Searches for Raptor Monitoring Sites During Autumn Migration in Southwestern and Southcentral Idaho in 1996

Final Report

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Introduction

Raptor migration counts from monitoring sites can sample a wide variety of species in large numbers over a relatively short period of time and are a useful and economical method for detecting long-term trends in species across regions, particularly for species that otherwise cannot be easily surveyed (Titus and Fuller 1990, Bednarz et al. 1990). Raptor migration monitoring counts are conducted at locations throughout the continental United States (Robbins 1975, Heintzelman 1986, Kerlinger 1989). Most monitoring sites are located along coastlines or mountain ridges where migrating raptors tend to concentrate (Allen and Peterson 1936, Kerlinger and Gauthreaux 1985, Kerlinger 1989). The majority of these locations are located in the eastern half of the country, predominantly in the Great Lakes region, Gulf Coast, Atlantic Coast, and Appalachian Mountains. In the Intermountain West there are only a handful of raptor migration monitoring sites. Specifically, in Idaho and Nevada there are only two monitoring sites, one in each state. During autumn 1996 we conducted searches for raptor migration monitoring sites in southwestern and south central Idaho. Several sites were identified, accessed, and sampled to assess their utility for monitoring raptors during autumn migration.

Study Area

Our study area is located within southwestern and south central Idaho. Monitoring sites included several within the Owyhee Mountains: War Eagle Mountain and Hayden Peak/Cinnabar Mountain area; Rough Mountain/Summit Springs area; South Mountain; and Toy Pass. Three sites along the Boise Front: Danskin Peak; House Mountain; and Bennett Mountain. Other sites included the Magic Mountain area, Wells Summit/Ketchurn/Bellevue area, and Sturgill Peak. Monitoring site elevations ranged from approximately 1700 -2800 meters.

Methods

We sampled raptors through observation at 10 different monitoring sites from 24 August through 27 October 1996. We counted and identified raptors to species, as well as age and/or sex class if possible. Each monitoring site was visited from one to five times. At each site we spent time assessing where the best monitoring location was located based on site-specific small scale topography, habitat features, and visibility. Once we identified the best location, it was used as our observation point. None of this time was included in the observation period minutes. Observation periods lasted from 44 to 280 minutes. We only counted raptors if they flew south past an imaginary east/west line oriented through our observation point at each monitoring site. Weather conditions were recorded at the beginning of each observation period, and then hourly thereafter.

In addition to observation, we set up a temporary raptor trapping and banding station on four different days to conduct more intensive monitoring. Raptors were trapped using bow-nets, mist-nets, and dho-gazzas. Each trapped raptor was marked with an official band issued by the U.S. Geological Survey's (USGS) Biological Resources Division (BRD) - formerly the National

Biological Service. Raptor banding was conducted under an Idaho Fish and Game (IDFG) banding permit, issued by the BRD. Various morphometric measurements, including weight, were obtained from each trapped raptor before they were released.

Results

We counted a total of 216 raptors, comprised of 10 different species (Table 1), during 2,586 total observation minutes. These totals resulted in an average of 5.01 raptors observed/hour for all monitoring sites combined. Sharp-shinned hawks (*Accipiter striatus*) and American kestrels (*Falco sparverius*) were the most numerous species, accounting for 31.5% (68) and 25.0% (54), respectively, of all raptors observed. Among all sites the Cinnabar Mountain/Hayden Peak and Danskin Peak monitoring sites yielded the highest number of raptors observed/hour with an average of 7.42 and 6.57 raptors per hour, respectively (Table 2).

In addition to observation, we set up a temporary raptor trapping and banding station at Cinnabar Mountain and Danskin Peak to conduct more intensive monitoring. We trapped and marked 10 raptors with official bands issued by the BRD, at these two sites over four different sampling days (7 raptors/3 sampling days at Danskin Peak; 3 raptors/l sampling day at Cinnabar Mountain, Table 3). Various morphometric measurements, including weight, were recorded for each trapped raptor before they were released.

