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A NEW SPECIES OF THE GENUS *CALLIONYMUS*
FROM ST. HELENA
(TELEOSTEI: CALLIONYMIDAE)

INTRODUCTION

In the course of a study of callionymid fishes in the collection of the Zoologisk Museum, Copenhagen (ZMUC), I found a specimen of a new species of the genus *Callionymus* Linnaeus, 1758 from St. Helena. This is the first species of callionymid fish to be reported from there.

Methods follow those of Fricke (1981).

Callionymus* (*Callionymus*) *sanctahelenae new species
(Fig. 1)

Material: ZMUC P 64165, holotype, 14.3 mm SL, off Sugar Loaf, St. Helena, 20-30 fms (36-55 m), T. Mortensen, Java-South Africa Expedition, 27 Feb. 1930.

Diagnosis: A *Callionymus* of the subgenus *Callionymus* with fin formulae D_1 IV, D_2 viii,1, A vii,1, P_1 i, 19-20, ii, its preopercular spine formula $1 \frac{2}{-} 1$, the male with a first dorsal fin higher than the second dorsal fin at a length of 14.3 mm (SL), and an anal fin higher than the second dorsal fin, in combination with pale caudal and pelvic fins.

Description: D_1 IV; D_2 viii,1; A vii,1; P_1 i,19-20, ii (totally 22-23); P_2 I,5; C (i),i,7,ii,(i). Proportions of the holotype see table 1.

Body elongate and depressed. Head depressed, 3.48 in SL. Body depth 5.82 in SL. Body width 4.07 in SL. Eye large, 2.28 in head.

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Table 1 - Proportions of the holotype of *Callionymus sanctaehelenae* n. sp. from southern Central Atlantic (expressed as hundredths of SL).

Predorsal (1) length	35.09
Predorsal (2) length	55.09
Preanal length	57.54
Prepelvic fin length	28.77
Head length	28.77
Body depth.....	17.19
Body width.....	24.56
Caudal peduncle length	17.54
Caudal peduncle depth	7.72
Caudal fin length	27.37
Eye diameter	12.63
Upper jaw length	8.77
1st spine of D ₁	17.54
2nd spine of D ₁	17.19
3rd spine of D ₁	14.04
4th spine of D ₁	6.32
1st ray of D ₂	13.33
Last ray of D ₂	13.33
1st A ray.....	14.73
Last A ray	13.33
Longest pectoral fin ray	23.16
Pelvic fin length	32.28

Preorbital length 3.73 in head. Interorbital distance 9.0 in eye. Occipital region with two very low bony ridges. Branchial opening dorsal in position. Preopercular spine length 4.56 in head; preopercular spine with a slightly curved main tip, a smooth concave ventral margin, a strong antrorse spine at its base, and two curved points at its dorsal margin, the anteriormost of which is larger (formula: $1 \frac{2}{-} 1$; see fig. 1 B).

Urogenital papilla small, 16.4 in head. Lateral line reaching from eye to end of fourth branched caudal fin ray (counted from above); the lines of the opposite sides are interconnected across the occipital region. Caudal peduncle length 5.7 in SL. Caudal peduncle depth 12.95 in SL.

First dorsal fin relatively high in the male, 1st spine longer than 1st ray of second dorsal fin at an SL of 14.3 mm; length of 1st spine 5.7 in SL. Predorsal (1) length 2.85 in SL. Second dorsal fin distally straight, last ray elongate. Rays unbranched except the last which is divided at its base. 1st ray 7.5 in SL, last ray 7.5 in SL. Predorsal (2)

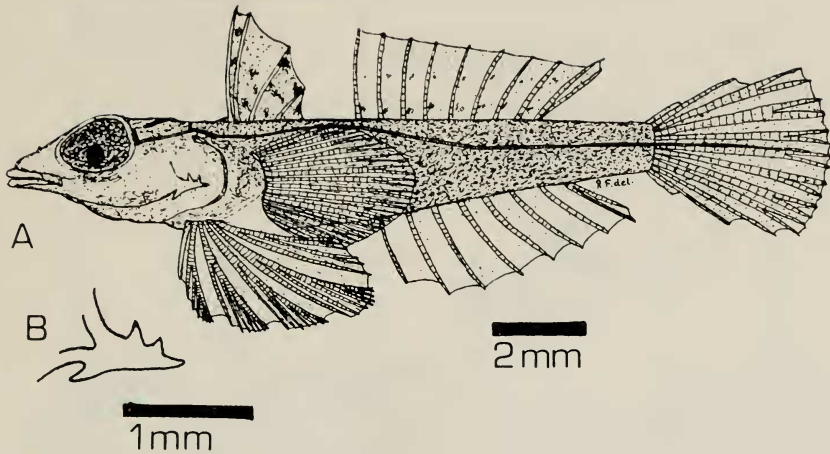


Fig. 1 - *Callionymus sanctaehelenae* n. sp.: holotype, ZMUC P 64165, male, 14.3 mm SL, St. Helena. A. Lateral view. B. Left preopercular spine.

