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FOSSIL WOODCOCKS: AN EXTINCT SPECIES FROM
PUERTO RICO AND AN INVALID SPECIES FROM
MALTA (AVES: SCOLOPACIDAE: SCOLOPAX)

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AN EXTINCT WOODCOCK FROM PUERTO RICO

Among the bird remains collected from caves in Puerto Rico by H. E. Anthony in 1916 was a distinctive charadriiform bird that Wetmore (1920) named as a new species of snipe, *Gallinago anthonyi*. This species and other Puerto Rican fossil birds were treated further in subsequent publications (Wetmore, 1922; 1927). Following the current AOU Checklist of North American birds (American Ornithologists' Union, 1957), the generic name *Capella* is substituted for *Gallinago*.

Remains of *Capella anthonyi* came from two caves (Cueva Catedral and Cueva Clara) near the town of Morovis and are housed in the American Museum of Natural History (AMNH) and the National Museum of Natural History (USNM). This material consists of a right humerus (AMNH 4922, holotype), two left humeri (AMNH 2909, USNM 241262), two right tarsometatarsi (AMNH 2911, 2912 and 14 [2 pieces of the same bone]), a left tarsometatarsus (USNM 241261), an incomplete left tibiotarsus (AMNH 2915), an incomplete right tibiotarsus (USNM 241260), a right coracoid (AMNH 2913), and a left carpometacarpus (AMNH 2910). At least four individuals are represented. The age of the deposits from which this material was derived is uncertain, but probably ranges from late Pleistocene to relatively recent times.

My first examination of *Capella anthonyi* suggested that it was not a snipe, but a woodcock, *Scolopax*. Later I com-

pared it with specimens of the living species *Capella galinago*, *C. paraguayiae*, *C. nobilis*, *C. stenura*, *Scolopax rusticola*, and *S. minor*. *Capella anthonyi* differs from *Capella* and agrees with *Scolopax* in the following details. Humerus with shaft proportionately heavier, distal end more expanded, olecranal fossa much wider and markedly shallower, ectepicondylar prominence reduced and much lower on the shaft (as noted by Wetmore, 1920; 1922), head broader and not as pointed, external tricipital groove virtually absent (distinct in *Capella*), internal tuberosity not produced as far anteriorly and much heavier in proximal view, internal condyle heavier and more rounded. Coracoid larger and proportionately heavier, internal portion of sternal facet in end view thicker. Carpometacarpus stouter, intermetacarpal space wider. Tarsometatarsus markedly stouter relative to its length, shaft much heavier, intercotylar prominence lower, distal end relatively wider, internal and external trochleae more divergent from line of shaft, external hypotarsal canal open (closed in *Capella*), internal cotyla in proximal view narrower and extending farther medially. The specimens of tibiotarsi are worn and incomplete and do not preserve many characters; nevertheless, they are too short and stout for *Capella*, although they are not as heavy as in either species of *Scolopax* examined.

These comparisons establish that the species *anthonyi* belongs in the genus *Scolopax* rather than in *Capella* and should now be known as *Scolopax anthonyi*.

Scolopax anthonyi is smaller than the European Woodcock, *Scolopax rusticola*. On the other hand, the measurements of its humerus and tarsometatarsus are considerably above the average for the American Woodcock, *S. minor* (Table 1). Until recently, *S. minor* has usually been placed in a monotypic genus *Philohela*, the basis for which lay mainly in the distinctively attenuated outer primaries. Although it seems not to have been noted previously, this modification is accompanied by marked specializations of the bones of the wing and pectoral girdle—specializations that are not found in *S. anthonyi*.

Although the humerus of *S. anthonyi* is about the size of

TABLE 1. Measurements of three species of *Scolopax*.

	<i>S. minor</i>			<i>S. anthonyi</i>			<i>S. rusticola</i>		
	n	range	mean	s.d.	range	n	range	mean	s.d.
Humerus									
length	30	39.8-45.8	42.6	1.96	42.8, 44.2, 44.3	8	54.0-56.2	55.2	.81
proximal width	14	9.8-11.1	10.4	.45	10.4, 11.1, 11.1	6	13.1-14.4	13.6	.44
least width shaft	14	3.0-3.5	3.2	.17	3.2, 3.6, 3.5	6	4.0-4.6	4.4	.20
distal width	14	7.1-8.3	7.6	.36	7.1, —, 8.2	6	9.8-10.6	10.1	.25
Tarsometatarsus									
length	30	30.1-35.9	32.7	1.79	34.6, 35.5, 35.7	7	37.7-40.6	39.4	.92
proximal width	13	5.2-6.4	5.7	.31	—, 6.7, 7.2	5	7.0-7.6	7.3	.24
least width shaft	13	1.9-2.5	2.1	.20	2.7, 2.6, 2.6	5	2.6-3.1	2.7	.19
distal width	13	5.2-6.3	5.7	.28	6.5, 6.7, 6.8	5	7.2-7.6	7.4	.15
Carpometacarpus									
length	30	32.8-38.1	35.5	1.23	27.6	8	37.0-40.1	38.9	.90
Coracoid									
greatest length	30	23.1-27.9	25.3	1.14	25.6	8	28.3-30.8	29.8	.69
Tibiotarsus									
length from distal end	14	32.8-37.0	35.2	1.71	39.5, 40.5	5	41.2-43.3	42.6	.73
of fibular crest									
least width shaft	14	2.2-2.9	2.4	.23	2.6, 2.5	4	2.9-3.3	3.2	.16



