



88006518



T/N 281
Filing Code 6610

Date Issued February 1976

TECHNICAL NOTE

U.S. DEPARTMENT OF THE INTERIOR – BUREAU OF LAND MANAGEMENT

NESTING ECOLOGY OF GOLDEN EAGLES IN ELKO COUNTY, NEVADA

by

Donald J. Seibert, Wildlife Biologist, Bureau of Land Management, Phoenix, Arizona
Robert J. Oakleaf, Non-Game Wildlife Biologist, Nevada Department of Fish and Game, Reno, Nevada
J. Michael Laughlin, Wildlife Biologist, Fish and Wildlife Service, Elko, Nevada
Jerry L. Page, Wildlife Biologist, Bureau of Land Management, Susanville, California



QL
84.2
.L35
no. 281

Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225

3528644

ID: 88006578

QL
84.2
.L35
no. 281

ABSTRACT

An aerial inventory was conducted of golden eagle (Aquila chrysaetos), nesting and habitat between 1972 and 1974 in Elko County, Nevada. It was found that of the nests surveyed, 90% were on cliffs, 80% were at elevations between 5,000 (1524.4 m) and 6,500 feet (1981.7 m), less than 15% faced north, and in 1974 (the only year studied), 66% of the nests were on cliffs higher than 25 feet (7.4 m).

Three trend study areas were established. The highest ecological nesting density was 15 square miles (38.9 sq km) per nest, which was along an area of suitable nesting cliffs with typical desert riparian habitat. Fluctuations in natality were observed through variations in nesting activity.

Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225

TABLE OF CONTENTS

	Page
Introduction	1
Acknowledgement	1
Study Area	2
Methods of Inventory	4
Golden Eagle Nesting Sites	4
Golden Eagle and Nesting Characteristics	5
Golden Eagle Population Trends	7
Nesting Densities of Golden Eagles	8
Conclusions	10
Literature Cited	11
Appendix A	13
Appendix B	14
Typical Golden Eagle Nest Site	15
Rock Crevice Nest Site	16
Fledgeling Golden Eagle	17

INTRODUCTION

Interest in eagles and other raptorial birds has increased in recent years due to: (1) population decline of certain raptorial species (Kochert 1972); (2) use of these birds in falconry; (3) the national publicity of eagle killings in some western states; (4) raptor electrocutions; and (5) recently realized ecological and aesthetic values of non-game species (Johnson and Melquist 1973). The influence of human activity is the greatest single factor affecting the well-being of these birds and is responsible for reduced nesting success of raptors (Craighead and Craighead 1956). Detailed information concerning present raptor populations and habitats is needed to provide data necessary for formulating management criteria for these species.

An intensive inventory of golden eagle nesting sites and related habitat was initiated in Elko County, Nevada, during the spring of 1972 to: (1) provide an indication of the present golden eagle nesting population and nesting success; and (2) provide a fast, inexpensive inventory of the habitat being used by nesting golden eagles. This inventory was a cooperative effort between the U.S. Fish and Wildlife Service, the U.S. Bureau of Land Management, the Nevada Department of Fish and Game and the U.S. Forest Service. Similar studies have been conducted in Montana (McGahan 1966), Idaho (Beecham 1970), and in New Mexico, Colorado, and Wyoming (Boeker and Ray 1971).

The purpose of this paper is to present the progress of the golden eagle nesting and habitat study in Elko County, Nevada, and to describe a method and analysis for inventorying golden eagle nesting habitat, that may be helpful to natural resource agencies.

ACKNOWLEDGEMENT

The authors are indebted to the Nevada Department of Fish and Game, Elko District of the U.S. Bureau of Land Management, Elko District of the U.S. Fish and Wildlife Service and the Humboldt Forest of the U.S. Forest Service for making this cooperative project possible. Special thanks are extended to Fred Robards, U.S. Fish and Wildlife Service, for the use of his aerial survey form for inventorying bald eagles in Alaska and to Ervin Boeker, U.S. Fish and Wildlife Service, for his constructive review of our project work.

STUDY AREA

This study was conducted in Elko County, Nevada, which contains approximately 17,000 square miles (44,000 square km) (Figure 1). Elevations range from 4,000 to 11,000 feet (1219.5 m to 3353.7 m).

Elko County has a wide temperature variation. The average mean summer temperature is 68 degrees F. (18 degrees C.), and the average mean winter temperature is 24 degrees F. (-4 degrees C.). Temperatures may vary 35 degrees during a 24-hour period. Average annual precipitation varies from under eight inches (20.3 cm), to over 25 inches (63.5 cm), due to elevation and proximity of mountains (U.S. Department of Commerce, Weather Bureau 1971, 1972).

The lower basins range from 4,000 to 5,000 feet (1219.5 m to 1524.4 m) and occupy less than five percent of the county. The major vegetation species are greasewood (Sarcobatus spp.), and saltbrush (Atriplex spp.)

