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Minimum longevity estimates for some Neotropical landbirds of southeastern Peru

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ABSTRACT—Relatively little is known about the longevity of free-living landbirds, especially in the tropics. We used mark-recapture data for birds originally banded in 2005 and 2006, and later recaptured between 2011 and 2016, to estimate minimum longevity for 20 species from southeastern Peru. The oldest recorded longevity was 10 years, 6 months for a Black-billed Treehunter (*Thripadectes melanorhynchus*). Another notable record was for a Russet-crowned Warbler (*Myiothlypis coronata*; 9 years, 2 months). Our estimated minimum longevity records generally reflect the findings of other researchers, indicating that tropical birds are often markedly site faithful and long-lived. *Received 7 July 2017. Accepted 10 April 2018.*

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Key words: bird banding, life history, lifespan, Manu National Park, mark-recapture, tropical birds.

Estimaciones de mínima longevidad para algunas aves terrestres neotropicales del sureste Peruano

RESUMEN (Spanish)—Se conoce relativamente poco sobre la longevidad de las aves terrestres silvestres, especialmente en los trópicos. Utilizamos datos de marca y recaptura para aves anilladas originalmente en 2005 y 2006, y luego recapturadas entre 2011 y 2016 para estimar la longevidad mínima en 20 especies del sureste Peruano. La mayor longevidad registrada fue de 10 años y 6 meses para *Thripadectes melanorhynchus*. Otro registro notable fuera 9 años y 2 meses para *Myiothlypis coronata*. Nuestros registros de longevidad mínimos estimados concuerdan con los hallazgos de otros investigadores, indicando que las aves tropicales permanecen frecuentemente en la misma localidad y son de vida larga.

Palabras clave: anillamiento de aves, aves tropicales, esperanza de vida, historia de vida, marca y recaptura, Parque Nacional de Manu.

Longevity records of wild birds are useful for understanding trade-offs in life history strategies among species, such as latitudinal differences in

Table 1. Maximum reported minimum longevity records for Neotropical passerines described in the scientific literature. For single species studies, we list only the highest reported minimum longevity estimate for that species. We assumed that time elapsed between first and last sampling was in exact years unless a specific range of dates was given. Age and study duration are presented as years-months (00-00).

Species	Age	Study duration	Study period	Source of longevity record	No. of species reported
Plain-colored Tanager (*Tangara inornata*)	6-08	7-03	1956–1963	Crebbs (1964)	1
White-bearded Manakin (*Manacus manacus*)	14-00	14-00	1957–1971	Snow and Lill (1974)	15
Red-legged Thrush (*Turdus plumbeus*)	6-06	9-00	1972–1980	Faaborg and Winters (1980)	5
Great Kiskadee (*Pitangus sulfuratus*)	8-09	11-00	1966–1977	Lopes et al. (1980)	44
Spotted Antbird (*Hylophylax naevioides*)	14-07	16-06	1965–1981	Willis (1983)	5
Gray-headed Tanager (*Eucometis penicillata*)	10-00	16-06	1965–1981	Willis (1985)	1
Puerto Rican Tody (*Todus mexicanus*)	14-06	15-00	1973–1988	Faaborg and Arendt (1989)	21
Puerto Rican Vireo (*Vireo latimeri*)	13-02	23-00	1973–1996	Woodworth et al. (1999)	1
Apical Flycatcher (*Myiarchus apicalis*)	6-06	6-06	1990–1997	Kattan et al. (2000)	1
Dusky Antbird (*Cercomacroides tyrannina*)	13-00[a]	10-00	1988–1998	Morton and Stutchbury (2000)	1
Guttulate Foliage-gleaner (*Syndactyla guttulata*)	10-00	10-10	1990–2001	Lentino et al. (2003)	18
Tawny-winged Woodcreeper (*Dendrocincla anabatina*)	11-09	12-00	1991–2003	Robbins et al. (2005)	23
Pearly-eyed Thrasher (*Margarops fuscatus*)	17-00	21-00	1979–2000	Arednt (2006)	1
Fuscous Flycatcher (*Cnemotriccus fuscatus*)	7-10	9-10	1991–2000	Verea et al. (2007)	2
White-throated Thrush (*Turdis albicollis*)	14-10	17-00	1990–2007	Lentino (2009)	14
Streaked Xenops (*Xenops rutilans*)	10-01	15-00	1991–2006	Bispo and Neto (2012)	1
Buff-breasted Wren (*Cantorchilus leucotis*)	15-00	14-00	1997–2011	Gill and Haggerty (2012)	1
Blue-backed Manakin (*Chiroxiphia pareola*)	14-00[a]	12-02	2001–2013	Blake and Loiselle (2013)	1
Marsh Antwren (*Formicovora acutirostris*)	16-02	17-01	1997–2014	Bornschein et al. (2015)	1
Black-faced Antthrush (*Formicarius analis*)	13-10	13-11	2001–2015	Lentino (2016)	7
Black-billed Treehunter (*Thripadectes melanorhynchus*)	10-06	11-04	2005–2016	Current study (2017)	21

