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Table 1. Bandings, retrappings and losses of color-bands among Common Terns.

Year of Banding	Number Color-banded	Number Retrapped		Number With Missing Band	
		1989	1990	1989	1990
1988	171	41	18 ^a	6	0
1989	118 ^b		23		1

^a Includes 12 birds that had been retrapped in 1989 also.

^b Includes 11 birds whose color-bands were sealed (see Methods).

Spring Owl Banding at the Whitefish Point Bird Observatory, Michigan, from 1981 to 1990. Part 2: Repeats and Returns

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INTRODUCTION

Grigg (1991) described the capture methods and results of the spring owl banding program at the Whitefish Point Bird Observatory from 1981 to 1990. This paper will present the owl repeats and returns resulting from the WPBO owl banding program during this period.

RESULTS

During the springs of 1981 to 1990, a total of 1494 owls of seven species were banded at WPBO (Table 1). Seventy-nine (6.1%) were recaptured subsequently in the same season at WPBO during the springs of 1982 to 1990. (Recaptures were not recorded in 1981.) This compares favorably with the 5.3% repeat rate for the nearly 6500 Sharp-shinned Hawks, *Accipiter striatus*, banded here during the springs of 1982 through 1987 (Grigg, unpublished data).

Fall studies of Northern Saw-whet Owls, *Aegolius acadicus*, in Wisconsin (Mueller and Berger 1967) showed a 20.2% same-season recapture rate, and at Prince Edward Point, Ontario, a 17.8% rate was calculated (Weir et al. 1980). This is far greater than the 2.9% spring repeat rate for Northern Saw-whet Owls at WPBO. Coincidentally, Catling (1971) reported a 2.9% recapture rate for Northern Saw-whet Owls in the spring at Toronto, Ontario. The Whitefish Point data may be partially biased by some of the volunteer banders not recording all of their recaptures. It is also more strongly influenced by the fact that spring birds may have a more hurried northbound migration - July - Sept. 1991

tion due to their upcoming breeding season than birds going south in the fall. Obviously, the geography of the banding station as well as the seasonal timing of occurrence plus the area's weather could also affect the recapture rates and length of stopover.

Interestingly, more than half (55.6%) of all same-season recaptures were made after a two or more night stopover in the WPBO area. Recaptures after ten or more nights totalled 21 encounters, 26.6% of all repeats. After 20 nights, there were eight recaptures, or 10.1% of the total repeats. The longest period between banding and subsequent same-season recapture was of 29 nights for a Boreal Owl, *Aegolius funereus*, banded on 28 April 1983 and recaptured on 27 May (Table 2).

Unfortunately, only 21 of the repeats had both the initial (banding) weight and recapture weight recorded. The maximum weight loss per body weight between banding and recapture was for an adult Boreal Owl banded on 13 April 1988 and recaptured on 19 April. The bird's weight loss was 18 grams, or 10.9% of the original banding weight. The greatest weight gain was 12.4% of original banding weight. This was for a Northern Saw-whet Owl banded on 16 April 1987 and recaptured one night later. Obviously, a positive change in body weight between banding and recapture indicates that the owl had fed recently prior to recapture, so the timing of feeding is important to the recapture weight gain or loss between periods.

While geographically Whitefish Point may be a temporary dead-end stopover for some migrants, examination of the weights shows that those individuals remaining here do not undergo a significant weight change over time. Nor does it show that individuals in poor condition (lighter in weight) are more likely to be recaptured. For example, during the spring of 1988, 12 of the 13 Boreal Owls that repeated had their recapture weights recorded. Nine of those lost from 1 to 18 grams in weight over a period of 1 to 17 nights. Two other owls gained four and six grams in weight after 9 and 16 nights, respectively. One bird showed no weight change after eight nights. The average banding weight for adult (ASY) Boreal Owls that were recaptured subsequently was 6.8 grams heavier than the combined average weight for all adult Boreals banded. For second year (SY) birds repeating, it was 3.6 grams heavier; so, heavier birds were recaptured more frequently than lighter birds (Table 3). While Boreal Owls are one of the most sexually dimorphic owl species (Earhart and Johnson 1970), there is no reliable way to sex them externally. It is, therefore, impossible to state that females (i.e., the larger, heavier birds) repeated more frequently than the males. Also, the averaged recapture weights for both ASY and SY owls are still greater than the average weight for all ASY and SY owls banded. So the weight change after their stay in the WPBO area is still within the normal weight fluctuations for Boreal Owls. More research is needed before we know why ASY Boreal Owls were recaptured more often than their population frequency; or why SY birds were recaptured with less frequency.