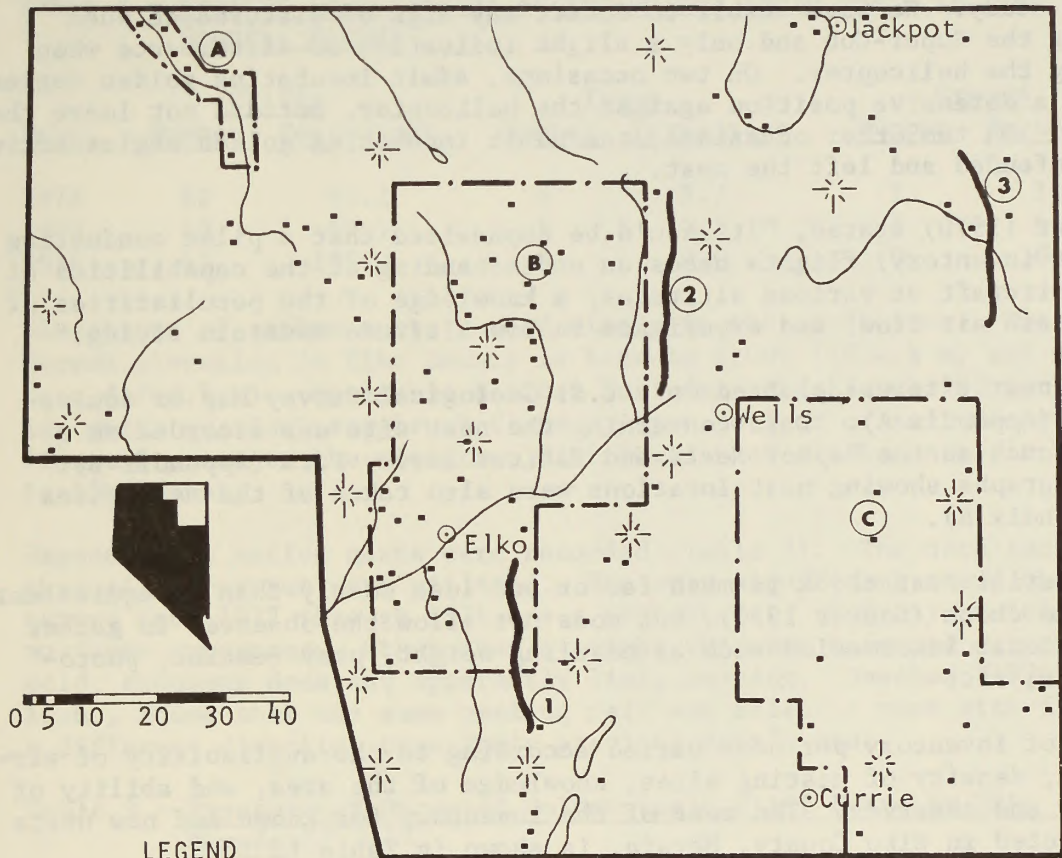
The hilly, intermediate areas encompass approximately 75% of Elko County. The elevation ranges from 5,000 (1524.4 m) to 7,000 feet (2134.1 m). The vegetative species are big sagebrush (Artemisia tridentata), black sagebrush (A. nova), and rabbitbrush (Chrysothamum spp.).

The highest elevations, ranging from 7,000 to 11,000 feet (2134.1 m to 3353.7 m), comprise approximately 20% of Elko County. These are steep-rising mountain ranges, generally running in a north-south direction. The vegetation varies greatly with the elevation. The major vegetative types are: (1) mountain browse type consisting of mountain mahogany (Cercocarpus spp.), bitterbrush (Purshia spp.), snowberry (Symphoricarpos spp.), serviceberry (Amelachier spp.), etc.; (2) sagebrush grass type consisting of sagebrush with various grasses; (3) pinyon-juniper type consisting of pinyon (Pinus spp.), juniper (Juniperus spp.), etc.; and (4) on favorable sites, broadleaf and conifer types consisting of aspen (Populus spp.), fir (Abies spp.), etc. There are also small areas of bristlecone pine (Pinus aristata), on most of the major mountain ranges in southeastern Elko County.

Throughout Elko County, desert riparian vegetation occurs between 5,000 and 9,000 feet elevations in a narrow strip along the streams. The major vegetation species included are willow (Salix spp.), rose (Rosa spp.), cottonwood (Populus spp.), and at the higher elevations, aspen.

Agriculture practices have eliminated large areas of native vegetation on the flood plains of the major water courses. Cultivated hay meadows have replaced 10% of the native sagebrush-grass type. An additional 10% of the sagebrush-grass type has been either seeded of crested wheatgrass (Agropyron cristatum), or burned, thus being converted to cheatgrass (Bromus tectorum), or, in some cases, other native grasses (Bureau of Land Management, Elko District Economic Profile, unpublished).

Figure 1 - Map of Elko County, Nevada, showing the distribution of golden eagle nesting sites, high density golden eagle nesting areas, jackrabbit transects, major mountain ranges and major streams.



LEGEND

- Golden Eagle Nesting sites ■
- Major Mountain Ranges *
- Major Streams ~

- Study Areas □
- A. South Fork, Owyhee River
- B. Central Area
- C. Southeast Area

- Rabbit Transects —
- 1. Jiggs
- 2. Deeth
- 3. Montello

METHODS OF INVENTORYING

GOLDEN EAGLE NESTING SITES

The nest site inventory was accomplished with both fixed wing aircraft (Piper Super-Cub - 150 h.p.), and helicopter (Bell 47G3B-1), using the techniques described by Boeker (1970) and Hickman (1972). Good results were obtained with both types of aircraft. In areas of extremely rough terrain or when the wind velocity exceeded 15 Knots (27.8 km), the helicopter proved more effective than the Super-Cub.

The disturbance factor, mentioned by Boeker (1970), was evaluated in this study. We were unable to detect any sign of disturbance when using the Super-Cub and only a slight indication of disturbance when using the helicopter. On two occasions, adult incubating golden eagles took a defensive position against the helicopter, but did not leave the nest. On two other occasions, the adult incubating golden eagles actively defended and left the nest.

Boeker (1970) stated, "It should be emphasized that a pilot conducting (nest inventory) flights needs an understanding of the capabilities of his aircraft at various altitudes, a knowledge of the peculiarities of mountain air flow, and experience in low altitude mountain flying."

Each nest site was plotted on a U.S. Geological Survey Map or equivalent (Appendix A). Data concerning the nest site was recorded on a form such as the Raptor Nests and Habitat Survey Form (Appendix B). Photographs showing nest locations were also taken of the nest sites (Appendix A).