[a] Captured as an adult in definitive basic plumage, which can take >2 years to obtain in this species.

clutch size and onset of reproduction (Sæther 1988), body size (Ricklefs 2010), developmental rates (Ricklefs 2006), and energy metabolism (Furness and Speakman 2008). Despite being one of the most well-studied vertebrate taxa, little direct information on longevity exists for many of the world's bird species, particularly from the tropics. In the Neotropics, minimum longevity estimates of some species are available from Puerto Rico (Faaborg and Winters 1980, Faaborg and Arendt 1989, Woodworth et al. 1999, Arendt 2006), Trinidad (Snow and Lill 1974), Guatemala (Robbins et al. 2005), Panama (Crebbs 1964; Willis 1983, 1985; Morton and Stutchbury 2000; Gill and Haggerty 2012), Brazil (Lopes et al. 1980, Bispo and Neto 2012, Bornschein et al. 2015), Colombia (Kattan et al. 2000), Ecuador (Blake and Loiselle 2013), and Venezuela (Lentino et al. 2003; Verea et al. 2007; Lentino 2009, 2016). Collectively, these studies indicate that Neotropical passerines are variably long-lived, with most birds attaining ages >5 years and often up to a decade or more (Table 1).

We report longevity estimates for 20 species of Neotropical landbirds captured over an 11 year period of monitoring in forests adjacent to Manu National Park, southeastern Peru. This area is one of the most biologically diverse regions in the world and has a species pool of roughly 1,100 birds (Walker et al. 2006).

Methods

Data were collected in humid montane forest in proximity to the Cock-of-the-Rock-Lodge, San Pedro (13°3′S, 71°32′W; 1,400 m a.s.l.) and at the upper extent of montane cloud forest near Wayqecha Biological Station (13°11′S, 71°35′W; 2,900

m a.s.l.). A distinct rainy season occurs at both locations from November through April and a dry season from May through August. Precipitation averages 1,700–2,000 mm per year and mean annual temperatures vary from 12.5 °C at Wayqecha to 16.5 °C at San Pedro (Rapp and Silman 2012).

In 2005 and 2006, mist netting was conducted at 48 field sites along a 2,100 m elevation gradient with the goal of describing species range limits and community composition (Jankowski 2010, Merkord 2010). Sixteen sites (4 at Wayqecha and 12 at San Pedro) later became the focus of a long-term banding and population monitoring project beginning in 2011. The data presented herein describe longevity estimates for birds banded during the 2 years of initial surveys and later recaptured between 2011 and 2016. Each field site was sampled for 2–4 consecutive days using an array of 10–15 mist nets (12 × 3 m, 36 mm mesh) opened from dawn until dusk. Nets were placed 0–50 m apart within plots and covered an area of ~1–1.5 ha. We timed data collection to overlap with the end of the dry season (Sep–Nov), which also marks the initiation of breeding for the majority of birds in the region (Terborgh et al. 1990, Merkord 2010).