For certain owl species, the banding data indicate that when large numbers are present, a higher percentage repeat than their nine-year average. For instance, in 1984 a record 38 Barred Owls, *Strix varia*, were banded. Thirteen, or 34.2%, repeated. During the 1982-90 period (excluding the 1984 data), 39 were banded and only 3, 7.7%, repeated.

For other species, the percent repeating during its peak occurrence is less than the nine-year average. Our records indicate this to be true for Northern Saw-whet Owls (93 banded in 1986, with one, or 1.1%, repeating) and Long-eared Owls, *Asio otus*, (64 banded in 1988 and one, or 1.6%, repeating).

The percent repeating for Great Horned Owls, *Bubo virginianus*, Great Gray Owls, *Strix nebulosa*, and Boreal Owls is very similar during their peak and non-peak years. The migration of both Great Horned and Great Gray Owls peaked in the spring of 1984. Those banded had a 5.6% and 20.8% repeat rate (versus a nine-year average repeat rate of 7.1% and 23.8%, respectively). Boreal Owls peaked in the spring of 1988 and had a 7.7% repeat rate then, compared to a 9.2% nine-year average.

The two more commonly banded owls at WPBO--the Northern Saw-whet and Long-eared Owls--are also the two species that are less frequently recaptured during the same season. Of all Northern Saw-whet Owls banded, 2.9% repeated. For Long-eared Owls, the repeat rate was 3.2%. Individuals of

these two species also migrate through the WPBO area during a shorter period of time than the other owl species. Of all repeating Northern Saw-whet Owls, 13.3% were caught after four nights; with repeating Long-eared Owls, 11.1% were caught after four nights. For all other species, those repeating after four nights totalled 52.7% of all those recaptured. This suggests a quicker migration past WPBO for Northern Saw-whet and Long-eared Owls than for the other owl species. Are they then more likely to breed in the same season as banded, as suggested by their more hurried migration? Further study on this subject is needed.

By using standardized capture methods and data collection, the Whitefish Point Bird Observatory will continue to study the interesting phenomena of the spring owl migration past this unique location.

As far as returns go, three of the owls banded at WPBO returned in later years. A Boreal Owl originally banded on 3 May 1982 was recaptured two years later on 22 April 1984 (Carpenter 1985). Two of the 36 Barred Owls banded in 1984 were recaptured in 1985. One banded on 20 April 1984 was recaptured on 25 April 1985 and the other banded on 11 May 1984 was recaptured on 20 April 1985. These three returns represent a 0.21% return rate found by Holroyd and Woods (1975) based on the 5843 Northern Saw-whet Owls banded in North America to the end of 1969. In comparison, Carpenter et al. (1990) calculate a 0.31% return rate for Sharp-shinned Hawks banded at WPBO during the springs of 1984-87.

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Table 1. Spring owls banded and recaptured and their length of stay at WPBO.

Species	Number Banded 1981-1990	Number of Repeats 1982-1990	Percent Repeating	Number Recaptured On/After			More Than 2 Nights
				Same Night	1 Night	2 Nights	
LEOW	427	9	2.3%	1	2	2	4
BAOW	79	16	20.3%	0	3	3	10
GGOW	22	5	23.8%	0	0	0	5
BOOW	306	28	9.2%	0	8	1	19
NSWO	575	15	2.9%	1	8	3	3
GHOW	84	6	7.1%	1	1	1	3
NHOW	1	0	0.0%	0	0	0	0
TOTAL	1494	79	6.1%	3	22	10	44

Table 2. Maximum length of stay at WPBO for spring owls from 1982 to 1990.

SPECIES	BANDING AND RECAPTURE DATES	LENGTH OF STAY
LEOW	20 April 1990 to 1 May	11 Nights
BAOW	25 April 1984 to 12 May	17 Nights
GGOW	20 April 1985 to 14 May	24 Nights
GGOW	3 May 1990 to 27 May	29 Nights
NSWO	19 April 1989 to 13 May	25 Nights
GHOW	17 April 1987 to 7 May	20 Nights



Table 3. Banding and recapture weights by age class of Boreal Owls caught during the spring of 1988.

FOR THE BANDING SAMPLE							
AGE	NUMBER	PERCENT	AVERAGE WEIGHT	NUMBER REPEATING	PERCENT	AVERAGE BANDING WEIGHT	AVERAGE RECAPTURE WEIGHT
ASY	90	55.2%	149.9g	9	69.2%	156.7g	150.4g
SY	73	44.8%	144.9g	4	30.8%	148.5g	147.8g