	14	20	20
Rough-legged Hawk	10	6	50	24	23	6	1
Unidentified buteo	77	5	24	21	13	42	57
TOTAL BUTEOS	3,207	4,023	5,629	3,730	4,306	3,225	4,947
Golden Eagle	329	235	341	305	295	330	181
Bald Eagle	6	6	31	14	8	12	9
Unidentified eagle	0	0	0	0	0	0	0
TOTAL EAGLES	335	241	372	319	303	342	190
American Kestrel	3,394	3,169	2,887	3,149	2,774	1,503	1,768
Merlin	78	91	59	49	51	39	33
Prairie Falcon	48	50	30	37	23	12	14
Peregrine Falcon	29	26	14	21	29	15	9
Unknown small falcon[1]	-	-	-	-	-	0	10
Unknown large falcon[1]	-	-	-	-	-	4	1
Unidentified falcon	7	2	7	3	2	2	2
TOTAL FALCONS	3,556	3,338	2,997	3,259	2,879	1,575	1,837
Unidentified raptor	102	25	57	34	26	81	79
GRAND TOTAL	17,114	25,290	21,011	17,327	20,960	11,349	13,770

[1] Designations used consistently beginning in 2002.

Appendix C. continued

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	MEAN
Start Date	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug	15-Aug
End Date	5-Nov	5-Nov	5-Nov	5-Nov	5-Nov	5-Nov	5-Nov	5-Nov	5-Nov	5-Nov	4-Nov
Observation days	76	83	82	82	82	83	82	79	83	80	79
Observation hours	642.75	695.30	652.58	703.00	698.51	733.59	692.60	682.03	741.00	641.75	675.55
Raptors / 100 hours	2,038	1,849	1,658	2,125	1,758	1,502	2,336	1,936	1,650	1,869	2,105
SPECIES	RAPTOR COUNTS										
Turkey Vulture	685	445	355	735	637	640	682	443	329	980	388
Osprey	120	83	68	113	89	59	126	129	95	117	94
Northern Harrier	96	153	177	186	158	154	201	142	162	88	171
Sharp-shinned Hawk	3,073	2,973	2,745	4,635	4,967	3,251	5,063	5,171	3,527	3,271	4,484
Cooper's Hawk	2,736	2,260	2,541	3,422	1,957	1,691	2,599	2,067	2,130	1,997	2,983
Northern Goshawk	41	74	95	55	27	26	54	58	53	92	92
Unknown small accipiter[1]	299	521	57	360	204	262	14	8	355	112	236
Unknown large accipiter[1]	11	32	6	1	6	7	10	3	10	3	8
Unknown accipiter	8	37	9	5	11	11	145	51	29	1	239
TOTAL ACCIPITERS	6,168	5,897	5,453	8,478	7,172	5,248	7,885	7,358	6,104	5,476	7,888
Red-shouldered Hawk	0	0	0	0	0	0	0	0	0	0	0
Broad-winged Hawk	122	36	57	122	81	101	295	83	78	204	63
Swainson's Hawk	197	664	109	163	248	445	933	269	308	285	271
Red-tailed Hawk	3,589	3,678	3,492	3,511	2,439	2,913	4,427	3,237	3,928	3,579	3,162
Ferruginous Hawk	8	12	10	11	10	8	8	14	11	18	15
Rough-legged Hawk	7	6	17	13	15	12	10	24	30	17	14
Unidentified buteo	117	97	13	44	91	120	34	24	76	41	70
TOTAL BUTEOS	4,040	4,493	3,698	3,864	2,884	3,599	5,707	3,651	4,431	4,144	3,594
Golden Eagle	160	130	152	218	226	206	236	226	213	212	247
Bald Eagle	12	11	9	10	6	6	6	10	16	15	12
Unidentified eagle	4	0	0	0	0	0	0	0	2	1	1
TOTAL EAGLES	176	141	161	228	232	212	242	236	231	228	259
American Kestrel	1,709	1,468	820	1,174	965	940	1,170	1,132	726	839	1,737
Merlin	22	40	40	34	51	50	54	49	35	57	41
Prairie Falcon	11	9	26	19	10	21	14	13	20	25	24
Peregrine Falcon	11	14	17	18	22	23	42	46	11	26	14
Unknown small falcon[1]	9	1	2	3	4	2	0	0	0	0	3
Unknown large falcon[1]	3	6	2	1	0	6	1	0	3	1	2
Unidentified falcon	0	4	0	2	2	2	1	0	1	0	5
TOTAL FALCONS	1,765	1,542	907	1,251	1,054	1,044	1,282	1,240	796	948	1,824

Unidentified raptor	51	104	3	86	51	60	52	5	79	13	103
GRAND TOTAL	13,101	12,858	10,822	14,941	12,277	11,016	16,177	13,205	12,227	11,994	14,321

[1] Designations used consistently beginning in 2002.

