Ecology of the osprey on the upper Missouri River, Montana
by Karl Eugene Grover

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Fish and Wildlife Management
Montana State University

Abstract:
The ecology of the osprey (Pandion haliaetus) on the upper Missouri River was studied during the summers of 1981 and 1982. Nesting density varied from 0.03 occupied nests/km of free flowing river to 0.54 occupied nests/km of impounded river. Nesting chronology was 1 week later in 1982 than in 1981. Nest site selection seemed to be influenced primarily by visibility afforded the birds and the morphology of the nest support structure. Advanced young per occupied nest (1.12) indicated an increasing population. Productivity did not appear to be reduced by human activity. Nest site or prey availability did not appear to be limiting the population. Catostomidae were determined to be the most heavily utilized prey. Incubation behavior was reported. Discouragement of the use of power poles as nest sites was discussed.

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APPROVAL

of a thesis submitted by

Karl Eugene Grover

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

3/10/83
Date

Robert F. Eng
Chairperson, Graduate Committee

Approved for the Major Department

3/8/83
Date

J. M. Prichett
Head, Major Department

Approved for the College of Graduate Studies

3-11-83
Date

Michael Malone
Graduate Dean

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Date 8 March 1983

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ABSTRACT

The ecology of the osprey (*Pandion haliaetus*) on the upper Missouri River was studied during the summers of 1981 and 1982. Nesting density varied from 0.03 occupied nests/km of free flowing river to 0.54 occupied nests/km of impounded river. Nesting chronology was 1 week later in 1982 than in 1981. Nest site selection seemed to be influenced primarily by visibility afforded the birds and the morphology of the nest support structure. Advanced young per occupied nest (1.12) indicated an increasing population. Productivity did not appear to be reduced by human activity. Nest site or prey availability did not appear to be limiting the population. Catostomidae were determined to be the most heavily utilized prey. Incubation behavior was reported. Discouragement of the use of power poles as nest sites was discussed.

INTRODUCTION

Since 1966 the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) have conducted nest surveys of ospreys (*Pandion haliaetus*) on the upper Missouri River. The data, which were in the form of unpublished reports, contained year to year inconsistencies in nest status definitions and boundaries of the survey area. For these reasons it was difficult to compare the status of this osprey population with that of other western populations (Schroeder 1972, Swenson 1975, Lind 1976, Henny et al. 1978).

Ospreys will nest on a variety of man-made structures (Reese 1970, Rhodes 1972, Henny and Noltemeier 1975) including power poles (MacCarter and MacCarter 1979, Van Daele 1980). Osprey on the upper Missouri River are no exception, even though nesting on power poles in the area has been discouraged after outages were caused by nest material.

The purpose of this study was to determine the relative size and reproductive status of this population, and to examine nest site characteristics. The data on nest site characteristics could be used to alter power pole design in such a way as to discourage their use, or encourage the birds to use alternate sites through discretionary placement of artificial structures or tree modifications.

Field research was conducted from mid-June to late September 1981, and from April to late September 1982.

DESCRIPTION OF STUDY AREA

The study area, located in southwestern Montana, begins at the headwaters of the Missouri River, near the town of Three Forks, at an elevation of 1231 m (meter) (4038 ft (feet)). It ends approximately 192 km (kilometer) (119 mi (mile)) downstream at Holter Dam, with a spillway elevation of 1091 m (3578 ft), 53 km (33 mi) north of Helena (Figure 1). To facilitate analysis of data, the study area was subdivided into 4 units: 1 major stretch of free flowing river and 3 reservoirs.

Physiography

The free flowing river portion begins at the headwaters and ends 74 km (46 mi) downstream at Townsend (Figure 2). This section meanders through a wide valley having agriculture as its primary land use. A few small canyons are encountered as the river flows through the Horseshoe Hills. Toston Dam is located 32 km (20 mi) below the headwaters but does not impound a significant amount of water.

