The Journal of Caribbean Ornithology

RESEARCH NOTE

Vol. 29:43–46. 2016

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Photo: Sean Rune

Birds Caribbean

The Journal of Caribbean Ornithology
www.birdscaribbean.org/jco ISSN 1544-4953 https://doi.org/10.55431/jco.2016.29.43-46
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First observations of Adelaide's Warblers (*Setophaga adelaidae*) outside of Puerto Rico, in the U.S. Virgin Islands

Sean M. Rune[1] and LeAnn M. Conlon[2]

Abstract Adelaide's Warblers (*Setophaga adelaidae*) are considered to be endemic to the islands of Puerto Rico, Vieques, and Culebra. We report the first confirmed sightings of Adelaide's Warblers in St. Thomas and St. John, U.S. Virgin Islands, where we observed Adelaide's Warblers 11 times from March 2012 through January 2013.

Keywords Adelaide's Warbler, Culebra, endemic, first record, Puerto Rico, St. John, St. Thomas, *Setophaga adelaidae*, U.S. Virgin Islands, Vieques

Resumen Primeras observaciones de Reinitas Mariposeras (*Setophaga adelaidae*) fuera de Puerto Rico, en las Islas Vírgenes estadounidenses—Reinitas Mariposeras (*Setophaga adelaidae*) son consideradas endémicas a las islas de Puerto Rico, Vieques y Culebra. Reportamos las primeras observaciónes confirmadas de Reinitas Mariposeras en Santo Tomás y San Juan, Islas Vírgenes estadounidenses, donde observamos Reinitas Mariposeras 11 veces desde marzo del 2012 hasta enero del 2013.

Palabras clave Culebra, endémico, Islas Vírgenes estadounidenses, primer registro, Puerto Rico, Reinita Mariposera, San Juan, Santo Tomás, *Setophaga adelaidae*, Vieques

Résumé Premières observations de Paruline d'Adélaïde (*Setophaga adelaidae*) en dehors de Porto Rico, aux Îles Vierges américaines—La Paruline d'Adélaïde (*Setophaga adelaidae*) est considérée comme endémique des îles de Porto Rico, de Vieques et de Culebra. Nous rapportons ici les premières observations confirmées de Paruline d'Adélaïde à St-Thomas et St-John (Îles Vierges américaines), où nous avons observé l'espèce 11 fois de mars 2012 à janvier 2013.

Mots clés Culebra, endémique, Îles Vierges américaines, Paruline d'Adélaïde, Porto Rico, première mention, St-John, St-Thomas, *Setophaga adelaidae*, Vieques

Adelaide's Warbler (*Setophaga adelaidae*) is a parulid warbler considered to be an endemic resident of the Caribbean islands of Puerto Rico. Specifically, published accounts of this species state that its range includes the islands of Puerto Rico (Wetmore 1927) and Vieques (Wetmore 1916). Previously unpublished observations consistently report this species on the Puerto Rican island of Culebra (Fig. 1). Sergio Colón López (pers. comm.) reported sighting and photographing Adelaide's Warblers in Culebra on 2 January 2005 and 22 December 2010, and also in Culebrita (18°18'57"N, 65°13'44"W), a small island adjacent to the eastern end of Culebra, on 20 January 2008. In this report we describe our own observations of Adelaide's Warblers in St. Thomas and St. John, U.S. Virgin Islands. These observations suggest that there is a persistent population of Adelaide's Warblers outside of the endemic range in Puerto Rico.

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Methods

We observed Adelaide's Warblers at Santa Maria and Perseverance Bays, St. Thomas, and Europa Bay, St. John, U.S. Virgin Islands (Fig. 1). The sites are located in the subtropical dry forest life zone (Ewel and Whitmore 1973) and include "deciduous, evergreen and mixed forest and shrubland with succulents" (Kennaway *et al.* 2008).

The Santa Maria Bay trail is located on a hilly slope on the north shore of western St. Thomas (18°21'34"N, 64°59'40"W). Dominant tree and shrub species include *Leucaena leucocephala*, *Bursera simaruba*, *Melicoccus bijugatus*, and *Acacia* spp. The habitat is characterized by dense understory and average tree heights less than 5 m, with larger emergent trees, particularly *Melicoccus bijugatus* (Fig. 2).

The Perseverance Bay site is located approximately 330 m away from the Santa Maria Bay site on the opposite, south-facing slope (18°21'22"N, 64°59'46"W). This site is separated from the Santa Maria Bay site by a road, and the two sites are similar in terms of forest structure and composition.

Europa Bay is located on St. John, on the south-central coast (18°19'10"N, 64°43'54"W), within Virgin Islands National Park.