FIG. 1. Anconal (top row) and palmar (bottom row) views of humeri of woodcocks and snipe. Left to right: *Scolopax rusticola*, *S. anthonyi*, *S. minor*, *Capella gallinago*. Natural size.

that of *S. minor*, in a number of its characters it more closely resembles that of *S. rusticola* (Fig. 1). The large ectepicondylar process typical of most shorebirds is reasonably well-developed in *S. rusticola*, projecting externally in a dis-

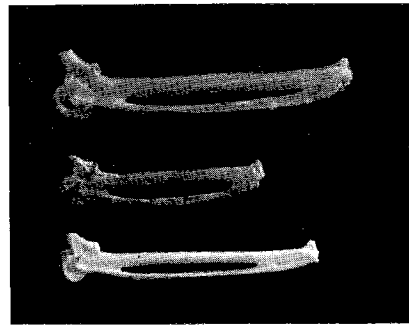


FIG. 2. Internal view of carpometacarpal of woodcocks. Top to bottom: *Scolopax rusticola*, *S. anthonyi*, *S. minor*. Natural size.

tinct point situated fairly high on the shaft. *S. minor* is peculiar among the Scolopacidae in having this process reduced to a low, rounded tubercle. *S. anthonyi* is nearly intermediate, the ectepicondylar process being higher and projecting farther than in *S. minor* but not as well developed as in *S. rusticola*. *S. anthonyi* differs from *S. minor* and is closer to *S. rusticola* in having a deeper brachial depression, shorter deltoid crest, heavier and more rounded internal condyle, and much thicker internal tuberosity with a more expanded anconal surface.

The carpometacarpus of *Scolopax minor* is highly peculiar in being very narrow and elongate with the distal metacarpal symphysis greatly lengthened and tapered (Fig. 2). Although the proximal end is much smaller, the overall length of the bone is nearly as great as in the much larger *S. rusticola*, which has a fairly typical scolopacid carpometacarpus. The carpometacarpus of *S. anthonyi* shows none of the specializations of *S. minor* and is shorter and much heavier (Fig. 2). It is more similar to that of *S. rusticola* but is proportionately shorter (62% of humerus length vs. about 72% of humerus length in *S. rusticola*), with the intermetacarpal space wider, the distal symphysis shorter, and the carpal trochlea smaller.

The coracoid of *S. anthonyi* agrees with that of *S. rusticola* and differs from *S. minor* in the prominent ventrally projecting extension of the head (Fig. 3), the heavier shaft, and proportionately larger articular surfaces. It differs from either

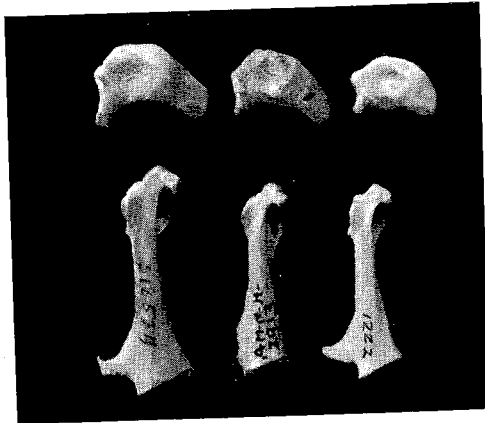


FIG. 3. Coracoids of woodcocks: end-on view of head (top row; 2 \times) and ventral view (bottom row; 1 \times). Left to right: *Scolopax rusticola*, *S. anthonyi*, *S. minor*.

species in the more expanded base of the procoracoid and the deeper sterno-coracoidal impression.

The tarsometatarsi of *S. anthonyi* are more robust than in *S. minor* whereas the tibiotarsi have longer and more slender shafts than in that species (Fig. 4).

