
Longevity Estimates of Puerto Rican Birds

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Knowledge of the lifespans of wild birds is of both aesthetic interest and scientific importance. The accumulation of such knowledge can be accomplished almost solely through the bird banding process. Clapp et al. (1982,1983), Klimkiewicz et al. (1983), and Klimkiewicz and Fitcher (1987) have recently summarized longevity records for North American birds through a survey of the Bird Banding Laboratory's records.

Little information exists about longevity of Neotropical birds, in part because of the limited amount of bird banding that has been done in that region. Here we present estimates of the longevity of Puerto Rican birds gathered during a 15-year study at a single site on that island. Although the number of birds banded cannot compare to the totals for all North American bandings (see above references), the longevity records are often quite comparable and provide an interesting first estimate of lifespans for tropical island birds. Additionally, winter site fidelity in some migratory birds provides longevity records comparable to those recorded on the breeding grounds.

Study Site and Methods

Our banding studies have been done in the Guanica Forest of southwestern Puerto Rico, a 4000 ha reserve that is covered with the dry scrub forest typical of such climates in the West Indies. Although this area receives nearly 100 cm of rain yearly, little rain falls from December to April. During this period, drying winds, shallow soils, and bright sunlight make for extremely arid conditions which results in a forest that is partially evergreen and includes many arborescent cacti. The short nature of the vegetation (usually less than 20 feet tall) makes mist netting a highly effective technique for sampling the bird population.

We have been using a line of mist nets as a population monitoring tool (see Faaborg et al. 1984), using the technique outlined in Terborgh and Faaborg (1973). All bandings reported here were from a single straight line of 16 mist nets (36 mm mesh, 12 m long, Association of Field Ornithologists type ATX) placed as close to end-to-end as possible and run from dawn to dusk for three consecutive days. The number of new individuals captured declines sharply during this period, such that only about 20% of

the three-day total is captured on the third day. Samples have been collected during January or early February of every year from 1973 through 1988 except 1977 and 1979, plus samples were taken in June of 1973 and October of 1986.

All birds captured were banded, weighed, measured, and released. Recaptures (birds banded in previous years) allow us to estimate avian longevity in this location. We have followed the standard procedure (see Clapp et al. 1982) of listing longevity records as years-months (0-00). The longest recapture period is the length of time between banding and last recapture of a bird. Estimated maximum longevity is the above period plus the time from initial banding to the previous June 1, assuming that all birds were born on that date. Average recapture time is the average time between first and last captures for all individuals of a species caught in two different sampling periods.

Results and Discussion

We have captured 39 species of birds in this netline over the 15-year period. Of these, 18 have never been recaptured in subsequent sampling periods (Table 1). Often, this is due to very small sample sizes; in other cases, it suggests mobile bird populations, both among winter residents (such as the Cape May and Prairie Warblers) and residents (such as the Black-faced Grassquit). Recapture information is not available for hummingbirds, as we clip tails to mark them.

There is great variation in the longevity characteristics of birds that have been captured in at least two samples (Table 2). Some species (such as the Common Ground Dove) have large sample sizes but show low recapture rates and short longevity estimates. In other cases, nearly 30% of banded individuals have been recaptured, often several times, and even average longevity is high. In a few cases, the presence of apparently sedentary individuals has given us a long recapture time despite either small total samples or low recapture rates.

Several records are worthy of note. Perhaps the most impressive recapture is that of a Puerto Rican Tody which

was banded in February, 1974, and recaptured 4 other times, the last in January of 1988. This period of 13 years, 11 months between banding and last capture and an estimated 14 years, 6 month of age is amazing for a 5.5 g bird living in such a harsh environment! Although the estimated ages of 11 years, 7 months for the Puerto Rican Flycatcher and Pearly-eyed Thrasher are impressive, these birds are appreciably larger (22 and 100 g, respectively) and seemingly more durable than the body. The age estimate of the flycatcher is exceeded in North America only by the Great Crested Flycatcher (*Myiarchus crinitus*; 13 years, 11 months [Clapp et al. 1983]) among congeners. The longevity of the Pearly-eyed Thrasher exceeds all of these shown for members of the North American Mimidae in Klimkiewicz et al. (1983).

The maximum longevity estimate for the Puerto Rican Vireo exceeds those listed for nearly all North American vireos (Klimkiewicz et al., 1983). Such is also the case for the resident Adelaide's Warbler when compared to North American warblers of the genus *Dendroica*. Although we have found that the Northern Parula rarely is recaptured, one of our recaptures gives an estimated maximum longevity of 7 years, 7 months, which exceeds that listed in Klimkiewicz et al. (1983) by nearly 3 years. Although only one individual Prothonothary Warbler was ever recaptured, it appeared in the same net over a 4-year span. This longevity estimate of 4 years, 7 months is close to the 4 years, 11 months listed by Klimkiewicz et al. (1983).

Although one can point out examples like those above it is difficult to make generalizations about the differences between Puerto Rican and North American birds through such comparisons. Yet, given that we are comparing a few dozen to a few hundred birds banded at a single location with often thousands of birds banded throughout North America, one cannot help but get the impression that these resident birds of Puerto Rico are rather long lived, despite the seeming harshness of the seasonally dry forests in which they live.