All captured birds were fitted with a privately issued aluminum leg band (National Band and Tag, Newport, KY), with the exception of hummingbirds and larger birds for which appropriate band sizes were lacking (i.e., some contingas, oropendolas, raptors, and toucans). We collected morphometric measurements for wing chord, tail length, exposed culmen (all 3 measurements in mm), and mass (g). When possible, for monochromatic species, we recorded sex as determined by the presence of secondary sexual characteristics (i.e., brood patches and cloacal protuberances). For dichromatic and sexually dimorphic species, we used plumage and morphometric differences (i.e., disparities in wing, tail, or bill measurements, or mass). Because none of the birds captured during 2005–2006 and included in this study showed juvenile characteristics (e.g., fleshy gapes, downy plumage, symmetrical growth of remiges or rectrices), we estimated minimum longevity of individuals based on their first and last documented captures plus an additional period of 2 months over which we assumed the birds must have been alive prior to banding. Following the standard procedure of Clapp et al. (1983), we list longevity records as years-months. We tested for a significant Pearson correlation between duration of study and maximum reported minimum longevity estimates from the literature (Table 1) using functions in base R 3.4.0 (R Core Team 2017).

Results and discussion

Of 20 species of Peruvian birds belonging to 10 families with ages ranging from 5 to 10 years (Table 2), longevity estimates for all but the Variable Antshrike (*Thamnophilus caerulescens*) are heretofore unreported. Some species, such as Trilling Tapaculo (*Scytalopus parvirostris*), had small sample sizes with the recapture of a single individual contributing to long recapture times. In general, recapture rates for Peruvian birds were 15% lower than those reported for birds of Puerto Rico (Faaborg and Ardent 1989), perhaps because of differences in the height and structure of vegetation between the study areas and the short duration of our study. Information on recapture rates from other Neotropical studies of longevity (Table 1) were unavailable for further comparison.

Many individuals seemed to remain site-faithful over the duration of the study. Similar to Snow and Lill (1974), who reported 38% of recaptured birds being recaptured at their banding site, 7 of the 21 individuals for which we present minimum longevity records were from birds recaptured within 0–50 m of their initial banding location and another 5 within 200 m (Table 2). Three individuals banded in 2006 showed larger movements and were recaptured at distances >1 km from their original capture location. Interestingly, each of these individuals shared the same recapture site along a ridgeline at 1,750 m a.s.l. despite having initial captures at different lower elevation locations. Other birds banded from 2011 to 2016 and not included in this analysis of longevity were found to make similar movements from riverine sites at lower elevations to be recaptured later at this same ridge. Such movements may reflect avian responses to changing food resources, such as the timing of fruiting *Ficus* spp. trees or loose participation in several adjacent mixed-species flocks (Merkord 2010).

Table 2. Minimum longevity estimates for birds captured adjacent to the Manu National Park, Peru, in 2005 and 2006 and later recaptured between 2011 and 2016; age is presented as years-months (00-00). Species names follow Plenge et al. (2017).

Species	Sex[a]	No. banded	No. birds recaptured	No. recaptures	Age	Distance between capture and recapture site (m)
Variable Antshrike (*Thamnophilus caerulescens*)	M	7	1	1	08-04	50–100
White-backed Fire-eye (*Pyriglena leuconota*)	M	12	1	1	07-05	350–400
Slaty Gnateater (*Conopophaga ardesiaca*)	M	18	2	2	06-01	150–200
Trilling Tapaculo (*Scytalopus parvirostris*)[b]	M	2	1	2	08-02	0–50
Olive-backed Woodcreeper (*Xiphorhynchus triangularis*)	U	20	1	2	08-04	1,600–1,650
Montane Foliage-gleaner (*Anabacerthia striaticollis*)	U	35	1	1	07-06	1,000–1,050
Black-billed Treehunter (*Thripadectes melanorhynchus*)	U	16	3	9	10-06	1–50
Streak-necked Flycatcher (*Mionectes striaticollis*)	M	86	1	1	07-06	1–50
Slaty-capped Flycatcher (*Leptopogon superciliaris*)	U	22	1	1	07-04	450–500
Yungas Manakin (*Chiroxiphia boliviana*)	F	52	4	4	06-05	1,600–1,650
Cerulean-capped Manakin (*Lepidothrix coeruleocapilla*)	F	23	1	2	06-01	1–50
Chestnut-breasted Wren (*Cyphorhinus thoracicus*)	U	14	1	1	05-01	150–200
Black-eared Hemispingus (*Sphenopsis melanotis*)	U	33	1	1	08-06	350–400
Orange-eared Tanager (*Chlorochrysa calliparaea*)	F	16	2	2	07-06	50–100
Scarlet-bellied Mountain-Tanager (*Anisognathus igniventris*)[b]	U	3	1	1	06-03	600–650
Blue-capped Tanager (*Thraupis cyanocephala*)[b]	U	8	1	1	06-04	1–50
Yellow-throated Chlorospingus (*Chlorospingus flavigularis*)	F	14	1	1	07-01	150–200
Black-faced Brushfinch (*Atlapetes melanolaemus*)[b]	M	31	1	1	06-04	1–50
Two-banded Warbler (*Myiothlypis bivittata*)	U	14	1	4	08-04	1–50
Russet-crowned Warbler (*Myiothlypis coronata*)	M	71	3	7	09-02	350–400