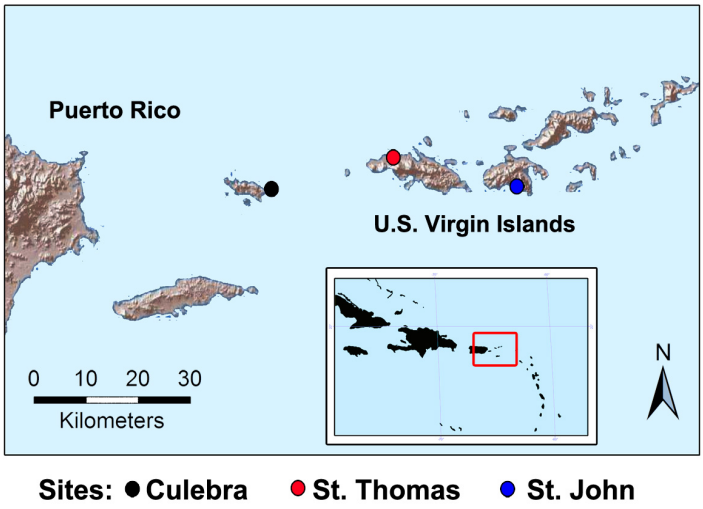

Fig. 1. Map of the reported observation sites in the U.S. Virgin Islands and Culebra (Puerto Rico).

Dominant tree and shrub species include *Leucaena leucocephala*, *Acacia* spp., and *Pisonia subcordata*. *Bromelia pinguin* and *Cephalocereus* sp. are present on the ground, and epiphytic *Tillandsia* spp. are found on the trees. This site is located closer to the shoreline and is less sloped than the St. Thomas sites.

The St. Thomas and St. John sites are farther apart (28.3 km) than the distance between St. Thomas and the nearest known Adelaide's Warbler observations in Culebra and Culebrita (Fig. 1). Culebrita is located 19.3 km from the western-most point of St. Thomas. The distances between Culebra and the islands of Vieques and Puerto Rico are 14.1 km and 25.9 km, respectively. We calculated these distances using ArcMap software (version 8.2; Esri, Redlands, California, USA) by measuring the straight-line distance between the two closest points of each landmass or between sites.

Results

We observed Adelaide's Warblers on 11 occasions in the U.S. Virgin Islands at the three sites listed between 24 March 2012 and 6 January 2013 (Table 1). We observed a maximum of six individuals simultaneously, and confirmed our identification through photography and careful observation of diagnostic field marks and vocalizations. We ceased searching for this species after 6 January 2013.

Santa Maria Bay Site, St. Thomas

Our first observation at Santa Maria Bay was on 24 March 2012. SMR and LMC sighted four adult Adelaide's Warblers simultaneously at 1135. The birds were foraging along the trail descending to Santa Maria Bay. We viewed the birds with 8×40 binoculars at a distance as close as 3 m, and noted the following field marks: a yellow supercilium, chin, throat, and breast; white wing bars and lower eye crescent; and a gray crown, nape, mantle, wing coverts, and flight feathers. The birds were making "chipping"

Fig. 2. Scrub forest habitat and Adelaide's Warbler on 13 April 2012 at the Santa Maria Bay site, St. Thomas, U.S. Virgin Islands. Photograph by Sean Rune.

Table 1. List of Adelaide's Warbler observations in the U.S. Virgin Islands. Location codes: SM = Santa Maria Bay; PB = Perseverance Bay; EB = Europa Bay. Identification codes: V = visual; P = photographed; S = song heard.

Date	Location	# of Birds Observed	Identification
24 March 2012	St. Thomas, SM	4	V + S
13 April 2012	St. Thomas, SM	3	P + S
14 June 2012	St. Thomas, SM	2	V + S
14 June 2012	St. Thomas, PB	1	S
17 June 2012	St. Thomas, SM	3	V + S
8 July 2012	St. Thomas, SM	4	S
7 September 2012	St. Thomas, SM	4	P + S
30 November 2012	St. Thomas, SM	2	P + S
30 November 2012	St. Thomas, PB	2	S
17 December 2012	St. Thomas, SM	6	V + S
6 January 2013	St. John, EB	1	V + S

calls and two individuals were singing a loud rapid trill. During one occasion three individuals were engaged in an antagonistic interaction that included chasing as well as loud chipping and "chitburst" (Staicer 1991) calls.

