RAPTOR RESEARCH FOUNDATION CONTINENTAL OSPREY STATUS SURVEY–1969[1]

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This survey was undertaken to compile available information concerning studies of local Osprey populations throughout North America. The purposes of the survey were:

1. To coordinate local studies of ospreys on a continental basis.
2. To bring together individual workers for comparative discussions and problem solving.
3. To provide statistical data for analysis on a continental basis as supporting evidence about the success of this species in North America.
4. To promote further study of this species with emphasis on the ecological relationships between Ospreys and man.

In June, 1969, a three-page form was mailed to persons that I knew were presently or had recently been engaged in Osprey studies throughout North America. In October a second report was mailed indicating the progress of the survey as of 25 October. This report

[1]This report of a project of the Raptor Research Foundation Raptor Population Committee was sent in its original form to cooperators on January 20, 1970. It has been rearranged for inclusion in the *News*. This report is a tribute to the cooperation of raptor workers scattered over the continent. The picture of the continent-wide population provides a basis for evaluating the population and the status of our knowledge of this species in North America.

The cooperators and others should use this information in planning further work and in encouraging others who may be able to expand the coverage to additional populations. Ideas on methodology generated by this report should be exchanged to develop the best guide lines for future cooperators. I hope some discussion will lead to an organizational framework to provide for a continuation of this cooperation. *Byron E. Harrell, President, Raptor Research Foundation, Inc.*

included additional terminology and a list of cooperators.

Description of report. The information included in this report is the result of my evaluation and compilation of data submitted by the cooperators. The map of the United States and Southern Canada indicates the locations of Osprey studies included in this report. The reports are arranged geographically from north to south and east to west. Each state or province is assigned a code letter to identify the additional data in the maps and tabular materials; a number is added when there is more than one study in a state. Sketch maps to indicate the study area are identified by code number; specific areas are shaded. The following information is included for each study: location (state or province, county, specific location), principal investigator(s) and years when studied (with cross references to other workers), chronology of the breeding season (all dates are approximate averages unless otherwise indicated), and summary (past and present history of the study and the study area, objectives of particular study, comments and statements on nest site selection, population trend, mortality factors, prey species, and particular techniques applicable to Osprey research).

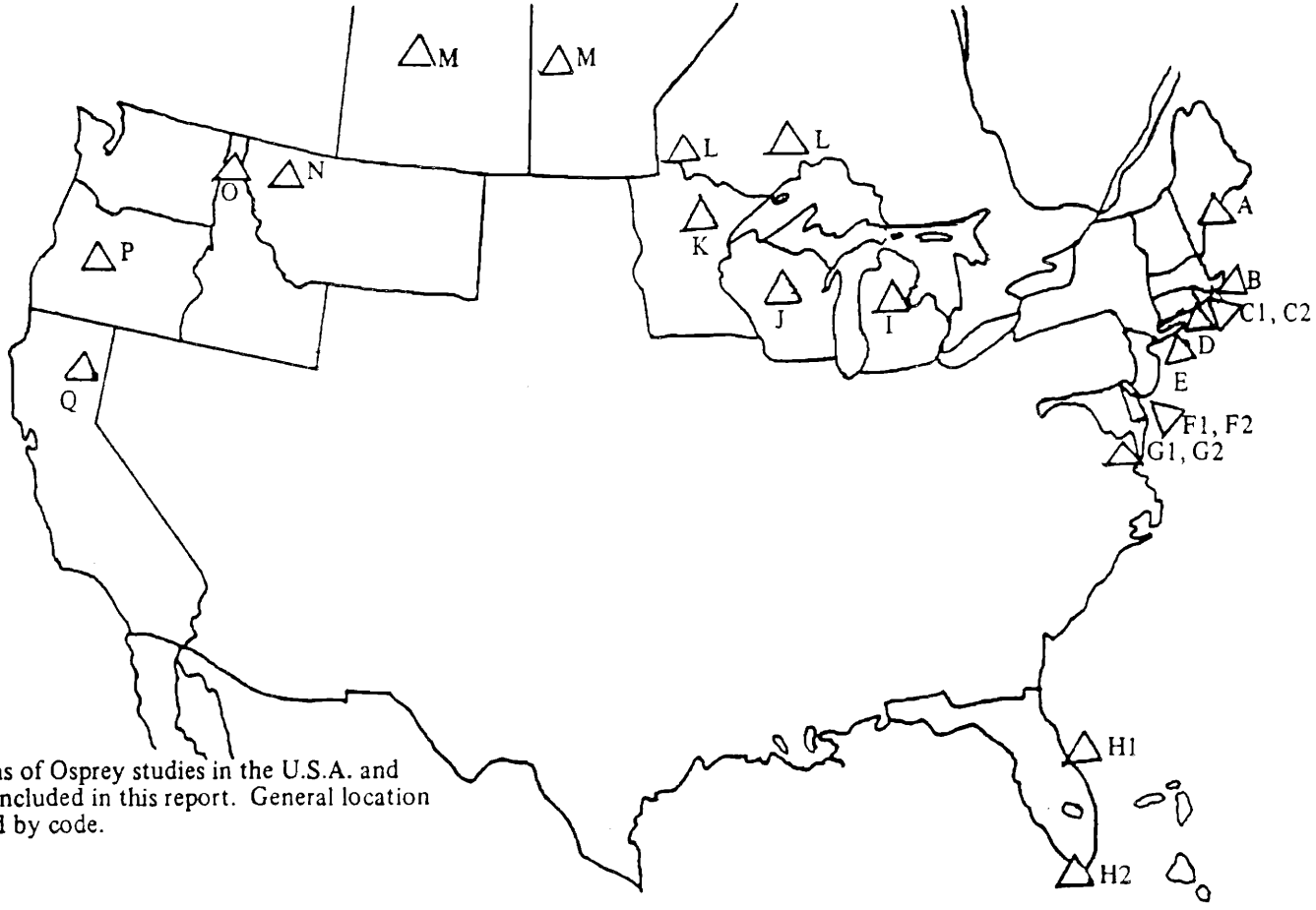
The data presented in table form include: year, number of known nests, number of active nests, number of nests with known outcome, number of successful nests, number of eggs laid, number of eggs hatched, number of young fledged, and young per successful nest. The following definitions were used:

> **Active nest**–a nest at which eggs were laid and adult bird was seen in incubating or brooding position or young in pre-flight stage of development were seen in the nest.
>
> **Successful nest**–a nest at which at least one egg was hatched and nestling(s) was seen in an advanced stage of development (just prior to fledging time) or fledglings were seen at an **active** nest.