length 1.82 in SL. The anal fin beginning on a vertical through second ray of second dorsal fin. Rays unbranched except the last which is divided at its base. First ray 6.8 in SL. Last ray 7.5 in SL. Preanal fin length 1.74 in SL. Pectoral fin distally convex, reaching to base of second anal fin ray when laid back. Pectoral fin length 4.3 in SL. Pelvic fin distally convex, its longest ray reaching to base of first anal fin membrane when laid back. Pelvic fin length 3.1 in SL. Prepelvic fin length 3.5 in SL. Caudal fin distally convex, its length 3.65 in SL.

Color in alcohol: Body dark brown, head lighter, cheeks with some dark pigment, eye dark grey. First dorsal fin light, with dark spots on the membranes. Second dorsal fin with one horizontal basal and one horizontal median row of dark spots. Anal fin translucent. Pectoral, pelvic and caudal fins translucent.

Distribution: This new species is known only from the type locality, St. Helena, and has been collected at a depth of 36-55 m (distribution in comparison with the nearest allied species, *C. bairdi*, see fig. 2).

Etymology: *Callionymus sanctaehelenae* n. sp. is named after its type locality, St. Helena, island in the southern Atlantic Ocean.

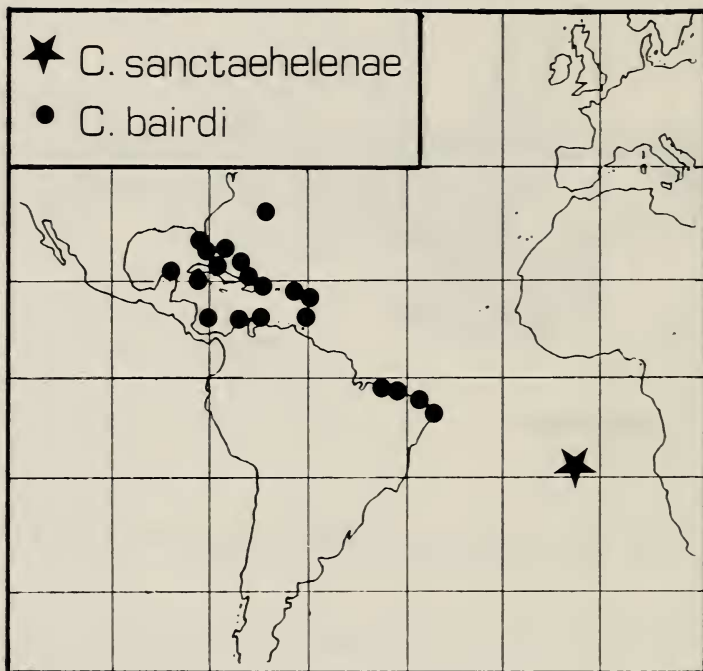


Fig. 2 - Geographical distribution of *Callionymus sanctaehelenae* and the nearly related species *C. bairdi*.

Discussion: The species nearest related to this new species is *Callionymus bairdi* Jordan (JORDAN, 1887: 501-502, between Pensacola and Tampa, Florida, U.S.A.; DAVIS 1966: 848-854, figs. 6-8, Honduras, Grenadines, Yucatan, Virgin Islands, Puerto Rico, Dominican Republic, Cayman Islands, Cuba, Bahamas, Florida, Bermuda, « a few to 91 m »; RANDALL, 1968: 176-177, fig. 199 (color photo); METZELAAR, 1919: 149-150, fig. 46, Curaçao, *Callionymus boekei*, and p. 150-151, fig. 47, St. Eustatius, *Callionymus sanctieustatii*). For comparison with the specimen of *C. sanctaehelenae* from St. Helena, the following material of *C. bairdi* was examined:

BM(NH) (British Museum (Natural History), London): 1933.10.12.86, 1 specimen, 46.4 mm SL, Dry Tortugas, Florida; 1939.5.12.174, Cayman Island, 3-6 m, 1 specimen.