Appendix D. Annual summaries of banding effort and capture totals by species at the Goshute Mts, NV: 1980–2013.

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Start date	23 Sep	2 Sep	8 Sep	25 Aug	28 Aug	2 Sep	27 Aug	30 Aug	28 Aug	30 Aug	24 Aug	21 Aug	19 Aug	22 Aug	19 Aug
End date	19 Oct	10 Oct	16 Oct	22 Oct	17 Nov	8 Nov	10 Oct	27 Oct	23 Oct	24 Oct	31 Oct	26 Oct	7 Nov	22 Oct	29 Oct
Blinds in operation	1	1	2	2	2	3	3	3	4	4	4	4	5	5	5
Trapping days	21	37	27	55	69	?	?	?	?	?	66	64	74	59	65
Station days	21	37	?	66	104	?	?	?	?	159	205	240	296	254	278
Station hours	149	227	159	443	622	654	483.8	833	1,085	1,203	1,454	1,899	2,316	1,971	2,290
Captures /100 stn hrs	84.5	341.0	215.1	228.9	149.1	185.2	127.5	168.2	175.4	196.9	190.3	159.8	166.8	136.0	205.1
SPECIES	RAPTOR CAPTURES														
Northern Harrier	0	2	0	8	3	6	2	4	10	9	4	9	10	4	7
Sharp-shinned Hawk	62	376	186	571	548	705	410	886	1,177	1,527	1,583	1,694	2,036	1,526	2,686
Cooper's Hawk	36	300	129	306	261	366	164	395	553	652	821	909	1,220	822	1,473
Northern Goshawk	6	11	3	32	40	42	5	27	22	29	44	33	104	27	35
Broad-winged Hawk	0	0	0	0	2	0	1	1	1	1	1	2	0	2	1
Swainson's Hawk	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
Red-tailed Hawk	14	26	13	43	31	51	15	43	37	66	99	93	97	53	158
Rough-legged Hawk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Golden Eagle	1	1	1	1	5	6	2	4	7	6	10	3	3	2	11
Bald Eagle	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
American Kestrel	7	58	8	51	28	34	17	37	85	61	190	266	367	223	285
Merlin	0	1	1	0	2	0	0	1	5	8	2	9	10	8	21
Prairie Falcon	0	0	0	6	5	2	1	3	7	5	7	7	8	1	7
Peregrine Falcon	0	0	0	0	1	0	0	0	0	2	1	1	0	1	0
All Species	126	775	341	1,019	926	1,212	617	1,401	1,904	2,366	2,762	3,026	3,855	2,671	4,685
Recaptures[1]	0	0	0	0	0	0	0	0	0	0	4	4	7	9	10
Foreign Recaptures[2]	0	0	1	0	0	0	0	0	0	2	0	0	1	1	2
Foreign Encounters[3]	0	1	5	3	9	12	5	7	11	12	15	18	14	21	19

[1] Recaptures in the Goshutes of birds originally banded in the Goshutes.

[2] Recaptures in the Goshutes of birds originally banded elsewhere.

[3] Birds originally banded in the Goshutes and subsequently encountered elsewhere.

