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DISTRIBUTION, ABUNDANCE, AND PRODUCTIVITY OF OSPREYS IN INTERIOR ALASKA

by

Jeffrey Hughes

NONGAME WILDLIFE PROGRAM REPORT

1985

This is a progress report on a survey and inventory project designed to determine the distribution, abundance and productivity of nesting ospreys (*Pandion haliaetus*) in interior Alaska. The objectives of this report are to provide wildlife managers with data gathered during 1985, and summarize the results of the past 3 years. Information regarding the distribution and abundance of nesting ospreys in Alaska is sparse. An historical review of the problem, general strategy and objectives for this project are contained in a problem analysis[1] and will not be reiterated in this paper.

The project was initiated by Nongame Wildlife Program biologists, who have received field assistance from other ADF&G biologists. This ongoing survey involves locating osprey nests and banding nestlings in those nests that are active. The information generated as a result of this project will facilitate management of this raptor.

Areas Surveyed and Methods

Field work in 1985 (as in previous years), was conducted in the Susitna Valley close to Talkeetna (PR), near Tok on the Tetlin Reservation (TR) and adjacent Tetlin National Wildlife Refuge (NWR), and Shaw Creek (SC) near Delta Junction. The river, lake and marsh habitats in these areas support a variety of fish and wildlife populations. Abundant prey populations of whitefish (*Coregonus* spp.), Arctic grayling (*Thymallus arcticus*) and northern pike (*Esox lucius*) make these areas particularly attractive to nesting ospreys.

Osprey nests were located on foot and by aerial reconnaissance. Nesting success data were collected by climbing into nests and/or aerial surveys. A Lake Amphibian (LA 4-200) aircraft, flown at approximately 60 mph at an altitude varying between 200-500 feet, was used for surveys in the Tok area. There was 1 observer in addition to the pilot. Nests containing young birds were approached on foot to evaluate the possibility of climbing into the nest and banding immature ospreys. The nests at Shaw Creek (40-84) and Petersville Road (16-83) were approached on foot and checked for breeding activity.

Results

Forty-eight osprey nests were located and checked for nestlings during 1985. Fifteen of these nests were observed for the first time during this year's surveys. Two inventoried nests were demolished and 7 other inventoried osprey nests were not relocated and presumed

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[1] Survey and Inventory Project: To determine the Distribution, Abundance and Productivity of Nesting Ospreys. On file with ADF&G Nongame Wildlife Program, Anchorage Regional Office.

destroyed. Forty-six nests were located in the tops of live conifer trees, 1 nest was atop a microwave tower; and 1 nest was built on a power transmission-line structure. Thirty-nine nests were located on the TR (maps 1 & 6), 6 nests were found on the NWR (map 2), 2 nests were in the PR (map 3) and 1 nest near SC (map 4). The perimeter of numerous lakes (maps 1, 2, & 6) on the TR and NWR were thoroughly examined for osprey nests in approximately 8 hours of aerial surveying. There was no aerial survey for osprey nests in the PR and SC areas.

Nest status* and fledging success for 1985 are summarized in Table 1. Twenty-two of the nests observed (46%) were active, and of these active nests, 9 nests (41%) contained nestlings. Three nests (33%) contained 2 young, while 6 nests (66%) held a single young osprey. The annual productivity** for 1985 was 0.55 (Table 2). In osprey nests that contained fledgings, there were 1.33 birds per nest. Three nests each contained 1 unhatched egg at the time of the survey in early August. Two dead young were discovered beneath an empty nest. Ten young ospreys in 8 nests were banded.

Twenty-six of the nests observed (54%) were inactive. Inactive nests were unattended by an adult osprey during the season and were in a state of disrepair. Five of the inactive nests were classified as supernumerary nest sites (Table 1).

Seven bald eagles nests were observed during the aerial survey of TR and NWR (Map 1). Three nests were active and contained a total of 4 young eagles. We did not band any nestling eagles. Four nests were apparently inactive.

Discussion

This was the third year of an ongoing survey and inventory project to determine the distribution, abundance and productivity of ospreys nesting in interior Alaska. Our efforts to date include 29 young ospreys banded, 1 band recovered, 3 infertile eggs collected for pesticide analysis, and 56 osprey nests located, mapped, and monitored for breeding activity in interior Alaska. Although the progress of this project is encouraging, the results are preliminary and should be interpreted with caution until more information becomes available.

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* An active nest is one in which eggs were laid, an adult was seen in an incubating position, or the pair became excited when the nest was closely approached.

** Productivity is the number of young fledged per active nesting pair.

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Table 1. Nest status, young produced and fledging success of ospreys nesting on the Tetlin Reservation (TR), Tetlin National Wildlife Refuge (NWR), Susitna Valley (PR), and Shaw Creek (SC) during 1985.