The aerial nest check is much faster and less costly than an equivalent ground check (Boeker 1970), but does not allow the observer to gather additional information such as nestling weight, prey remains, photographs, etc.

Cost of inventory per nest varied according to the availability of aircraft, density of nesting sites, knowledge of the area, and ability of pilot and observer. The cost of the inventory for known and new nests conducted in Elko County, Nevada, is shown in Table 1.

Table 1 - Costs per Year for the Golden Eagle Nesting Survey Using a 150 h.p. Super-Cub Aircraft

Year	Acreage	No. Nests Located	No. Hours Flown	Airplane Rental per Hour	Observer's Salary	Total of Airplane plus Salaries	Approximate
							Cost to Conduct Survey per Nest Location
1972	5 million	88	48	\$20.00	\$336.00	\$1296.00	\$14.80
1973	5 million	81*	35	25.00	245.00	1120.00	13.80
1974	7 million	126*	53.5	28.50	400.00	1926.00	15.30

* Includes some of the same nests originally located in 1972.

GOLDEN EAGLE HABITAT AND NESTING CHARACTERISTICS

Most eagle nesting sites throughout the western United States are located on cliffs, a few are situated in trees and occasionally a nest is found on the ground (McGahan 1968, Wellein and Ray 1964, Beecham 1970, Kochert 1972, Page and Seibert 1973, Murphy et al 1969). Between 1972 and 1974, at least 90% of the active nests in this study were located on cliffs (Table 2).

Table 2 - Habitat Locations of Active Golden Eagle Nests in Elko County, Nevada

Year	Cliffs		Trees		Ground	
	Number	Percentage	Number	Percentage	Number	Percentage
1972	82	93.2	5	5.7	1	1.1
1973	19	90.5	1	4.8	1	4.7
1974	42	100.0	0	0.0	0	0.0

Elevations of active nests varied widely in the study area. The preferred elevation in Elko County is between 5,000 (1524.4 m) and 6,500 feet (1710.5 m). Desirable habitat includes suitable cliffs for nesting which overlook sagebrush flats, pinyon-juniper or salt desert shrub. Figure 2 presents the elevation distribution of all known eagle nests in Elko County.

Exposures of active nests were recorded (Table 3). The data indicates that all exposures were utilized. The only significant trend that occurred from 1972 through 1974 was a significant ($P < 0.01$) avoidance of northern exposures. Other than a slight tendency to avoid extremes in cold, exposure does not apparently limit nesting. Beecham (1970), in Idaho, found that the same nesting pair may select a nest site facing a different direction than their previous year's nest.

Table 3 - Exposure of Occupied Golden Eagle Cliff Nests in Elko County, Nevada

Year	No.	North	East	South	West
		Percentage	No. Percentage	No. Percentage	No. Percentage
1972	10	12.2	35 42.7	20 24.4	17 20.7
1973	3	15.8	4 21.0	4 21.1	8 42.1
1974	17	16.7	10 23.8	17 40.5	8 19.04

Heights of nesting cliffs were estimated from the base of the face to the brink; and nest height above the cliff base was also recorded (Table 4). Data indicates that a wide range in cliff heights is acceptable. We felt that the reason there were fewer nests on cliffs higher than 100 feet (30.5 m), was there were fewer cliffs of this size in Elko County.

Figure 2 - Nest elevation distribution of all known golden eagle nests in Elko County, Nevada.

