

---

# Osprey monitoring in the West Kootenay Region: Results from 2006

Janice E. Arndt

901 Highway 3A, Nelson, B.C. V1L 6J5; e-mail: jarndt@telus.net

---

**Abstract:** Breeding Ospreys (*Pandion haliaetus*) were monitored to determine number of nesting attempts and breeding success in a selected area of the West Kootenay region of British Columbia. Twenty-seven Osprey pairs attempted to breed within the study area in 2006. Twenty-nine young were observed in 16 successful nests; the average number of young per occupied nest was 1.07 and per successful nest was 1.81. Breeding Canada Geese (*Branta canadensis*) used 36 Osprey nest sites. Ospreys were less likely to successfully raise young in nests that had been used by geese earlier in the season. While most measures of Osprey nesting activity and success in 2006 were below the average of the previous nine years, they fell within the range of values observed in that period.

**Key words:** Osprey, *Pandion haliaetus*, breeding population, nest success, monitoring program, British Columbia, Canada Goose, *Branta canadensis*.

---

## Introduction

The areas surrounding Nelson and Creston in south-eastern British Columbia are known for having significant densities of Osprey (*Pandion haliaetus*) during the breeding season (e.g., Campbell *et al.* 1990). Previous studies conducted on portions of this population include those by Machmer and Ydenberg (1990), Steeger *et al.* (1992) and Green and Krebs (1995). Breeding phenology is relatively synchronous in this northern, migratory population. Adult Ospreys return to the West Kootenay region in April each year. Most females lay during May, and the majority of chicks hatch in July. The nestling period is about 55 days, but there is considerable variation in the age at which the chicks leave the nest. Fledging of young Ospreys typically occurs in August.

In 1997, a long-term monitoring project was initiated by members of the Nelson Naturalists to measure the size of the Osprey breeding population, nesting success and effect of Canada Geese (*Branta canadensis*) on Ospreys in a selected section of the West Kootenay region. The 2006 season marked the tenth year of this ongoing study, and results from 2006 are presented and discussed here.

## Methods

Osprey nests were monitored along the West Arm of Kootenay Lake, the Kootenay River downstream of Nel-

son, and the Columbia River between Castlegar and the Canada-U.S. border. The study area, which begins at Balfour (northeast of Nelson) and runs to Waneta (south of Trail), constitutes a continuous waterway approximately 120 km long (Fig. 1).

Known and potential nest sites were visited by two observers monthly from April to August to determine use by Ospreys. A nest site was considered occupied if at least one of the following was observed during at least one visit: nest-building, copulation, an adult sitting low in the nest in a horizontal position (indicating probable incubation or brooding), or young present in the nest. Number of young were counted from the ground in nests containing chicks. Nests that contained large young (approximately 4 weeks old or older) in late July or in August were considered successful. Binoculars and spotting scopes were used to reduce disturbance of breeding pairs.

The average number of young per occupied nest and the average number per successful nest were calculated. These productivity rates may be slightly higher than real values because they are based on number of large young counted in each nest; actual fledging of young was not confirmed in every case because visits were four weeks apart. Percentage of occupied nests that were successful was also determined. Results from the 2006 season were compared with the range of values and nine-year averages from 1997 to 2005.

The presence of Canada Geese was noted during visits to Osprey nests in April. A nest was considered to be used by geese if a goose was present and in incubating posture. I



Figure 1. Location of Osprey monitoring project in the West Kootenay region of British Columbia. The survey route begins at Balfour and runs southwest through Nelson, Castlegar and Trail.

compared nests that had been used by geese with nests that had not been used, with respect to three variables: the average number of Osprey young per occupied nest, the average number of young per successful nest, and the percentage of occupied Osprey nests that were successful. Results were compared to those of the previous eight years; goose data were not collected in 1997.

Data from each occupied nest in 2006 were submitted to Project NestWatch (Bird Studies Canada) and the British Columbia Nest Records Scheme (Biodiversity Centre for Wildlife Studies).

## Results And Discussion

Various measures of Osprey numbers and success were lower in 2006 than the overall averages for the previous nine years (1997-2005). In 2006, 27 occupied nests were found and monitored within the study area. Sixteen, or 59 %, were considered successful. Number of occupied nests for the previous nine years ranged from a low of 21 in 2002 to a high of 56 in 1998, and averaged 34. Proportion of occupied nests that were successful each year ranged from 48 % (2002) to 95 % (1998), averaging 72 % over nine years (Table 1).

Total number of young observed in 16 successful Osprey nests in 2006 was 29. Number of young per occupied nest was calculated as 1.07 and number of young per successful nest was 1.81. In the previous nine years the number of young ranged from 15 in 2002 to 96 in 1998, and averaged 44. Number of young per occupied nest averaged 1.23 over nine years (range: 0.71 to 1.71) and number of young per successful nest averaged 1.70 (range: 1.50 to 1.91) (Table 1).

The following variables showed the second-lowest val-

ues seen in ten years: number of occupied nests, number of successful nests, percentage of occupied nests that were successful and total number of young. The lowest year was 2002. However, values have fluctuated considerably, and Arndt *et al.* (2006) did not find a statistically significant decline over the ten-year study period.

Breeding success as measured by number of young per occupied nest was below average in 2006 but similar to the past two years (1.07 in 2004 and 1.09 in 2005). Breeding success as measured by number of young per successful nest was slightly above the nine-year average.

Overall, these results suggest that while numbers of breeding pairs were down, and a higher percentage of nests failed than usual, those nests that were successful may have raised a greater number of young than average.

When Canada Geese used Osprey nests, it appeared to

Table 1. Breeding success of Ospreys in the West Kootenay during 2006, compared to the nine-year average and range of values for 1997 – 2005.

