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The Osprey *Pandion haliaetus* in Berezinsky Biosphere Reserve, Belarus

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INTRODUCTION

Until the late 1970s, the Osprey was considered as an extremely rare, endangered species in Byelorussia (Dolbik & Dorofeev 1978). A special project aimed to define accurately the status of the rare raptors in the northern lake region of the country (Byelorussian Poozerie) was started in 1976 (Dorofeev & Ivanovsky 1982), and it soon became clear that the Osprey is not so rare in this region (e.g. Ivanovsky 1983). Since 1986 I began to study Ospreys in Berezinsky biosphere reserve and its vicinities (south-central part of Byelorussian Poozerie). This territory is rich in forests, rivers and lakes, but no more than four Osprey nests were checked before 1986. Since then about 90% of all nests in the reserve were checked at least twice each breeding season up to 1991. Recently, we summarised all data and this information was accepted for publication in *Ornis Fennica* (Tishechkin & Ivanovsky 1992). The aim of the present note is to document the most thoroughly studied part of the Byelorussian Osprey population in 1989-91 (data from 1987-88 published earlier (Tishechkin 1991).

STUDY AREA AND METHODS

The study area was situated at the junction of Minsk and Vitebsk regions, approximately 55.0 N, 28.30 E, in the lowlands of the upper Berezina River (Dnieper basin). It included Berezinsky biosphere reserve and one tract of wetland (environs of Lake Mezhuzhol) near its north-western borders, and comprised 910km^2. About 80% of the territory was covered with forest, mainly coniferous; wetlands and swamp forest covered about 60%. The Berezina and its numerous small tributaries form a dense network and there are six lakes in the area, from 0.7 to 3.5km^2 in size. Detailed information on the study area has been published elsewhere (Heltman & Dolbik 1983).

During the first two years (1986-87) Osprey breeding habitats throughout the area were searched carefully for territories and nests. Some information on the nest distribution was collected during the aerial counts of ungulates carried out in early spring. Since 1988 nearly all nests in the area were visited at least twice a year, in late April during clutch initiation and in early July just before fledging. About half the known nests were visited some more times in May and June. Every nest was climbed up to during each visit to record the progress of breeding, clutch or brood size, and to

document nestling mortality. All nests were treated as occupied, active and successful according to Postupalsky (1974). Nest with young over 40 days old were considered to be successful.

RESULTS AND DISCUSSION

The use of breeding habitats and nest trees by the Ospreys in the study area was typical for northern Byelorussia: practically all nests were built in sparse pine *Pinus sylvestris* stands on peat bogs, at the top of the trees (cf. Tishechkin & Ivanovsky 1992).

The numbers of known nests and total estimates of Osprey numbers in the study area are presented in Table 1. Two and one remote territories were not checked in 1990-91 respectively, so fewer nests were found in these years. There were clearly no changes in Osprey numbers during the study period; only small ones in the distribution of territories were observed. Three artificial platforms erected in new potential breeding sites in 1987 were not used until 1991. Apparently, observed densities (between 1.3 and 1.6 pairs/100^2 km) reflected the upper limit for the area determined by food availability.

Table 1. Numbers of Osprey nests in the study area, 1989-91.

		Nest checked		*Total pairs*
Year	*occupied*	*active*	*successful*	*(estimate)*
1989	14	12	8	14-15
1990	12	10	5	12-15
1991	12	12	10	12-14

Mean clutch size was *ca.* 2.8 and its annual variation was small (Table 2). Most pairs laid three eggs, smaller and larger clutches were rare. The average successful pair raised two fledglings and the annual variation of brood size was also significant (Table 2). The number of young per active and occupied nest was more variable; in one of the study years Osprey reproduction was largely unsuccessful (Table 2).

To test whether data from the study area may be used as an index of breeding success for the whole northern Byelorussian population, I compared the number of young/active nests in the reserve and computed from all data for Poozerie during 1987-91 (Tishechkin 1991; Tishechkin & Ivanovsky 1992). Correlation between annual means appeared to be positive, but insignificant ($r = 0.52$, $P < 0.05$). Values of annual means for the reserve (1.00-1.67) were in general less than for the whole population (1.00-1.86), with only one exception (1991, 1.67 and 1.32 respectively). At least half the nests outside the study area were visited only once per season for ringing young, and some nest failures in the early stages could be omitted (cf. Postupalsky 1974). So

Table 2, Clutch size, brood size and breeding success of the Osprey in the study area, 1988-91. Means ± SE.

Year	*Clutch size*	*Brood size*	*Young per Active nest*	*Occupied nest*
1989	2.80 ± 0.20	2.12 ± 0.31	1.41 ± 0.38	1.21 ± 0.35
1990	2.75 ± 0.16	1.80 ± 0.37	0.90 ± 0.35	0.75 ± 0.30
1991	2.90 ± 0.10	2.00 ± 0.30	1.67 ± 0.33	1.67 ± 0.33
1988-91*	2.81 ± 0.21	2.06 ± 0.32	1.43 ± 0.35	1.22 ± 0.34

* including data from Tishechkin 1991.

data from the study area seem to be more accurate indices of breeding success. There was a large variation in breeding success in the different nests observed over several seasons (Table 3). In general, two of every three nesting attempts were successful, and a more than eight-fold variation in breeding success was observed in the nests controlled for at least four years. These data support results of Postupalsky (1989), who reported that fledgling production of different individual Ospreys varied considerably.

The main reason for nest failures was the nest falling from the tree (cf. Tishechkin 1991; Tishechkin & Ivanovsky 1992), especially in the case of nests used for the first time (new territory or change of nest tree). Breeding success in such nests was 0.79 ± 0.28 young/active nest (n = 14) and differed significantly ($P < 0.05$) from that in the nests used at least for the second time (1.53 ± 0.20, n = 34).

Table 3. Variation of breeding success in different Osprey nests, 1986-91 (for nest H data since 1982 available).

Nest code	*Seasons when nest occupied*	*% seasons when nest successful*	*young/occupied nest ± SE*
A	6	67	1.50 ± 0.56
B	6	67	1.32 ± 0.56
C	5	60	1.20 ± 0.58
D	5	60	1.60 ± 0.68
E	4	75	2.00 ± 0.71
F	4	0	0
G	4	25	0.25 ± 0.25
H	9	77	1.44 ± 0.38
I	5	80	1.60 ± 0.60
J	5	80	1.20 ± 0.49
K	4	50	0.75 ± 0.48

Proportions of collapsed nests in the total number of whole clutch/brood failures were 57% and 26% respectively. It seems that artificial platforms providing reliable support for nests are especially important for improving success in pairs breeding for the first time or changing nest trees.

Monitoring of the Ospreys in Berezinsky reserve will be continued in 1992-96. Special activity will be devoted to searching for new territories near the borders of the study area; their establishment may indicate the population growth which may be predicted from reproduction rates. In 1991 all fledglings were ringed with plastic colour rings, and this work will be continued. I hope to start colour ringing adults in 1992. Observations of the individually marked birds will help to collect more information on Osprey population dynamics in Byelorussia.

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