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## First Specimen Record of the Barn Owl *Tyto alba* in Bonaire, Netherlands Antilles

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The cosmopolitan Barn Owl *Tyto alba* (Scopoli) lives on many Caribbean islands, where a number of morphologically distinct forms have evolved. Some of these forms have been considered separate species, like the taxa *glaucoptis*, *nigrescens*, and *insularis* on Hispaniola and the Lesser Antilles (Peters, 1940; Bruce in Del Hoyo et al., 1999; König et al., 1999). In the Netherlands Antilles (southern Caribbean) only Curaçao is known to have a breeding Barn Owl population. This endemic form, known as *bargei*, differs markedly from the taxa of the nearby mainland by its small size and relatively well-feathered feet.

On December 16 1998, JAdF found a dead Barn Owl under an overhanging ridge of a limestone hill of the Seru Domi formation on the western border of the gully Roi Sangu in Bonaire, an arid island ca. 50 km east of Curaçao and ca. 90 km north of mainland Venezuela. Bonaire has a surface of 288 km<sup>2</sup> and its habitats are comparable with those of Curaçao. The specimen was a recently fledged juvenile with some down still adhering to its head and with not quite full-grown primaries and tail-feathers. It was estimated to be dead for 1-2 days and upon dissection proved to be a male, testis 2 × 1 mm, weight 225 g, stomach empty. The specimen is deposited in the Zoological Museum of the University of Amsterdam, the Netherlands (ZMA coll. nr. 52559).

This is the first specimen record of the species for Bonaire and the first published case of breeding on the island. However, the occurrence of the Barn Owl on Bonaire is not a recent phenomenon. A. Debrot Sr. (pers. comm. 2000 to JAdF) recalls having seen the bird on several occasions on the Slagbaai Plantation in the late 1940s. A small owl feather thought to be from a Barn Owl was found on 29 Nov 1951 in the cave of Spelonk (Voous, 1955), and a silhouette of a Barn Owl was seen in the headlights of a car at night on 2 Aug 1972 (Voous, 1983). The unpublished archives of the late Brother Candidus van der Linden, stored in the ZMA, contain color slides of a juvenile Barn Owl sitting in a tree in the center of the capital Kralendijk in Aug 1993, the head still partly covered with down. De Boer (1993) and Ligon (2000) report frequent sightings in recent years. On Dec 20 1998

relatively fresh owl pellets were found by JAdF at one site in the Roi Sangu area and older partly decomposed pellets were found at several other locations difficult to access by humans.

Based on the similarities between the avifauna of the Dutch Leeward Islands, our first thought was that the rare form *bargei* was also present on Bonaire. However, the bird differed from *bargei* in its large unfeathered feet and long tarsus and bill. Its plumage was pale, the upperparts being golden-yellow with rather sparse dark vermiculation, but the marks themselves were blackish. The underparts were white with sparse but rather large black specks, and the facial ruff, as well as wing- and tail-bands, was also blackish. The form *bargei* has grayer marks on the upperparts, wings, and tail, and it generally has smaller dark spots on the white underparts. The bill and

TABLE 1. Measurements of Barn Owls *Tyto alba* in the western hemisphere. Data of both sexes combined are summarized in the following order: average (standard deviation; sample size) range. Measurements were taken according to Svensson (1992). Morphometric analysis does not include just-fledged specimens. Middle toe is without claw.

	<i>Tyto alba</i> ssp.	<i>Tyto alba</i> <i>bargei</i>	<i>Tyto alba</i> <i>contempta</i>	<i>Tyto alba</i> <i>guatemalae</i>
Localities of the specimens examined	Bonaire	Curaçao	W Colombia (Medellin), Ecuador, NW Peru	NE Mexico, Guatemala, Nicaragua, Costa Rica, C Panama
wing	285	253.9 (3.88;15) 245-260	315.4 (9.36;13) 295-329	332.6 (10.16;17) 318-348
tail	—	99.2 (2.46;14) 96-108	120.8 (6.06;13) 111-133	134.0 (5.91;17) 127-148
tarsus	67	55.8 (1.87;14) 51.5-59.5	62.0 (2.10;13) 58.5-65.3	72.4 (3.52;17) 67.5-80.5
middle toe	35.7	31.0 (1.87;12) 27.8-33.8	33.4 (1.95;12) 30.5-37.6	37.4 (1.84;17) 34.5-40.6
middle claw	16.7	16.5 (1.49;16) 13.5-18.9	17.3 (1.76;11) 14.3-20.1	20.0 (1.30;15) 17.8-22.3
bill to cere	20	20.3 (0.82;16) 19.0-22.2	19.3 (1.22;13) 17.4-21.8	21.8 (1.41;17) 18.2-23.7
bill to skull	40	34.1 (1.33;15) 32.2-36.5	34.4 (2.55;13) 31.4-40.8	37.9 (2.42;16) 32.3-41.6
tarsus/wing %	23.5	21.9 (0.80;13) 20.8-23.5	19.7 (0.76;13) 18.6-20.7	21.8 (1.01;17) 20.4-23.6

  