Appendix D. continued

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Start date	22 Aug	19 Aug	18 Aug	18 Aug	21 Aug	21 Aug	22-Aug	24-Aug	24-Aug	27-Aug
End date	25 Oct	23 Oct	22 Oct	22 Oct	3 Nov	28 Oct	4-Nov	5-Nov	28-Oct	22-Oct
Blinds in operation	6	5	5	5	3	4	4	4	4	3
Trapping days	63	61	62	63	72	62	72	68	66	53
Station days	312	270	264	236	131	174	210	188	163	105
Station hours	2,382	2,061	2,087	1,690	939	1,286	1,666	1,474	1,276	807
Captures /100 stn hrs	120.1	160.7	147.0	202.3	163.6	167.0	173.0	159.9	114.7	158.2
SPECIES	RAPTOR CAPTURES									
Northern Harrier	2	1	18	4	0	17	11	8	7	2
Sharp-shinned Hawk	1,823	2,091	1,783	2,131	897	1,235	1,608	1,283	825	791
Cooper's Hawk	695	737	767	1,006	438	504	975	791	460	342
Northern Goshawk	27	68	20	20	20	24	23	7	9	28
Broad-winged Hawk	3	0	0	1	0	3	1	0	2	1
Swainson's Hawk	0	0	0	0	0	0	1	0	0	0
Red-tailed Hawk	93	84	67	69	49	58	76	109	63	61
Rough-legged Hawk	0	0	0	0	0	0	2	0	0	0
Golden Eagle	4	7	5	4	8	2	1	9	1	2
Bald Eagle	0	0	0	0	0	0	0	0	0	0
American Kestrel	193	290	351	149	97	285	168	127	88	35
Merlin	13	18	26	13	16	11	12	15	5	11
Prairie Falcon	3	7	17	7	3	8	3	4	3	4
Peregrine Falcon	1	1	4	0	1	1	1	3	0	0
All Species	2,857	3,304	3,058	3,404	1,529	2,148	2,882	2,356	1,463	1,277
Recaptures[1]	3	3	7	9	4	6	9	7	2	2
Foreign Recaptures[2]	1	4	3	5	2	3	4	3	1	2
Foreign Encounters[3]	16	9	18	15	10	19	10	28	12	16

[1] Recaptures in the Goshutes of birds originally banded in the Goshutes.

[2] Recaptures in the Goshutes of birds originally banded elsewhere.

[3] Birds originally banded in the Goshutes and subsequently encountered elsewhere.

Appendix D. continued

	2005	2006	2007	2008	2009	2010	2011	2012	2013	MEAN
Start date	23-Aug	22-Aug	20-Aug	21-Aug	22-Aug	20-Aug	17-Aug	25-Aug	20-Aug	24-Aug
End date	1-Nov	5-Nov	25-Oct	28-Oct	31-Oct	1-Nov	30-Oct	31-Oct	31-Oct	26-Oct
Blinds in operation	4	3	3	2	2	2	2	2	2	3.4
Trapping days	69	72	63	62	64	62	57	63	67	60.5
Station days	150	128	81	69	66	68	59	80	92	152.6
Station hours	1,073	888	550	503	476	476	429	572	576	1,082.7
Captures /100 stn hrs	153.8	112.1	210.9	204.2	176.7	245.5	159.8	203.0	187.1	176.0
SPECIES				RAPTOR CAPTURES						
Northern Harrier	3	2	6	2	0	1	1	4	4	9.8
Sharp-shinned Hawk	902	503	683	616	432	700	420	661	585	1,058.2
Cooper's Hawk	562	356	383	314	307	280	200	297	314	534.4
Northern Goshawk	21	26	18	2	3	5	9	17	10	24.3
Broad-winged Hawk	2	1	2	0	1	1	2	0	7	1.1
Swainson's Hawk	1	1	0	0	0	1	0	0	2	0.2
Red-tailed Hawk	67	56	39	40	43	119	27	112	88	63.6
Rough-legged Hawk	0	0	0	0	0	0	0	1	0	0.1
Golden Eagle	1	1	0	4	4	4	2	7	5	3.9
Bald Eagle	0	0	0	0	0	0	0	0	0	0.0
American Kestrel	76	38	19	42	41	38	15	48	44	113.7
Merlin	11	5	6	6	6	15	5	12	11	8.4
Prairie Falcon	3	5	3	0	4	3	2	2	6	4.3
Peregrine Falcon	2	2	0	0	0	1	2	1	2	0.9
All Species	1,651	995	1,159	1,026	841	1,168	685	1,162	1,078	1,818.2
Recaptures[1]	2	2	3	4	3	3	1	2	0	3.1
Foreign Recaptures[2]	4	0	1	2	0	2	0	3	1	1.4
Foreign Encounters[3]	10	8	10	12	3	8	10	6	7	11.3

[1] Recaptures in the Goshutes of birds originally banded in the Goshutes.

[2] Recaptures in the Goshutes of birds originally banded elsewhere.

[3] Birds originally banded in the Goshutes and subsequently encountered elsewhere.