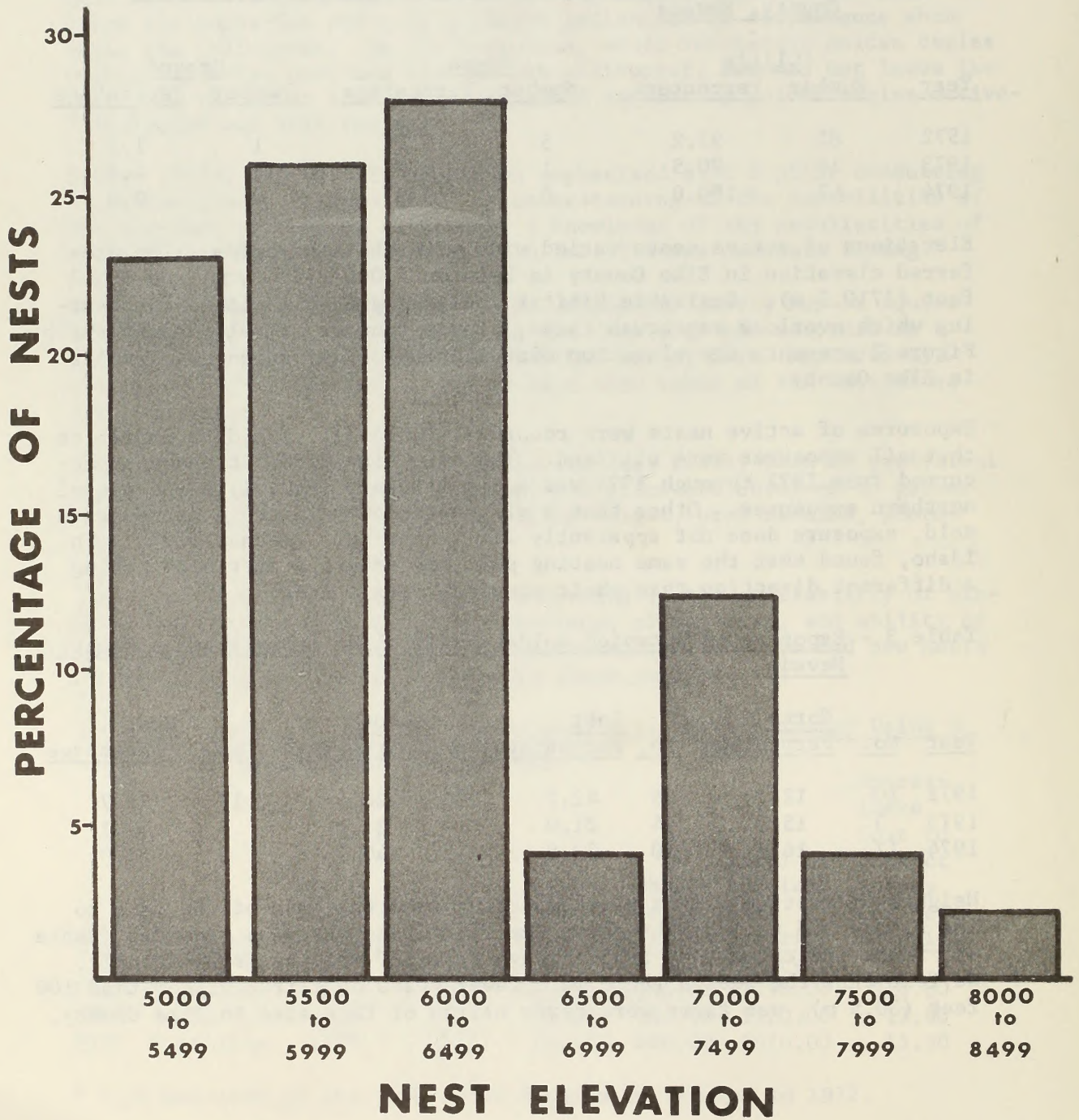


Table 4 - Cliff and Nest Heights of 42 Active Eagle Nests in 1974 in Elko County, Nevada

<u>Height in Ft. (Meters)</u>	<u>Cliff</u>		<u>Nest</u>	
	<u>No.</u>	<u>Percentage</u>	<u>No.</u>	<u>Percentage</u>
0-24 (0-7.3)	8	19.0	14	33.3
25-49 (7.4-14.9)	13	30.9	9	21.4
50-74 (15.0-22.5)	7	16.7	9	21.4
75-99 (22.6-30.2)	8	19.0	7	16.7
100-149 (30.3-45.4)	3	7.2	1	2.4
150+ (45.5+)	3	7.2	2	4.8

GOLDEN EAGLE POPULATION TRENDS

Sixty-one of the nesting sites found active in 1972 were also checked the following two years of study. Only 10 (16.4%) and 17 (27.9%) of the nesting sites were found active in 1973 and 1974, respectively. The use pattern of these 61 sites was analyzed; 37 sites (60.7%) were inactive during the last two years of the study, while only three sites (4.9%) were active during all three years. A nesting site was considered active only if egg laying was initiated.

Boeker (1974) found that approximately 45% of historical nesting sites were active during stable populations in the Rocky Mountains. The significantly ($P < 0.01$) lower ratios of active sites of Elko County populations in 1973 and 1974 are indicative of a decreasing trend in nesting.

Another index used for indicating nesting trends is the number of active nesting sites located per hour of survey time (Table 5). More than twice as many active sites were located in 1972 than in 1973 or 1974 (Table 5). This index under normal conditions should increase as more nesting locations are known and less time is spent in covering unproductive ground.

Table 5 - Number of Active Golden Eagle Nests Observed in Elko County, Nevada

<u>Year</u>	<u>Active Nests Total Number</u>	<u>Hours Surveyed</u>	<u>Active Nests/Hour</u>
1972	88	48	1.83
1973	21 <u>1/</u>	35	0.60
1974	42 <u>2/</u>	53.5	0.78

1/ Includes 13 known 1972 nesting sites.

2/ Includes 27 known 1972 and 1973 nesting sites.

These indices clearly show that nesting activity in 1973 and 1974 was considerably below that of 1972.

The index of young per nesting attempt was 1.10 (n=50 nests) in 1972 and 1.36 (n=25) in 1974. No data for this index were obtained in 1973. The difference of young per nesting attempt in 1972 and 1974 was not significant ($P>0.01$). Also, a bias in 1974 methodology would tend to cause a higher index. The 1974 production survey was conducted somewhat early with a majority of nestlings just starting to obtain flight feathers. Therefore, several days remained for additional nestling mortality that could have lowered the production index.

Since nesting activity has significantly decreased and production of nesting pairs did not increase, we concluded that the natality declined.

We feel that the decline in eagle nesting in Elko County can be partly contributed to a decline in food availability prior to egg laying. Several papers have covered the importance of energy intake and how the lack of food can result in cessation of nesting activity or a reduction in clutch size (Southern 1959, Lack 1946, Perrins 1970).

In Elko County, we commonly observed eagles utilizing jackrabbits (Lepus spp.), as a food source during the winter months prior to nesting. Other studies in adjacent states have shown jackrabbits to be an important food source of golden eagles (McGahan 1966, Woodgerd 1952, Kochert 1972).

General observation and data presented in Figure 3 indicate that jackrabbit populations have significantly declined in the last couple of years. Data presented in Figure 3 were obtained while working U.S. Fish and Wildlife Service coyote transects (Figure 1). Additional information on rabbit population from 1964-1966 is presented by Gross et al (1974).

The lowered natality during 1973-1974 was contributed to shortages of prey-species prior to the egg laying. However, some mortality factors affecting the adult breeding segment appear to have trends that are somewhat similar to nesting trends. These factors are as follows: (1) accidental trapping of eagles in bobcat and coyote sets; (2) poisoning from illegal use of poisoned bait; (3) electrocution on transmission lines. Since none of these factors have been accurately quantified, the principal or combination of causal factors cannot be positively identified.

NESTING DENSITIES OF GOLDEN EAGLES

Three areas in Elko County have received sufficient survey work to allow for comparisons of population densities and habitat analysis. Locations of these trend study areas are shown in Figure 1. We feel that most of the eagle eyries have been located in these areas. The number of nests and density indices are presented for each area (Table 6).