Location/Number	Status	Young Produced	Fledged
TR/01-83	Active	2	0
TR/02-83	Active (nest and tree destroyed)	2	0
TR/03-83	Active	2	2
TR/04-83	Inactive	-	-
TR/05-83	Active	1	1
NWR/06-83	Inactive	-	-
TR/07-83	Active	1 egg observed	0
TR/08-83	Inactive (super-numerary nest)	-	-
TR/10-83	Inactive	-	-
TR/11-83	Active	0	0
NWR/12-83	Nest not located; probably destroyed	-	-
NWR/13-83	Inactive (decrepit nest)	-	-
NWR/14-83	Active	0	0
NWR/15-83	Inactive (super-numerary nest)	-	-
PR/16-83	Active	1 egg recovered	0
TR/17-84	Nest not located	-	-
TR/18-84	Active	0	0
TR/19-84	Nest not located	-	-
TR/20-84	Inactive	-	-
TR/21-84	Nest not located	-	-
TR/22-84	Active	1	1
TR/23-84	Nest not located	-	-
TR/24-84	Nest not located	-	-
TR/25-84	Active	0	0
TR/26-84	Active	1	1
TR/27-84	Inactive (decrepit nest)	-	-
TR/28-84	Nest not located	-	-
TR/29-84	Active	1 egg observed	0
TR/30-84	Inactive (super-numerary nest)	-	-
TR/31-84	Active	2	2
TR/32-84	Inactive	-	-
TR/33-84	Active	1	1
TR/34-84	Inactive (decrepit nest)	-	-
TR/35-84	Active	0	0
TR/36-84	Inactive	-	-

Table 1. (cont'd)

Location/Number	Status	Young Produced	Fledged
TR/37-84	Inactive (decrepit nest)	-	-
TR/38-84	Inactive	-	-
TR/39-84	Inactive	-	-
SC/40-84	Active (nest destroyed)	0	0
NWR/41-84	Inactive	-	-
TR/42-85	Inactive (decrepit nest)	-	-
TR/43-85	Active	2	2
TR/44-85	Active	0	0
TR/45-85	Inactive (super-numerary nest)	-	-
TR/46-85	Inactive	-	-
TR/47-85	Inactive (super-numerary nest)	-	-
TR/48-85	Inactive	-	-
TR/49-85	Inactive	-	-
TR/50-85	Inactive (decrepit nest)	-	-
TR/51-85	Active	1	1
TR/52-85	Inactive (decrepit nest)	-	-
TR/53-85	Active	0	0
TR/54-85	Inactive	-	-
TR/55-85	Inactive	-	-
PR/56-85	Active	1	1

In interior Alaska, osprey reproductive success appeared to be reduced during 1985 over the previous 2 years (Table 2). P. Schempf[2] and D. Roseneau[3] (pers. comm.) reported low nesting success in other Alaskan raptors this year. Spring and early summer weather (lingering snow cover and low temperatures) provided poor nesting conditions for ospreys. Local storms disrupted nesting and were probably the ultimate cause of several nesting mortalities.

Three nesting attempts were apparently thwarted by strong winds. The leaning spruce supporting nest 02-83 was toppled by a severe storm in the Tetlin area during July; this nest contained at least 2 young birds (D. Stearns[4], pers. comm.). Nests 02-83 and 01-83 were located on the same lake and we assumed the 2 young found dead beneath nest 01-83 were probably blown from the nest and perished as a result of the storm that destroyed nest 02-83. Nest 40-84, built atop an electric utility tower, located along Shaw Creek, was destroyed by strong winds on 30 May. The nest was attended by a pair of ospreys and active prior to the storm, however the pair did not attempt to renest.

Forty-five nests (95%) were located on the TR and NWR. The majority of our aerial survey time was spent in these 2 areas and not surprisingly, most of the young were enumerated on TR and NWR. Unfortunately, our survey efforts reflect what we know, to a great extent, and not what we hope to learn, i.e., the distribution of nesting ospreys. However regrettable, we can only afford to conduct aerial surveys in areas of known breeding concentrations.

Productivity is the number of young fledged per active nesting pair. Productivity in 1985, 0.55 fledglings per active nesting pair, was considerably lower, than the figure calculated for 1984, 0.84 fledglings per active nesting pair (Table 2). Over the past 3 years, 3 nests have consistently held young birds (Appendices A and B). Breeding pairs at 3 nests, 01-83, 02-83, and 03-83, have produced nestlings annually, 1983-85. Forty-one percent of the young ospreys in the Tetlin area were raised in these 3 nests. Several explanations (at least 1 per biologist) exist for this observation.

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[2] P. Schempf, Project Leader, Raptor Management Studies, USFWS, Box 1287, Juneau, AK 99802.

[3] D. Roseneau, LGL Alaska, Inc., 3549 College Road, Fairbanks, AK 99701.

[4] D. Stearns, Refuge Manager, Tetlin National Wildlife Refuge, Box 115, Tok, AK 99780.

Sixty-five percent of the fledglings produced on TR and NWR the past 3 years were found in nests adjacent to Island Lake and Fish Lake (Merganser Lake). These bodies of water appear to be medium-aged (well-scalloped edge), cave-in lakes. Island Lake apparently does not contain fish while Fish Lake seasonally supports 2 potential osprey prey, northern pike and whitefish.

Table 2. Osprey productivity from 1983-85 for interior Alaska.

Year	Active Nests	Nests with Young	Young Produced	Young Fledged	Productivity
1983	8	4	9	9	1.13
1984	19	9	18	16	0.84
1985	22	9	16	12	0.55

Three critical assumptions affect the accuracy of the productivity statistic. The first supposition is the classification of nests as active or inactive. This year, as in the past, nests were categorized on the basis of 1 aerial survey flown late in the breeding season. We have been unable to get a thorough survey completed early in the nesting season. This bias leads to an underestimate of the number of active nests and increases the productivity estimate. At least 2 surveys are necessary: an initial one in May to determine the location and number of nesting pairs and another in late July or early August to count the young produced. Supernumerary nest sites also affect the classification of nests as active or inactive. In southeastern Alaska, most osprey pairs build and maintain 2 nests in proximity[5]. Obviously, multiple visits throughout the nesting period improves the accuracy of the data collected.

