JOB PROGRESS REPORT

Schlorff, R. 1983

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tate: California

Project Number: W-54-R-15 Project Title: Nongame Wildlife Investigations

Job Number: II-2.0 Job Title: Diurnal Raptor Eyrie Monitoring Program

Period Covered: July 1, 1982 - June 30, 1983 Job Type: Survey and Inventory

SUMMARY:

During the report period information on the breeding activities of Swainson's Hawks (Buteo swainsoni) and Ospreys (Pandion haliaetus) was gathered and added to the diurnal raptor eyrie files. A total of 70 Swainson's Hawk territories were visited, 42 were active. Insufficient data were gathered to yield meaningful information on Swainson's Hawk productivity. Five fresh Swainson's Hawks eggs were taken from nests in the Central Valley in order to conduct pesticide contamination studies. No significant levels of organochlorides or PCB's were found and eggshells were of normal thickness.

A sample of 20 Osprey territories was monitored at Lake Almanor in northern California. Information was received from the U.S. Forest Service involving territories located on the Lassen National Forest. Results indicate the population is now reproducing at levels that are twice as great as during the mid-1970's.

's was the case during last report period, much of the eyrie location information has een entered into the Department's Natural Diversity Data Base, a computer listing of locality information on a number of species of plants and animals throughout the state. Data Base continues to work with information sent to them during last FY; no new element occurrences on diurnal raptors were sent during FY '82-83.

BACKGROUND:

Department of Fish and Game personnel have reported on the location of diurnal raptor eyries since the 1950's. Much of the information was gathered in an informal manner; however, records obtained in the past dozen years have been filed systematically. There has been an effort to maintain a central file containing information on raptor nest locations, breeding success, and other facts concerning the nesting activities of several species. New information is added on a continuing basis. Currently, Department eyrie files contain information on the following raptors: Turkey Vulture (Cathartus aura), California Condor (Gymnogyps californianus), Black-shouldered Kite (Elanus leucurus), Northern Goshawk (Accipiter gentilis), Cooper's Hawk (A. cooperii), Sharp-shinned Hawk (A. striatus), Swainson's Hawk, Golden Eagle (Aquila chrysaetos), Bald Eagle (Haliaetus leucocephalus), Osprey, Prairie Falcon (Falco mexicanus), Peregrine Falcon (F. peregrinus), and American Kestrel (F. sparverius).

Information on the locations of Northern Goshawk territories has been received, primarily from various National Forests within the species' range in California. More information on the Goshawk is contained in the report dealing with the Montane Forest Accipiter Study.(W-54-R-15; II-11.0).

The raptor eyrie files contain information on over 1,500 nest sites and territories that have been active both historically and recently. The files are most complete and contain the greatest number of records on Prairie Falcons (500+), Ospreys (300+), Golden Eagles (250+), Goshawks (200+) and Swainson's Hawks (150+). Files on species such as Black-shouldered Kite, Sharp-shinned Hawk, and Turkey Vultures are the least complete and no records have been entered into the Data Base on these species.

OBJECTIVE:

The primary objective is to establish base line data for use in evaluating raptor population trends. Information on the size of breeding populations and their breeding success on an annual basis is contained in the raptor eyrie files and used to monitor populations of selected raptor species and to determine research and management needs.

PROCEDURES:

Information on territory or nest site location, date of nest check, status of occupancy, number of eggs or young, and other notes are recorded on field forms. Nest and territory records are completed by Department and cooperating field personnel and forwarded to the raptor eyrie repository. Land use changes that might adversely affect nests and nesting territories are noted. These data are also entered into the computer file of the Natural Diversity Data Base.

Location information for endangered species and those popular in falconry is kept confidential to reduce human disturbance and harassment. However, this information is available to cooperating agencies and qualified personnel for use in planning activities and the design of research studies. These same agencies and personnel often are the source of new raptor eyrie information. The raptor eyrie file often functions as a starting point when a study to determine the status of a particular species is undertaken. Information gained as a result of such studies is added to the system and facilitates periodic monitoring thereafter.