Figure 3 - Number of Rabbits observed on 30-mile road transects in Elko County, Nevada.

Jiggs Transect was not worked in 1970 and Montello Transect was not worked in 1972.

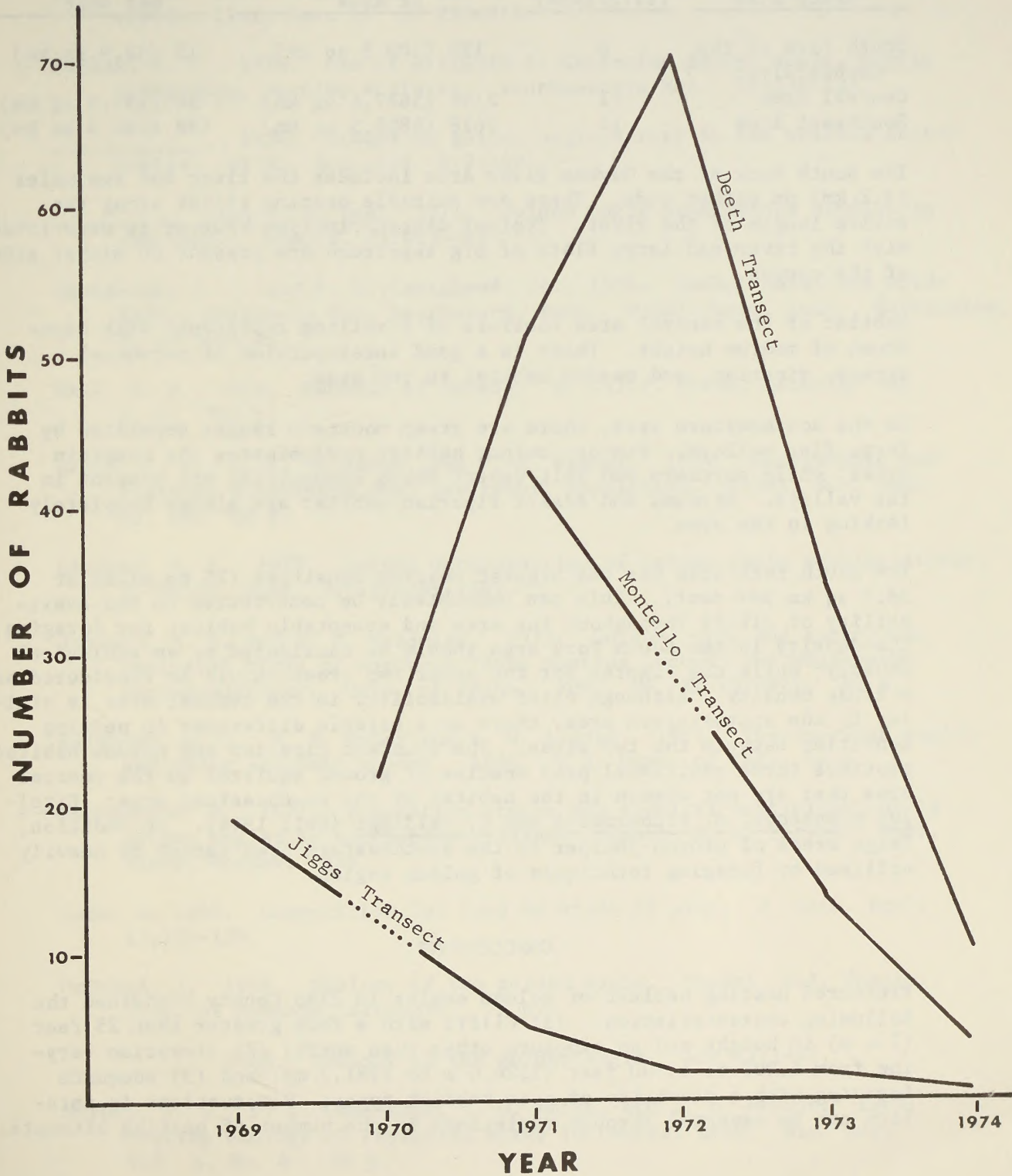


Table 6 - Nesting Densities of Golden Eagles in Three Study Areas of Elko County, Nevada

<u>Study Area</u>	<u>No. of Nests Recorded Active (1972-1974)</u>	<u>Sq. Miles of Area</u>	<u>Sq. Miles per Nest</u>
South Fork of the Owyhee River	8	120 (300.8 sq km)	15 (38.9 sq km)
Central Area	41	2196 (5687.6 sq km)	54 (139.9 sq km)
Southeast Area	14	2628 (4806.5 sq km)	188 (486.9 sq km)

The South Fork of the Owyhee River Area includes the river and two miles (3.2 km) on either side. There are suitable nesting cliffs along the entire length of the river. Typical desert riparian habitat is associated with the river and large flats of big sagebrush are present on either side of the canyon.

Habitat of the central area consists of a rolling topography with sagebrush of medium height. There is a good interspersions of perennial stream, riparian, and meadow habitat in the area.

In the southeastern area, there are steep mountain ranges separated by large flat valleys. Pinyon-juniper habitat predominates the mountain areas, while northern and salt desert shrub communities are present in the valleys. Streams and desert riparian habitat are almost completely lacking in the area.

The South Fork area has the highest nesting densities (15 sq miles or 38.9 sq km per nest). This can undoubtedly be contributed to the availability of cliffs throughout the area and acceptable habitat for foraging. The density in the South Fork area should be considered as an ecological density; while the figures for the other two areas should be considered as a crude density. Although cliff availability in the central area is similar to the southeastern area, there is a notable difference in nesting densities between the two areas. The abundant riparian and meadow habitat provides three additional prey species of ground squirrel in the central area that are not common in the habitat of the southeastern area: Citellus townsendi, C. richardsoni and C. beldingi (Hall 1946). In addition, large areas of pinyon-juniper in the southeastern area cannot be heavily utilized by foraging techniques of golden eagles.