It is now apparent that a precise terminology is necessary for a survey of this type. Persons specifically interested in the data presented in the tables should write to the investigator in order to verify procedure of censusing.

Several investigators requested that specific information be withheld from publication at this time and persons interested in these data should write to the pertinent investigator. This policy was necessary for the success of a survey of this magnitude.

References referred to in the text are listed by number in the literature cited and include both published and unpublished material. This list is provided to support compiled data and inform interested



Locations of Osprey studies in the U.S.A. and Canada included in this report. General location indicated by code.

persons as to which progress reports and publications are available. No overall conclusions are presented at this time. Fulfilling all the objectives of this continental survey is now dependent on further cooperation between persons interested in this species.

A–Maine (near Louds Island in Muscongus Bay).
Investigator: Kury, 1964
Summary: *History*–Kury made observations on a local population within the Louds Island, Maine quadrangle map of the U.S.G.S. 7.5 Min. series. Survey was concluded on 10 August 1964 (20).

B–Massachusetts (Entire state; Bristol County; Westport River).
Investigators: G. and J. Fernandez, 1964-1969.
Chronology:

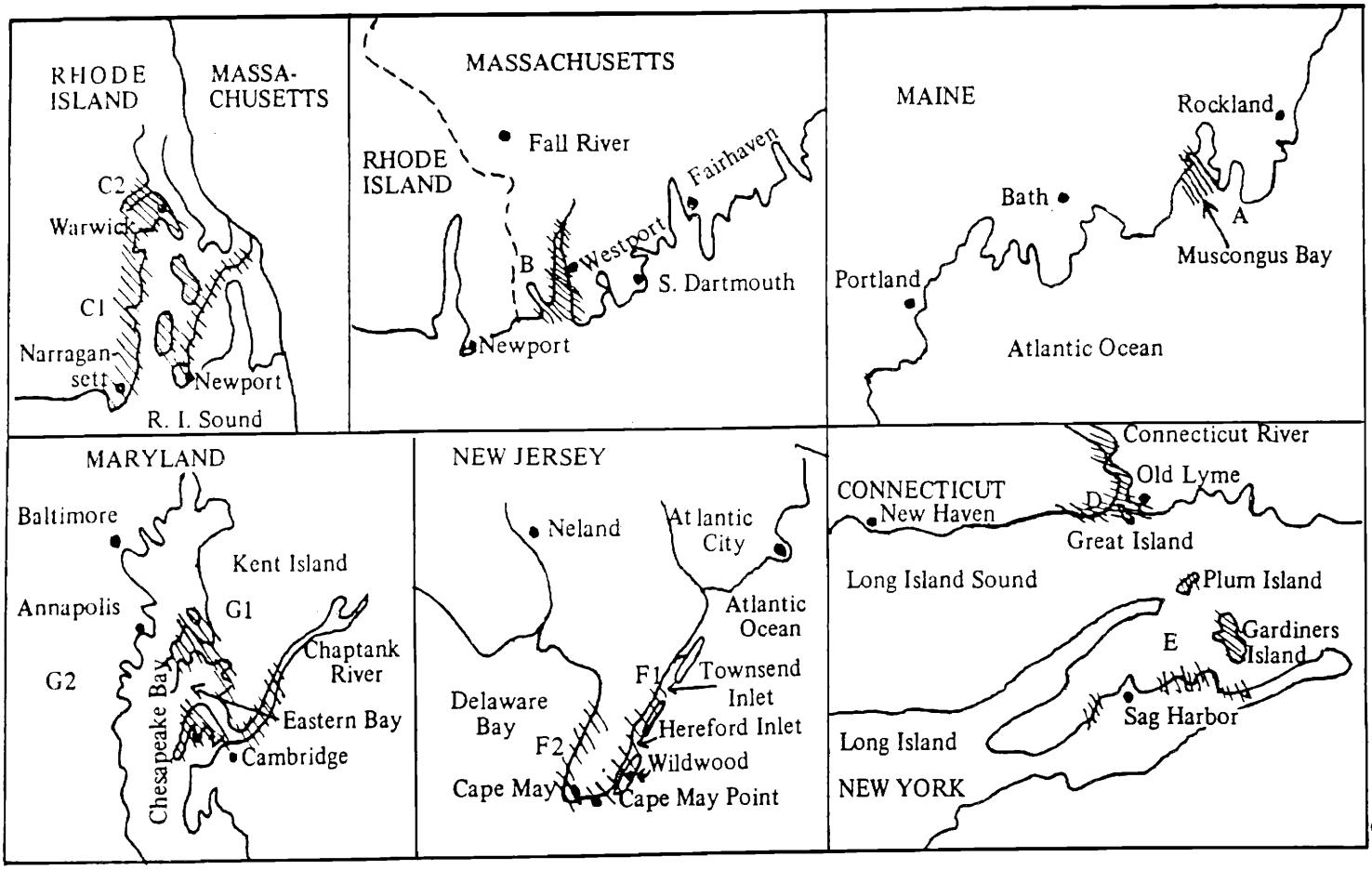
Spring arrival	23 March
Eggs laid	10 March
Eggs hatched	23 May
"Fledging" (first flight)	11 July
Fall departure	———

Summary: *History*–The Fernandezes initiated the study in 1964 and have published (13, 14). Paul Spitzer has cooperated (see 35). *Study includes*–locating nests, hatching success, behavior at nests, mortality factors, live-trapping and color banding, migration, and pesticide analysis of eggs. *Population success*–no statement on trend. *Mortality factors*–in 1969 five eggs lost as result of storms blowing down nests in dead trees; 1967 three 3-week-old young taken from one nest; one adult female shot (14). *Pesticide analyses*–Egg analysis, Allen H. Morgan, Mass. Audubon, 1964.

