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Short Communications

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Satellite Telemetry Reveals the First Record of the Ascension Frigatebird (*Fregata aquila*) for the Americas

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ABSTRACT.—We present the first record of the Ascension Frigatebird (*Fregata aquila*) for the Americas by retrieving coordinates from an individual equipped with a satellite transmitting device. As part of a wider study on the spatial and behavioral ecology of this species, we tracked a single juvenile frigatebird that entered into Brazilian waters as defined in the guidelines set forth by the Brazilian Ornithological Records Committee and the South American Checklist Committee. In total, this individual traveled ~45,000 km over a 3.5-month period before transmissions ceased close to the exclusive economic zone of Sierra Leone. Based on the potential for this species to wander, the Ascension Frigatebird should be considered when attempting to identify any frigatebird in the Atlantic Ocean. Importantly, this record demonstrates the great potential for satellite telemetry to inform national ornithological and conservation organizations on the presence of pelagic seabirds that may otherwise be overlooked by visual surveys. Received 21 September 2016. Accepted 22 January 2017.

Key words: Brazil, dispersal, Fregatidae, satellite telemetry, vagrancy.

The five species of frigatebirds are dark-plumaged, tropical seabirds characterized by inflatable red gular pouches used in male display and occasional kleptoparasitic foraging behavior (Nelson 1975, Osorno et al. 1992, Madsen et al. 2007). While three species are widely distributed,

two species (the Christmas Frigatebird [*Fregata andrewsi*; James and McAllan 2014, Hennicke et al. 2015] and the Ascension Frigatebird [*F. aquila*; Ratcliffe et al. 2008]) breed on a single island each. The global population of Ascension Frigatebirds breeds on Ascension Island (7.9467° S, 14.3559° W), an isolated volcanic peak in the central tropical Atlantic Ocean, with the majority of nesting occurring on the small offshore islet of Boatswain Bird Island (Ratcliffe et al. 2008). The global population of ~18,500 Ascension Frigatebirds is considered Vulnerable by the International Union for Conservation of Nature (IUCN), although it has been treated previously as Critically Endangered owing to its highly restricted nesting habitat (Birdlife International 2015).

The at-sea range of the Ascension Frigatebird is poorly understood. Enticott and Tipling (1997) suggested that it mainly occurs within 150 km of Ascension Island, although until now no quantitative data have been collected (Orta 1992). Ascension Frigatebirds have occurred as vagrants off the west coast of Africa (Brown et al. 1982), and surprisingly have been recorded twice in Argyll, Scotland in 1953 and 2013, >7,000 km north of the breeding grounds (Walbridge et al. 2003, Hudson et al. 2014). These records far from the only breeding site provide some precedent that Ascension Frigatebirds wander great distances.

Satellite telemetry technologies have added critical information to our knowledge of movement patterns and geospatial ecology of widely varied taxa (Le Beouf et al. 2000, Webster et al. 2002, Stokes et al. 2015), including seabirds (Jouventin and Weimerskirch 1990, Jodice et al. 2015, Opper et al. 2015), but their potential to supplement national and regional species inventories has been underutilized. Indeed, data from telemetry studies may provide the most effective means of establishing records for fauna in inaccessible and rarely-surveyed areas, as well as

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FIG. 1. Juvenile Ascension Frigatebirds were captured by hand and equipped with battery-powered platform terminal transmitters (PTTs). After the frigatebirds were released, a transmitter recorded positional data via the Argos satellite system on a 3-hr on/off duty cycle (on: 2400–0300; 0600–0900; 1200–1500; 1800–2100 hrs), with 1–23 fixes registered per day (mean = 8.5). The bill length of individual #135630 was 103 mm, the wing chord was 609 mm, and the mass was 1190 g.

insights into how abundance and distribution change over time and space (Romagosa and Labisky 2000, Callaghan and Gawlik 2015).

Here, we present the first record of an Ascension Frigatebird within the Brazilian and continental South American geopolitical borders, as defined by the Brazilian Ornithological Records Committee (CBRO) and the South American Checklist Committee (SACC) of the American Ornithologists' Union, respectively (Piacentini et al. 2015, Remsen et al. 2016). As part of a long term study on the spatial and behavioral ecology of Ascension Frigatebirds, a range of archival GPS and Argos-linked telemetry devices were fitted on 60 of the frigatebirds on Boatswain Bird Island between February 2013 and November 2014 (Fig. 1). Between June and July 2014, one immature individual carrying a Sirtrack Kiwisat® 202 K2G Argos transmitter closely passed by the Brazilian Archipelagos of Fernando de Noronha (3.8576° S, 32.4297° W) and São Pedro e São Paulo (0.9169° N, 29.3344° W).

