THIOLLAY, J. M. 1991. Foraging, home range use and social behaviour of a group-living rainforest raptor, the red-throated caracara *Daptrius americanus*. Ibis 133:382–393.
WITTENBERGER, J. F. 1981. Animal social behavior. Duxbury Press, Boston, Massachusetts.

CARLOS A. PERES, *Dept. of Ecology, Universidade de São Paulo, Caixa Postal 11.461, São Paulo–S.P. 05422-970, BRAZIL.* (Present address: *CSERGE, School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, ENGLAND).* *Received 25 April 1995, accepted 1 Sept. 1995.*

Wilson Bull., 108(1), 1996, pp. 175–178

Notes on the status and behavior of the Swainson's Warbler in Cuba.—The Swainson's Warbler (*Limnothlypis swainsonii*) is one of the less common North American warblers (Morse 1989). Although data from the Breeding Bird Survey suggest that the species has undergone a significant range-wide population increase during the period 1966–1988 (Sauer and Droege 1992), regional Neotropical migrant prioritization schemes for the midwestern (Thompson et al. 1993) and southeastern (Hunter et al. 1993) United States consider the Swainson's Warbler among the more vulnerable Neotropical migrants based on its low population, threats on the breeding and wintering grounds, and its restricted range. Considering its vulnerability, the status of the Swainson's Warbler is poorly known in its breeding range (Hunter et al. 1993), and even more so in winter. Here, we summarize recent and historical records for the Swainson's Warbler in Cuba, re-assess its status there, and describe aspects of its foraging and flocking behavior based on casual observations, previously published information, and anecdotal reports.

The Swainson's Warbler winters in the northern Bahama Islands, Cuba, the Cayman Islands, Jamaica, the Yucatán Peninsula, and Belize (AOU 1983). There are also sight and banding records from Puerto Rico (AOU 1983; J. Faaborg, pers. comm.) and sight records from St. John (Raffaele 1989). It is reported as casual on the Swan Islands (AOU 1957). In Cuba, the Swainson's Warbler has been considered a rare winter resident (Garrido and García Montaña 1975). The first report for Cuba was provided by Gundlach (1876) who knew of a single sight record from La Habana (Fig. 1). In the 150 years prior to 1991, it is unknown exactly how many Swainson's records exist for Cuba, but we are aware of only 21 (Fig. 1).

Banding activities carried out during the winters of 1991–1994 by Cuban researchers of the Institute of Ecology and Systematics (IES) of the Ministry of Science, Technology, and Environment, the Cuban National Museum of Natural History; and by a cooperative forest bird survey project of the IES, the Canadian Wildlife Service (CWS), and the Long Point Bird Observatory (LPBO) have provided many new records of Swainson's Warbler. Recent bird-watching tours have contributed additional sight records of the species. In total, 58 individuals were observed, netted, or collected at 17 sites during the winters of 1991–1994 (Fig 1). Highest numbers were at El Cenote, Ciénaga de Zapata, Matanzas Province, where 13 (1.80/100 net-h) were captured 11–14 February 1991, and at Camino al Sitio Viejo, Cayo Coco, Ciego de Avila Province, where 12 (1.67/100 net-h) were captured 27–30 January 1994. Seasonally, Swainson's Warblers have been observed in Cuba from 15 September to 14 April (Garrido and García Montaña 1975; Garrido and Kirkconnell, unpubl. data).

Historical and recent Cuban records indicate that Swainson's Warblers occur in the lowlands, montane regions, and in swampy areas. They apparently prefer semideciduous forest with high shrub and tree stem density, complete, or nearly complete, canopy cover, abundant

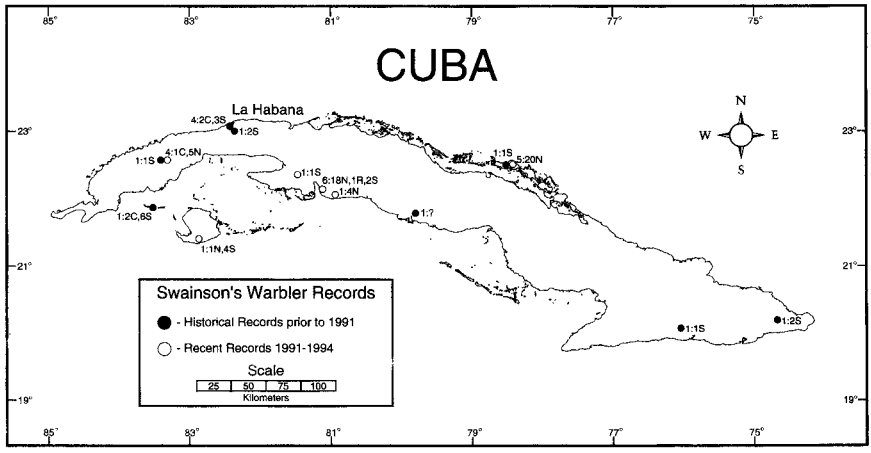

FIG. 1. Distribution of historical and recent records of the Swainson's Warbler in Cuba. The first numeral, followed by a colon, indicates number of sites at that location from which records are derived and is followed by the number of individuals in each of the following categories: C = Collected, N = Netted and usually banded, R = Recapture of bird banded previous year, S = Sight record, ? = exact number of individuals unknown.

dry leaf litter, and humid, shady areas, sometimes near streams, or near waterholes in limestone bedrock near the coast. While they seem to inhabit mostly larger forest tracts, they also occasionally reside in smaller forest fragments in the vicinity of larger forests, or, in the keys, in patches of low coastal scrub.