Egg. No.	DDT*	DDE*	DDT* technical
1	33.8	39.1	34.5
2	fragments of egg		
3	11.1	20.5	12.9
4	9.7	17.5	10.7

*in ppm dry wt.

Eight eggs are presently being analyzed at Westboro, Mass. Lab. *Techniques*–live-trapping with dho-gaza and Great Horned Owl (17) and captured 10 adults; noose carpet on nest; mirror on pole used to count eggs and nestlings and combined with a camera and telephoto lens for taking pictures (13). Transfer of young from nest with more than one to nests with birds still incubating addled eggs was successful; two young were adopted and fledged. Tower blinds for behavior study.


RHODE ISLAND
MASSA-CHUSETTS
C2
Warwick
C1
Narragan-sett
Newport
R. I. Sound
MASSACHUSETTS
Fall River
RHODE ISLAND
Fairhaven
B
Westport
S. Dartmouth
Newport
MAINE
Rockland
Bath
A
Muscongus Bay
Portland
Atlantic Ocean
MARYLAND
Baltimore
Kent Island
Annapolis
G1
G2
Chaptank River
Eastern Bay
Chesapeake Bay
Cambridge
NEW JERSEY
Neland
Atlantic City
Atlantic Ocean
F1
Townsend Inlet
Delaware Bay
Hereford Inlet
F2
Wildwood
Cape May
Cape May Point
Connecticut River
Old Lyme
CONNECTICUT
New Haven
D
Great Island
Long Island Sound
Plum Island
E
Gardiners Island
Sag Harbor
Long Island
NEW YORK

C1–Rhode Island (Newport, Bristol, and Washington Counties; see table on town of Swansea in Bristol Co. and on Kent Co.).

Investigators: Emerson, 1961-1969 and R. I. Ornith. Club (R.I.O.C.). (see C2.)

Chronology: (From Emerson and Davenport (12)).

Spring arrival	25-30 March
Eggs laid	1 May
Eggs hatched	5 June
"Fledging" (first flight)	1-7 August
Fall departure	Late September and October

Summary: *History*–Census by R.I.O.C. in 1941, 42, 45, 46, 49, 54. In 1954 there were 130 nests in R.I., in 1961 less than 60, and in 1962 further decline (12). One publication by Emerson and Davenport (12) and an annual report by R.I.O.C. *Study includes*– locating nests, reproductive success, and banding. *Population success*– steady decline in number of active nests since 1954 (12). From 1954 to 1961 approximately 50% decline, and from 1961 to 1962 season approximately 40% drop in a year. *Primary prey*–menhaden, alewives (12). *Techniques*–In 1961 helicopter survey by Alfred Hawkes, Cooperator for R.I.O.C.

C2–Rhode Island (Kent County).

Investigator: Brown, 1958-1969 (see C1; see note below).

Chronology:

Spring arrival	25-31 March

Notes: Brown made occasional observations prior to 1958; 1959 studied success. From 1967-1969 reported no known nests in study area. Kinsey from Warwick, R.I., knew of one nest that has been inactive since 1967. No previous data given. Oppersdorff states that in 1968 one pair produced 3 young, and in 1969 this nest was taken over by a Great Horned Owl. Tingley from Bristol, R.I., states that one pair returned to nest at Bristol in 1969. This pair stayed approximately 24 hours and left.

D–Connecticut (Middlesex and New London Counties; Old Saybrook and Old Lyme Area).

Investigators: Ames and Mersereau, 1957-1963.

Chronology:

Spring arrival	25 March
Eggs laid	20 April-10 May
Eggs hatched	25 May-15 June
"Fledging" (first flight)	10 July
Fall departure	10 September

Summary: *History*–This study area is one of the oldest

documented in the U.S.A. In 1892 Allen (2) wrote about Ospreys on Plum Island. Abbott (1) and Gill (15) wrote about Ospreys in the area indicated. Ames along with Mersereau began an ecological study in 1957. Other individuals have cooperated (see New York, Maryland, and Rhode Island). Ames has authored the following papers (3-7). Spitzer has reported some 1969 results (35). *Study included*—locating nests, hatching success, behavior at nest, banding, prey survey and analysis for pesticides, pesticide analyses of eggs and one nestling, mortality factors, and erection of artificial nesting platforms. *Nest site selection*—nests built on ground, artificial structures, and trees (red oak, white oak, red maple); and birds are gregarious. *Population success*—a decrease from 200 pairs in early 40's to 71 pairs in 1960 to 24 in 1963 (7) because of failure of eggs to hatch. *Mortality factors*—people taking eggs and nestlings from nests, and disturbance of incubating birds. *Primary prey*—eel early in season and black-backed flounder from March-June. *Pesticide analyses*—seven eggs analyzed averaged 555 micrograms of DDT metabolites (35-100 ppm dry wt.). A 5-day-old nestling contained 624 micrograms DDT metabolites (15.9 ppm wet wt.) and trace of DDT. Fish flesh contained 1.8-7.4 ppm of metabolites and only 0.7-1.8 ppm of DDT wet wt. (7). *Techniques*—experimental nests with exchanges of eggs from Maryland (35).

E—New York (Long Island).
Investigator: Spitzer (see D above)
Chronology: (See D above)
Summary: *History*—Spitzer is doing work in this area. A report of 1969 observations has appeared (35). See Connecticut, Ames *et al.* for information on general region.

F1—New Jersey (Cape May County; Seven Mile Beach; from Townsends Inlet to Hereford Inlet).
Investigator: Jacobs, 1944-1969 (see F2).
Summary: *History*—Initial banding by Jacobs in 1944. Artificial nest platforms constructed in 1966-1969. Jacobs reports 80% use (no. of platforms not given). Eggs sent to Patuxent for pesticide analysis in 1963, 1964, and 1965.