Among all sites weather remained relatively constant during our sampling periods. Winds consistently had a westerly component, temperatures ranged from 8 to 25 degrees Celsius, and cloud cover ranged from 0-60% during all sampling periods. The only exception to these weather conditions was on 15 September 1996 at the House Mountain location when visibility was less than 25 meters due to low clouds and rain for the majority of the observation period.

Table 1. Total number of raptors observed and species composition for all monitoring sites combined.

Species	number observed	% of total
American kestrel	54	25.0
Merlin	3	1.4
Prairie falcon	1	0.5
Red tailed hawk	28	13.0
Sharp-shinned hawk	68	31.5
Coopers hawk	21	9.7
Northern goshawk	2	0.9
Northern harrier	7	3.2
Golden eagle	9	4.2
Turkey vulture	5	2.3
Unidentified accipiter	10	4.6
Unidentified raptor	8	3.7
	Total 216	100%

Table 2. Observation dates, # of raptors observed, minutes of observation, average # of raptors/hour, and totals for each monitoring site.

Monitoring site	obsv. dates	# of raptors	minutes of obsv.	avg. # raptors/hr.
War Eagle Mtn./				
Cinnabar Mtn./Hayden Peak	1 Sep.	12	64	11.25
Cinnabar Mtn.	4 Oct.	21	203	6.21
	Totals	33	267	7.42
South Mtn.	22 Sep.	8	99	4.85
	19 Oct.	3	75	2.40
	Totals	11	174	3.79
Toy Pass	13 Oct.	3	128	1.41
Rough Mtn/Summit Springs	27 Oct.	4	91	2.64
Danskin Peak	24 Aug.	14	116	7.24
	8 Sep.	25	210	7.14
	13 Sep.	31	225	8.27
	28 Sep.	26	265	5.89
	1 Oct.	24	280	5.14
	Totals	120	1096	6.57
Bennett Mtn.	31 Aug.	6	65	5.54
	7 Sep.	15	180	5.00
	14 Sep	5	44	6.82
	Totals	26	289	5.40
House Mtn.	15 Sep.	0	105	0 ***
	29 Sep.	11	120	5.50
Sturgill Peak	6 Oct.	4	124	1.94
Ketchum/Bellevue/Wells Summit	12 Oct.	2	105	1.14
Magic Mtn. Area/Deadline Ridge	20 Oct.	2	87	1.38
	Totals	216	2586	5.01

*** = No raptors observed, visibility less than 25 meters for majority of observation period due to inclement weather.

Table 3. Raptors Banded at Danskin Peak and Cinnabar Mountain/Hayden Peak in 1996.

Date	Species -sex -age	Location
13 Sep. 1996	AMKE-MALE-UNK.	Danskin Peak
28 Sep. 1996	SSRA -FEMALE -IMM.	Danskin Peak
28 Sep. 1996	SSRA -FEMALE -AD.	Danskin Peak
28 Sep. 1996	SSRA -MALE -IMM.	Danskin Peak
28 Sep. 1996	CORA -MALE -AD.	Danskin Peak
01 Oct. 1996	SSRA -FEMALE -AD.	Danskin Peak
01 Oct. 1996	SSRA -FEMALE -AD.	Danskin Peak
04 Oct. 1996	SSRA -MALE -IMM.	Cinnabar Mtn./Hayden Peak
04 Oct. 1996	SSRA -FEMALE -AD.	Cinnabar Mtn./Hayden Peak
04 Oct. 1996	MERL -MALE -IMM.	Cinnabar Mtn./Hayden Peak

Discussion

Our project was successful in searching for and identifying new raptor migration monitoring sites. Based on the results of our study, we were able to determine which monitoring sites yielded the highest number of raptors observed per hour. However, since we were unable to sample all 10 sites at the same time, we cannot overlook the possibility that our sampling regime affected the results. Ideally, all 10 sites should have been sampled simultaneously on the same days. During the study design phase of this project we realized that with our limited resources (i.e., funding, 4WD vehicles, etc.) we would have to identify this lack of simultaneous sampling as a potential variable that could affect our results. However, even if this level of coverage was achieved, site-specific weather could affect our results since different climatological conditions can exist between sites on the same day, due to distances between locations and elevational differences.