Both a Swainson's Hawk ground survey and a survey of the Sacramento River from Colusa to the Delta were conducted. Nest trees also were climbed in order to obtain a sample of 5 fresh Swainson's Hawk eggs for pesticide analysis. Information on Osprey populations at Lake Almanor, Plumas County was proviced by Dan Airola, U.S. Forest Service.

FINDINGS:

Swainson's Hawk:

Surveys to locate active Swainson's Hawk territories were conducted during May and June, 1983. During surveys, a sample of 5 fresh Swainson's Hawk eggs were taken from active nests for analysis to determine pesticide loads. There were no significant levels of organochlorides in any of the 5 eggs sampled. Egg shells were of normal thickness. Detailed results of the analysis of these 5 eggs plus 3 eggs taken in 1982 are contained in the attached Pesticide Laboratory Report.

Ground and river surveys have resulted in expanded nest site information on Swainson's Hawks (Table 1). Results of the river survey indicated that certain portions of the Sacramento River were much more valuable as Swainson's Hawk nesting habitat than others (Table 2; maps 1-15). Of a total of 141 river miles of survey area or 282 miles of stream bank, suitable habitat existed on 41 miles of stream bank. The remaining 85%

Swainson's Hawk Territories, Central and Owens Valley Survey 1979-83

County	Year	No. of Known Territories	No. of Territories Checked	Number of Active Territories
Butte	1979	1	1	1
	1980	2	1	1
	1981	2	0	0
	1982	4	2	2
	1983	4	0	0
Colusa	1979	3	3	3
	1980	4	4	2
	1981	9	6	6
	1982	11	11	3
	1983	12	11	5
Glenn	1979	2	2	2
	1980	2	0	0
	1981	2	1	1
	1982	2	0	0
	1983	2	0	0
Inyo	1979	0	0	0
	1980	0	0	0
	1981	1	1	1
	1982	2	1	1
	1983	2	1	1
Merced	1979	7	7	7
	1980	7	0	0
	1981	7	0	0
	1982	7	0	0
	1983	7	3	2
San Joaquin	1979	9	9	9
	1980	10	5	1
	1981	16	8	8
	1982	19	17	5-6
	1983	22	13	10
Sacramento	1979	11	11	11
	1980	12	12	4
	1981	22	14	12
	1982	27	20	13
	1983	34	19	14
Solano	1979	0	0	0
	1980	0	0	0
	1981	0	0	0
	1982	2	2	2
	1983	4	3	3

TABLE 1 (Continued)

Swainson's Hawk Territories, Central and Owens Valley Survey 1979-83

County	Year	No. of Known Territories	No. of Territories Checked	Number of Active Territories
Stanislaus	1979	4	4	4
	1980	4	0	0
	1981	4	0	0
	1982	4	1	0
	1983	4	3	0
Sutter	1979	7	7	7
	1980	9	3	1
	1981	10	3	3
	1982	14	11	7
	1983	17	8	7
Yolo	1979	16	16	16
	1980	18	17	8
	1981	29	19	15
	1982	38	25	15-19
	1983	42	17	14
Total	1979	60	60	60
	1980	68	42	17
	1981	102	52	46
	1982	130	90	51
	1983	150	78	42

