

THE STATUS OF THE BALD EAGLE AND OSPREY IN
GRAND TETON NATIONAL PARK, YELLOWSTONE
NATIONAL PARK AND VICINITY

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Objectives

Yellowstone National Park funded a research study conducted by Jon Swenson from 1972 through 1974 on the ecology of the bald eagle (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*). The present study was initiated to further the information on the ecology of the bald eagle and osprey in Grand Teton National Park and to obtain comparative data to that obtained by Swenson from Yellowstone National Park.

The objectives of this study were to provide baseline data on the life history (breeding chronology, nesting success and food habits) of these birds, to provide quantitative data on numbers and distribution of breeders and non-breeders, to determine productivity, to locate actual and potential nesting areas and to assess response to human activities. In conjunction with this study, a nestling bald eagle banding project was also undertaken which covered eaglets produced from all known territories in the study area.

Data on the bald eagle was gathered from Grand Teton National Park, Yellowstone National Park and vicinity (Beaverhead, Bridger-Teton and Gallatin National Forests, Red Rocks Refuge and various private lands). Osprey data were collected primarily from Grand Teton National Park, however, information on osprey productivity was also accumulated from Yellowstone National Park. In addition a minimum amount of information was collected from a small but active osprey population on Hebgen Lake.

Procedures

Seven aerial surveys (February 26, April 6, June 2 and 16, July 16 and 31, and August 18) were conducted during 1979. These surveys were flown in a 150-hp Super Cub piloted by James Stradley who has had approximately eight years of experience in locating eagle and osprey nests in this area. The purpose of the first flight was to determine the number, age structure and distribution of wintering bald eagles in the general study area and vicinity. The April flight provided data on territory occupancy by bald eagles and helped document nest initiation. The June 2 survey yielded information on osprey nest occupancy and provided data concerning bald eagle hatching dates and nesting chronology. The fourth flight conducted June 16 established the number of nestling bald eagles in each active nest and their approximate stage

of development. From these data the sequence of nestling banding was formulated in which priority was given to those most advanced in age and development. The purpose of the July 16 flight was to provide bald eagle productivity data and add to information regarding fledging dates. The July 31 aerial survey helped determine osprey production in Grand Teton National Park, however it was also important in determining approximate bald eagle fledging dates. The final flight (August 18) was funded by Yellowstone National Park and provided information concerning osprey production in Yellowstone (principally the Yellowstone Lake population). The two previous flights were also instrumental in compiling information on productivity of the Yellowstone Lake osprey population.

Ground observations were instrumental in determining fledging dates and food habits of these two bird species. River ranger reports aided in obtaining approximate fledging dates for osprey in Grand Teton National Park. During the latter part of the summer, individual nest sites (both bald eagle and osprey) were visited to collect food remains and obtain nest site measurements. Bald eagle food items were collected in and around the nest and under obvious perches in the vicinity of the nest site. Nest trees were climbed with the expert help of George Montopoli and Keith Hadley (Grand Teton National Park climbing rangers). Tree density measurements were completed using a modification of the method used last year. The exact procedure and results will be presented and discussed in the final report.

Results

Locations of bald eagle territories in Grand Teton National Park, Yellowstone National Park and vicinity and osprey nests in Grand Teton National Park are shown in Figure 1. Bald eagle territories in Yellowstone National Park, with the exception of one located on the upper Snake River, were taken from Swenson (1975). There are a minimum of 30 bald eagle territories in the study area. Four are located in Grand Teton National Park, 15 within the boundaries of Yellowstone and 11 in the vicinity of both parks. A total of 25 osprey nest sites were observed within Grand Teton during 1979. Included in this total were 3 nests which blew down before the 1979 breeding season began. One of these nests was rebuilt in the same tree in September. In addition there were 3 other nests located this year, however only 1 is suspected of being in a previously unknown nesting site. There are 4 nests not included in this total which are believed to be either alternate or frustration nests.

Reproductive data for the bald eagle and osprey during 1979 are summarized in Tables 1 and 2 respectively. The reproductive terminology used in these tables is from Swenson's (1975) modification of Postapalsky's (1974) terminology describing raptor nest status and reproductive success. Bald eagle productivity (Table 1) based on active and occupied territories (.84 and .78 respectively) are somewhat lower than the 1978 figures (1.18 and .91 respectively, Alt 1978). The productivity figures

(Table 1) for Yellowstone National Park only, are .82 (active) and .75 (occupied). When these are compared with those reported by Swenson (.39 active and .23 occupied) in Yellowstone during the years 1972-1974, it is evident that productivity has at least doubled since that time. Even though productivity has decreased since last year, the number of young fledged during 1979 (21, Table 1) increased by 1 over 1978 (20, Alt 1978) and the average brood size for 1979 (1.62, Table 1) also increased over that reported for 1978 (1.43, Alt 1978). Osprey productivity figures for 1979 based on active and occupied nests are 1.31 and 1.13 respectively (Table 2). When these are compared with corresponding figures for 1978 (.39 occupied and .44 active, Alt) it appears that productivity tripled over the previous year. The total number of young fledged (17, Table 2) during 1979 more than doubled over the 1978 total (7, Alt). The average brood size also substantially increased from 1.4 in 1978 to 2.25 (Table 2) for 1979.