We observed Adelaide's Warblers at the Santa Maria Bay site on seven subsequent occasions. On 13 April 2012 at 1202 SMR photographed an adult Adelaide's Warbler with a digital SLR camera using an 18–55 mm lens (Fig. 2). This presumed male individual was repeatedly singing from various perches at a height of 1.5–2.5 m. During the same observation SMR and LMC sighted two other individuals nearby along the trail. On 14 June 2012 SMR sighted two presumed male individuals at 0930 and heard them both singing. On 17 June 2012 SMR and an additional observer, R. White, sighted one individual and heard two others singing during a search that began at 1020. On 8 July 2012 SMR detected four singing Adelaide's Warblers during a search that began at 0843. On 7 September 2012 at 1014 SMR detected four Adelaide's Warblers simultaneously. Two individuals, one of which was singing, were foraging and moving together through the understory, covering an area about 10 m across. A third individual arrived from the side, and perched about 14 m away and began singing. A fourth bird was heard singing at a distance. SMR photographed one of the birds with a digital SLR camera using a 75–300 mm lens (Fig. 3). On 30 November 2012 SMR and R. Norton sighted and photographed two Adelaide's Warblers at 0930. We watched the two birds foraging and traveling closely together in the same exact location as the 7 September 2012 observation. On 17 December 2012 SMR detected a total of six Adelaide's Warblers during a search that began at 0745.

Perseverance Bay Site, St. Thomas

We detected Adelaide's Warblers on two occasions at this site. Both detections were confidently identified by song, but not visually confirmed. On 14 June 2012 SMR heard a single Adelaide's Warbler singing at 1005 near the trail down to Perseverance Bay. On 30 November 2012 SMR and R. Norton detected a total of two individuals singing during a search that began at 1030.

Europa Bay Site, St. John

On 6 January 2013 SMR detected a single Adelaide's Warbler near the Europa Bay trail in Virgin Islands National Park. At 1015 SMR observed a presumably male individual singing, and subsequently observed the bird at close range for 5 min using binoculars. The individual foraged in a 10 m radius area, singing every 2–3 min.

Discussion

These observations are the first known records of Adelaide's Warblers outside their endemic range in Puerto Rico. The individuals sighted at the Santa Maria Bay site appear to be occupying the site permanently. Adelaide's Warblers were sighted on 8 out of 10 visits to the site during the observation period. The birds' prolonged singing from perches, as well as the 24 March 2012 observations of conspecific antagonistic interactions and "chitburst" calls seem to indicate territoriality (Staicer 1991). Male Adelaide's Warblers sing throughout the year; as do some females, mostly older individuals (Staicer 1991). This species also shows weak sexual dimorphism in physical appearance (Toms 2010). As a result, it is difficult to determine the sex of observed individuals without capturing them. On two occasions at the Santa Maria Bay site (7 September and 17 December 2012) we observed two Adelaide's Warblers foraging alongside each other within a fixed area. One of the individuals was repeatedly singing. This leads us to believe that they were a male and female pair.

The breeding season of Adelaide's Warblers usually extends from March through June, depending on precipitation patterns (Toms 2010). During this time we did not find any conclusive signs or evidence of breeding activity. We also did not identify

Fig. 3. Adelaide's Warbler photographed on 7 September 2012 near Santa Maria Bay, St. Thomas, U.S. Virgin Islands. Photograph by Sean Rune.

any juvenile Adelaide's Warblers. Future research should focus on monitoring these birds for breeding activity. Individually marking the birds would allow for an accurate census of the local population, and aid in identification of potential breeding pairs. Recording and classifying vocalizations may be an effective tool to ascertain the degree of territoriality and mate advertisement, as per Staicer (1996).

The St. Thomas sites are relatively secluded and rarely visited, particularly by birdwatchers. It is therefore difficult to speculate exactly when these individuals arrived. It is reasonable to assume that these birds easily traveled the modest distance between their origin and the separate sites in the U.S. Virgin Islands due to the strong flight capability of the *Setophaga* genus (Cooke 1904).

We hypothesize that the availability of suitable habitat in St. Thomas and St. John may create an opportunity for Adelaide's Warblers to expand their range outside of Puerto Rico. Competition within and among species may be an important factor in the process of colonization. Intraspecific competition may be reduced initially due to the small pioneering population. A potential source of interspecific competition could be the resident Yellow Warbler (*Setophaga petechia*), which is widely distributed throughout the West Indies, and has a similar body size (Raffaele *et al.* 1998). Other warbler species occur as migrants during their non-breeding period, and have been shown to elicit aggressive responses from Adelaide's Warblers due to competition for similar food resources (Toms 2013).

While additional research efforts are necessary for understanding the status of Adelaide's Warbler outside of Puerto Rico, our observations describe an example of an endemic avian species potentially colonizing new island habitats.

Acknowledgments

We would like to thank Roger White and Robert Norton for joining us to observe these birds. We would also like to thank Judith Toms for reviewing the manuscript, and for her informative entry, "Adelaide's Warbler," in Neotropical Birds Online.

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Cite this article as:

Rune, S.M., and L.M. Conlon. 2016. First observations of Adelaide's Warblers (*Setophaga adelaidae*) outside of Puerto Rico, in the U.S. Virgin Islands. Journal of Caribbean Ornithology 29:43–46.
https://doi.org/10.55431/jco.2016.29.43-46