JOB PROGRESS REPORT

State: California

Project Number: W-54-R-14 Project Title: Nongame Wildlife Investigations

Job Number: II-10 Job Title: Osprey Status Review

Period Covered: July 1, 1981 - June 30, 1982 Job Type: Survey and Inventory

SUMMARY:

A statewide survey of Osprey *(Pandion haliaetus)* nesting populations was conducted to determine breeding status and population characteristics. The most comprehensive information was provided by U.S. Forest Service personnel, for Osprey nesting on Forest Service lands in the interior regions of northern California. Forest Service records suggest that these populations are stable and probably increasing. Nesting records from the north coast and other areas of the state are sporadic. In 1982, late storms appear to have had a negative effect on Osprey nesting success in northern California. Systematic aerial surveys throughout suitable Osprey habitat statewide are needed for accurate assessments of population status and trends.

BACKGROUND:

During the late 1950's and 1960's declines in Osprey populations were noted and correlated with pesticide contamination of the food chain and resultant eggshell thinning. Most of the declines were noted in the eastern United States. There is little historical data prior to the late 1960's on sizes or reproductive rates of western populations.

The most recent comprehensive survey of the northern California Osprey population (relatively few Ospreys breed in southern California) was conducted in 1975 by Henny et al. (1978). Their survey covered 90-95% of suitable habitat by air, with a nearly simultaneous ground count over a part of the area surveyed by air. This enabled the development of an aerial visibility rate that was used to adjust aerial counts to the total number of occupied nests, including those not seen from the air.

Much of the intensive survey work in recent years has concentrated on the population in interior northern California, the major areas being Lake Almanor, Eagle Lake, Lake Shasta, and the Klamath River. Forest Service personnel conduct yearly surveys of these areas. Dan Airola (Lassen National Forest, pers. comm.) has compiled data for Ospreys on National Forest lands from 1969 to 1982. The north coast Osprey populations have not been studied intensively on a year-to-year basis. Aerial surveys of Humboldt and Del Norte counties were conducted in 1977, 1978 and 1980 by Department Region 1 personnel. Mendocino and Sonoma counties have not been systematically surveyed since 1975. The population at Kent Lake in Marin County was surveyed in 1981 and 1982 by the Marin County Municipal Water District.

In 1970 and 1971, Garber (1972) conducted an Osprey nesting ecology study in Lassen and Plumas counties. Cracking or crushing of eggs in nests accounted for an average of 23% of the mortality in the reproductive efforts studied at Eagle Lake. Analysis of tissues collected during this study showed DDT and its metabolites to be present in

Osprey tissues ($\leq$ $7.9 ppm) and in various prey items ($\leq$ 0.355 ppm). It was postulated that pesticides were causing the eggshell breakage. Strengthening this postulate is the fact that egg breakage declined from 31% in 1970 to 16% in 1971, while average total DDT in eggs decreased from approximately 12 ppm in 1970 to approximately 5 ppm in 1971 (Garber 1972).

OBJECTIVES:

Conduct a statewide survey of Osprey nesting populations to determine breeding status, population size and distribution, and threats to habitat due to logging and other forms of human disturbance.

PROCEDURES:

Department Nongame Wildlife personnel reviewed information on past Osprey nesting sites, and used this information to coordinate a statewide monitoring survey. Department Regional personnel and U.S. Forest Service personnel were contacted for Osprey survey results. Department Nongame Wildlife personnel conducted surveys in Del Norte, Humboldt, and Mendocino counties. Nesting, information was also- collected from private land man-againg agencies and individuals when available.

FINDINGS:

From 1967 to 1972, Department files were kept on known Osprey nesting sites. Table 1 compares by county/the number of nest sites known at that time to those known in 1982. These are numbers of nest sites including alternate nests, so do not reflect nest site activity. Increases in numbers of nest sites. are partially due to more intensive searches during recent years.

In 1982, comprehensive surveys were not completed in all major Osprey nesting areas. Results of surveys in eight major nesting areas in northern California are shown in Table 2. Results of all attempted surveys are discussed below.