SURVEY OF RIPARIAN ZONE OF
SACRAMENTO RIVER FOR NESTING SWAINSON'S HAWKS
AND OTHER STICK NESTING RAPTORS, 1983

Swainson's Hawk and Other Raptor
Sighting and Territory Frequencies

	Section of Sacramento River				
	Colusa-Fraziers Landing	Steiner Bend Knights Landing	Knights Landing-Discovery Park	Discovery Park-Hood	Hood-Grand Island
Swainson's Hawks per river mi.	4/28; 0.14	5/27; 0.19	18/30; 0.60	3/21; 0.14	4/35; 0.11
River mi. per hawk	28/4; 7.0	27/5; 5.4	30/18; 1.7	21/3; 7.0	35/4; 8.8
Swainson's territories per river mi.	3/28; 0.11	4/27; 0.15	14/30; 0.47	2/21; 0.10	3/35; 0.09
River mi. per terr.	28/3; 9.3	27/4; 6.8	30/14; 2.1	21/2; 10.5	35/3; 11.7
Swainson's per suitable hab. mi.	4/10; 0.40	5/6; 0.83	18/20; 0.90	3/3; 1.0	4/2; 2.0
Suitable hab. mi. per hawk	10/4; 2.5	6/5; 1.2	20/18; 1.1	3/3; 1.0	2/4; 0.50
Swainson's terr. per suitable mi.	2/10; 0.30	4/6; 0.67	12/20; 0.60	2/3; 0.67	3/2; 1.5
Suitable mi. per Swainson's terr.	10/3; 3.3	6/4; 1.5	20/12; 1.7	3/2; 1.5	2/3; 0.67
Other raptors per river mi.	10/28; 0.36	23/27; 0.85	22/30; 0.73	3/21; 0.14	1/35; 0.03
River mi. per other raptor	28/10; 2.8	27/23; 1.2	30/22; 1.4	21/3; 7.0	35/1; 35.0
Other raptor terr. per river mi.	10/28; 0.36	14/27; 0.52	15/30; 0.50	3/21; 0.14	1/35; 0.03
River mi. per other raptor terr.	28/10; 2.8	24/14; 1.9	30/15; 2.0	21/3; 7.0	35/1; 35.0
Other raptor per suitable hab. mi.	10/10; 1.0	23/6; 3.8	22/20; 1.1	3/3; 1.0	1/2; 0.50
Suitable hab. mi. per other raptor	10/10; 1.0	6/23; 0.26	20/22; 0.91	3/3; 1.0	2/1; 2.0
Other raptor terr. per suitable mi.	10/10; 1.0	14/6; 2.3	15/20; 0.75	3/3; 1.0	1/2; 0.50
Suitable mi. per other raptor	10/10; 1.0	6/14; 0.43	20/15; 1.3	3/3; 1.0	2/1; 2.0

of the banks of the portion of the Sacramento River that was surveyed was either denuded of all vegetation and rip-rapped or had trees that were not suitable for nesting Swainson's Hawks.

During 1983 the California Fish and Game Commission, acting in response to recommendations of the Department based on recent surveys and monitoring of Swainson's Hawk populations, placed the species on the list of Rare birds in California. By doing so, the Commission has acted to afford greater protection to the Swainson's Hawk and its habitats and directs that greater effort be expended to effect recovery of the species in California.

The importance of the riparian vegetation to other species of stick-nesting raptors has also been documented (Table 2; maps 1-15). Red-tailed Hawks were the most abundant raptors on the River Survey Route and the 29 territories located were in habitats virtually identical to those chosen by Swainson's Hawks. There were also 3 Great-horned Owl (Bubo virginianus), 2 Red-shouldered Hawk (B. lineatus), and 1 Long-eared Owl (Asio otus) territories located on the River Survey Route.

Osprey:

Results of the U.S. Forest Service's 1983 Osprey Survey at Lake Almanor (Table 3) and the reproductive success trend (based on number of young per occupied nest) shows the population has begun to recover from its low levels during 1969 to 1975 (Figure 1). Both the number of young per occupied nest (1.40) and the number of young per successful nest (2.13) are at levels sufficient to maintain population stability.

Even though pesticide use within Osprey range now appears not to be significant enough to cause reproductive failure, disturbance caused by logging activities and the potential for loss of snags and live nest trees continues to threaten the population on both public and private lands.

ANALYSIS:

Swainson's Hawk:

The 1983 Sacramento Valley Swainson's Hawk Survey was the second most extensive since the original work completed in 1979. The number of known territories in 1979 equaled 53, and by 1982, the number increased to 150. New territories are added each year as birds move from site to site within a general area of suitable habitat.