CONCLUSIONS

Preferred nesting habitat of golden eagles in Elko County contained the following characteristics: (1) Cliffs with a face greater than 25 feet (7.4 m) in height and an exposure other than north; (2) elevation varying from 5,000 to 6,500 feet (1524.4 m to 1981.7 m); and (3) adequate foraging with a diversity of open habitat types. Fluctuations in natality can be expected through variations in the number of nesting attempts.

LITERATURE CITED

- Beecham, J., Jr. 1970. Nesting ecology of the golden eagle in southwestern Idaho. Unpubl. M.S. Thesis. Univ. of Idaho, Moscow. 48 p.
- Bent, C. A. 1937. Life histories of North American birds of prey. Dover reprint 1961, Part I. p. 293-315.
- Boeker, E. L. 1970. Use of aircraft to determine golden eagle, Aquila chrysaetos, nesting activity. Southwestern Nat. 14:136-137.
- _____. 1974. Status of golden eagle survey in the western United States. Wildl. Soc. Bul. 2(2):48.
- _____ and T. D. Ray. 1971. Golden eagle populations studies in southwest. Condor. 73:463-467.
- Craighead, J. J. and F. C. Craighead, Jr. 1956. Hawks, owls, and wild-life. Stackpole Co., Harrisburg, Penn., Wildl. Mgmt. Inst., Washington, D. C. 443 p.
- Hall, E. R. 1946. Mammals of Nevada. U. Calif. Press, Berkeley and L. A. 710 p.
- Gross, J. E., L. C. Stoddart, and F. H. Wagner. 1974. Demographic analysis of a northern Utah jackrabbit population. Wildl. Soc. Mono. No. 40. 68 p.
- Hickman, G. L. 1972. Aerial determination of golden eagle nesting status. J. Wildl. Mgmt. 36(4):1289-1292.
- Johnson, D. R. and N. E. Melquist. 1973. Unique, rare and endangered raptorial birds of northern Idaho nesting success and management recommendations. Univ. of Idaho. Publ. No. RI-73-0921. 42 p.
- Kalmbach, E. R., R. H. Imler and L. W. Arnold. 1964. The American eagles and their economic status. 1964. U.S. Dept. of Int. 51 p.
- Kochert, M. N. 1972. Population status and chemical contaminations in golden eagles in southwestern Idaho. Unpubl. M. S. Thesis. Univ. Idaho, Moscow. 93p.
- Lack, D. 1946. Competition for food by birds of prey. J. Anim. Ecol. 15:123-129.
- McGahan, J. 1966. Ecology of the golden eagle. Unpubl. M.A. Thesis. Univ. of Montana, Missoula. 78 p.
- _____. 1968. Ecology of the golden eagle. Auk 85:1-12.
- Murphy, J. R., F. J. Camenzind, D. G. Smith, and J. B. Weston. 1969. Nesting ecology of raptorial birds in central Utah. Bio. Ser. Vol. X, No. 4. 36 p.

- Page, J. L. and D. J. Seibert. 1973. Inventory of golden eagle nests in Elko County, Nevada. Cal-Neva Wildlife 1973. Transactions western sections of the wildlife society. February 1973. p. 1-8.
- Perrins, C. M. 1970. The timing of birds' breeding seasons. Ibis 112:242-255.
- Reynolds, H. V., III. 1969. Populations status of the golden eagle in southcentral Montana. Unpubl. M. S. Thesis. Univ. of Montana, Missoula. 61 p.
- Southern, N. H. 1959. Mortality and population control. Ibis 101:429-436.
- Wellein, E. G. and T. Ray. 1964. Eagle investigation--New Mexico and western Texas. Wildl. Research Lab., Colorado.
- Woodgerd, W. 1952. Food habits of the golden eagle. J. Wildl. Mgmt. 16(4):457-459.

RAPTOR NEST LOCATION

Appendix A

SPECIES _____

DATE ORIGINALLY LOCATED _____

NEST NR. _____

OBSERVER _____

HOW TO FIND NEST SITE _____

DESCRIPTION OF NEST SITE:

NEST ELEVATION _____

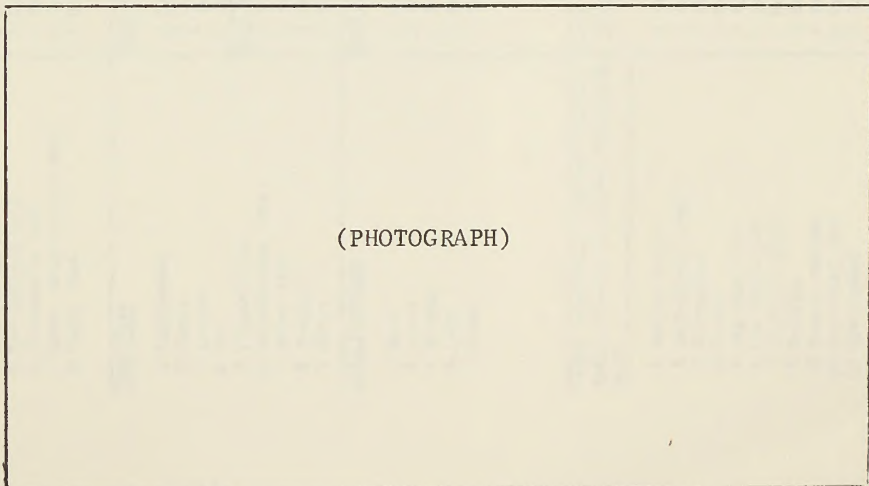
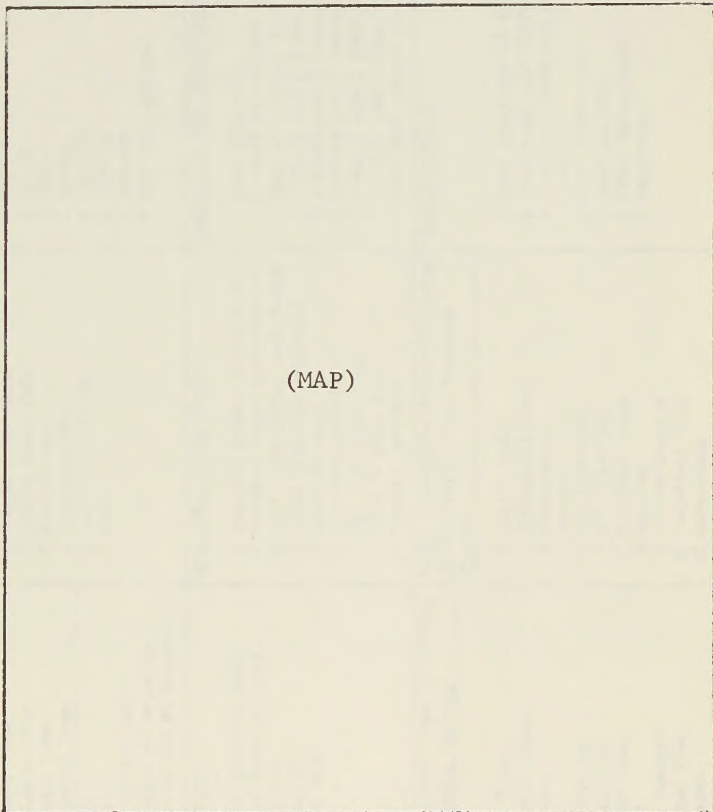
NEST LOCATED ON _____