There were two cases of prefledging mortalities documented during the summer of 1979. In the first instance remains of a nestling in the Schwabacher bald eagle nest were found during the banding operation. The remains were entangled in monofilament fishing line, however it could not be positively determined if this was a cause of death. The age at death appeared to be between 5 and 6 weeks. In the second case one of the young from an osprey nest on Jackson Lake disappeared from the nest just prior to fledging. When the nest site was visited a large number of flight feathers, all incompletely developed, were discovered. Some of these showed evidence of predation (quill tips nipped off, several feathers still joined together).

The eaglets in nests on the Snake River south of the junction with the Gros Ventre River fledged during the last week of June and first week of July. Those from the Red Rocks Refuge nest also fledged during this same period. Eaglets from nests on Hebgen Lake and the Madison River had first observed flights on the 18 and 19 of July respectively. The first noticed flight of the eaglet from the Schwabacher nest site in Grand Teton National Park was on July 24. The fledging date of the young from the Slide Lake nest are also considered to be near this same date. This conclusion was based on the similar relative ages of the eaglets from both nests. Those young on Yellowstone Lake were the last to fledge making their first flights between July 31 and August 18.

The first osprey to fledge this summer in Grand Teton National Park were from two different nests, one on the Snake River and one on Phelps Lake (JY Ranch). The young from these nests fledged sometime during the first week in August. Young from 3 nests on Jackson Lake fledged during the second week in August. The first observed flights of young from two other nests on the Snake River were on August 16 (Blacktail Ponds nest) and 19 (Disney Channel nest). Three young from the osprey nest on Leigh Lake were the latest to fledge. Two had first observed flights on August 26 and the third on August 30.

A total of 25 bald eagles were observed during the winter (February 26) flight. Fourteen (3 immatures and 11 adults) were observed along the

Yellowstone River. Five adult bald eagles were seen along the Snake River. An immature was seen on the Firehole River near its confluence with Nez Perce Creek. The remaining 5 bald eagles (1 immature and 4 adults) were located along the Madison River. During this flight any open water had abundant waterfowl on it. All of the bald eagles observed during this survey were associated with open water and therefore also in close association with plentiful waterfowl.

A total of 9 nestling bald eagles were banded during this initial season of banding. Due to the late arrival of our endangered species permit we were unable to band 5 nestlings since we would have either risked injury to the bird by causing premature fledging or because they had already fledged. Two eagle nests containing 2 young each were not banded due to the land managers wishes and only 3 eaglets from two nests were totally inaccessible due to the deteriorated condition of the nest tree.

Analysis of food items and assessing human disturbance is being conducted at this time and thus will be presented in the final report.

Conclusions

The decrease in bald eagle productivity from 1978 to 1979 (presented in the results) might not be significant, since the number of young fledged and brood size for 1979 increased over comparable values for 1978. In any event it is evident that bald eagle productivity during these two years (1978-1979) has at least doubled over productivity values Swenson calculated for 1972-1974.

Continued osprey productivity similar to the low values exhibited during 1978 could have led to a reduction in the population in Grand Teton National Park. However, due to the dramatic increase in osprey productivity during 1979 this threat could have been minimized. It is important for this population to continue reproducing at levels comparable to this years values in order to maintain a healthy breeding adult osprey population in Grand Teton National Park.

Literature Cited

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Table 1. Reproduction of bald eagles in Grand Teton National Park (GTNP), Yellowstone National Park (YNP) and vicinity-1979.

	GTNP	YNP	Vicinity	Total
Territories observed	4	15	11	30
Occupied nests (A)	4	12	11	27
Active nests (B)	3	11	11	25
Successful nests (C)	1	5	7	13
Young fledged (D)*	1	9	11	21
Brood size (D/C)	1	1.8	1.57	1.62
Productivity (occupied) (D/A)	.25	.75	1.0	.78
Productivity (active) (D/B)	.33	.82	1.0	.84

*Young raised to an advanced stage of development.