Following tag deployment on 6 March 2014, this individual embarked on several local and more extended trips of 100–9,000 km in length, each time returning to Ascension Island. Finally, on 16 June 2014, it left Ascension Island and embarked on a 12,000 km trans-Atlantic movement that approached the Brazilian coast before the frigatebird turned east towards Africa where transmissions ceased on 27 July 2014 (Fig. 2). During the

entire transmission period, the bird traveled 45,000 km.

To determine whether this migration qualifies as a new species record for the Americas, positions recorded by the transmitter were screened using the Douglas Argos Filter (DAF) to exclude anomalous fixes (i.e., locations with a travel speed of ≥ 65 km/hr; Weimerskirch et al. 2004, Douglas et al. 2012). The locations were then compared with a geopolitical map of Brazil obtained from the website of the Brazilian Government (Instituto Brasileiro de Geografia e Estatística 2016). Locations falling within the 200 nautical miles exclusive economic zone (EEZ) of Brazil were extracted. Distances between the recorded positions of the frigatebird and the islands of Fernando de Noronha and São Pedro e São Paulo were calculated using the QGIS software (QGIS Development Team 2016).

The satellite-tagged immature Ascension Frigatebird #135630 traveled through Brazilian waters on three separate occasions between 23 Jun and 17 Jul 2014. For 2,200 km, the frigatebird traveled within 200 nautical miles of the islands of Fernando de Noronha and São Pedro e São Paulo, approaching to within 80 km.

The CBRO and SACC use similar definitions for oceanic boundaries. According to the SACC, an individual bird is considered to have occurred in South America and Brazil if it entered “continental South America and all islands within 1,200 km of its shores eastward into the Atlantic. . . and waters within 200 nautical miles of the coasts of these land areas, including the islands” (Piacentini et al. 2015, Remsen et al. 2016). Because this individual occurred within the Brazilian region, it should be added to the Brazilian and South American checklists. After leaving Brazilian waters, this bird traveled across the Atlantic, passing within ~60 km of the EEZ of Sierra Leone (Fig. 2), which corroborates previous reports of Ascension Frigatebirds as vagrants in the Gulf of Guinea area (Brown et al. 1982).

The record presented here, and the two Scottish records are all of immature birds occurring in July (Walbridge et al. 2003, Hudson et al. 2014). These records far away from the breeding area may indicate a propensity of juvenile Ascension Frigatebirds to wander great distances from their breeding grounds. The full results of the tracking