Inter-winter site fidelity has been documented for the Swainson's Warbler in Jamaica (Diamond and Smith 1973). In the recent Cuban banding surveys, a Swainson's Warbler was recaptured one year after banding and 120 m from the original capture site (McNicholl 1992).

Swainson's Warblers spend most of their time on the ground or less than 1-2 m above it. Lack and Lack (1972) reported that Swainson's Warblers in Jamaica always feed on the forest floor where they rummage and probe in leaf litter, sometimes tossing leaves aside. Our observations in Cuba support this, but include sightings of the species insect gleaning from surfaces of leaf litter or bare ground, and gleaning prey in slow moving water. Whereas insects seem to be the principal food items, Eaton (1953) discovered the bones of small lizards, perhaps anoles (*Anolis* sp.) or geckos (*Sphaerodactylus* sp.), in stomach samples of Swainson's Warblers wintering in Cuba.

Although Eaton (1953) classified Swainson's Warblers as solitary foragers, we frequently observed them foraging in close association with other warblers, particularly Ovenbirds (*Seiurus aurocapillus*) and Worm-eating Warblers (*Helmitheros vermivorus*). When the three species were together, Swainson's Warblers foraged in the wettest areas with Worm-eating Warblers, while Ovenbirds foraged in drier areas. At La Güira, Pinar del Río Province in Feb-Mar 1986, Garrido twice observed Kentucky Warblers (*Oporornis formosus*) and Hooded Warblers (*Wilsonia citrina*), joining such mixed-species flocks, typically feeding within a few inches of the ground, and sallying or hovering in a manner similar to the American Redstart (*Setophaga ruticilla*) (Bennett 1980).

In many of our sightings, we observed an apparent association between Swainson's Warblers and Ovenbirds. Like Swainson's Warblers, Ovenbirds pick insects off leaf litter or the

ground, but, in general, they use their bills to rummage in dry leaves more frequently than Swainson's Warblers. During four of our sightings, we observed a Swainson's Warbler feeding in the "wake" of an Ovenbird, sometimes following the Ovenbird within a few centimeters. During many other observations Ovenbirds and Swainson's Warblers foraged in close proximity without any apparent aggression. Ovenbirds and Swainson's Warblers were frequently captured side-by-side in mist nets suggesting that they were moving together through the forest. We suggest that the body movements of walking Ovenbirds, which often include repeated cocking of the tail, and the disruption of the leaf litter with the bill and feet, make otherwise cryptic insects move or fly, facilitating their capture by Swainson's Warblers (the "beater effect" of Powell 1985). Other potential explanations of this trailing behavior include the possibility that active foraging by Ovenbirds signals the presence of food resources to Swainson's Warblers, as proposed for a variety of mixed-species assemblages (e.g., Gannon 1934, Rand 1954, Sealy 1973, Turner 1965); or that the association provides enhanced predator detection for both species, as proposed for other mixed-species flocks (e.g., Cody 1971).

In summary, the recent evidence provided by bird banding and regular, intensive searching during bird-watching tours suggests that the Swainson's Warbler is a more common winter resident in Cuba than previously believed. The total of 58 individuals recorded during the winters of 1991–1994 is nearly three times the total recorded in the previous 150 years. We believe that the paucity of early records is attributable to the cryptic plumage of the species, its elusive behavior in dense vegetation, and, particularly, the lack of intensive surveys utilizing mist nets.

Acknowledgments.—We thank the Cuban Ministry of Science, Technology, and Environment, the Canadian Wildlife Service, Great Auk Nature Tours, Long Point Bird Observatory, and the Canadian Nature Federation for financial and logistical support. Graeme Gibson of Great Auk Nature Tours and CubaTour made the bird-watching trips to Zapata and La Güira possible. The following people assisted in the field: Martín Acosta, Vincente Berovides, Pedro Blanco, Jane Bowles, Beverly Collier, Ronel Concepción, Donald Fillman, Esteban Godinez, Raúl Gómez, Hiram González, Colleen Hyslop, Judith Kennedy, Alejandro Llanes, Frank Loyola, Miriam Martinez, Jonathan McCracken, Martin McNicholl, Lourdes Mugica, Ramona Oviedo, Alina Pérez, Ronald Ridout, Daysi Rodríguez, Bárbara Sánchez, Eliser Socarrás, Steven Wendt, and Daily Zuñiga. Joseph Walter of the Geographic Resource Center, Univ. of Missouri produced the map. Michael Baltz, John Faaborg, Herbert Raffaele, Elizabeth Wallace, and an anonymous reviewer contributed valuable comments on the manuscript.

