

RECOVERIES OF BANDED OSPREYS IN THE WEST INDIES

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Abstract.—Of 109 banded Ospreys recovered in the West Indies, 106 (97%) were from eastern continental North America and 74 (68%) were captured between September and December suggesting an important fall migration that, at least among first-year birds, arrives in the Bahamas, Cuba, and Hispaniola before reaching Puerto Rico and the Lesser Antilles. Social, economic, and political factors seem to have an important influence on the temporal and geographic patterns of recoveries in the region.

RECUPERACIÓN EN LAS ANTILLAS DE ESPECÍMENES ANILLADOS DE *PANDION HALIAETUS*

Síntesis.—De 109 especímenes de *Pandion haliaetus* recuperados en las Antillas (Indias Occidentales), 106 (97%) resultaron haber sido anillados en la parte este de Norte América Continental; 74% fueron capturados entre septiembre y diciembre. Esto sugiere una importante migración en el otoño de al menos juveniles de primer año, que llegan a las Bahamas, Cuba y la Española, previo a alcanzar a Puerto Rico y las Antillas Menores. Se sugiere que factores sociales, económicos y políticos pudieran estar afectando la proporción de aves recuperadas.

There are few accounts of the migratory and wintering habits of North American raptors in the West Indies (e.g., Henny and Van Velzen 1972, Kennedy 1973, Smith 1980). We present information on band recoveries of North American Ospreys (*Pandion haliaetus*) in the West Indies, and we discuss band-recovery patterns in Cuba and Hispaniola. We suggest that socio-political factors have played an important role in determining band-recovery patterns in the region.

The Bird-Banding Laboratory (U.S. Fish and Wildlife Service) provided us with all Osprey band-recoveries that had been reported through July 1984 from all islands in the West Indies. We tabulated and summarized the information contained in these records.

One-hundred and nine banded North American Ospreys were recovered from the West Indies between March 1933 and April 1983. Forty-eight Ospreys were recovered from Cuba, 32 from Hispaniola, 9 from Trinidad, 8 from Puerto Rico, 3 from the Bahamas, 3 from Jamaica, 2 from Aruba, and 1 each from Dominica, St. Lucia, Bonaire, and an unidentified island in the Lesser Antilles. Ninety-two (84%) of the recovered Ospreys had been banded in New Jersey, New York, Maryland, or Virginia. With the exception of 3 birds banded in Wisconsin and Michigan, all other birds had been banded along the eastern coast of North America from Prince Edward Island to Florida.

Fifty-eight percent of the Ospreys recovered in the West Indies had been shot; 17% were found dead; 6% were reports of the band number only, and 19% were a combination of other types of reports (e.g., death

TABLE 1. Band recoveries of Ospreys in the West Indies by decade (1941–80).

Islands	Number of Ospreys recovered			
	1941–1950	1951–1960	1961–1970	1971–1980
Cuba	11	14	0	17
Hispaniola	3	3	6	16
Other islands	1	5	4	11
Total	15	22	10	44

unknown, captured by hand, collided with wires). There were no differences in the proportions of recovered Ospreys that had been shot during the pre-1960 period (63% of 43 recoveries) and the post-1960 period (56% of 66 recoveries, $\chi^2 = 0.34$, $df = 1$, $P > 0.05$).

Twenty-eight Ospreys were recovered in Cuba before 1960, and 20 were recovered after 1960. In contrast, during these periods Osprey band-recoveries increased in Hispaniola from 6 to 26, and in all other islands in the region from 9 to 20. These temporal patterns in number of recoveries were not different between Hispaniola and the other islands ($\chi^2 = 1.23$, $df = 1$, $P > 0.05$), but they were significantly different between Cuba and Hispaniola ($\chi^2 = 12.31$, $df = 1$, $P < 0.001$) and Cuba and the other islands ($\chi^2 = 5.41$, $df = 1$, $P < 0.02$). These differences were largely caused by the complete lack of Osprey band-recoveries from Cuba during the decade of 1961–1970 (Table 1).

To determine if Ospreys recovered from Cuba had been banded in the same regions as those recovered from Hispaniola and all other islands, we compared the percent of recovered birds that had been banded north or south of Chesapeake Bay (39°30' N latitude). The 10 Ospreys recovered from Hispaniola and all other islands between 1961 and 1970 were excluded because no Ospreys were recovered from Cuba during this period. Fifty-two percent, 46%, and 48% of the Ospreys recovered from Cuba, Hispaniola, and all other islands, respectively, had been banded north of Chesapeake Bay. The differences among these proportions were not significant ($\chi^2 = 0.26$, $df = 2$, $P > 0.05$) and suggest that there were no differences in the origins of the banded Ospreys that were recovered from these islands.

Ospreys were recovered in the West Indies during all months of the year; however, 46% of all recoveries were during September and October, and 68% of all recoveries were between September and December. Young Ospreys may remain in their wintering grounds for over one year (Henny and Van Velzen 1972) and might make movements between islands during that time, so it is difficult to determine from total band-recoveries whether recovered birds had just arrived on an island or had been in the region for many months. We used recoveries of first-year birds (i.e., birds recovered the same year they were banded as nestlings) to determine if Ospreys arrived earlier on islands closer to continental North America than on those farther away. Eighty-six percent of the 36 first-year Os-

preys recovered in the nearby northwestern islands of the West Indies (Bahamas, Cuba, and Hispaniola) were recovered before 1 November, whereas only 42% of the 12 first-year Ospreys recovered in the more distant southeastern islands (Puerto Rico and the Lesser Antilles) were recovered before 1 November. The significant difference ($\chi^2 = 4.41$, $df = 1$, $P < 0.05$) between these proportions suggests that first-year Ospreys do arrive in the northern islands earlier than in the southern islands.