[a] U = unknown; M = male; F = female.
[b] Captured at Wayqecha Biological Station.

Our largest minimum longevity estimate of 10 years, 6 months for a Black-billed Treehunter (*Thripadectes melanorhynchus*) is the first record for this species and supports other studies reporting long lifespans (>10 years) in Furnariids (Snow and Lill 1974, Willis 1983, Lentino et al. 2003, Robbins et al. 2005, Lentino 2016). Our documented longevity of a Russet-crowned Warbler (*Myiothlypis coronata*) at 9 years, 2 months is the only record for this genus and surpasses >80% of longevity records for North American Paruline warblers reported by the United States Geological Survey Bird Banding Laboratory (Lutmerding and Love 2017), despite our relatively small sample size (<100) of birds initially banded. For Variable Antshrike, our record of 8 years, 4 months is

higher but comparable to those reported by Lopes et al. (1980) for Brazil (6 years, 1 month). Minimum longevity of a Streak-necked Flycatcher (*Mionectes striaticollis*; 7 years, 2 months) was lower, but also comparable to those reported for the sympatrically occurring Olive-striped Flycatcher (*M. olivaceous*, 9 years) in Venezuela (Lentino et al. 2003). For some species, such as Montane Foliage-gleaner (*Anabacerthia striaticollis*) and White-backed Fire-eye, (*Pyriglena leuconota*), our estimates were double those reported by Lopez et al. (1980) from Brazil for species within the same genera: White-browed Foliage-gleaner (*A. amaurotis*; 3 years, 1 month) and White-shouldered Fire-eye (*P. leucoptera*; 3 years, 5 months). A strong correlation ($r = 0.71$, $n = 21$, $P < 0.001$) between study duration and the maximum reported minimum longevity estimates from Table 1 suggests that continued sampling at our Manu field sites could yield even higher estimates for the species we studied. This underscores the need for long-term monitoring of tropical bird communities to achieve better estimates of this life-history variable. More widespread reporting of longevity records for tropical birds will allow broader generalizations regarding avian lifespans and their general life-history strategies.

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First description of nests, eggs, and nestlings of the Pearly-bellied Seedeater (*Sporophila pileata*)

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ABSTRACT—The "capuchinos" form a monophyletic group within the Neotropical seedeaters of the genus *Sporophila* and are typically smaller than the other congeners. Many of the 12 species of this group are endangered, but reproductive information is scarce for most of them. Here we present the descriptions of nests, eggs, nestlings, and nesting habitats for the Pearly-bellied Seedeater (*Sporophila pileata*). From 2012 to 2017 we found 83 nests constructed in herbaceous plants present in open marshlands, 15–73 cm above water or humid ground. Nests were deep cups built of grass stems, inflorescences, and rootlets, attached with spider web. Nests measured 59.3 ± 4.7 mm outside diameter, 50.7 ± 6.5 mm outside height, 41.6 ± 3.2 mm internal diameter, and 35.7 ± 3.3 mm internal depth. Eggs were oval with white, grayish, or greenish background color with black and brown spots mainly in the obtuse pole. They weighed 1.2 ± 0.1 g and measured 16.3 ± 0.8 per 12.2 ± 0.3 mm. Clutches consisted of 1–3 eggs. Our study sites represent the northernmost reproductive areas ever documented for a migratory capuchino. *Received 21 June 2017. Accepted 2 April 2018.*

Key words: birds, breeding biology, reproduction, nesting behavior.

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