LITERATURE CITED

AMERICAN ORNITHOLOGISTS' UNION. 1957. Check-list of North American birds, 5th ed. A.O.U., Washington, D.C.

———. 1983. Check-list of North American birds, 6th ed. A.O.U., Washington, D.C.

BENNETT, S. E. 1980. Interspecific competition and the niche of the American Redstart (*Setophaga ruticilla*) in winter and breeding communities. Pp. 919–335 *in* Migrant birds in the Neotropics: ecology, behavior, distribution, and conservation (A. Keast and E. S. Morton, eds.). Smithsonian Inst. Press, Washington, D.C.

CODY, M. L. 1971. Finch flocks in the Mojave Desert. Theor. Popul. Biol. 2:142–158.

DIAMOND, A. W. AND R. W. SMITH. 1973. Returns and survival of banded warblers wintering in Jamaica. Bird-Banding 44:221–224.

EATON, S. W. 1953. Wood warblers wintering in Cuba. Wilson Bull. 65:169–174.

GANNON, G. R. 1934. Associations of small insectivorous birds. Emu 34:122–129.

——— AND F. GARCÍA MONTAÑA. 1975. Catálogo de las aves de Cuba. Acad. Cien., La Habana.

GUNDLACH, J. 1876. Contribución a la Ornitología Cubana. Imprenta La Antilla.

HUNTER, W. C., D. N. PASHLEY, AND R. E. F. ESCANO. 1993. Neotropical migratory landbird species and their habitats of special concern within the southeast region. Pp. 159–171 *in* Status and management of Neotropical migratory birds (D. M. Finch and P. W. Stangel, eds.). USDA Forest Serv., Gen. Tech. Rep. RM-229.

LACK, D. AND P. LACK. 1972. Wintering warblers in Jamaica. Living Bird 11:179–183.

MCNICHOLL, M. K. 1992. Surveys of Nearctic migrant and Neotropical resident birds wintering in Cuban forest ecosystems: report of the 1992 field season. Unpubl. rep., Long Point Bird Obs., Port Rowan, Ontario.

MORSE, D. H. 1989. American warblers, an ecological and behavioral perspective. Harvard Univ. Press, Cambridge, Massachusetts.

POWELL, G. V. N. 1985. Sociobiology and adaptive significance of interspecific foraging flocks in the neotropics *in* P. A. Buckley et al. (eds.). Neotropical Ornithology. Ornithol. Monographs 36.

RAFFAELE, H. A. 1989. A guide to the birds of Puerto Rico and the Virgin Islands, 2nd ed. Princeton Univ. Press, Princeton, New Jersey.

RAND, A. L. 1954. Social feeding behavior of birds. Fieldianna, Zool. 36:1–71.

SÁNCHEZ, B. AND D. RODRÍGUEZ. 1992. Relación de aves y nuevo reporte de Bijirita de Swainson (*Limnothlypis swainsonii*) en el Rincón del Guanal, sur Isla de Juventud, Cuba. Comunicaciones Breves de Zoología:15–18. Editorial Academia, La Habana.

SAUER, J. R. AND S. DROEGE. 1992. Geographic patterns in population trends of Neotropical migrants in North America. Pp. 26–42 *in* Ecology and conservation of Neotropical migrant landbirds (J. M. Hagan III and D. W. Johnston, eds.). Smithsonian Inst. Press, Washington, D.C.

SEALY, S. G. 1973. Interspecific feeding assemblages of marine birds of British Columbia. Auk 90:796–802.

THOMPSON, F. R., S. J. LEWIS, J. GREEN, AND D. EWERT. 1993. Status of Neotropical migrant landbirds in the Midwest: identifying species of management concern. Pp. 145–158 *in* Status and management of Neotropical migratory birds (D. M. Finch and P. W. Stangel, eds.). USDA Forest Serv., Gen. Tech. Rep. RM-229.

TURNER, E. R. A. 1965. Social feeding in birds. Behavior 24:1–46.

ARTURO KIRKCONNELL, *Museo Nacional de Historia Natural, Capitolio Nacional, La Habana, Cuba*; GEORGE E. WALLACE, *Long Point Bird Observatory, Box 160, Port Rowan, Ontario, N0E 1M0 Canada*; AND ORLANDO H. GARRIDO, *Museo Nacional de Historia Natural, Capitolio Nacional, La Habana, Cuba.* *Received 5 Dec. 1994, accepted 1 Oct. 1995.*

Wilson Bull., 108(1), 1996, pp. 178–180

Comments on a probable gynandromorphic Black-throated Blue Warbler.—Sexual plumage differences in passerine birds are believed to be controlled genetically and only minimally influenced by hormones (Murton and Westwood 1977). Bilateral gynandromorphs are among the most striking manifestations of chromosomal regulation of plumage (Crew and Munro 1938, Cock 1960, Witschi 1961). In these rare individuals, plumages of the left and right sides of the body are demarcated along the midline and presumably reflect gonadal placement. In most cases, an ovary and female plumage are found on the left side, a testis and male plumage on the right. Several hypotheses have been advanced to explain the