HEIGHT OF TREE OR CLIFF _____

HEIGHT OF NEST ABOVE GROUND _____

GENERAL AZIMUTH OF CLIFF EXPOSURE

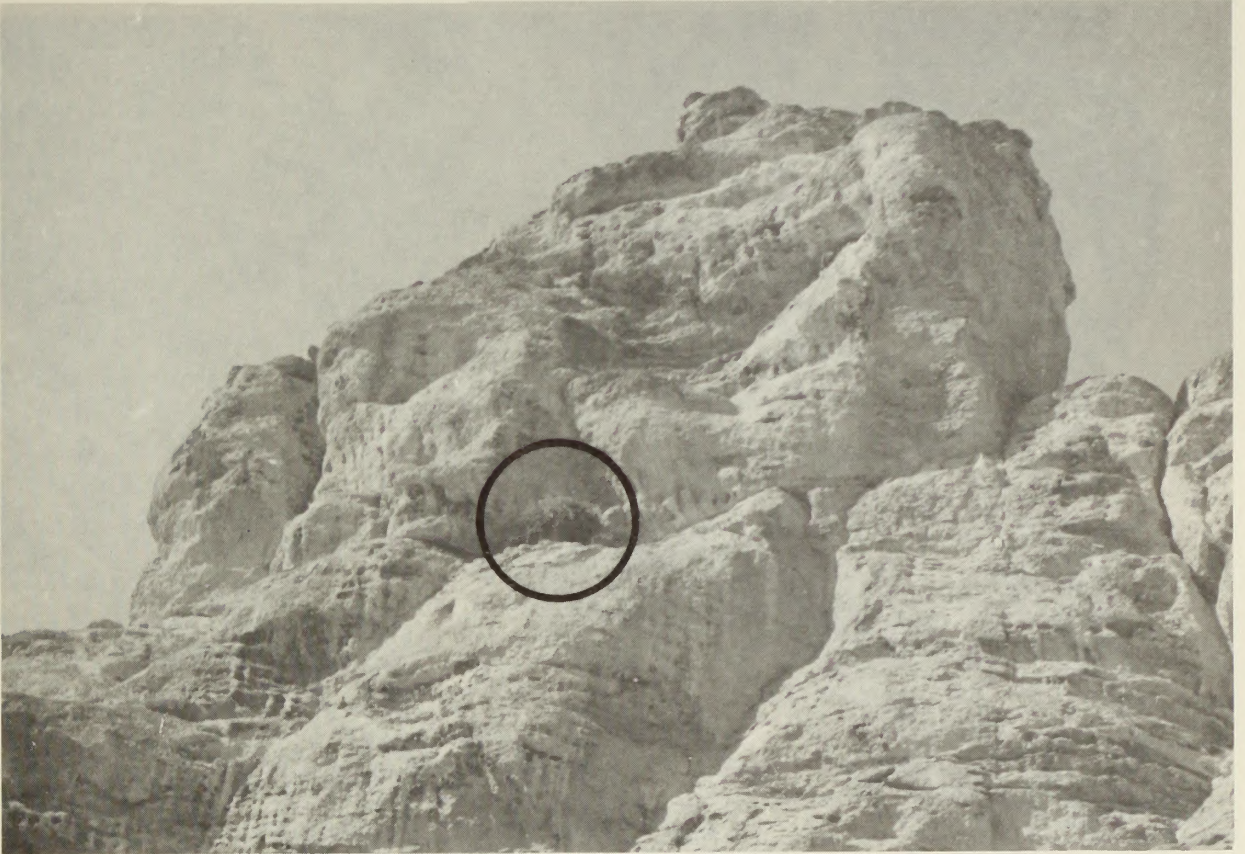
ACTUAL AZIMUTH OF NEST EXPOSURE



RAPTOR NEST AND HABITAT SURVEY

BLM State & District No.	AMS Map Name	Nest. No.	No.-Day-Yr.	Recorder's Name
Method of Survey	Lat. Long	Ownership of Nest Site	Mileage of Nest to Stream or River	Nest Elevation
1 Fixed Wing Aircraft-150 HP 2 Fixed Wing Aircraft-180 HP 3 Helicopter 4 Foot 5 Other	T. _____ R. _____ S. _____ 1/4 Sec. _____ Miles to Human Disturb. _____ Type of Disturbance _____	1 Private 2 BLM 3 FS 4 State 5 Other	1 1/4 Mile 2 1/2 Mile 3 3/4 Mile 4 1 Mile 5 1 1/2 Miles 6 1 3/4 Miles 7 1 3/4 Miles 8 2 Miles 9 Over 2 Miles	1 4500-5000 2 5000-5500 3 5500-6000 4 6000-6500 5 6500-7000 6 7000-7500 7 7500-8000 8 8000-8500 9 8500 Feet and Over
Species	Species	Species	Ground Nest	Azimuth Reading
1 Golden Eagle 2 Bald Eagle 3 Turkey Vulture 4 Red-Tailed Hawk 5 Ferruginous Hawk 6 Swainson's Hawk 7 Amer. Rough-Legged Hawk 8 Marsh Hawk	1 Goshawk 2 Sharp-Shinned Hawk 3 Cooper's Hawk 4 Prairie Falcon 5 Peregrine Falcon 6 Pigeon Hawk 7 Sparrow Hawk 8 Osprey	1 Great Horned Owl 2 Short-Eared Owl 3 Burrowing Owl 4 Barn Owl 5 Screech Owl 6 Long-Eared Owl 7 Saw-Whet Owl 8 Pygmy Owl 9 Poor-Will	1 Top of Cliff 2 Cliff Shelf or Ledge 3 Creviss 4 Open Hillside 5 Level Ground 6 Hole in Ground	General Cliff Exposure Actual Nest Site Exposure
Tree Nest	Tree Form	Pole or Other Nest	Height, Tree or Cliff in Feet	Nest Above Ground in Feet
1 Cottonwood 2 Aspen 3 Spruce 4 Fir 5 Pinyon-Pine 6 Bristlecone Pine 7 Other Pine 8 Juniper 9 Other	1 Live Bushy Tree 2 Live Slender Tree 3 Dead Bushy Tree 4 Dead Slender Tree Tree Height 1 Tallest 2 Taller than Majority 3 Same Height as Majority 4 Shorter Height as Majority	1 Single Power Pole 2 Double Power Pole 3 Transformer 4 Telephone Pole 5 Barn or Building 6 Other	1 0-25 Feet 2 25-50 3 50-75 4 75-100 5 100-150 6 150-250 7 250-400 8 400 Feet and Over	1 0-25 Feet 2 25-50 3 50-75 4 75-100 5 100-150 6 150-200 7 200 Feet and Over
Nest Frontage	Nest Condition	Activity at the Nest	Eagles in Nest Territory	Age of Young
1 Open 2 River 3 Stream 4 Lake 5 Other	1 Good-New Material Seen 2 Fair-Old Material Only 3 Poor-Stable 4 Poor-Unstable 5 Remnant Only	1 Material Added to Old Nest 2 New Nest Under Construction 3 Nest Found Since Last Survey 4 Adult with Nest Material 5 Adult on Nest 6 Whistling Adult 7 Adult on Nest Tree 8 Pair on Nest Tree 9 Pair on the Nest	1 None Observed 2 1 Adult at or Near Nest 3 Pair at or Near Nest 4 1 Adult and 1 Immature 5 1 Adult and 2 Immatures 6 2 Adult and 1 Immature 7 2 Adult and 2 Immatures 8 2 Adult and 3 Immatures 9 More than Listed Above	1 Eggs 2 Downies 3 Partly Feathered 4 Nest Fledging 5 Flying Young No. of Young _____
Major Vegetative Type of Crucial Radius during territory Establishment	Major Vegetative Type of Crusing Radius during Nesting	Major Vegetative Type of Crusing Radius during Post Fledging Period	Nest Destroyed	Photograph
1 Native Grass 2 Introduced Grass 3 Cheatgrass 4 Meadow 5 Big Sagebrush 6 Low Sagebrush 7 Mountain Brush 8 Conifer 9 Pinyon Juniper 10 Broadleaf Tree 11 Greasewood 12 Other	1 Native Grass 2 Introduced Grass 3 Cheatgrass 4 Meadow 5 Big Sagebrush 6 Low Sagebrush 7 Mountain Brush 8 Conifer 9 Pinyon Juniper 10 Broadleaf Tree 11 Greasewood 12 Other	1 Native Grass 2 Introduced Grass 3 Cheatgrass 4 Meadow 5 Big Sagebrush 6 Low Sagebrush 7 Mountain Brush 8 Conifer 9 Pinyon Juniper 10 Broadleaf Tree 11 Greasewood 12 Other	1 Nest Blown off of Tree 2 Nest Blown off Cliff 3 Nest too Large and Fell Off 4 Tree Blown Down 5 Road Building 6 Urban Development 7 Predation	Frame Nos. _____ No. _____ Adult Behavior:

TYPICAL GOLDEN EAGLE NEST SITE



Over 90 percent of the active golden eagle nests in Elko, County, Nevada, were located on cliffs.

ROCK CREVICE NEST SITE



Many cliff nests were situated in rock crevices. The vertical walls of the crevice provided shade and protection for the eaglet.

FLEDGELING GOLDEN EAGLE



Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225

Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225

U.S. DEPARTMENT OF
BUREAU OF LAND
BORROWER

QL
84.2 Nesting ecology of
2.L35 County, Nevada.
no.281

DATE LOANED	BORROWER

(Continued on reverse)

Form