The second assumption is that we censused all the nests and young produced in the Tok, Susitna Valley and Delta Junction regions. Undiscovered nests affect the abundance estimates and possibly the productivity calculations. This bias can be reduced by sharing information and coordinating activities with the Tetlin Refuge staff and local ADF&G personnel. Osprey nesting information can be gathered, often at no additional cost, during aerial waterfowl or other wildlife surveys.

[5] Hughes, J. H. 1982. The osprey in southeast Alaska. Pp. 197-204 In Proceedings of a symposium and workshop raptor management and biology in Alaska and western Canada. USDI, USFWS, Anchorage, AK. 335 Pp.

Our productivity estimate is contingent on the third assumption that the nestlings we observed this year in early August would successfully fledge. The young we observed were approximately 14 to 30 days from fledging. This estimate is based upon feather development. The 10 young banded showed considerable variation in plumage development. One nestling, on 10 August, lacked body contour feathers and its primaries were only about one-third emerged from their follicles. Obviously, fledging will be later this year than in the previous 2 years. At 63° latitude, delays in fledging can be risky. The failure of nestlings to fledge would lower productivity estimates.

An artificial nest platform was erected atop the Alascom radio tower along the Petersville Road. The platform was made of electrical conduit bent into a ring approximately 36 inches in diameter. Steel reinforcing bars were welded like spokes across the ring for support and also around the perimeter the ring in an upright position to support the sides of the nest. ADF&G biologists provided the platform design and Alascom, Inc., provided the materials and labor to build and place the artificial nest structure. The materials cost less than $20.00 and it took approximately 8 hours to construct and install the platform. Nest 16-83, located on the tower, was placed intact, into this "nest basket" during April. An osprey nesting pair began using the nest in early May, and 1 unhatched egg was collected from the nest in early August.

The addled eggs in nests 07-83, 16-84 and 29-84 could be the result of an infertile egg, death of the embryo through chilling or desiccation of the egg, or pesticide contamination. One egg from nest 16-83, was recovered and forwarded to the U. S. Fish and Wildlife Service facilities at Patuxent, Maryland, for pesticide analysis and determination of shell thickness. The results will probably not be available before the end of the year. We will continue our attempts to recover any addled eggs discovered in the future.

We have had one band recovery during the project. An osprey nestling banded at TR (nest 03-83) in August 1983 was found dead near Roseville, California during November of the same year. There have been no additional band recoveries during the past year.

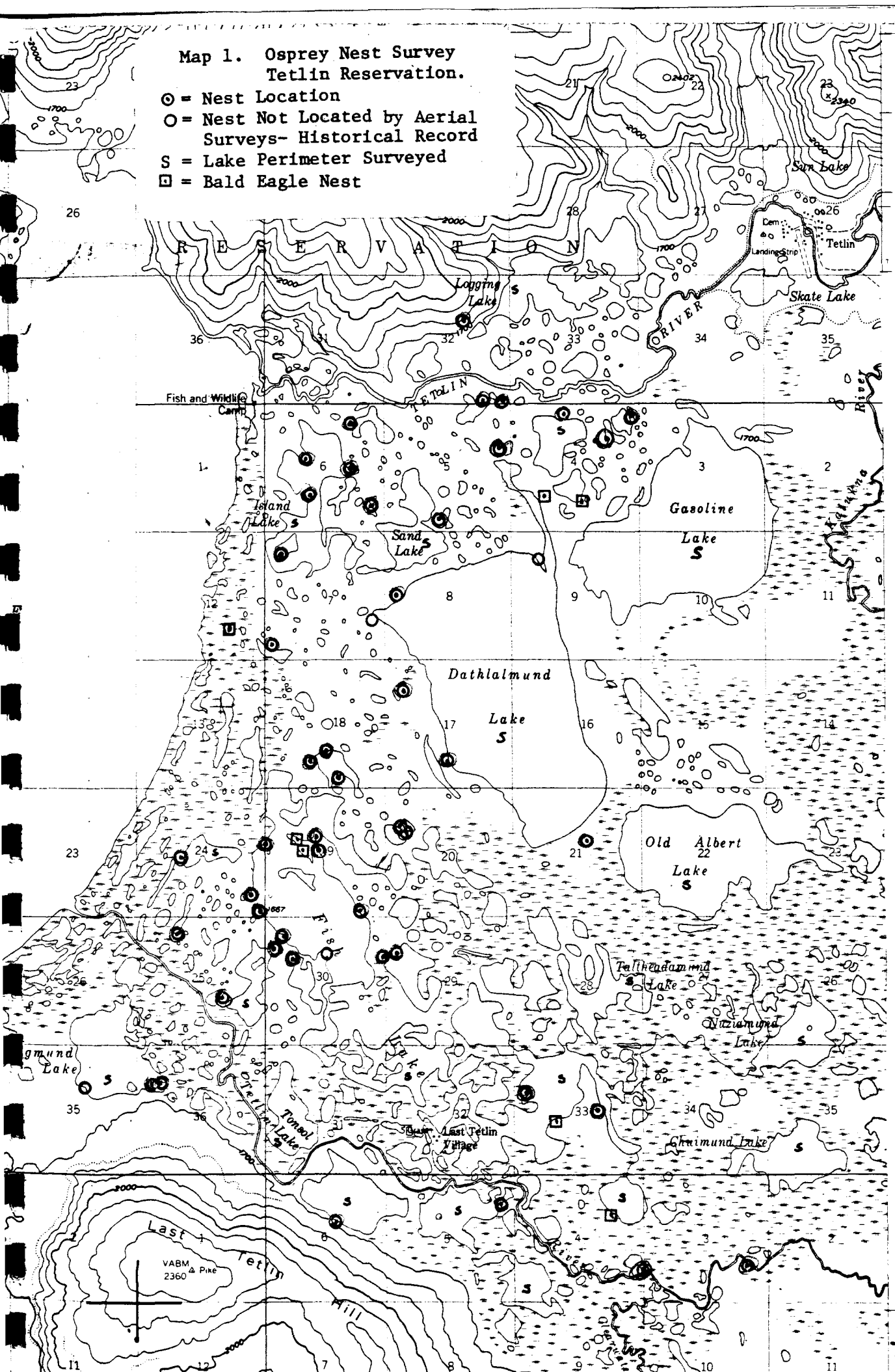
Acknowledgment - I wish to acknowledge and extend credit to Jack Whitman, John Wright, and Nancy Tankersley for field assistance; Dave Kelleyhouse, and Dave Stearns for information on the Tetlin area and help with organizing the survey; C. J. Henny for assistance with the addled egg.