F2—New Jersey (May County; North Cape May; Higbee's Beach, Cape May Point, Mill Lane, Cold Spring, Burleigh, Cape May Court House, Cape May Co. Farm, Cox Hall Cr.).
Investigator: Schmid, 1939- (see F1).
Summary: *History*—Schmid compares the status of the Osprey in Cape May County from 1939 to 1963 (33). He researched in

the 30's and used the data of Jacobs and Reese for comparison in his 1963 paper. Schmid's conclusions are that the population has decreased in his previous study area. Schmid suggests diminution of food supply, frequency of disturbance by man, and environmental pollution as possible factors influencing this decline (33).

G1–Maryland (Queen Annes and Talbot Counties; Kent Island, (see G2)).

Investigator: Reese, 1966-1968.

Chronology: (Earliest dates for Talbot County.)

Spring arrival	17 March
Eggs laid	31 March
Eggs hatched	16 April
"Fledging" (first flight)	2 July
Fall departure	17 August

Summary: *History*–Reese initiated the study in 1966. He has published (31) and compiled five progress (32) reports. *Study includes*–locating nests, hatching and fledging success, mortality factors, nest destruction, prey and ectoparasite survey. *Nest site selection*–nests built on duck blinds, channel markers, artificial nesting platforms, and trees. 70% of total active nests (of 127) were on off-shore structures; others in dead trees. *Population success*–no trend indicated. *Mortality factors*–eggs destroyed as a result of wind storms, and people; nestlings destroyed by people (shooting); adults shot. U.S. Coast Guard destroys nests on channel markers. *Techniques*–erection of artificial nesting platforms which have been utilized. Sampling ectoparasites from nestlings. Use of noose carpet on nest to capture adults. Reese does not recommend using carpet on nests. All work from outboard motorboat. (Note: Reese has requested that specifics be withheld pending publication.)

G2–Maryland (St. Marys and Charles Counties; Chesapeake Bay and Potomac River (see G1)).

Investigators: Wiemeyer, 1969; Krantz and Schmid, 1967 and 1968.

Chronology: (Wiemeyer, for 1969 season).

	early	average
Eggs laid	2 April	13-19 April
Eggs hatched	13 May	18-24 May
"Fledging" (first flight)	1 July	3-9 July

Summary: *History*–In 1968 William Krantz was principle investigator. Wiemeyer was in charge of 1969 work and submitted this data. *Study includes*–locating nests.

reproductive success, mortality factors, banding; analysis of eggs, nestlings, adults, and prey for pesticide residues; egg exchanges. *Nest site selection*—most nests are built on off shore duck blinds. *Population success*—In 1968 and 1969 egg exchanges have biased success (see Ames (3-7) for Conn. work). *Mortality factors*—the U.S. Coast Guard destroyed nests on channel markers resulting in the destruction of eggs and nestlings (Wiemeyer, pers. comm.). *Pesticide analyses*—analyses are being done on prey, eggs, nestlings, adults, and items from the environment (Conn., Maryland, and Potomac River). *Techniques*—egg exchanges between Maryland and Connecticut nests. For pesticide data on Conn. and Potomac rivers see Stickel *et al.* (34).

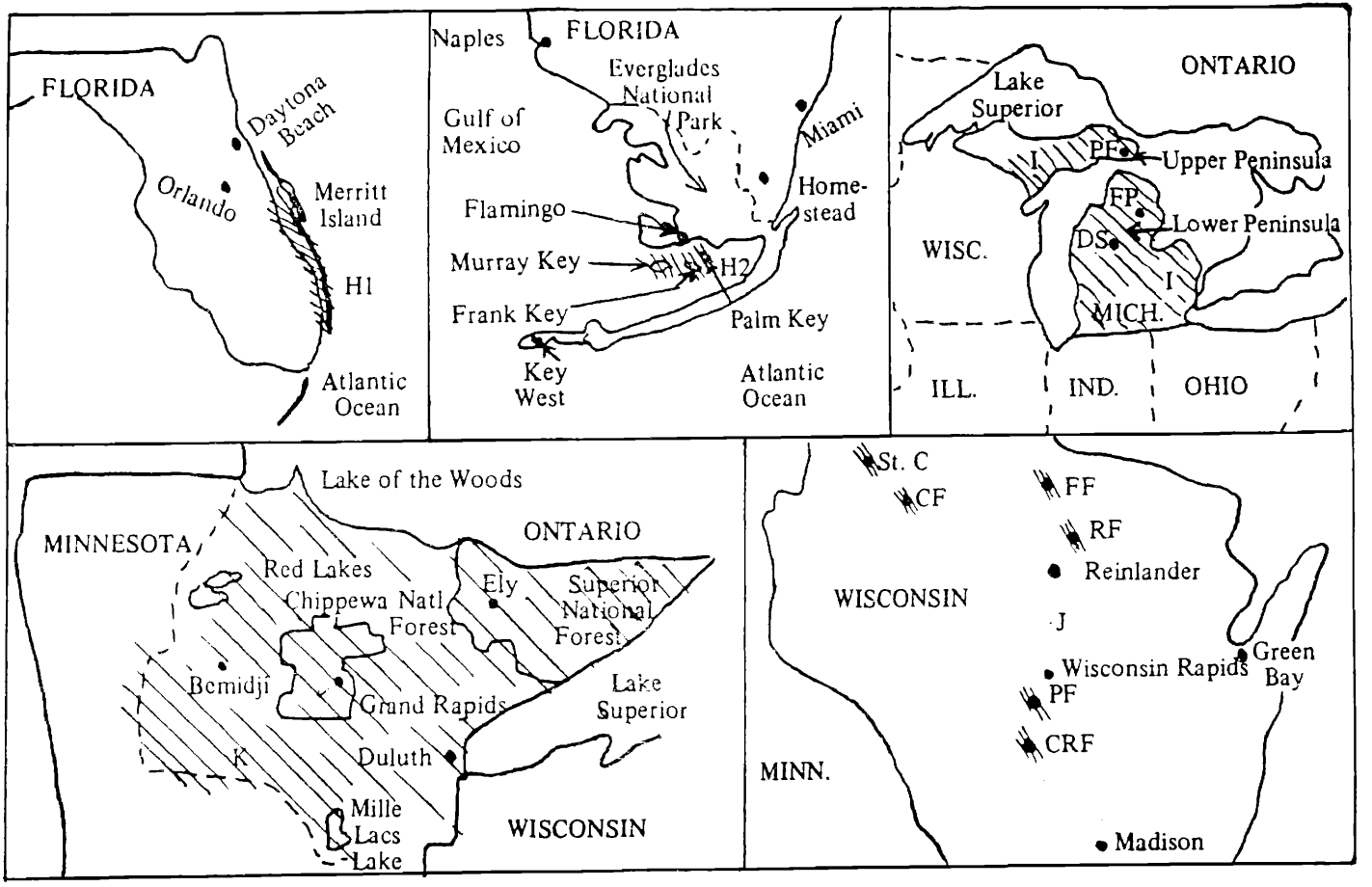
H1—Florida (Brevard County; Merritt Island).
Investigators: Ellis and Bush, 1964-1969 (see H2).
Summary: *History*—Ellis and Bush have been doing research on Bald Eagles and observations on Ospreys are incidental.

