First Atlantic Ocean and Gulf of Mexico specimen of Short-tailed Shearwater

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ABSTRACT

An individual of an all-dark, medium-sized shearwater, recovered alive from the Gulf of Mexico off southwestern Florida on 7 July 2000, is the first specimen of Short-tailed Shearwater (*Puffinus tenuirostris*) in the Atlantic Ocean basin, the Gulf of Mexico, and Florida. The only previous report of this species in the Atlantic Ocean is a sight record off Virginia in 1998. Comparing the specimen (skin, spread wing, and skeleton) with a series of specimens of the similar and regularly-occurring Sooty Shearwater (*Puffinus griseus*), the identification as Short-tailed Shearwater is based on eight skeletal measurements, one qualitative skeletal character, three skin measurements, and the color of the median and lesser underwing coverts. Given the timing and typical path of Short-tailed Shearwater migration in the Pacific, it seems likely that the Florida bird was attempting a "normal" northbound migration but was in the Atlantic rather than the Pacific Ocean.

INTRODUCTION

On 7 July 2000, a dark mid-sized shearwater was brought to a wildlife clinic (Care & Rehabilitation of Wildlife, or "CROW") on Sanibel Island, Lee County, Florida. It had been found in weakened condition about 40 km west of the island in the Gulf of Mexico by a fishing boat captained by Joe Donkersloot. Because the shearwater's condition never improved, it was euthanized on 7 August 2000. The staff at CROW logically identified it as a Sooty Shearwater (*Puffinus griseus*), the only all-dark species of shearwater known from Florida (Stevenson and Anderson 1994).

Upon receipt of the frozen specimen at the Florida Museum of Natural History (UF), Kratter noticed that it had duskier underwing coverts than is typical in Sooty Shearwater. He suspected that it could be a Short-tailed Shearwater (*P. tenuirostris*), although away from the Pacific and Indian

Figure 1. Underwings of dark *Puffinus* shearwaters. Top, Short-tailed Shearwater (UF 41873; off southwestern Florida, 7 July 2000); bottom, Sooty Shearwater (UF 39963; Florida, Brevard County, 9 June 1997).

Oceans, this species was known only from a single sight report from Virginia (Marchant and Higgins 1990; A.O.U. 1998; Iliff 1998; Brinkley et al. 2001). Differentiating between Sooty Shearwater and Short-tailed Shearwater is a substantial problem in the field, whereas the smaller size of Short-tailed Shearwater (e.g., see Marchant and Higgins 1990) should make specimen identification straightforward. Kratter prepared a round skin, spread wing, and partial skeleton from the specimen (UF 41873; Figure 1) in late January 2001. Heart, liver, and muscle tissues were saved and frozen. In this paper we present evidence for the first confirmed occurrence of Short-tailed Shearwater outside of the Pacific and Indian Oceans. This record was accepted by the Florida Ornithological Society's Records Committee (R. Bowman, in litt. 2002).

We compared the study skin, spread wing, and partial skeleton of UF 41873 to similar preparations of Short-tailed Shearwater and Sooty Shearwater specimens at UF and the University of Washington Burke Museum of Natural History (UWBM). Osteological terminology follows Baumel et al. (1993). We pooled sexes in our statistical comparisons because the sexes differ very little in size; for each of seven mensural characters in Short-tailed Shearwater, the means of males and females differed by no more than 1.5% (Marchant and Higgins 1990).

IDENTIFICATION

Description of the bird

The Florida specimen is clearly a shearwater in the genus *Puffinus*, with a relatively long and narrow bill with a dorsal nasal tube (shorter, deeper, and broader bill in *Procellaria* and *Pterodroma*), long, narrow wings (Figure 1), and a short squared tail (longer and wedge-shaped in *Bulweria*). A male with gray testes not enlarged (3 x 2 mm), the emaciated specimen weighed 363 g, although it still had light subcutaneous fat. The bird lacked a bursa of *Fabricus*. Other all dark *Puffinus* shearwaters—Wedge-tailed (*P. pacificus*), Flesh-footed (*P. carneipes*), Christmas (*P. nativitatis*), Heinroth's (*P. heinrothi*), and Mediterranean (*P. yelkouan mauretanicus*) shearwaters—differ substantially from UF 41873 in size, proportions, plumage, soft part coloration, and/or skeletal characters (Kuroda 1954, Cramp and Simmons 1977, Hadden 1981, Harrison 1983, Marchant and Higgins 1990, Seto 2001).