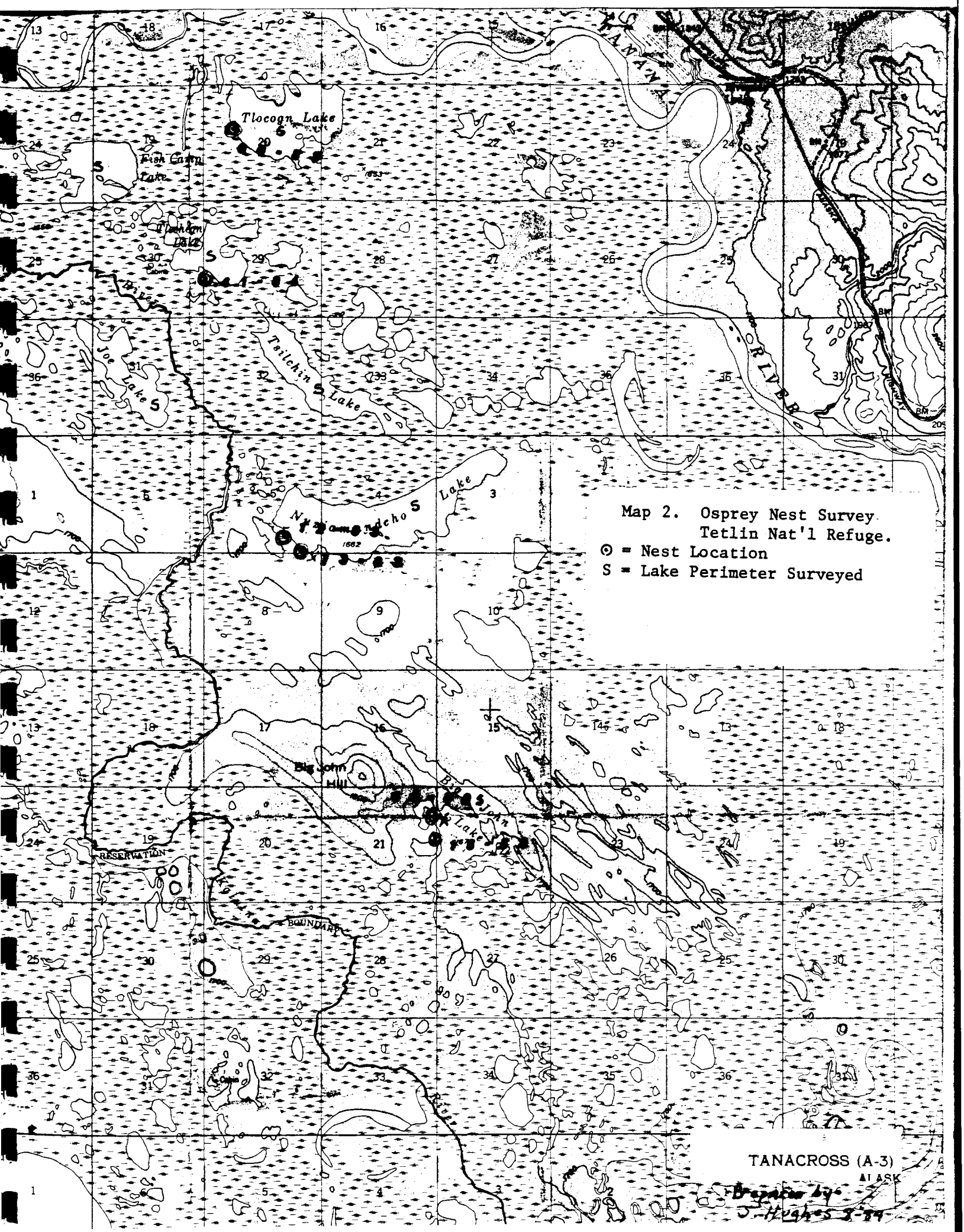
Appendix A. Nest status, young produced and fledging success of ospreys on Tetlin Reservation (TR) Tetlin National Wildlife Refuge (NWR), and Susitna Valley (PR), during 1983.