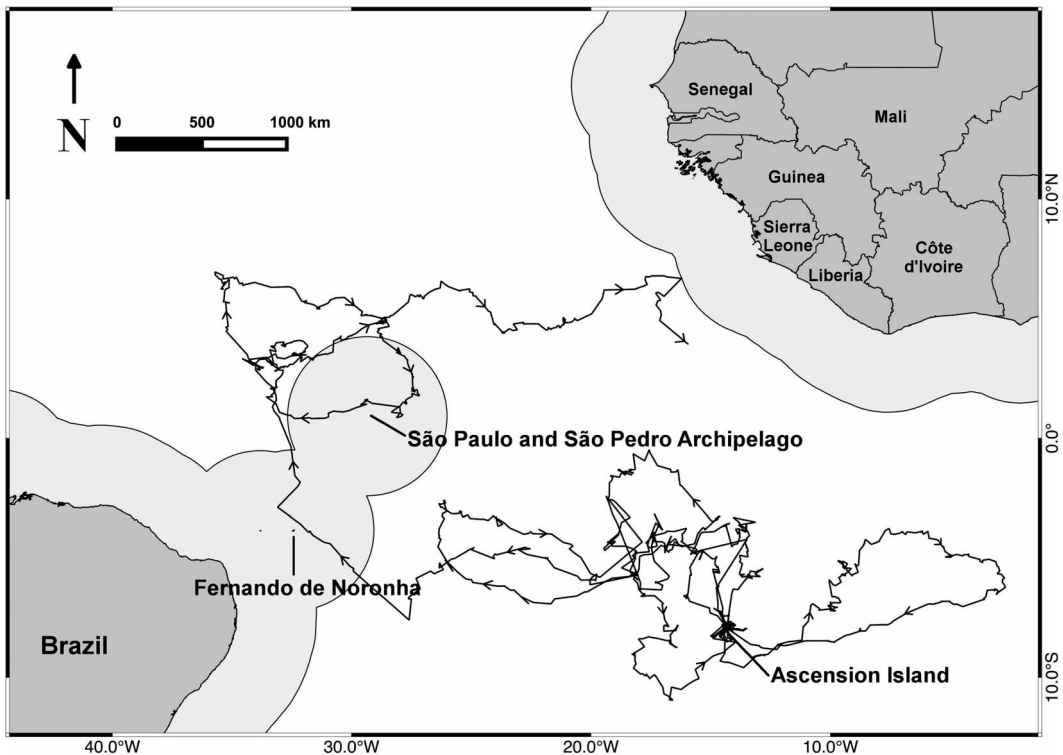


FIG. 2. Ascension Frigatebird #135630 traveled through tropical Atlantic waters for 45,000 km between 6 March and 27 July 2014. The bird flew within Brazilian waters for 3,200 km within 200 nautical miles of Fernando de Noronha and São Pedro e São Paulo Archipelagos between 23 June and 17 July 2014. A buffer of 200 nautical miles has been drawn off the coasts of Brazil, Fernando de Noronha, São Pedro e São Paulo, and Africa. Arrows on the line indicate the direction of travel. Note that the bird closely passed, but did not enter, within the 200 nautical mile EEZ of Sierra Leone.

study and also additional planned deployments of telemetry devices on Ascension Frigatebirds will be critical for understanding their geographic distribution (both within and outside of Ascension's EEZ), and whether these movements are normal or anomalous. Other species of frigatebird are prone to wander as well (Weimerskirch et al. 2016); while our knowledge of vagrant frigatebirds in Central and South America is lacking, we can summarize the records in the continental United States, where Magnificent (*Fregata magnificens*), Great (*F. minor*) and Lesser frigatebirds (*F. ariel*) occur as long-distance vagrants. Magnificent Frigatebirds, which breed off Florida and in the Pacific and Atlantic coasts of Central America, occur rarely but regularly in the oceans of the northeastern and Pacific northwestern United States, and in inland lakes in the central United States typically in May–October (Nehls 1993, Rines 2008, Chu 2011). Great Frigatebirds, whose

closest breeding range is on the Pacific coast of Central America, have been recorded in March and October in California, and in November in Oklahoma (Heindel and Patten 1996, Tomer et al. 1996, McCaskie and Miguel 1999). Lesser Frigatebirds, whose closest breeding range is in the tropical central Pacific Ocean, have occurred four times, only in the month of July, in Maine, Wyoming, Michigan, and California (Snyder 1961, Faulkner 2006, Putnam 2008, Singer and Terrill 2009).

Although our Ascension Frigatebird is the first record with tangible evidence, it is not the first reported. Antas et al. (1988) report an immature Ascension Frigatebird over a colony of Magnificent Frigatebirds on Fernando de Noronha. The legitimacy of the sighting was challenged by Nacinovic and Teixeira (1989), who found the details were insufficient to rule out Magnificent Frigatebird, in part because of the identification

challenges when separating immature frigatebirds. Thus, Ascension Frigatebird was placed on the tertiary (hypothetical) list of the BORC, where it remains today (Piacentini et al. 2015).

Future observers should pay critical attention to frigatebirds in the Atlantic region and use identification criteria summarized by Walbridge et al. (2003) in order to rule out Ascension Frigatebirds, especially in June–July. In brief, juvenile Ascension Frigatebirds are distinctive with the combination of a pure white head, thick breast band positioned anteriorly, and broad, white axillar spurs. Adult male Ascension Frigatebirds are likely inseparable from Magnificent Frigatebirds; however, adult female Ascension Frigatebirds are unique among the frigatebirds in that they typically lack any white plumage. Instead, females have a brown breast band and collar wrapping around the neck (Orta 1992).

Satellite telemetry has become a highly productive source of information for investigations into the ecology and conservation of pelagic seabirds (e.g., Jodice et al. 2015, Oppel et al. 2015). However, the use of satellite telemetry data in compiling and updating national species checklists has received less attention. In this respect, online repositories for wildlife tracking data such as Movebank (Wikelski and Kays 2016) and the Global Seabird Tracking Database (BirdLife International 2016) are an invaluable resource for improving understanding of species distributions, particularly for cryptic taxa and remote locations where visual records are scarce. In addition, scientists conducting research with satellite-tagged birds should be encouraged to report significant, apparently new or unusual records in order to monitor potentially changing distributions.

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