Scolopax anthonyi is of particular interest in that it is more similar to the Old World populations of *Scolopax* than to *S. minor* of eastern North America. This similarity is not necessarily indicative of closer relationship, however. In its wing and shoulder girdle, *S. minor* is clearly the most specialized species of woodcock, although the osteology and myology of these specializations are in need of much more detailed study. R. L. Zusi (pers. comm.) informs me that in its skull morphology *S. minor* shows an even further advance on the specializations found in *S. rusticola*. Thus, *S. minor* is not merely a small New World geographical representative of *S. rusticola* (Mayr and Short, 1970: 45), but the most highly specialized species of the genus. It may be prudent to recognize *Philohela* at the subgeneric level.

It is obvious that *S. anthonyi* is not just a recent insular derivative of *S. minor*. Although it was surely derived from North America, its ancestors must have reached Puerto Rico



FIG. 4. Anterior view of hindlimb elements of woodcocks and snipe. Left to right: tibiotarsi of *Scolopax rusticola*, *S. anthonyi*, *S. minor*, *Capella gallinago*; tarsometatarsi of *S. rusticola*, *S. anthonyi* (2 individuals), *S. minor*, *C. gallinago*. Natural size.

before the North American population of *Scolopax* had evolved the advanced conditions now seen in *S. minor*. Thus, *S. anthonyi* preserves the primitive features still found in the Old World forms of *Scolopax*. It must have been resident in Puerto Rico for a considerable period of time.

Woodcocks are usually confined to forested areas and according to Wetmore (1922:298-299) the vicinity of Morovis would have been suitable for them. That *Scolopax anthonyi* was relatively common is attested to by the presence of at least four individuals in the rather limited material examined by Wetmore (much more unsorted material at AMNH awaits further study) and by the presence of the species at two different localities. There can be little question that *S. anthonyi* was a resident rather than a migrant form. Its re-

duced carpometacarpus appears to have been an adaptation to the reduced flight requirements of a sedentary insular species in an environment with few predators.

Although it might at first seem strange that there was once a woodcock in the West Indies, it is not so anomalous when one takes into account the distribution of Old World woodcocks, particularly in the East Indies. Resident populations of *S. rusticola* are found on Madeira, the Canary Islands and the Azores, while distinctive insular species, presumably derived from *S. rusticola* stock, are found in the Ryu Kyus (*S. mira*), Celebes (*S. celebensis*), Java, Sumatra, and New Guinea (*S. s. saturata* and *S. s. rosenbergii*), and in the Moluccas (*S. rochussenii*). In view of this, it would not be unexpected if new forms of *Scolopax* were to be found in the fossil record of other Antillean islands.

A SUPPOSED FOSSIL WOODCOCK FROM MALTA

Fischer and Stephan (1974) reported a small collection of avian remains of Middle and Upper Pleistocene age from Ghar Dalam Cave on the island of Malta in the Mediterranean. A single tarsometatarsus from the Middle Pleistocene layers was described as a new species of woodcock, *Scolopax ghardalamensis*. A distal end of a tarsometatarsus from the younger layers was also referred to this species. All other bird fossils from these deposits were assigned to modern species, the most abundant non-passerine taxon being the quail *Coturnix coturnix* (Galliformes, Phasianidae).

The material of *C. coturnix* from Ghar Dalam consisted of coracoids, ulnae, portions of pelvis, and femora, but did not include a tarsometatarsus. Suspicion is aroused by the extremely small size of the holotype tarsometatarsus of *Scolopax ghardalamensis* (26.7 mm), which exactly equals the dimensions of that element in *Coturnix coturnix* (average of 6 modern specimens in USNM = 26.8 mm). In addition to its small size, Fischer and Stephan (1974) diagnosed *Scolopax ghardalamensis* as having the hypotarsus narrower, with the medial crest thin and sharp, ending distally in a canal rather than a ridge, and with the portion lateral to the medial crest extending distally as a ridge where in *S. rusticola* there is a

canal. In these particulars *S. ghardalamensis* differs significantly from *Scolopax* and agrees precisely with *Coturnix coturnix*. As determined from the photographs published in Fischer and Stephan (1974), the holotype of *S. ghardalamensis* differs further from *Scolopax* and agrees with *Coturnix* in the following characters: proximal end narrower relative to shaft, the internal cotyla much less medially produced; medial edge of internal cotyla sharper and raised proximally well beyond the level of the intercotylar prominence, the latter being lower and much less bulbous than in *Scolopax*; lateral edge of external cotyla less produced proximally; fossa containing proximal foramina narrower and deeper; posteromedial surface of proximal end more excavated; distal foramen larger; trochleae less divergent from each other, the middle one more constricted at the base.

The obvious conclusion is that Fischer and Stephan identified several skeletal elements correctly as *Coturnix coturnix* but then went on to describe the tarsometatarsus of the same species as that of a new woodcock. *Scolopax ghardalamensis* Fischer and Stephan (1974) as a consequence must become a synonym of *Coturnix coturnix* (Linnaeus, 1758), and may be disregarded in any consideration of the evolution of woodcocks.

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