Humboldt and Del Norte Counties

Aerial surveys of Humboldt and Del Norte counties were conducted in 1977, 1978, and 1980 (Table 3). A ground survey was conducted in early June, 1982, by headquarters personnel in known nesting areas except for the Elk River area (drainage), southeast of Humboldt Bay. Only 5 active nests were found; 15 inactive or of unknown status, 35 were not checked, and 48 were not located. Poor survey results were due to the in-accessability by roads of many of the nests, the poor visibility of nests from the ground, and time limitations. The Elk River area was surveyed by Riggs Johnston (pers. comm.) of the Elk River Timber Company. Out of 25 nests checked, 16 were active and young were observed in 7 (from the ground). Four nests are on platforms constructed by the timber company in 1978. Two of these platform nests were active.

Mendocino County

A ground survey of nesting areas in Mendocino County was conducted by headquarters personnel in late June, 1982, yielding data on 7 active nests, 9 of unknown status and 3 inactive; 16 were not checked, and 20 not located. The major concentration site of Osprey nesting in Mendocino County is at Usal Creek. During a 1977 survey 27 nest sites were (activity unknown) in this area. French (1972) found 32 sites at Usal Creek, 20 of which were active. Only 8 sites were found in 1982. Again, ground inaccessability,

Table 1. Known Osprey nest sites in California - 1967-1972, and 1982 (does not reflect nest site activity).

County	Number of Nest Sites 1967-1972	1982
Del Norte	5	6
Humboldt	94	103
Sonoma	34	NC[1/]
Mendocino	36	58
Marin	12	15
Lake	3	3
Lassen	43	40[2/]
Plumas	30	63
Siskiyou	25	44
Shasta	29	29[3/]
Trinity	16	NC
Inyo	1	NC
Mono	1	NC
Sierra	1	NC
Madera	1	1
Sutter	1	NC
Tehama	2	NC
Kern	0	1[4/]
TOTAL	334	363

1/ Not checked
2/ Includes artificial nest poles at Eagle Lake
3/ Number of active nests only
4/ Artificial nest pole at Lake Isabella

Table 2. Summary of Reproductive Success of Ospreys in Eight Major Nesting Areas, 1982.

Location	Number Occupied	Number Successful	Number Young	% Successful (#Succ./#Occ.)	No. Occ. Young/Nest	No. Succ. Young/ Nest
Lake Almanor	28	18	37	64	1.32	2.06
Butt Valley Res.	3	1	1	33	0.33	1.00
Antelope Lake	2	1	2	50	1.00	2.00
Eagle Lake (inc. McCoy Flat Res.)	22	14	35	64	1.60	2.50
Shasta Lake	21	17	29	81	1.38	1.71
Klamath River	26	No Data	18+	--	No Data	---
Elk River	16	No Data	7+	--	No Data	---
Kent Lake	15	12	21	80	1.4	1.8

Table 3. Results of aerial Osprey surveys in Humboldt and Del Norte counties, 1977, 1978, and 1980.

Year	Active Nests	Indactive Nests	Nests Not Found	Nests Not Checked	Total
1977	34	49	84	No Data	167
1978	36	23	69	33	161
1980	43	63	64	10	180

poor visibility of nests from the ground, and time limitations (only a few hours were spent in the area) contributed to incomplete survey results.

Sonoma and Lake Counties

Osprey surveys in Sonoma and Lake counties were done incidentally to a heron and egret rookery survey. Four active nests were seen along the Russian River and two were found at Clear Lake. Several Ospreys were sighted along the Sonoma County coast, but time limitations prevented searching for nests.

Marin County

At Kent Lake, Marin County, nesting has increased from 7 active nests in 1975 (Benny et al. 1978) to 11 in 1981 and 15 in 1982. Production of young in 1982, however, was lower (1.4 young/occupied nest) than in 1981 (2.2 young/occupied nest).

Lake Almanor

The Lake Almanor /Osprey population has been intensively studied from 1969-1971 and from 1975 to the present. Airola and Shubert (1981) report a marked increase in number of birds and reproductive success during this time. Production in 1982 was slightly lower than in 1981, probably due to a late storm which left snow on many nests through mid-April. This caused many birds to delay nest building by as much as 3-4 weeks (D. Airola, pers. comm.).

The number of young produced per occupied nest was found to be the most reliable indicator of reproductive success (Airola and Shubert 1981). At Lake Almanor, the number of young per occupied nest increased from 0.7 in 1969 to 1.58 in 1981 and 1.32 in 1982. Since intensity of survey efforts varied from year to year, this may not indicate a population increase, but almost certainly indicate the population has not declined. Henny and Wight (1969) determined that in order to maintain stable osprey populations in the eastern United States, the number of young per occupied nest should be between 0.95 and 1.30.

