

## Acknowledgements

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# Banding, movements and adult biometrics of Ontario Ospreys

by  
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## Introduction

There have been few studies of Ospreys (*Pandion haliaetus*) in Ontario. Previous work has focused mainly on the declines during the DDT era, and levels of contaminants in eggs (Grier et al. 1977; Postupalsky 1971, 1977). One reason for this scarcity of information on such a widespread and large, visible bird is the inaccessibility of many nests, at the top of large, dead trees, often in swamps (Poole 1989; pers. obs.). However, in some parts of Ontario, Ospreys now breed in more accessible sites, on low stumps in flooded lakes, artificial nesting platforms, hydro poles, navigation aids and other towers (Ewins, in press).

In 1991 the Canadian Wildlife Service, in conjunction with the Ontario Ministry of Natural Resources, Michigan Department of Natural Resources, and the Georgian Bay Osprey Society, began a study to investigate the suitability of Ospreys as sensitive indicators of contaminant-related biological effects in the Great Lakes aquatic ecosystem. This paper presents up-to-date information (as of April 1994) on bandings and recoveries of Ospreys banded as nestlings in Ontario. Biometrics are presented for adults trapped at nests (the first published for Ontario or the Great Lakes basin), and these will assist anyone wishing to determine the sex of adult Ospreys.

### Study area and methods

Recovery details presented here are of birds banded in Ontario. The detailed studies from 1991 to 1993 were completed in five different study areas. The three main areas were: the Kawartha Lakes (Lindsay area mostly), southeastern Georgian Bay, and the St. Marys River. Less intensive studies were carried out at Ogoki Reservoir (north of Lake Nipigon), and the St. Lawrence River near Mallorytown.

Chicks were banded when about 5-6 weeks old, in early-mid July (early August at Ogoki Reservoir). Young Ospreys usually take their first flight when 7-8 weeks old (Poole 1989). Each chick was fitted with a USFWS band on one leg, and a single plastic colour band on the opposite leg, signifying the year. The same colour is used for most young Ospreys banded in the Great Lakes drainage basin each year.

Adult Ospreys were trapped at the nest during late incubation (dates ranged from 21 to 30 May), using a dome-shaped noose-mat made of reinforced chicken wire placed over the nest, and tied firmly beneath the entire nest structure. This technique has been used successfully, and safely, during long-term studies of Ospreys in Michigan (Postupalsky 1989). Sex was determined mostly on the basis of plumage details and body size, either by direct observation of copulation attempts, or by a combination of parameters, especially when banded adults were seen together at the nest (Henny 1986; Poole 1989).

Details of Ontario bandings and band recoveries up to 31 December 1989, were obtained from the CWS

Banding office in Ottawa. Subsequent data are those generated by these CWS studies (1991-93). Methods used in analyses of band recoveries follow those given in Ewins and Houston (1993).

## Results and Discussion

### Banding

At least 85 Ospreys (82 nestlings, two hatching year birds, and one older Osprey) had been banded in Ontario up to the end of 1989 (Ewins and Houston 1993). The present study has increased dramatically the banding totals of Ospreys in Ontario, by 187 (40 chicks in 1991, 63 chicks and 21 adults in 1992, 61 chicks and two adults in 1993), to at least 272 birds by the end of 1993.

### Recoveries and sightings

Up to the end of 1989, there had been six recoveries of Ospreys banded in Ontario, a recovery rate of 7.1%, which was the highest for any part of Canada (Ewins and Houston 1993), and similar to that for U.S. Ospreys (Poole and Agler 1987). The two reported recoveries from 1991-93 bandings are presented, along with details of the six previous ones, in Table 1. These data indicate that Ontario Ospreys migrate along the Mississippi flyway, and that by mid-late September, young fledged from Ontario nests have moved hundreds or thousands of kilometres south into the U.S.

In addition to the two recoveries from the 1991-93 bandings, regular nest checks detected a further ten chicks which died before migrating southwards. Of these ten chicks, two (in the same 2-chick brood) were

Table 1: Band recoveries of Ospreys banded as chicks in Ontario, as reported /up to 14 April 1994.

Banding details				Recovery details			
Date <sup>a</sup>	Lat. / Long.	Location	Date <sup>a</sup>	Lat. / Long.	Location	Cause <sup>b</sup>	
19.6.51	44°20' N 79°00' W	n.r. L. Scungog	1951	44°30' N 76°20' W	n.r. Kingston	Shot	
19.6.51	44°10' N 79° 00' W	n.r. L. Scungog	9.63	44°20' N 76° 20' W	n.r. Kingston	F.D.	
14.7.67	49°20' N 94°06' W	L. of the Woods	27.9.67	39°25' N 94°30' W	W. Missouri	injured	
25.7.67	49°20' N 94°12' W	L. of the Woods	30.9.67	30°06' N 89°12' W	S. Mississippi	F.D.	
22.7.71	49°30' N 94°20' W	L. of the Woods	9.6.87	48°50' N 94°50' W	L. of the Woods	unknown	
12.7.78	46°06' N 84°00' W	St. Joseph's Island	8.87	45°30' N 80°20' W	E. Georgian Bay	injured	
5.8.92	50°30' N 88°20' W	Ogoki Reservoir	6.11.92	34°406 N 87°50' W	NW Alabama	Wires	
7.7.93	44°20' N 78°20' W	Kawartha Lakes	19.9.93	39°59' N 79°35' W	SW Pennsylvania	caught	

Notes: <sup>a</sup> day:month:year; <sup>b</sup> Cause of reported death / finding circumstances; F.D. = found dead.

killed and eaten by a Great Horned Owl (*Bubo virginianus*) shortly after they fledged (their mother had also been killed by a Great Horned Owl early in the nestling period, so the male raised both chicks on his own). Four large chicks died before leaving the nest area, probably from starvation, and four chicks vanished from the nest before fledging, probably either due to Great Horned Owl predation, or to natural brood reduction caused by food shortages.