The dorsal plumage of UF 41873 is mostly very dark brown (Munsell Soil Color Charts 10YR 2/1 black to 10YR 2/2 very dark brown), with the crown, nape, and mantle very dark brown (10YR 2/2). The ventral plumage is lighter, mostly dark gray (10YR 4/1) to dark grayish brown (10YR 4/2), with the throat paler (light brownish gray 10YR 6/2 to grayish brown 10YR 5/2) and the undertail coverts very dark brown (10YR 2/2). The fresh rectrices are very dark brown (10YR 2/2). The remiges of UF 41873 are in active symmetrical molt with pp1-5 new, p6 sheathed, and pp7-10 very worn; the secondaries are all very worn (Figure 1). New and sheathed remiges are black (10YR 2/1) to very dark brown (10YR 2/2) above and dark gray (10YR 4/1) to very dark gray (10YR 3/1) below. Worn remiges are dark grayish brown (10YR 4/2) to very dark grayish brown (10YR 3/2) above and gray (10YR 5/1) to dark grayish brown (10YR 4/2) below. New and sheathed greater upperwing coverts (pp1-5 and a few secondaries) are black (10YR 2/1); worn coverts are very dark grayish brown (10YR 3/2). The greater underwing coverts are gray (10YR 5/1), whereas the median and lesser underwing coverts are grayish brown (10YR 5/2) to brown (10YR 5/2). There was no body molt.

Confirming the identification

The species most similar to UF 41873 are Sooty Shearwater and Short-tailed Shearwater. Both are mid-sized shearwaters with all-dark plumage (dark brown to black), although the throats can be lighter. Typically, Sooty Shearwater is larger and has whitish lesser and median underwing coverts, whereas Short-tailed Shearwater is smaller and has darker underwing coverts (Figure 1), although variants can have white coverts (Harrison 1983). Both species breed on islands in the temperate southern hemisphere, with Sooty Shearwater in both the Atlantic and Pacific Oceans, and Short-tailed Shearwater restricted to islands off eastern Australia in the southwestern Pacific (Marchant and Higgins 1990, A.O.U. 1998). Following breeding, both species migrate into temperate northern hemisphere waters during the boreal summer, generally following the clockwise currents in the North Pacific (both species) or North Atlantic (Sooty Shearwater).

The molt pattern of UF 41873 is probably typical for a Sooty Shearwater or Short-tailed Shearwater in its third (austral) winter. During this season, when both species are in the North Pacific (see below), hatch-year (HY, assuming that birds are born after 1 January) specimens have large bursae, and all remiges and rectrices are fresh. A number of specimens of both species with smaller bursae and active primary molt probably represent second-year (SY) birds, with very worn juvenile primaries being replaced. A number of North Pacific specimens of Short-tailed Shearwater with active wing molt and no bursa (like UF 41873) may represent third-year (TY) birds. We have found no North Atlantic or Pacific specimens of Sooty Shearwater with active wing molt and no bursa. Most of the specimens without a bursa have all fresh remiges and rectrices; these are probably breeding-age birds. Age of first breeding is 5-7 years in Short-tailed Shearwater and Sooty Shearwater (Schreiber and Burger 2001).

Most skins of Short-tailed Shearwater and Sooty Shearwater at UF and UWBM do not include data on the bursa; therefore, we did not attempt to put these into age classes as we have for the spread-wing specimens below. The very dark brown crown and face of UF 41873 is similar to that in two (of 23) specimens of Short-tailed Shearwater and eight (of 28) of Sooty Shearwater. The grayish-brown throat of UF 41873 resembles that in one other Short-tailed Shearwater and 10 Sooty Shearwaters. The throats of most Short-tailed Shearwater are grayer than in UF 41873.

The bill in Short-tailed Shearwater is smaller than in Sooty Shearwater, with exposed culmen, width at distal nares, and length of the nail all significantly different ($p<0.001$ in t-Tests); exposed culmen and nail length show no overlap. UF 41873 falls within the range of Short-tailed Shearwater for all three bill measurements and is outside the 95% confidence interval (mean ± 1.96 standard deviations units) of Sooty Shearwater for exposed culmen and nail length. Although the boney rostrum and mandible of UF 41873 were left within the skin and thus not available for measurement, their lengths in skeletal specimens of Sooty Shearwater and Short-tailed Shearwater do not overlap, reinforcing the diagnostic value of bill measurements.

To compare wing lengths, we limited the samples to birds that, like UF 41873, had worn outer primaries. The distance from the longest greater primary covert on the underwing to the tip of p10 is 118 mm in UF 41873, compared to 112-127 mm (N=23) in Short-tailed Shearwater and 126-131 (N=12) in Sooty Shearwater.