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Table 1. Species and numbers of birds banded in the Guanica Forest which have never been recaptured in subsequent samples.

SPECIES	NO. BANDED
American Kestrel (<i>Falco sparverius</i>)	1
Zenaida Dove (<i>Zenaida aurita</i>)	3
Key West Quail-dove (<i>Geotrygon chrysia</i>)	12
Puerto Rican Screech-owl (<i>Otus nudipes</i>)	1
Puerto Rican Nightjar (<i>Caprimulgus noctitherus</i>)	1
Antillean Mango (<i>Anthracothorax dominicus</i>)	24
Puerto Rican Emerald (<i>Chlorostilbon maugaeus</i>)	1
Gray Kingbird (<i>Tyrannus dominicensis</i>)	1
Gray-cheeked Thrush* (<i>Catharus minimus</i>)	1
Cape May Warbler* (<i>Dendroica tigrina</i>)	23
Prairie Warbler* (<i>Dendroica discolor</i>)	18
Northern Water-thrush* (<i>Seiurus noveboracensis</i>)*	1
Hooded Warbler* (<i>Wilsonia citrina</i>)	6
Wilson's Warbler* (<i>Wilsonia pusilla</i>)	1
Blue-hooded Euphonia (<i>Euphonia musica</i>)	6
Indigo Bunting* (<i>Passerina cyanea</i>)	1
Black-faced Grassquit (<i>Tiaris bicolor</i>)	34
Shiny Cowbird (<i>Molothrus bonariensis</i>)	1

*denotes winter resident

Table 2. Banding and longevity information for bird species banded and recaptured in the Guanica Forest, Puerto Rico. See text for explanations of terms.

SPECIES	NO. BANNED	NO. BIRDS RECAPTURED	NO. OF RECAPTURES	MEAN RECAP- TURE TIME	LONGEST RECAPTURE	ESTIMATED LONGEVITY
Common Ground Dove (<i>Columbina passerina</i>)	50	3	3	1-08	2-00	2-07
Mangrove Cuckoo (<i>Coccyzus minor</i>)	9	1	1	2-00	2-00	2-07
Puerto Rican Lizard-cuckoo (<i>Saurothera vieillotii</i>)	8	2	3	1-08	3-00	3-07
Puerto Rican Tody (<i>Todus mexicanus</i>)	40	7	15	3-11	13-11	14-06
Puerto Rican Woodpecker (<i>Melanerpes portoricensis</i>)	11	2	2	2-06	4-00	4-07
Caribbean Elaenia (<i>Elaenia martinica</i>)	60	6	10	2-00	5-00	5-07
Puerto Rican Flycatcher (<i>Myiarchus antillarum</i>)	56	16	29	4-00	11-00	11-07
Red-legged Thrush (<i>Turdus plumbeus</i>)	50	14	21	3-06	7-00	7-07
Pearly-eyed Thrasher (<i>Margarops fuscatus</i>)	101	18	28	3-08	11-00	11-07
Puerto Rican Vireo (<i>Vireo latimeri</i>)	19	7	14	2-09	8-09	9-04
Northern Parula* (<i>Parula americana</i>)	36	2	2	4-00	7-00	7-07
Adelaide's Warbler (<i>Dendroica adelaidae</i>)	68	10	13	2-05	6-11	7-06
Black-and-white Warbler* (<i>Mniotilta varia</i>)	47	13	19	1-11	4-00	4-07
American Redstart* (<i>Setophaga ruticilla</i>)	62	11	13	1-11	6-11	7-06
Prothonotary Warbler* (<i>Protonotaria citrea</i>)	3	1	2	4-00	4-00	4-07
Ovenbird* (<i>Seiurus aurocapillus</i>)	24	4	4	1-09	2-00	2-07
Bananaquit (<i>Coereba flaveola</i>)	291	38	55	2-00	6-00	6-07
Stripe-headed Tanager (<i>Spindalis zena</i>)	24	4	4	2-01	6-00	6-07
Puerto Rican Bullfinch (<i>Loxigilla portoricensis</i>)	228	46	63	2-03	7-00	7-07
Black-cowled Oriole (<i>Icterus dominicensis</i>)	2	1	2	1-11	1-11	2-06
Troupial (<i>Icterus icterus</i>)	15	2	2	2-11	3-11	4-06

*denotes winter resident

IBBA CALL FOR PAPERS

The 1989 meeting of the Inland Bird Banding Association will be held on September 8-10, 1989 at the University of Minnesota Raptor Rehabilitation Center on the St. Paul campus. All members and banders are invited and encouraged to submit abstracts for papers or posters covering any aspect of banding, for inclusion in the scientific session to be held on Saturday, September 9th. For information and guidelines, please contact Betsy Jones, Dept. of Veterinary Biology, College of Veterinary Medicine, University of Minnesota, St. Paul, MN 55108, home phone: 612-490-1975, work phone: 612-624-5322. Abstracts are due no later than June 1, 1989.