H2—Florida (Monroe County; Florida Bay).
Investigator: Ogden, 1968-1969 (see H1).
Chronology:

Spring arrival	permanent residents
Eggs laid	peak early December to January
Eggs hatched	1 December-1 April
"Fledging" (first flight)	February-May
Fall departure	unknown (dispersal)

Summary: *History*—Ogden initiated the study in 1968 as a National Park Service Research Project. As of 1969 he has prepared 2 mimeographed preliminary reports (26). *Study includes*—locating nests, hatching success, behavior, banding and color-marking, prey survey, mortality factors, and pesticide analysis of eggs. *Population success*—general trend not known; often two eggs hatch when three laid. *Mortality factors*—young fall from nests at pre-flight stage. *Primary prey*—catfish of the genus *Galeichthys*, jacks (*Caranx* sp.), mullet (*Mugil* sp.). *Pesticide analyses*—eggs have been sent to the Patuxent Pesticide Research Laboratory. *Techniques*—Ogden is working on aging and identification of sub-adult birds by using birds of known age, identified by colored celluloid bands.

I—Michigan (Roscommon, Mecosta, Alpena, and Montmorency Counties: Dead Stream Flooding, Fletcher Pond. Potagonissing Flowage, and Backus Creek Flooding. Entire state).
Investigator: Postupalsky, 1965-1969.


FLORIDA
Daytona Beach
Orlando
Merritt Island
H1
Atlantic Ocean
Naples
FLORIDA
Everglades National Park
Gulf of Mexico
Miami
Homestead
Flamingo
Murray Key
H2
Frank Key
Palm Key
Key West
Atlantic Ocean
ONTARIO
Lake Superior
I
PF
Upper Peninsula
FP
Lower Peninsula
WISC.
DS
I
MICH.
ILL.
IND.
OHIO
Lake of the Woods
MINNESOTA
ONTARIO
Red Lakes
Chippewa Natl Forest
Ely
Superior National Forest
Bemidji
Grand Rapids
Lake Superior
K
Duluth
Mille Lacs Lake
WISCONSIN
St. C
CF
FF
RF
Reinlander
WISCONSIN
J
Wisconsin Rapids
Green Bay
PF
CRF
MINN.
Madison

Chronology: (Postupalsky (pers. comm.))

Spring arrival	24 April
Eggs laid	9 May
Eggs hatched	15 June

Summary: *History*–Postupalsky initiated study in 1965. Prior observations were made during his Bald Eagle surveys. Postupalsky surveys the areas mentioned above and the Lake Nipigon area in Ontario. He has published (27, 30) and compiled several progress reports (28, 29). *Study includes*–locating nests, hatching success, banding, mortality factors, erection of artificial nesting platforms and pesticide analysis of eggs. *Population success*–Postupalsky states that the Michigan population is decreasing (27). *Mortality factors*–loss of eggs from nests, causes unknown. *Techniques*–erection of artificial nesting platforms in flowages. Platforms approximately seven feet above surface of the water.

J–Wisconsin: (Entire state; Flambeau Flowage (FF), Chippewa Flowage (CF), Petenwell Flowage (PF), Rainbow Flowage (RF), Castle Rock Flowage (CRF), St. Croix Fl. (St. C)).

Investigators: Ingram, 1966; Berger and Mueller, 1950-1966 (Rainbow Fl.), N.C.A.C. (North Central Audubon Council).

Summary: *History*–In 1950 Berger and Mueller initiated a study on the Flambeau Flowage (8), and continued it through 1965. In 1966 the N.C.A.C. initiated a three-state (Michigan, Wisconsin, and Minnesota) study (see Ingram, 18). Present work is being done by Sindelar, Wisconsin Ornithological Society. Postupalsky summarized three-state study in (28). *Nest site selection*–trees, stumps, and gregarious on flowages. *Population success*–decline on Flambeau Fl. *Pesticide analyses*–fish from flowages. *Techniques*–dho-gaza for adults (17).