Eagle Lake

Osprey reproduction at Eagle Lake has varied somewhat from year to year since 1969, but has remained relatively high. The number of young per occupied nest was 1.6 for 1982 (including one active nest at McCoy Plat Reservoir), about the same as in 1981 (1.58), and higher than 1980 (1.17) (Lon, Schultz, pers. comm.).

Butt Valley Reservoir and Antelope Lake

Three occupied nests were found in 1982 at Butt Valley Reservoir, and two at Antelope Lake. Reproductive rates were 0.33 young per occupied nest, and 1.00 young per occupied nest, respectively (Gary Rotta, pers. comm.).

Shasta Lake

The Shasta Lake Osprey population has been studied since 1972. Reproductive rates of this population have been generally low, although data from the last few years may indicate an increasing trend. In 1982, number of young per occupied nest was 1.38, the highest ever recorded in this area, compared with 1.15 in 1981, 0.76 in 1980, and 1.15 in 1979.

Klamath River

The Klamath River Osprey population has been surveyed since 1969. It's reproductive rate has varied considerably from year to year. In 1982, 26 active nests were found. Although the 1982 reproductive rate is not available at this writing, it has been generally high for the past few years (1.46 in 1981, 1.48 in 1980).

Southern California

Two Osprey nests were reported from southern California in 1982. One pair nested on the southwest side of Bass Lake in Madera County, and another utilized an artificial nest pole on Lake Isabella in Kern County.

ANALYSIS:

The effort to obtain a comprehensive statewide Osprey survey in 1981-82 was not successful. Although valuable data were obtained from many Osprey populations, especially those on interior lakes and resevoirs, few data were collected from other areas, most noticeably the north coast. Ground surveys of Humboldt, Del Norte, and Mendocino counties were largely unsuccessful (except for the population along the Elk River) because of lack of road access to nests, poor visibility of nests from the ground, and time limitations due to other job commitments. Surveys of the north coast have been sporadic through the years, and no standardized survey method has been used, although periodic aerial surveys were conducted in 1977, 1978, and 1980 (Table 3) and suggested a fairly stable population. The last intensive study of this area was in 1971 and 1972 by Jon French (1972). Further aerial surveys are needed to accurately census this population.

Forest Service aerial surveys of interior populations provide the most valuable information on breeding Ospreys. Dan Airola (pers. comm.), Wildlife Biologist, Lassen National Forest, has compiled detailed records of Osprey reproduction on Forest lands for the past 10 years. According to his records, overall Osprey reproduction on these lands has been adequate with possible increases in the last 5-7 years, suggesting reduced pesticide loads. Many of the areas where Ospreys currently breed in interior California are man-made reservoirs. Thus, the overall population in this area may be higher than in historical times. Reproduction in both interior and coastal populations was affected in 1982 by storms late in the season. Snow in some areas caused a delay in breeding, and late storms with strong winds appeared to have destroyed some nests and eggs or young.

Forest Service personnel have determined the easiest and most practical Osprey reproduction assessment method to be two aerial surveys; an early check in May to locate occupied nests, and a late check in early July to determine nesting success (Airola and Shubert 1981). To assess a statewide trend in numbers, a systematic flight such as that done in 1975 by Henny et al. (1978) is needed.

A more concerted effort should be made to conduct a comprehensive statewide Osprey survey as soon as it is feasible. A letter requesting Osprey nesting information could be sent to Department Regional personnel, Forest Service biologists, and private timber land owners throughout the state. Aerial surveys should be conducted wherever possible, especially along the north coast.

RECOMMENDATIONS:

1. Continue to monitor the California population of Ospreys in order to develop management policies to ensure maintenance of a viable population.

2. Improve communications between Department staff and regional personnel as well as biologists from forest land managing agencies, private timber land owners, and conservation groups that have or are willing to survey for Osprey nesting information.

3. Continue to monitor the effects pesticide contamination on Osprey populations.

LITERATURE CITED:

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Prepared by: Ronald W. Schlorff for Jan Ellen Bickett
Seasonal Aide

Approved by: Robert D. Mallette
Robert D. Mallette
Nongame Wildlife Coordinator

Approved by: Eldridge G. Hunt
Eldridge G. Hunt, Chief
Wildlife Management Branch

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