Swainson's Hawks are highly territorial and unless a death occurs in one member of a pair, they will continue to use the same grove or tree for the life of the birds. Females are known to reoccupy the same territory after the death of the male. It is unclear what happens when the female dies. The male may move to another territory to find a new mate. Since there are new territories constantly being located in the Valley as some of the 1979 territories are no longer being used, this may indicate an unstable population with a high adult turnover rate (Bloom, pers. comm.). Thus it appears a general area of suitable habitat is a better indicator of territory than is a nest site. Actual nest sites have been located in only about 50% of all territories.

There is increasing evidence that the status of Swainson's Hawks in the Sacramento Valley is determined by habitat quality. Toxic pesticide accumulation was suggested as contributing to the species' decline in the 1979 study. Since that time, 8 fresh eggs have been collected during the 1982 and 1983 surveys and analyzed for pesticide

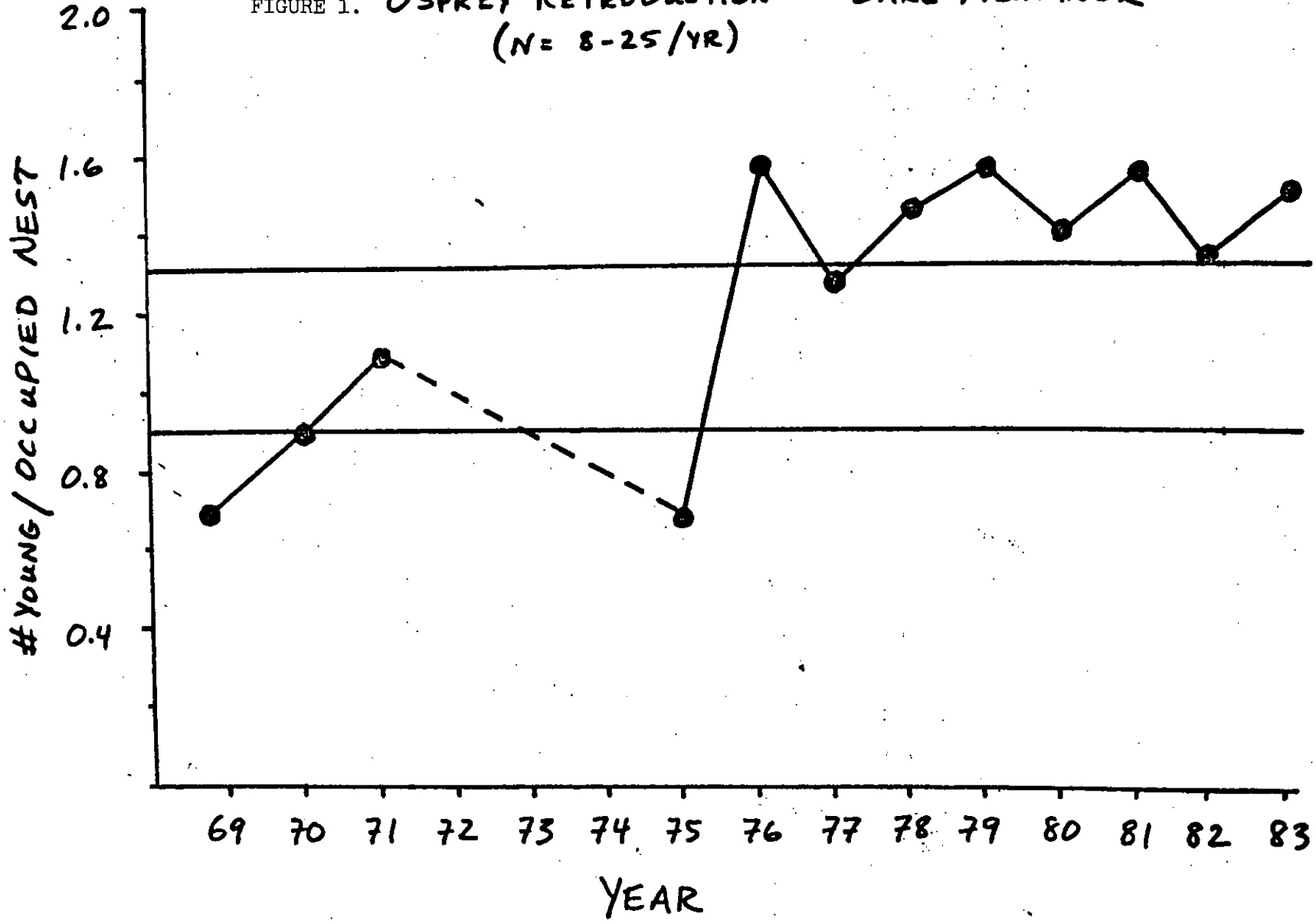
TABLE 3

1983 Lake Almanor Osprey Survey Results

# Occupied Nests	29 (+6)[a/]
# Successful Nests	20 (+3)
# Young Produced	43 (+6)
% Nests Successful	20/29 = 69% (23/35 = 66%)
# Young/Occupied Nest	43/29 = 1.48 (49/35 = 1.40)
# Young/Successful Nest	43/20 = 2.15 (49/23 = 2.13)

a/ Numbers in parentheses are values for nests, found late in the season.

FIGURE 1. OSPREY REPRODUCTION - LAKE ALMANOR
(N= 8-25/YR)



content. No significant levels of toxic substances were found and eggshells are of normal thickness. It now appears that pesticides are not a factor in the decline or continued low population size of Swainson's Hawks in California. A survey of the Sacramento River from Colusa to the Delta also indicates the importance of habitat quality. Twenty-four territories were located during the survey and although there was adequate nesting habitat in several portions of the area covered, most of the 141 miles of river was unsuitable as nesting habitat for Swainson's Hawks. The results can be partially attributed to a large reduction in potential foraging area, caused by replacing annual crops with orchards as well as the loss of nest trees.

Each year the amount of information contained in eyrie files increases, but the efficient use of such files cannot keep pace with the volume of data. It is encouraging, however, to have input into the data file from a variety of sources. These include unit managers, biologists from federal agencies, environmental consultants, and contract personnel conducting Department studies. The data files contain sufficient information to determine population trends of certain species.