Table 2. Reproduction of osprey in Grand Teton National Park-1979.

	Lakes	Rivers	Total
Nest sites observed	18	7	25
Occupied nests (A)	10	5	15
Active nests (B)	8	5	13
Successful nests (C)	5	3	8
Young fledged (D)*	9	8	17
Brood size (D/C)	2.0	2.67	2.25
Productivity (occupied) (D/A)	.9	1.6	1.13
Productivity (active) (D/B)	1.13	1.6	1.31

*Young raised to an advanced stage of development.

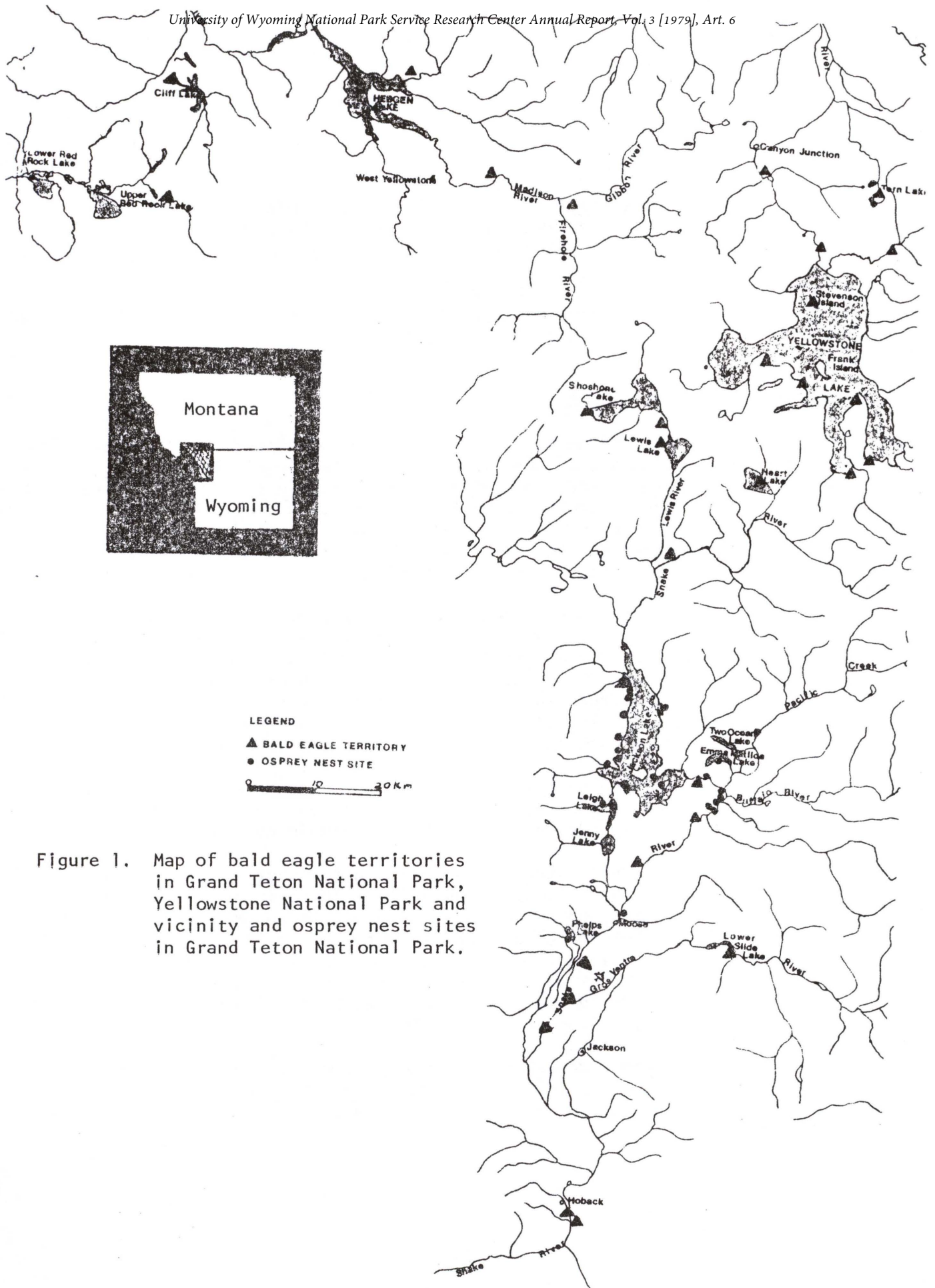


Figure 1. Map of bald eagle territories in Grand Teton National Park, Yellowstone National Park and vicinity and osprey nest sites in Grand Teton National Park.