

Statement on Migratory Species in Guánica Forest
by

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Guánica is important to migratory birds, both from the island's historical deforestation and land-use perspective, and in light of global change. For decades, the Guánica Biosphere Reserve, with its advanced regenerating dry forest, has acted as an ecological source for migratory birds (Faaborg and Arendt 1984) as well as resident species, many of which are endemic (Dugger et al. 2000). Guánica will become even more important in the future as an ecological source and biodiversity 'hotspot' because neighboring landscapes, as well as coastal dry forest throughout Puerto Rico and the region, are continuing to be deforested and developed at an accelerating rate.

Understanding the non-breeding distributional patterns of Neotropical migratory birds is essential because the last 25 years of collective research on the demographics of Neotropical migratory songbirds has led to the realization that populations can be limited on wintering grounds as well as their breeding grounds (Dugger et al. 2004, Sillett and Holmes 2002, Sherry et al. 2005). At a given non-breeding site such as the Guánica dry forest, patterns of species occurrence and abundance may vary over time. Furthermore, wintering strategies within species may vary with regard to the extent that individuals are site-faithful both within and between winters (Faaborg and Arendt 1984a, Baltz 2000, Faaborg 2002, Dugger et al. 2004, Faaborg et al. in press). Now that NEON has declared Guánica as one of its core areas, it has become even more important to the study of migratory species, all of which will be researched on a much larger scale.

From the longest running constant-effort mist-netting study in the Neotropics, and possibly the world (Faaborg and Arendt 1992b, Faaborg et al. 2000), over a 35-yr period within the Guánica Biosphere Reserve, 21 species of winter resident birds have been captured (Table 1). Mean total captures varied from 8.3 to 18.9 individuals per net line and six to 14 species captured per year (Faaborg et al. in press).

Guánica's migratory birds are important in light of hastened climate change. Our long-term monitoring has allowed us to be among the first to gain insight into the longevity (Faaborg and Arendt 1989) and long-term survival of migratory birds in general, but on islands in particular (Faaborg and Arendt 1995). In addition, we were able to correlate population dynamics with rainfall in Puerto Rico as well on their North American breeding grounds (Faaborg and Arendt 1984b, Faaborg and Arendt 1992c, Dugger et al. 2000, 2004). Furthermore, Guánica's migratory birds have allowed us to document for the first time the effects of long-term climate change on migrant populations inhabiting Neotropical dry forest, as well as an almost four-decade decline

in some migratory species (Faaborg and Arendt 1989, 1992a, Dugger et al. 2004, Faaborg et al. ms.).

Guánica forest is an important habitat for migratory birds during winter. The degradation and destruction of native habitats for urban and agricultural development continues in southwestern Puerto Rico. This reduction in native habitats increases the importance of protected habitats such as the Guánica Biosphere Reserve for both wintering Neotropical migrants and resident bird populations. In addition, the demographics of bird populations in Guánica forest are well-studied, providing baseline information on survival and abundance, crucial to documenting changes in demographics associated with future climate change. Continued long-term research in Guánica Forest will allow us to document changes in demographics associated with future climate change.

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Table 1. Distribution of capture frequencies of Neotropical migratory birds across seven net lines in 1989, eight net lines in 1990, and nine net lines from 1991 – 2006 in Guánica Forest, Puerto Rico.

Species	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Mertin	1	1							1	1		1		1				
Baltimore Oriole																		1
Bicknell's Thrush																		
Black-whiskered Vireo		1										1	1					1
Blue-winged Warbler																		
Northern Parula	4	3	7	8	7	4	7	1	2	22	15	17	15	10	1	6	5	7
Magnolia Warbler			1		1		1			1	1	2	2	2				
Cape May Warbler	2	1	9				3			1		1				3	2	
Prairie Warbler	2		4	12	4	10	5	2	6	21	19	16	13	10	12	13	8	7
Black-and-white Warbler	35	52	60	67	38	38	50	56	34	41	43	44	45	26	26	15	16	26
American Redstart	13	21	19	30	11	9	29	21	7	34	18	16	24	16	23	14	9	7
Prothonotary Warbler	2		1	1							1	3	6					
Worm-eating Warbler	4	2	6	5	2	3	8	7	10	3	7	5	5	1	3		5	6
Ovenbird	26	44	29	35	34	18	44	38	33	34	22	31	41	30	16	20	24	23
Northern Waterthrush		2	4	1				2			1							
Kentucky Warbler																		
Hooded Warbler	7	10	8	4	1	2	3	2		2	1	2	5			2	3	1
Black-throated Blue Warbler		2	2															
Swainson's Warbler		1			1	1						1	2					1
Indigo Bunting			1	1					5	1		1				1		1
Rose-breasted Grosbeak							2			2		12	12			4	1	1
Total Individuals Captured	96	140	151	165	99	85	152	129	98	163	133	152	170	94	81	79	75	79
Mean captures per line	13.7	17.5	16.8	18.3	11.0	9.4	16.9	14.3	10.9	18.1	14.8	16.9	18.9	10.4	9.0	8.8	8.3	8.8
% Recaptured (banded in previous year)	2.1	15.0	13.2	15.2	33.3	25.9	20.4	24.8	33.7	17.2	18.8	10.5	6.5	31.9	37.0	16.5	6.7	30.3