We scored the color of the greater and median secondary underwing coverts on 31 specimens of Sooty Shearwater and 70 of Short-tailed Shearwater. In general, Short-tailed Shearwater has darker median coverts than Sooty Shearwater, though pale variants in Short-tailed Shearwater (9 of 70 scored as grayish white and two as white) overlap with darker variants of Sooty Shearwater (14 of 31 scored as grayish white, the others being white). The gray-

ish-brown median coverts of UF 41873 are darker than in all 31 specimens of Sooty Shearwater and matched most closely by five specimens of Short-tailed Shearwater that have brownish-gray median coverts. In contrast, the gray greater underwing coverts of UF 41873 are similar to those in many specimens of both species (14 of 31 Sooty Shearwater and 23 of 70 Short-tailed Shearwater).

Looking at the skeleton, the margo caudalis of the humerus is rounded in Short-tailed Shearwater and UF 41873, whereas it is sharper in Sooty Shearwater. All other osteological differences that we could find between Sooty Shearwater and Short-tailed Shearwater are quantitative; this similarity had been noted by Kuroda (1954). Short-tailed Shearwater (N=5-9) is significantly smaller than Sooty Shearwater (N=12-19) in all 10 elements that we measured (rostrum, mandible, humerus, coracoid, ulna, radius, carpometacarpus, femur, tibiotarsus, tarsometatarsus). Eight of these elements had no overlap in the samples measured. UF 41873 is outside the range of Sooty Shearwater for all eight measured characters and within the range of Short-tailed Shearwater for seven of these (the rostrum and mandible could not be measured in UF 41873 because the bill remained with the skin). The tibiotarsus of UF 41873 is 0.6 mm longer than the longest of seven Short-tailed Shearwaters measured, but still outside the range of the Sooty Shearwaters measured.

EVIDENCE ON ORIGIN

Pelagic birds have been known to hitch rides on ocean-going vessels and end up at far ports, but this is probably not how UF 41873 arrived in the Gulf of Mexico. Given the migration routes of Short-tailed Shearwater and the season of capture of the specimen, the bird would have had to stow away somewhere on its northbound flight in the western Pacific, then cross the immense Pacific and go through the Panama Canal to the Atlantic, staying on board until off Florida in the Gulf of Mexico. It is unlikely that a bird could survive such a lengthy journey and then muster the power to fly away.

We believe it more likely that UF 41873 was blown eastward across the southern oceans from southern Australia (or even farther south, see below) to the southern Atlantic during the austral summer or autumn, where it could have joined northbound Sooty Shearwaters migrating into the western North Atlantic. Nonbreeding Short-tailed Shearwaters, such as UF 41873, would be especially likely to follow this path, as they occur regularly off Antarctica in the austral summer (Marchant and Higgins 1990). At these high latitudes, where there are no continental barriers to east-west movement and the ocean basins merge, the strong and constant westerly winds provide ample power to displace individual seabirds. Northbound migrations into the "wrong" ocean basin already are known for Short-tailed Shearwater in the form of rare but regular records in the northern Indian Ocean (Marchant and Higgins 1990) and one well-documented sight report off Virginia in 18 January 1998 (Brinkley et al. 2001). One other procellariid that breeds only in the temperate southwest Pacific has been recorded in the North Atlantic: a Buller's Shearwater (*Puffinus bulleri*) was photographed off New Jersey in October 1984 (Paxton et al. 1985). An occasional northbound migration in the wrong ocean basin is also likely for two other species that breed only in the South Atlantic: Wilson's Storm-Petrel (*Oceanites oceanicus*) rarely but regularly occurs off the Pacific coast of North America in the boreal summer (A.O.U. 1998), and the Greater Shearwater (*Puffinus gravis*) has been recorded four times off the West Coast (A.O.U. 1998, K. L. Garrett, pers. comm.).

The occurrence of a Short-tailed Shearwater on the Gulf Coast of Florida, although unique and surprising, underscores the exceptional ability of procellariiforms for long-distance vagrancy. Birders and researchers in Atlantic waters should now be on the lookout for this species but should do so only with a great deal of caution: separating Short-tailed and Sooty Shearwaters poses one of North America's most difficult problems in field identification. This record also underscores the tremendous, largely untapped resource for documenting avian distributional records via wildlife rehabilitation clinics across the continent. In Florida alone, more than 120 clinics are licensed to handle birds; the staff at the FLMNH has resources to regularly visit only six or so of these clinics annually, retrieving hundreds of frozen specimens. Fortunately, many of the state's birders pass the word when a rarity shows up at other clinics, and we have been able to document many important records from specimens salvaged at wildlife clinics (Kratter et al. 2002).

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