In 1993, at least 16 of the 21 adults banded with alpha-numeric bands in 1992 could be accounted for, a survival rate of at least 76.1%. The five which were not located in 1993 were ones which failed in their breeding attempt in 1992. Ospreys are more likely to move site and/or change mate in the year following reproductive failure (Poole 1989). One of the colour-banded adults was seen flying west at the Cranberry Marsh Hawk Watch Station (east of Toronto) in late August 1993 (M.J.R. Miller, pers. comm.), presumably one of the Kawartha Lakes adults. Average annual survival rates of adult Ospreys vary little in the published accounts: 82-84% after the first year of life (Henny and Wight 1969); 85% after the third year (Postupalsky 1989); and 83-90% for adults (Poole 1989).

More thorough searches, and further banding of adults is planned for future seasons in the Great Lakes study. Adult survival, site fidelity, and recruitment are key parameters, which need to be quantified before concluding that these populations are reasonably "healthy" in the early 1990s.

### Adult biometrics

In May 1992, 21 adult Ospreys (three males and 18 females) were trapped in the St. Marys River, Georgian Bay and Kawartha Lakes study areas. In May 1993 an additional male and a female were trapped in the Kawartha Lakes. There was no significant difference in female wing length, bill length, or weight among the three areas (One-Way ANOVA,  $p > 0.3$ ), so data were pooled. Adult females averaged significantly larger than males, for wing length (by 7%,  $t_{21} = 4.9$ ,  $p = 0.0001$ ), bill length (by 10%,  $t_{18} = 4.2$ ,  $p = 0.0005$ ), and weight (by 30%,  $t_{21} = 7.0$ ,  $p = 0.0001$ ) (Table 2). Only wing length overlapped slightly between the sexes. Body weight appeared to be the best biometric on which to segregate the sexes (at least for the late incubation period), although a combination of bill length and weight, or even wing length and weight, would also do (Figure 1). An adult Osprey in Ontario with a weight of at least 1600 g, and a bill (to cere) 32 mm or longer, is almost certainly a female. Similar biometric differences between the sexes have been found in U.S. studies, but often with greater overlap than we found in Ontario (Macnamara 1977; Prevost 1983; Poole 1989; Postupalsky 1989; Johnsgard 1990).

### Summary

Between 1991 and 1993 a CWS-led study of Great Lakes Ospreys has banded 187 birds, trebling the provincial total banded from 85 to at least 272. Ospreys raised in Ontario appear to migrate down the Mississippi flyway in autumn. In Ontario, adult females average up to

Table 2: Biometrics of breeding adult Ospreys trapped at Ontario nests, 1992-93.

Sex		Wing (mm)	Bill length (mm)	Weight (g)
Male	mean	485	30.9	1383
	s.d.	10	0.9	72
	range	476 - 495	29.9 - 31.6	1303 - 1475
	n	4	3	4
Female	mean	517	34.0	1804
	s.d.	12	1.2	115
	range	490 - 542	31.9 - 36.4	1540 - 1946
	n	19	17	19

30% heavier than males and have longer wings and bills. Any breeding adult Osprey heavier than 1600 g, and with a bill (to cere) longer than 32 mm in Ontario is almost certainly a female. Adults breeding in Ontario appear to have similar biometrics to those measured in the northeastern U.S.

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## PUBLICATION NOTICE

**Bird Trends: A report on results of national and regional ornithological surveys in Canada. Number 4, Winter 1994/95.** Migratory Birds Conservation Division, Canadian Wildlife Service, Ottawa, Ontario K1A 0H3. No charge.

The latest report in this series features an overview of population status and trends for the 35 birds of prey that breed in Canada, as estimated through data from migration counts, Christmas Bird Counts, and the Breeding Bird Survey. Other articles in this 32 page report are: "Raptor species at risk"; "Trends in Peregrine Falcon populations in Canada from 1965 to 1990"; "Recovery of Osprey populations in Canada"; "The Bald Eagle in Ontario's Great Lakes basin"; "Productivity declines in Swainson's Hawks and their significance to population trends"; "Burrowing Owl status and conservation programs"; "Recovery of the Ferruginous Hawk"; "Nocturnal owl surveys" (in Manitoba); "Protective legislation for raptors in Canada"; "Environmental contaminants in Canadian raptors"; "Raptor rehabilitation programs"; and "Disease diagnosis and surveillance in birds and other wildlife". There is a great deal of interesting material here for Ontario birders.