	2006	1997 – 2005 mean (range)
Number of occupied nests	27	34 (21 – 56)
Number of successful nests	16	26 (10 – 53)
% successful nests	59	72 (48 – 95)
Number of young	29	44 (15 – 96)
No. young per occupied nest	1.07	1.23 (0.71 – 1.71)
No. young per successful nest	1.81	1.70 (1.50 – 1.91)

Table 2. Breeding success of Ospreys in nests previously used by Canada Geese in the same season, and in nests that had not been used. Data for 2006 are compared to the eight-year average and (range) of values for 1998 – 2005. All data are for the West Kootenay region.

	Used by Canada Geese		Not used by Canada Geese	
	2006	1998 - 2005	2006	1998 - 2005
Successful nests (%)	33	70 (17 – 100)	72	73 (47 – 100)
No. young per occupied nest	0.67	1.14 (0.33 – 2.00)	1.28	1.29 (0.76 – 1.72)
No. young per successful nest	2.00	1.64 (1.25 – 2.00)	1.77	1.74 (1.44 – 2.06)

reduce the probability that the nest would be successful. Thirty-six Osprey nest sites were used by Canada Geese in 2006, and nine of these nests were subsequently used by Ospreys. Osprey young were produced in three of the nine nests (33 %), compared to 13 of 18 (72 %) in nests where geese had not been detected. In nests used by geese, Osprey nesting success was 0.67 young per occupied nest and 2.00 young per successful nest, compared to 1.28 young per occupied nest and 1.77 young per successful nest where geese were not detected (Table 2). In previous years, between 14 and 40 Osprey nest sites were occupied by geese each season (average = 33; 1998-2005), and from three to 16 were subsequently used by Ospreys.

The number of Osprey nest sites that were used by Canada Geese in 2006 was within the normal range for the nine years that goose occupancy has been recorded (1998 – 2006), as was the number of Osprey pairs that subsequently used these nests. Previous studies have shown that in some instances use of Osprey nests by Canada Geese prevented Ospreys from successfully using those sites later in the same season (e.g., Campbell *et al.* 1990; Ewins *et al.* 1994). In other cases there has been successful use by both species (e.g., Flath 1972; Steeger and Ydenberg 1993). In the present study, some Osprey pairs successfully raised young in nests that had been used by geese earlier in the year. Average number of Osprey young raised per occupied nest was much lower in nests used by geese than for those not used by geese, but number of Osprey young raised in those few successful nests appeared higher than average.

Reproductive success may be reduced due to a delay in egg-laying by Ospreys when geese are present (Steeger and Ydenberg 1993). The apparent effect of previous use of nests by Canada Geese, on subsequent nesting success of Ospreys, has varied annually in the West Kootenay region. For example, in some years, all nests used by both geese and Osprey in the same season successfully fledged Osprey young (Table 2). Arndt *et al.* (2006) suggested that Canada Geese,

which are resident in the area, may initiate first clutches earlier in some years, reducing the degree to which Osprey nesting is delayed in those years.

## Suggestions For Future Monitoring

As with many volunteer-based projects, field work for the present study was necessarily scheduled around jobs and various personal commitments, and therefore timing of visits was not consistent from year to year. Where possible, monthly visits to Osprey nests should coincide with known stages in the population's breeding cycle. Specifically, one visit during the last week of April or first week of May would provide an index for the incidence of goose use of Osprey nests. The June visit should be planned very early in the month, when it is likely that the majority of female Ospreys are incubating eggs. A third visit to occupied nests in the last week of July is critical for counting chicks near fledging age from early-hatched broods. A final visit during the third week in August would provide counts of older young in the remainder of nests. The advantages of this monitoring schedule include securing a more accurate estimate of how many females have laid eggs and a more reliable count of chicks approaching fledging age.

## Acknowledgements

Elaine Moore, Larry Prosser, Rita Wege and the author monitored nests and summarized data. Additional assistance in the field was provided by Bethany Arndt, Justin Arndt, Alistair Fraser, Dorothy Fraser and Darryl Secret. I thank Kenneth C. Taylor, John B. Sprague, Steve Arndt and an anonymous reviewer for their helpful comments on the

manuscript. The Osprey monitoring team is grateful to the B.C. Field Ornithologists and Columbia Basin Trust for providing funding in 2006.

## Literature Cited

- Arndt, J., E. Moore, L. Prosser and R. Wege 2006. Ten years of monitoring nesting Ospreys (*Pandion haliaetus*) in the West Kootenay region of British Columbia. *Wildlife Afield* 3:125-133.
- Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser and M.C.E. McNall 1990. The birds of British Columbia. Vol. 2. Nonpasserines: Diurnal birds of prey through woodpeckers. Royal British Columbia Museum, Victoria.
- Ewins, P.J., M.J.R. Miller, M.E. Barker and S. Postupalsky 1994. Birds breeding in or beneath Osprey nests in the Great Lakes basin. *Wilson Bulletin* 106:743-749.
- Flath, D.L. 1972. Canada Goose – Osprey interactions. *Auk* 89:446-447.
- Green, D.J. and E.A. Krebs 1995. Courtship feeding in Ospreys *Pandion haliaetus*: a criterion for mate assessment? *Ibis* 137:35-43.
- Machmer, M.M. and R.C. Ydenberg 1990. Weather and Osprey foraging energetics. *Canadian Journal of Zoology* 68:40-43.
- Steeger, C., H. Esselink and R.C. Ydenberg 1992. Comparative feeding ecology and reproductive performance of ospreys in different habitats of southeastern British Columbia. *Canadian Journal of Zoology* 70:470-475.
- Steeger, C. and R.C. Ydenberg 1993. Clutch size and initiation date of ospreys: natural patterns and the effect of a natural delay. *Canadian Journal of Zoology* 71:2141-2146.