The Canyon Ferry Reservoir sub-unit is situated between the Elkhorn Mountains and Spokane Hills to the west and the Big Belt Mountains to the east. The upper end of the reservoir is at Townsend with the dam 40 km (25 mi) downstream (Figure 3). The reservoir has a surface area of 14251 ha (hectare) (35200 a (acre)) and is 7.2 km (4.5 mi) at its widest point. The adjacent valley, which is extensively

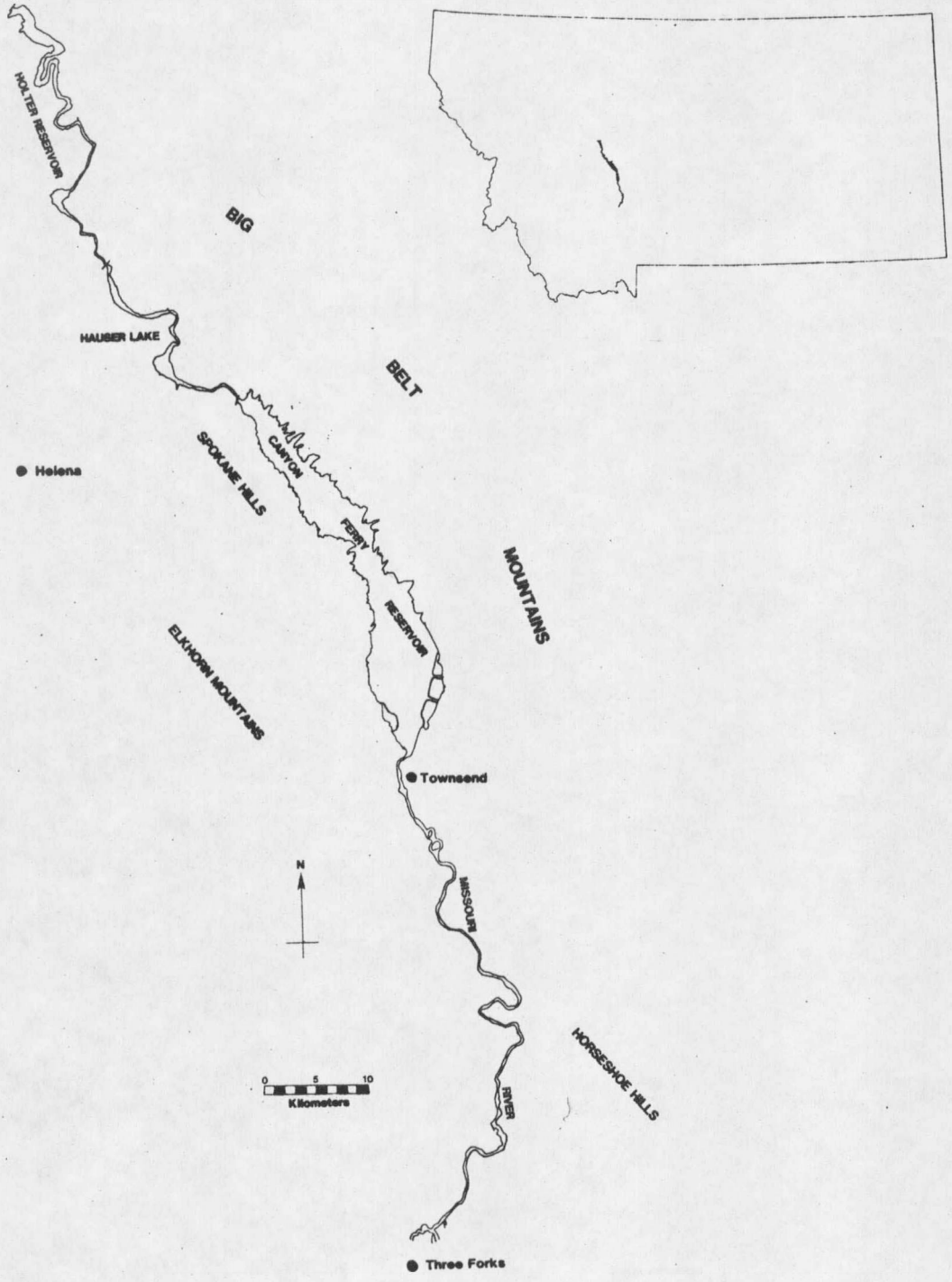

Figure 1. Location of study area within the state of Montana, and map of its major topographic features.