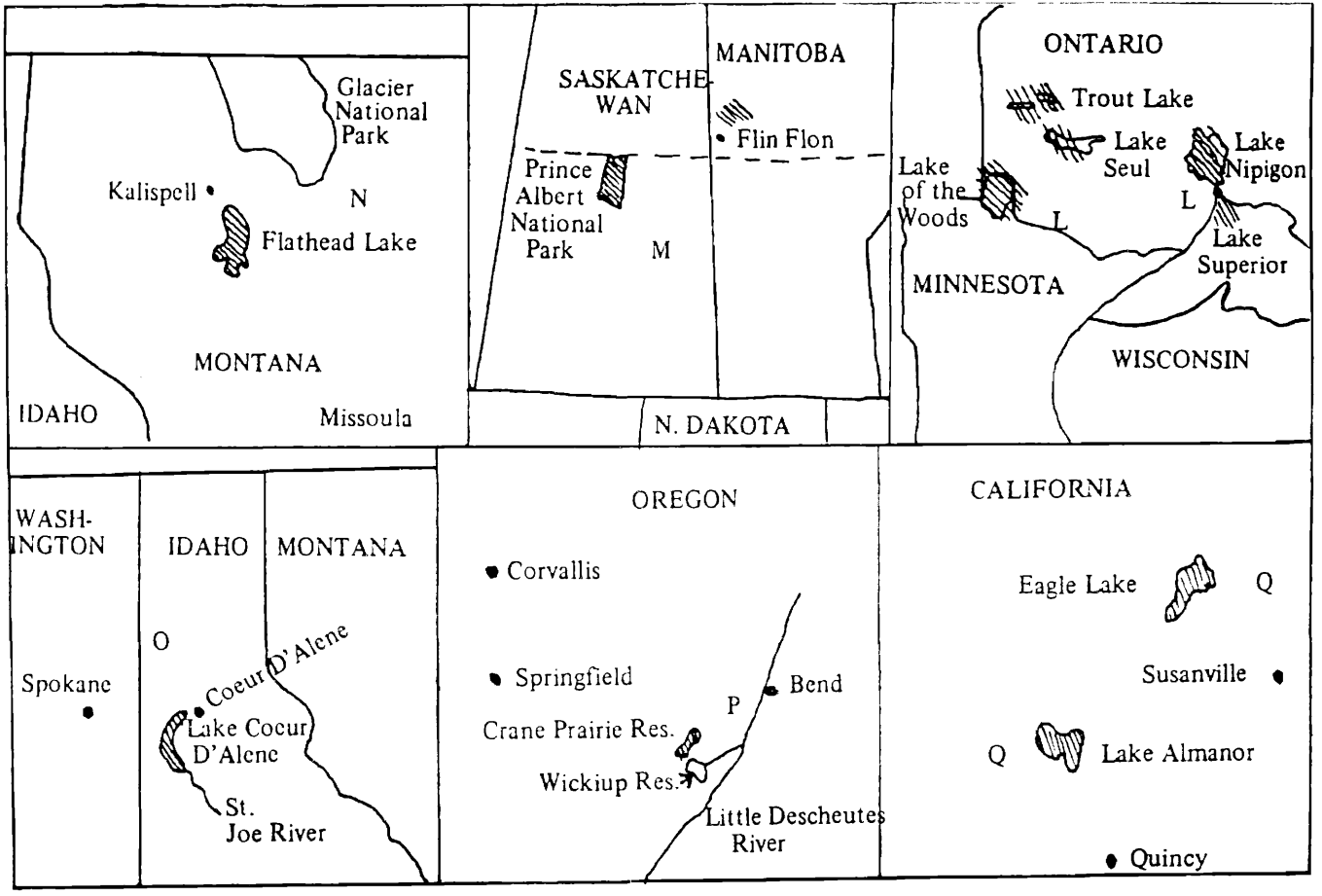
K–Minnesota (Entire state; Chippewa Nt. For. (JM); Portions of C.N.F. and adjacent Counties; Superior Nat. For. (LM)).

Investigators: Dunstan, Mathisen, 1963-1969; Magnus, 1966-1969.

Chronology:

Spring arrival	25 April
Eggs laid	10 May
Eggs hatched	14 June
"Fledging" (first flight)	11 August
Fall departure	11 September

Summary: *History*–surveys initiated in 1963. Related publications: Mathisen (22-24) and Dunstan (9-11). *Study*


Glacier National Park
Kalispell
N
Flathead Lake
MONTANA
IDAHO
Missoula
SASKATCHE-WAN
MANITOBA
Flin Flon
Prince Albert National Park
M
N. DAKOTA
ONTARIO
Trout Lake
Lake Seul
Lake Nipigon
Lake of the Woods
L
L
Lake Superior
MINNESOTA
WISCONSIN
WASH-INGTON
IDAHO
MONTANA
O
Spokane
Coeur D'Alene
Lake Coeur D'Alene
St. Joe River
OREGON
Corvallis
Springfield
Bend
P
Crane Prairie Res.
Wickiup Res.
Little Descheutes River
CALIFORNIA
Eagle Lake
Q
Susanville
Q
Lake Almanor
Quincy

includes– locating nests, nesting success, nesting ecology, behavior at and away from nests, prey survey, and pesticide analysis of prey. *Nest site selection*– usually dead or partially dead conifers (*Pinus* sp., *Picea* sp.) and occasionally power line support poles (9, 11). No colonies found. *Population trend*–no conclusions. *Mortality factors*–electrocution of one adult male 1968 and one nestling in 1966; one adult shot in 1968; nests blown down and destroying eggs and young. *Primary prey*–73% centrarchids (*Lepomis* sp., *Micropterus* sp., *Pomoxis* sp.), and yellow perch (*Perca* sp.). *Pesticide analyses*–fish analyzed by Minn. State Cons. Dept. (25). Prey species are being analyzed by Dunstan. *Techniques*–a camera apparatus used for indirect viewing of nest contents (10).

L–Province of Ontario, Canada.

Investigators: Grier, 1967-1969 (western Ontario); Postupalsky, 1969 (Lake Nipigon and Ogoki Res) (see K).

Summary: In 1967 Grier checked 65 nests which he believed represented 57 territories (term territory not defined). Number of nests known or believed to have young totaled 35. Grier found one young shot on nest, one young dead in nest structure, and three addled eggs. Grier's 1968 and 1969 data not compiled (see 16). In 1969, Postupalsky (pers. comm.) found 11 pairs of which six produced a total of 10 young which were seen in an advanced stage of development. Dunstan reports the results of nests in the boundary waters of Minnesota with the Minnesota data. The chronology of the boundary water nests not included.

M–Provinces of Manitoba and Saskatchewan, Canada (Prince Albert National Park).

Investigators: Dutcher, 1969 (P.A.N.F.); Whitfield and Gerrard, 1967-1969; Houston, 1965-69 (banding nestlings).

Summary: *History*–Dutcher will initiate survey in 1970. Park Wildlife Observation Cards will be processed. Whitfield and Gerrard made observations while conducting Bald Eagle surveys. Houston has had two banding returns and requests data withheld. *Nest site selection*– in Manitoba 16 nests along a powerline in 1969 (W&G).