Location/Number	Status	Young Produced	Fledged
TR/01-83	Active	3	3
TR/02-83	Active	1	1
TR/03-83	Active	2	2
TR/04-83	Active	3	3
TR/05-83	Active	0	
NWR/06-83	Active	0	
TR/07-83	Active	0	
TR/08-83 through TR/11/83	Inactive	0	
NWR/12-83 through NWR/15-83	Inactive	0	
PR/16-83	Active	0	

Appendix B. Nest status, young produced and fledging success of ospreys nesting on Tetlin Reservation (TR), Tetlin National Wildlife Refuge (NWR), Susitna Valley (PR), and Shaw Creek (SC) during 1984.

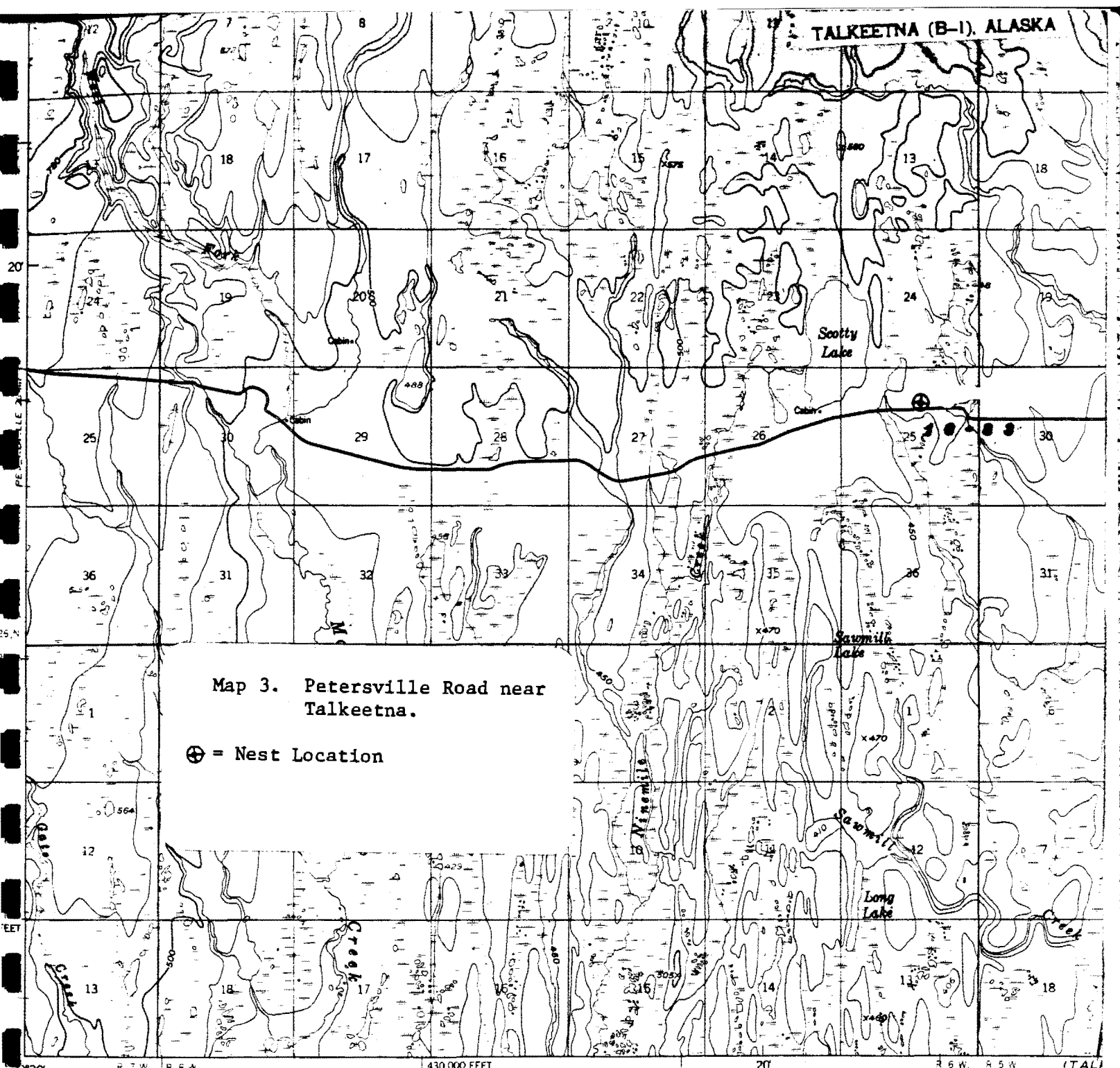
Location/Number	Status	Young Produced	Fledged
TR/01-83	Active	2	2
TR/02-83	Active	2	2
TR/03-83	Active	3	3
TR/04-83	Active	3	3
TR/05-83	Inactive	-	-
NWR/06-83	Active	0	-
TR/07-83	Active	0	-
TR/08-83	Inactive	-	-
TR/09-83	Nest not located; probably destroyed	-	-
TR/10-83	Inactive	-	-
TR/11-83	Active; nest contained 1 infertile egg		
NWR/12-83 & 13-83	Inactive	-	-
NWR/14-83	Active	2	2
NWR/15-83	Active	0	
PR/16-83	Active; nest removed from tower		
TR/17-84	Inactive	-	-
TR/18-84	Active	1	(dead in nest)
TR/19-84 through			
TR/22-84	Inactive	-	-
TR/23-84	Active; nest contained 1 egg		
TR/24-84	Inactive	-	-
TR/25-84	Active	0	-
TR/26-84 through			
TR/30-84	Inactive	-	-
TR/31-84	Active	1	0
TR/32-84	Inactive	-	-
TR/33-84	Active	0	-
TR/34-84	Inactive	-	-
TR/35-84	Active	1	1
TR/36-84	Inactive	-	-
TR/37-84	Inactive	-	-
TR/38-84	Active	0	-
TR/39-84	Inactive	-	-
SC/40-84	Active	3 (1 infertile egg)	3
NWR/41-84	Active	0	-