As the volume and complexity of information in eyrie data files increases, it is evident that the best way to maintain efficient use of such files is to computerize them via the Natural Diversity Data Base and other systems. The ideal system would allow input from several sources within and outside the Department. Access to information in certain species' files would have to be kept confidential, but could be available to qualified researchers and agency personnel with a need to know.

Ironically, more is known about the population status of the less common species than raptors such as Red-tailed Hawk (B. jamaicensis), Turkey Vulture, and American Kestrel. Since it has always been assumed these species were abundant and not threatened in any way, no effort has been made to study their populations. It will be important to establish a baseline population level for such species should they show signs of decline in the future. It must be remembered that the Swainson's Hawk was once an abundant and widely distributed species in California; now it's Rare.

Osprey:

Results of Osprey surveys conducted by the U.S. Forest Service and the Department indicate that the declines in the '60's and '70's attributed to pesticide contamination of the Osprey food chain and resultant reproductive failure has largely disappeared in the late '70's to early '80's. However, the threat of habitat disturbance and loss continues, especially on private timber lands. Thus, even though the problems associated with pesticide contamination appear to have abated, there is still reason to closely monitor the population trends of Ospreys in California.

RECOMMENDATIONS:

1. Continue to gather baseline population and productivity information on species of diurnal raptors nesting in California.

2. Monitor habitat disturbance and destruction caused by activities such as logging, agricultural development, etc.

3. Computerize information via the Natural Diversity Data Base and "in-house" programs and develop a system that can be expanded and utilized by a greater number of researchers within and outside the Department.

4. Maintain confidentiality of certain file information to protect sensitive and endangered raptors from disturbance and illegal take.

5. Determine, through monitoring, if annual productivity is sufficient to maintain populations of these species.

Prepared by: Ronald W. Schlorff
Ronald W. Schlorff
Wildlife Biologist

Approved by: _____
Robert D. Mallette
Nongame Wildlife Coordinator

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