N–Montana (Flathead and Lake Counties; Flathead Lake area).

Investigators: D. L. MacCarter, Koplin, D. S. MacCarter, 1966-1969.

Chronology:

Spring arrival	15-30 April
Eggs laid	15-30 May

Eggs hatched	15 June
"Fledging" (first flight)	15 August
Fall departure	25 October

Summary: *History*–Koplin, D. L. and D. S. MacCarter initiated the study in 1966. They published in 1969 (21) and also compiled 2 progress reports. *Study includes*–locating nests, reproductive success, nest site selection, behavior, fishing success, prey analysis and survey, mortality, and egg shell measurements. Analysis of eggs, prey, water, and related aquatic organisms for pesticide residues. *Nest site selection*–all nests found were on tops of yellow pines (*Pinus ponderosa*) and black cottonwoods (*Populus tricocarpa*); 87% were in dead trees. *Population success*–young fledged show 30% annual decline between 1967 and 1968 (21). *Mortality factors*– shooting documented. Pesticides suspected based on egg shell thinning and addled eggs (21). *Primary prey*–largescale sucker (*Catostomus macrocheilus*). Also pumpkinseed (*Lepomis gibbosus*), pea mouth (*Mylocheilus caurinus*), catfish (*Ictalurus melas*) and cutthroat trout (*Salmo clarki*). *Pesticide analyses*–three addled eggs had 37 to 59 ppm (dry wt.) DDT residues, and all contained dead but well developed embryos (21). Additional egg data unpublished. Pesticide analysis of water, plankton, and sediment from Flathead Lake. Flathead Lake has residues. *Techniques*–picric acid and color bands used for color-marking. Egg shell thickness measured with a Helios micrometer to nearest 0.01 mm (See 19).

O–Idaho (Kootenai and Benewah Counties; St. Joe River and upper Coeur D' Alene Lake).

Investigators: Johnson and Shroeder, 1969.

Summary: *History*–Johnson and Shroeder initiated the study in 1969. Future plans are to survey northern Idaho and eastern Washington. They will also construct nesting platforms on pilings in the Coeur D' Alene River and band nestlings. One encouraging note from Johnson is that past records indicate that one local colony has increased in size during the past decade.

P–Oregon (Deschutes and Klamath Counties; Crane Prairie Reservoir.

Investigator: Roberts, 1969

Chronology:

Spring arrival	12 April
Eggs laid	———
Eggs hatched	———

"Fledging" (first flight) 5 August
Fall departure 1 October (last bird seen)

Summary: *History*—In 1969 the U. S. Forest Service established the Crane Prairie Reservoir Osprey Management Area, located in the Deschutes National Forest. It includes the reservoir and a 5,300 acre strip around it. Roberts is investigating reproductive success, nest site selection, territory, and migration.

Q—California (Lassen Volcanic National Park region; Eagle and Almanor lakes).

Investigators: Garber and Koplin, 1970.

Summary: *History*—Garber and Koplin will initiate a study in 1970 similar to that done in Montana.

Year	No. of known nests	No. of active nests	No. of active nests with known outcome	No. of successful nests		No. of eggs laid	No. of eggs hatched	No. of young fledged	Young per successful nest
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A—Maine									
					%				
1964	13	8	8	2	25	—	—	3	1.5
B—Massachusetts									
					%				
1969	24	17	17	8	51	52	11	11	1.3
1968	25	23	23	11	47	48	30	23	2.1
1967	20	15	15	4	26	30	8	5	1.2
1966	19	17	17	5	29	52	9	6	1.2
1965	15	15	15	7	41	40	9	9	1.3
1964	11	11	11	6	54	29	15	15	2.5
C1—Rhode Island									
					%				
1969	17	8	—	3	—	—	—	4	1.2
1968	19	7	—	3	—	—	—	5	1.6
1967	19	4	—	0	—	—	—	0	0.0
1966	32	16	—	0	—	—	—	0	0.0
1965	36	23	—	5	—	—	—	8	1.6

[Also in 1969—3 pairs at Martha's Vineyard; 1 pair each at Duxberry, Marshfield, and Wellfleet. Spitzer (35) reports the last two unproductive and the third fledged young.]

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

C1–Rhode Island (continued)

1964	43	24	—	7	—	—	—	12	1.7
1963	60	40	—	14	—	—	—	23	1.6
1962	60	33	—	10	—	—	—	13	1.3
1961	75	55	—	10	—	—	—	11	1.1

[Town of Swansea, Bristol Co., had 1 active nest in 1961, and success not recorded; Kent Co. had two active nests. One was successful and fledged one young.]

C2–Rhode Island

					%				
1963	5	3	0	—	—	—	—	—	—
1962	6	3	0	—	—	—	—	—	—
1961	6	3	3	—	—	—	—	—	—
1960	7	3	3	2	66	—	—	—	—
1959	6	3	3	3	100	—	—	—	—
1958	6	3	3	3	100	—	—	—	—

[Since 1967 no known nests in study area (however, see note under C1 above).]

D–Connecticut

					%				
1963	—	24	24	—	—	69	—	9	—
1962	—	31	31	—	—	90	—	8	—
1961	—	31	31	—	—	77	—	12	—
1960	—	71	71	—	—	204	—	7	—
1959	—	46	46	—	—	—	—	—	—
1958	—	39	39	—	—	—	—	13	—
1957	—	35	35	—	—	—	—	13	—

[Spitzer (35) reports the following for 1969 (active nests/productive nests/fledged young): a) scattered nests 6/2/4; b) Old Lyme-Niantic area (experimental nests, eggs from Maryland) 10/8/21; c) putative success of connecticus nestings *without* egg transfer 16/7/11.]

E–New York

[Spitzer reports the following for 1969 for Long Island and Vicinity (active nests/productive nests/fledged young): Fisher's Island, N.Y., 5/2/4; Plum Island, N.Y. (inaccessible) 3+/?/?; Orient Point west to Greenport, N.Y., 8/0/0; Shelter Island, N.Y., 17/6/9; Gardiner's Island, N.Y., 38/17/25; Eastern Long Island west to Brookhaven, N.Y., 18/?/?(6+).]