Map 1. Osprey Nest Survey
Tetlin Reservation.
⊙ = Nest Location
O = Nest Not Located by Aerial Surveys- Historical Record
S = Lake Perimeter Surveyed
⊡ = Bald Eagle Nest
RESERVATION
Sun Lake
Cem
Landing Strip
Tetlin
Logging Lake
Skate Lake
RIVER
Fish and Wildlife Camp
TETLIN
Island Lake
Sand Lake
Gasoline Lake
Dathlalmund Lake
Old Albert Lake
Tallhendammund Lake
Nizianund Lake
Chaimund Lake
Tonsol Lake
Last Tetlin Village
Last Tetlin Hill
VABM 2360 Pike
Prepared by
J. Hughes - 8-84.
8-85



Map 2. Osprey Nest Survey
Tetlin Nat'l Refuge.
⊙ = Nest Location
S = Lake Perimeter Surveyed

Prepared by
J. Hughes 8-84



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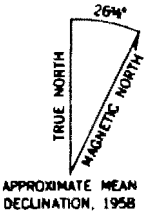
Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1951 and 1953, field annotated 1958. Map not field checked

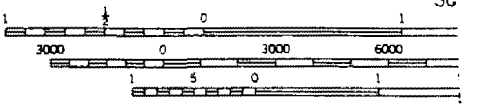
Universal Transverse Mercator projection, 1927 North American datum
10,000-foot grid based on Alaska coordinate system, zone 4
1000-meter Universal Transverse Mercator grid ticks, zone5, shown in blue

Gray land lines represent unsurveyed and unmarked locations predetermined by the Bureau of Land Management
Folio S-2, Seward Meridian

Swamps, as portrayed, indicate only the wetter areas, usually of low relief, as interpreted from aerial photographs



APPROXIMATE MEAN DECLINATION, 1958



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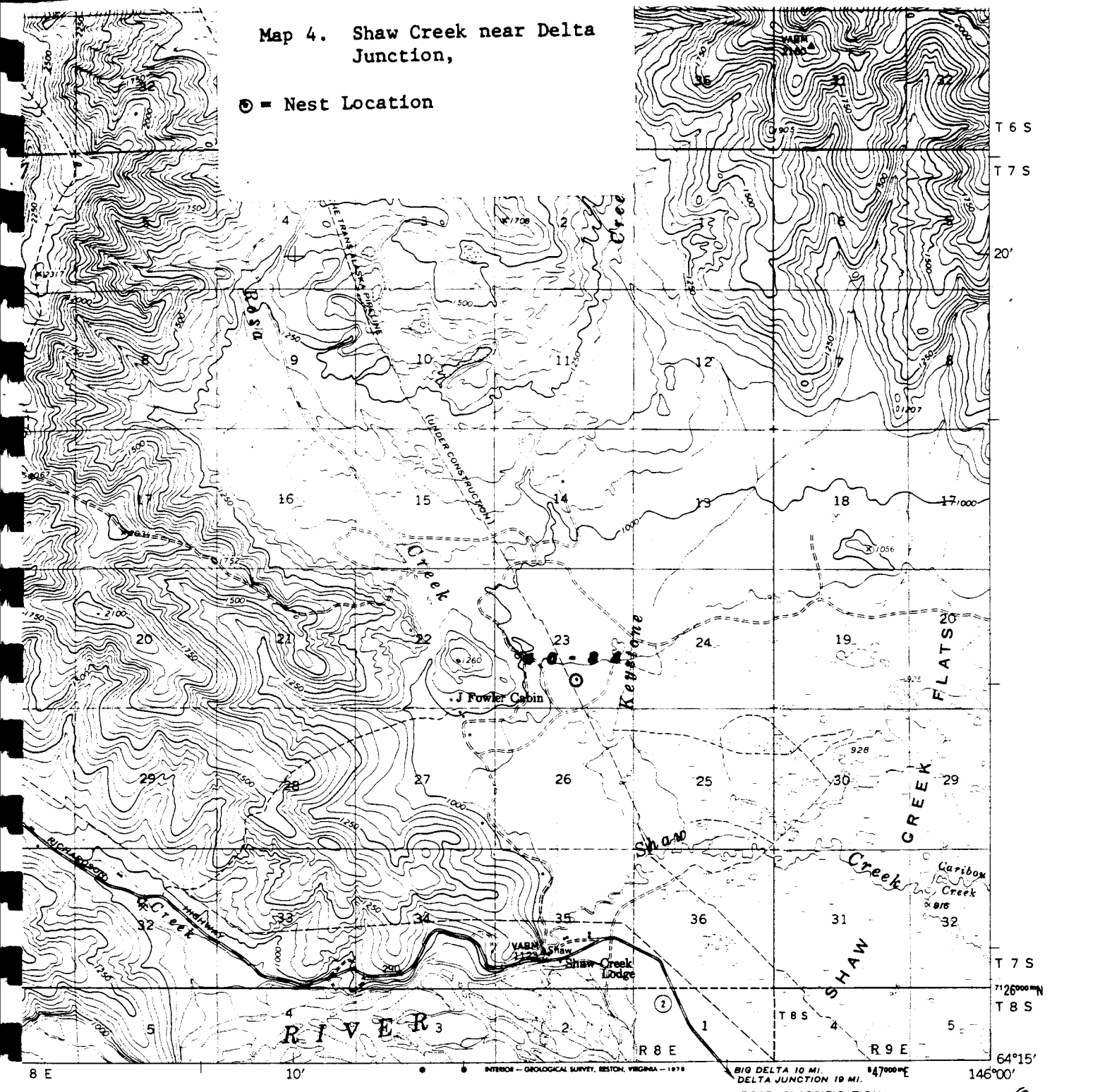
Prepared by
J. Hughes 8-84