	<i>Tyto alba</i> <i>hellmayri</i>	<i>Tyto alba</i> <i>pratincola</i>	<i>Tyto alba</i> <i>tuidara</i>	<i>Tyto alba</i> <i>zottae</i>
Localities of the specimens examined	C Venezuela, Trinidad, Guyana, Suriname, French Guiana, E Bolivia	S USA (SW California, S Texas)	S Brazil, NE Argentina	SW & S Argentina
wing	327.8 (7.55;25) 312-342	342.4 (7.48;13) 331-354	303.8 (11.0;6) 292-321	311.5 (10.8;10) 290-326
tail	126.6 (5.43;24) 118-136	134.0 (4.86;13) 127-141	118.2 (5.38;6) 110-124	124.0 (4.01;9) 117-132
tarsus	72.0 (2.12;27) 69.5-78.0	73.6 (2.69;13) 69.5-78.0	66.2 (2.91;6) 62.4-69.3	62.4 (2.05;10) 59.0-65.2
middle toe	37.9 (1.95;19) 35.2-43.5	37.4 (2.28;12) 32.8-42.5	35.1 (0.95;5) 33.9-35.7	33.5 (1.75;10) 31.5-37.0
middle claw	20.7 (1.01;17) 19.2-22.2	22.3 (1.34;12) 20.3-24.3	18.4 (1.89;6) 15.3-20.9	18.3 (1.30;9) 17.2-20.9
bill to cere	22.8 (0.95;25) 20.7-24.5	22.4 (2.22;13) 17.4-26.5	20.1 (0.59;6) 19.6-21.0	20.1 (1.19;10) 18.5-22.7
bill to skull	39.1 (2.00;16) 36.6-42.8	39.1 (2.42;13) 35.5-42.6	35.3 (0.85;6) 34.3-36.4	35.3 (2.72;9) 32.8-40.5
tarsus/wing %	22.0 (0.84;24) 21.1-23.1	21.5 (0.82;13) 20.5-22.8	21.8 (1.27;6) 20.5-23.3	19.9 (0.55;10) 19.2-20.7

leg of the Bonaire bird were considered to be full-grown, while wing length in this stage of growth is estimated to be 90 % of the adult length (Table 1).

To determine the taxonomic status of the Bonaire specimen we compared its biometrics and plumage with a series of *bargei* from Curaçao and with approximately 200 specimens of various taxa from Trinidad and mainland North, Central and South America from the collections of the Natural History Museum (BMNH), U.K., the National Natural History Museum Naturalis (RMNH) in Leiden, the Netherlands, and the ZMA. Taxa from other islands in the West Indies were excluded from the analysis due to their different size and plumage characteristics (see Parkes and Phillips 1978; Del Hoyo et al. 1999).

Based on measurements, *bargei* stands clearly apart from the other populations because it is much smaller (Table 1). The other populations can be grouped into 3 size-class categories (Table 1): 1) smaller birds (wing length generally below 320 mm) with relatively short tarsus (tarsus/wing ratio in most birds below 20.5) occurring in the Andes mountains and in the hills and plains of southern South America, 2) smaller birds (wing length generally below 320 mm) with relatively long tarsus (tarsus/wing ratio generally over 20.5) occurring in the plains east of the Andes from southern Brazil to northern Argentina, and 3) larger birds (wing length generally over 320 mm) with relatively long tarsus (tarsus/wing ratio in general over 20.5) occurring widely in the lowlands and hills of central and northern South America, Central America, and in the USA. Further subdivision of these size groups on color characteristics is possible, and we categorized these subdivisions by names, but type specimens were not examined and only some birds were from or near the type-localities. Based on plumage, the smaller short-legged birds (1) are separable into two subspecies: very dark birds in the northern Andes (*contempta*; from western Venezuela and Colombia south to at least western Peru) and very pale birds in the southern Andes (south from c. 41°N) and Tierra del Fuego (*zottae*); the latter birds

have largely unmarked white secondaries and tail, especially in the adult male. The smaller longer-legged birds (2) are rather pale in color (but not as pale as *zottae*, as they show yellow secondaries and a tail with dark banding) and have been grouped under *tuidara*. The large northern birds (3) are separable into the dark *guatemalae* (southern Mexico to central Panama) and the rather pale *hellmayri* (eastern Venezuela and Trinidad to eastern Bolivia, and the Amazonian Basin of Brazil). Separation of the latter two taxa is not complete, as *guatemalae* has a rather pale morph which is rare as judged from skin collections. This morph is hardly separable from *hellmayri*, except for slightly grayer (less blackish) markings on upperparts, wings, and tail. Moreover, *pratincola* from the southern USA is also close in plumage to *hellmayri*, though usually larger in size, while the dark pigments of this form are grayish rather than blackish. Most populations showed marked variation in bill, toe and claw measurements (Table 1) and also in depth at base of the bill and in development of the hook of the bill.

The predominantly yellow upperparts, wing, and tail, and the predominantly white underparts of the Bonaire bird could not differentiate it from *pratincola*, *guatemalae*, *bargei*, *hellmayri* or *tuidara*. However, the intricate dark-speckled pattern of the upperparts and of the bands on the wings and tail are blackish, as in *hellmayri* and *tuidara*, instead of grayish as in *guatemalae*, *pratincola* or *bargei*. The Bonaire bird agrees with *hellmayri* and *tuidara* in the fairly large but sparse black spots on the underparts. On geographical grounds, one could suppose that the Bonaire bird is *hellmayri*, the subspecies occurring on the nearest mainland, but this is contradicted by its smaller size, which makes the specimen more similar to the geographically remote *tuidara*.

The collection of a just-fledged bird and other observations indicate the presence of a breeding population of Barn Owl on Bonaire. Sightings date back to the late 1940s and indicate that the species is not a recent colonizer of the island or has recently been introduced by man. Examination of plumage and measurements indicate that the Bo-

naire bird is not the rare endemic *bargei* from nearby Curaçao, nor *hellmayri* from the nearby mainland. Opportunistic findings of dead birds should help elucidate the taxonomic status of the Bonaire owl; the evident rarity of the bird should prevent active collecting.

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