F1–New Jersey

					%				
1969	—	45	—	10	—	—	—	15	1.5
1968	—	42	—	8	—	—	—	10	1.3
1967	—	—	—	11	—	—	—	17	1.5
1966	—	—	—	18	—	—	—	30	1.7

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
F1–New Jersey (continued)									
1965	—	—	—	15	—	—	—	25	1.7
1964	—	—	—	20	—	—	—	35	1.8
1963	—	—	—	11	—	—	—	18	1.6
1962	—	—	—	13	—	—	—	20	1.5
1961	—	—	—	—	—	—	—	14	—
1960	—	—	—	18	—	—	—	28	1.6
1959	banded by another person								
1958	—	—	—	20	—	—	—	28	1.4
1957	—	—	—	16	—	—	—	28	1.8
1956	—	—	—	—	—	—	—	26	—
1955	—	—	—	—	—	—	—	32	—
1954	—	—	—	23	—	—	—	47	2.0
1953	—	—	—	—	—	—	—	21	—
1952	—	—	—	20	—	—	—	35	1.8
1951	—	—	—	12	—	—	—	22	1.8
1950	—	—	—	—	—	—	—	34	—
1949	—	—	—	1	—	—	—	1	1.0
1948	banded by another person								
1947	—	—	—	—	—	—	—	18	—
1946	—	—	—	—	—	—	—	35	—
1945	—	—	—	12	—	—	—	30	2.5
1944	—	—	—	6	—	—	—	15	2.5

F2–New Jersey [Data for all nine areas taken from Schmid (33).]

1937		1938		1939		1963	
nests	young	nests	young	nests	young	nests	young
27	53	21	45	25	56	7	0

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
G1–Maryland									
					%				
1968	—	31	21	9	43	44	19	5*	1.8
1967	—	29	23	9	39	35	14	9	1.5
1966	—	24	17	7	41	13	11	6**	1.7

* 4 hatchlings did not fledge. **1 hatchling did not fledge.

[The above data from Reese (31). Additional information on breeding success for Talbot Co. is in press and will appear in the *Auk*. Reese mentions that in 1968 censusing was done along the Chaptank River (see map) by George Krantz, and along the tidewater region of Pender and Onslow Counties, Maryland, and lake region of Craven Co., North Carolina.]

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
G2–Maryland									
					%				
1969*	91	—	—	—	—	—	—	—	—
1968	60	31	31	10	31	78	17	14	1.4
1967	59	52	52	32	61	108	71	54	1.7

*Because of egg exchange experiments Wiemeyer requests that 1969 data be summarized as follows: Per cent eggs hatched–34%; per cent young fledged of young hatched–70%; young fledged per successful nest–1.85; young fledged per active nest–0.57; per cent nests successful–32%.

H1–Florida									
					%				
1969	9	7	7	6	86	—	—	7	1.2
1968	11	9	9	7	78	—	—	10	1.4
1967	7	7	7	7	100	—	—	12	1.7
1966	21	18	18	12	67	—	—	—	—
1965	15	15	15	11	73	—	—	—	—
1964	31	26	26	—	—	—	—	—	—
H2–Florida									
					%				
1969	138*	39	39	28	72	—	—	45	1.6
1968	141*	44	44	30	68	—	—	56	1.8

*For all Florida Bay; rest are for Murray, Frank, and Palm Keys.

I–Michigan									
					%				
1969	—	67	—	23	—	—	—	33	1.4
1968	—	70	69	25	36	—	—	40	1.6
1967	—	—	62	17	27	—	—	30	1.7
1966	—	—	50	9	18	—	—	15	1.6
1965	—	51	50	11	22	—	—	18	1.6
J–Wisconsin									
					%				
1967*	104	75	71	36	50.7	—	—	66	1.83
1966*	104	74	67	19	38.4	—	—	—	1.68
1965	7	—	—	1	—	—	—	1	1.0
1963	14	—	—	3	—	—	—	3	1.0
1962	17	—	—	4	—	—	—	5	1.25
1961	15	—	—	4	—	—	—	5	1.25
1960	14	—	—	8	—	—	—	12	1.5
1959	13	—	—	7	—	—	—	7	1.6
1958	14	—	—	10	—	—	—	21	2.00
1957	—	—	—	9	—	—	—	21	2.3
1956	15	—	—	5	—	—	—	11	0.7
1955	27	—	—	12	—	—	—	22	1.8

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
J–Wisconsin (continued)									
1954	20	—	—	10	—	—	—	17	1.7
1953	19	—	—	14	—	—	—	25	1.8
1952	20	—	—	10	—	—	—	23	2.3
1951	—	—	—	7	—	—	—	14	2.0

*From Postupalsky (28); 1951-1965, for the Flambeau Flowage only, Berger and Mueller (8).

K–Minnesota

					%				
1969	144	63	—	31	—	—	—	66	2.0
1968	132	79	—	50	—	—	—	81	1.6
1967	119	60	—	36	—	—	—	59	1.6
1966	58	22	—	19	—	—	—	25	1.3
1965	29	15	—	14	—	—	—	23	1.6
1964	21	15	—	13	—	—	—	22	1.7
1963	16	16	—	14	—	—	—	21	1.5

[Ingram (18) independently surveyed Minnesota in 1967.]

M–Provinces of Manitoba and Saskatchewan, Canada

					%				
1969	32*	21	—	—	—	—	—	37**	—
1968	7*	5	—	—	—	—	—	8**	—
1967	2*	2	—	—	—	—	—	3**	—

*Territories (term territory not defined). **Nestlings (minimum number).
[Data above from Whitfield and Gerrard.]

N–Montana

					%				
1969	47	20	—	9	—	34	20	15	1.6
1968	46	20	—	8	—	22	14	14	1.7
1967	36	16	—	8	—	28	18	17	2.1
1966	28	16	—	—	—	—	—	—	—

O–Idaho

					%				
1969	26	22	—	—	—	—	—	—	—

P–Oregon

					%				
1969	85	48	43	25	58	—	—	35	1.4

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