Map 4. Shaw Creek near Delta Junction,

⊙ = Nest Location



3 4 MILES

00 15000 18000 21000 FEET

3 4 5 KILOMETRES

CONTOURS OF 1929

ROAD CLASSIFICATION

Primary highway, all weather, hard surface

Secondary highway, all weather, hard surface

Light-duty road, all weather, improved surface

Unimproved road, fair or dry weather

State Route

QUADRANGLE LOCATION

BIG DELTA (B-5), ALASKA

N6415-W14600/15X30

1949

PHOTOREVISED 1975

SURVEY

, OR RESTON, VIRGINIA 22092

S AVAILABLE ON REQUEST

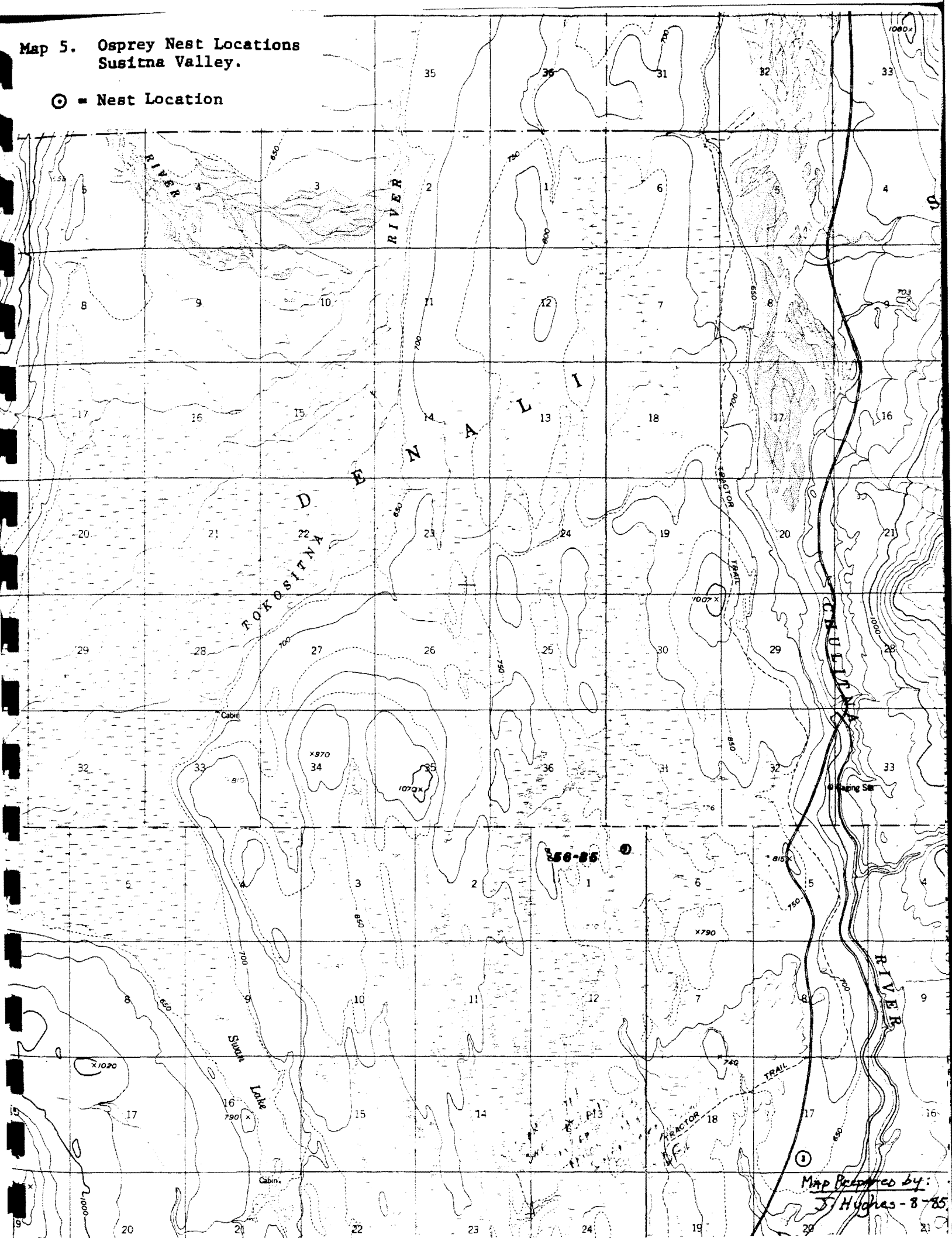
Revisions shown in purple and recompilation of woodland areas compiled from aerial photographs taken 1975