The large proportion (97%) of Ospreys recovered in the West Indies that had been banded in eastern continental North America, as well as the banding results of Melquist et al. (1978) and Melquist and Johnson (1984) for western North America, corroborate Henny and Van Velzen's (1972) suggestion that Osprey populations from eastern North America migrate to South America primarily via the West Indies while those from central and western North America migrate primarily via Central America. Kennedy (1973) also reported Ospreys from eastern continental North America migrating mainly to the West Indies.

A similar situation has been documented for Blue-winged Teal (*Anas discors*). The majority of ducks migrating to the Neotropics from the Atlantic Flyway winter in or migrate through the West Indies, whereas those from the Central and Pacific Flyways winter in or migrate through Central America (Botero and Rusch, in press).

Recovery rates of banded raptors depend on collection rates (rates at which banded raptors are shot or found) and on reporting rates (percentages of shot or found banded raptors that are reported) (Geis 1972). Botero and Rusch (in press) suggested that the low educational level in many areas of the Neotropics is an important factor that reduces reporting rates and that reporting rates might be higher near urban areas. This implies that, all else being equal, illiteracy rates should be negatively correlated with band-recovery rates.

This prediction holds when comparing band-recovery patterns from Haiti and the Dominican Republic. Both countries share the island of Hispaniola; however, Haiti, which covers 36% of the land area and has 47% of the island's human population, contributed only 3% of the Ospreys recovered from Hispaniola. Haiti is one of the poorest countries in the Western Hemisphere and had an illiteracy rate that was 2.3 times higher than that of the Dominican Republic (74% vs. 33%, respectively) in 1970–1971 (U.N.E.S.C.O. 1980).

Illiteracy rates declined in Cuba during the 1960s from 22% in 1953 to 5% in 1979 (U.N.E.S.C.O. 1980, 1981). However, osprey band-recoveries decreased during the decade, 1961–1970. This reduction in recoveries was not a result of changing banding trends in North America because: (1) banding of Ospreys increased during this period (Henny 1977) and, more importantly, (2) band recoveries decreased only in Cuba even though the island received migrating Ospreys from the same regions as other islands in the West Indies. Band-recovery rates declined in Cuba during the decade, 1961–1970, concurrently with declining illiteracy rates, apparently due to reduced collection rates or reporting rates in Cuba.

After the 1959 Cuban Revolution, hunting activities decreased, apparently because of the implementation of strict gun-ownership and hunting regulations (H. J. Gonzalez Alonso, pers. comm.). The emigration of large portions of the educated middle- and upper-class sectors of the population (Casal 1979, Fagen et al. 1968), as well as redirected use of leisure time for community service during those early post-revolution years (H. J. Gonzalez Alonso, pers. comm.), might also have reduced the number of sport hunters on the island during that decade. It is difficult to obtain statistics on hunting before or during the 1960s because the first government institution (Union de Cazadores) to maintain reliable records on hunting was not established until the late 1960s (H. J. Gonzalez Alonso, pers. comm.).

Reporting rates probably declined as well during the decade, 1961–1970. After the 1959 Cuban Revolution numerous conflicts began between the United States and Cuba (Bender 1981). It is likely that this situation reduced the ability and disposition of Cuban hunters to cooperate with the Bird-Banding Laboratory in the United States by returning bird bands. Improved relations between the two countries in the 1970s and improved socio-economic conditions in Cuba (Bender 1981, Mesa-Lago 1978) may have brought about the observed increase in band-recovery rates from the island during the decade, 1971–1980. Although hypotheses addressing the effects of socio-political phenomena in biasing band-recovery studies will be difficult to test, their importance should not be underestimated.

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NOTES AND NEWS

Symposium: FOOD EXPLOITATION BY TERRESTRIAL BIRDS, 19 March 1988. Asilomar Conference Center, Pacific Grove (Monterey), California. Held in conjunction with the 58th Annual Meeting of the Cooper Ornithological Society. The intent of this symposium and subsequent published proceedings is to bring together for presentation and discussion scientists involved with the design and analysis of studies exploring how birds exploit food resources. Topics must be limited to nonraptorial, terrestrial birds. **Abstracts, due 1 March 1987,** are solicited that review the particular subject area as well as presenting new data. The symposium is being organized by MICHAEL L. MORRISON, C. JOHN RALPH, JARED VERNER, and WILLIAM M. BLOCK, with sponsorship from several private, state, and federal organizations. For instructions on submission of abstracts, and other information on the symposium, write: MICHAEL L. MORRISON, *Dept. Forestry and Resource Management, Univ. of California, Berkeley, California 94720 (415-642-5344)*.

AVIAN SEXUAL SELECTION: A SECOND CENTURY OF CONTROVERSY

A symposium to be hosted on **27 March** by the Dept. of Biological Sciences, Ohio Wesleyan Univ. Invited speakers include SIEVERT ROHWER, DONALD KROODSMA, PATRICIA GOWATY, KEN YASUKAWA, and STEPHEN PRUETT-JONES. Breaks, reception, buffet lunch, and dinner will provide opportunity for discussion among participants and with speakers. For further information contact the host, EDWARD H. BURTT JR., *Dept. of Biological Sciences, Ohio Wesleyan Univ., Delaware OH 43015 (614-369-4431 ext 400)*.

THIRD NEW ENGLAND REGIONAL HAWK CONFERENCE, 4 Apr. 1987, Holiday Inn, Holyoke, MA. Registration forms available from **HAWKS, P.O. Box 212, Portland, CT 06480.**