The Cinnabar Mountain/Hayden Peak site in the Owyhee Mountains was the most productive location we sampled, averaging 7.4 raptors/hour. The Danskin Peak monitoring site was the second most productive location, averaging 6.6 raptors/hour. With adequate resources these sites have the potential to become raptor migration monitoring locations.

By comparison with other established raptor migration monitoring locations in western North America, the Diamond Head raptor migration count site in central Washington produced yearly averages ranging from 4.8 to 6.2 raptors/hour during the 1991-1996 fall migration period (Namitz and Fletcher 1997). In 1995, fall raptor migration monitoring sites in the Bridger Mountains, Montana and at Mount Washburn, Wyoming, averaged 6.0 and 5.1 raptors/hour, respectively (Tilly and Sherrington 1996). At the upper end of the scale, the Goshutes Mountains monitoring site in Nevada records by far the greatest number of raptors in the western United States of any mountain ridge site. Their numbers have ranged from 11.3 to 31.2 raptors/hour during the 1983-1995 fall migration period (Salafsky et al. 1995).

Raptor population trend data obtained from migration monitoring sites has demonstrated that counts can reflect true regional population changes (Titus and Puller 1990). In the western United States, Hoffman et al. (1992) found that long-term migration count data from monitoring sites suggest potential region-wide population declines for northern goshawks (*Accipiter gentilis*) and golden eagles (*Aquila chrysaetos*).

Current hypotheses suggest the Snake River Plain acts as a geographic barrier to many species of migrant raptors. Whether there are major raptor migration routes or corridors across this semi-arid expanse of land during autumn is currently unknown. In Idaho and Nevada there are a total of only two other locations where raptor migration monitoring efforts occur. In Idaho, the Boise Ridge monitoring site is located on the northern edge of the Snake River Plain. Whereas, in Nevada, the Goshute Mountain monitoring site is located in the northeastern corner of the state, approximately 150 kilometers south of the Plain (Salafsky et al. 1995), and approximately 350 kilometers south/southeast of the Boise Ridge site. Both areas are thought to be along the same

raptor migration flyway. However, out of approximately 2,300 raptors that were banded from 1993-1996 along Boise Ridge, only two have been retrapped to date at the Goshutes (Steve Hoffman, pers. comm. 1997).

The Danskin Peak site is located on the northern edge of the Snake River Plain approximately 40 kilometers southeast of the Boise Ridge monitoring site. Both of these sites are located along the Boise Front. However, the Cinnabar Mountain/Hayden Peak site is unique in that it is located on the opposite, or southwestern edge, of the Snake River Plain.

Through establishment of the Cinnabar Mountain/Hayden Peak location as a raptor migration monitoring site, and additional sites, we may greatly increase our knowledge of migrant raptor movements across large semi-arid expanses of land and throughout the Intermountain West. Then, we may be able to more thoroughly understand the effects of weather and other environmental factors that affect migratory raptors and more fully understand what important habitat types are associated with their movements. Furthermore, important raptor population baseline information and long-term trend data can be obtained from these sites. Monitoring sites can provide site-specific data for analyses, and permit pooled analyses of two or more sites. Additionally, differential age and sex class migration by different species could be further investigated along with a host of other factors, such as hormonal and contaminant issues.

In conclusion, the establishment of a long-term raptor migration monitoring program will provide invaluable information on raptor migration in general, and specifically in the Intermountain West. Avian population data acquired through standardized long-term monitoring is essential to establishing baseline population information and understanding trends. Our project could provide crucial population trend data for those raptor species that migrate south during autumn from northern boreal forests to Idaho, and further south to the Neotropics, as well as back north during spring. This information will be critical to government agencies making management decisions for avian species and associated important habitats throughout the Intermountain West.

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