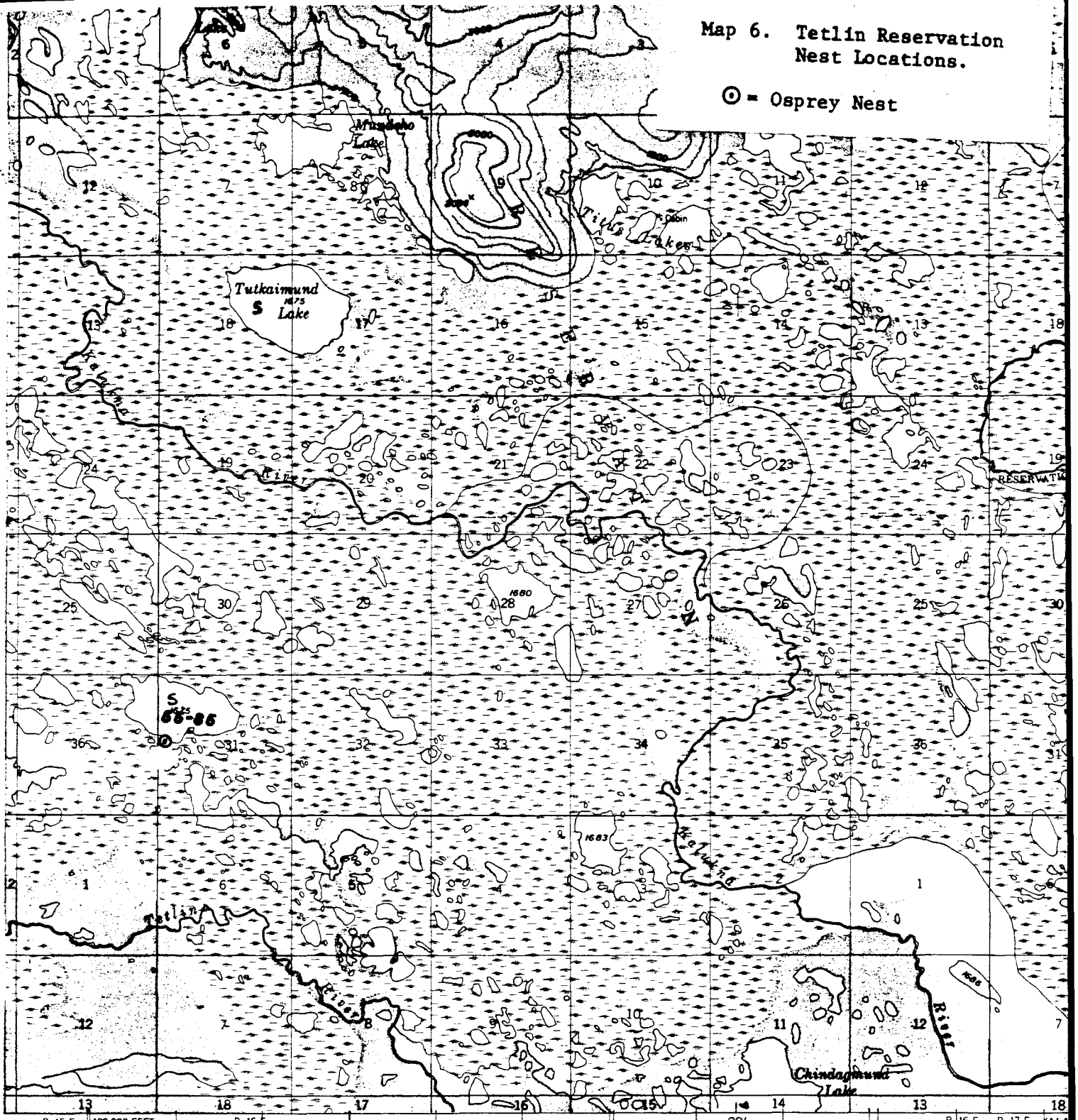
This information not field checked

Map prepared by J. Hughes 8-84

Map 5. Osprey Nest Locations
Susitna Valley.

⊙ = Nest Location





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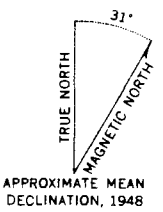
Topography by photogrammetric methods from aerial photographs taken 1948. Map not field checked

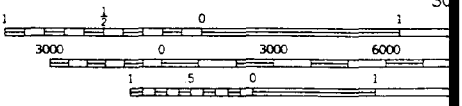
Universal Transverse Mercator projection, 1927 North American datum
10,000-foot grid based on Alaska coordinate system, zone 2
1000-meter Universal Transverse Mercator grid ticks, zone 7, shown in blue

Land lines represent unsurveyed and unmarked locations predetermined by the Bureau of Land Management
Folios CR-1, CR-2, and CR-3, Copper River Meridian

Swamps, as portrayed, indicate only the wetter areas, usually of low relief, as interpreted from aerial photographs



APPROXIMATE MEAN DECLINATION, 1948



CONTOUR
DOTTED LINES
DATUM

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FAIRBANKS, ALASKA 99701, DENVER,
A FOLDER DESCRIBING TOPOGRAPH

Map Prepared By:
J. Hughes 8-85