CAS-SU (California Academy of Sciences, Stanford University Collection, San Francisco): 7488, 1 specimen, Snapper Banks.

ZMUC (Zoologisk Museum, Copenhagen): P6487, 1 male, 30.2 mm SL, West Indies.

UF/FSM (Florida State Museum, Gainesville, U.S.A.): 18030, 2 males, 12.2-22.2 mm SL, Georgetown, Grand Cayman Island, 1-3 m; 11340, 1 male, 21.8 mm SL, Antigua; 14429, 3 males (13.3-32.3 mm SL) and 2 females (14.8-15.0 mm SL), Bahamas, 0-3 m;

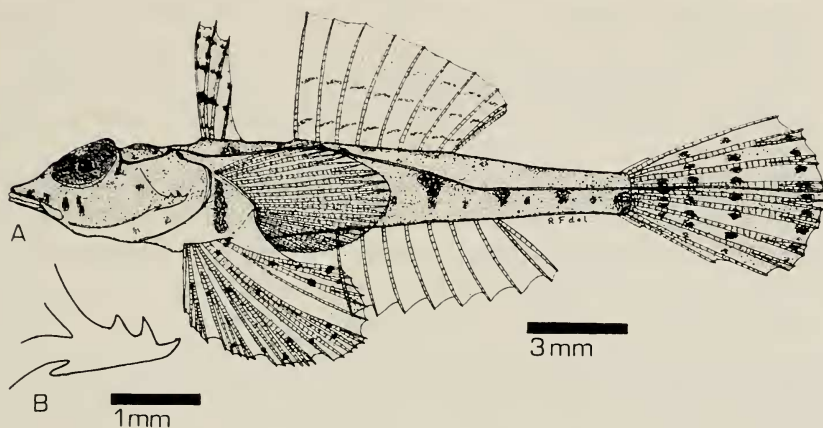


Fig. 3 - *Callionymus bairdi* Jordan, 1887: UF/FSM 14429, specimen 3, male, 18.5 mm SL, Bahamas. A. Lateral view. B. Left preopercular spine.

16173, 2 males (15.8-17.5 mm SL) and 2 females (18.0-20.9 mm SL), Florida; 28882, 1 male, 23.8 mm SL, Columbia.

A male specimen of *C. bairdi* similar in size to the holotype of *C. sanctaehelena* n. sp. is illustrated in Fig. 3 for comparison. Distinguishing features are the first dorsal fin, which is in *C. sanctaehelena* much higher than the first ray of the second dorsal fin, but lower in *C. bairdi*, the shape of the second dorsal fin which is slightly convex in *C. bairdi* but has no elongate last ray, and has a last ray which is much shorter than the first ray in *C. bairdi*, but of equal length as the first ray in *C. sanctaehelena*. The anal fin of *C. sanctaehelena* is higher than the second dorsal fin, but that of *C. bairdi* is lower than that fin. *Callionymus bairdi* also has a larger pelvic fin, which reaches to the base of the third anal fin membrane when laid back. Differences in the color pattern include the head, especially suborbital region, the sides of the body, the caudal fin, and the pelvic fin. An additional feature to distinguish the specise

C. sanctaehelenae from *C. bairdi* is the length of the base of the first dorsal fin, which is much shorter in *C. bairdi* than in *C. sanctaehelenae*. The preopercular spine shape also differs, especially the shape of the ventral margin which is straight in *C. bairdi* but concave in *C. sanctaehelenae*.

It is interesting that *C. sanctaehelenae* is nearly related to a West Atlantic species, but not so closely related to a species from the south-eastern Atlantic (where no *Callionymus* occurs) or from the western Indian Ocean. This is astonishing in the South Atlantic since the predominant currents in the tropical Atlantic run from east to west, and St. Helena is nearer to Africa than to South America. LUBBOCK (1980: 300-301), however, found the same phenomenon in Ascension Island north of St. Helena, which has much of its ichthyofauna in common with St. Helena. He found that 21 of the fish species occurred in Ascension and the tropical West Atlantic, while only 5 occurred in the Central Atlantic (Ascension) and the eastern Atlantic. BRIGGS (1974) explained this fact with the tropical Atlantic countercurrent from west to east, since St. Helena comes occasionally under the influence of this current. LUBBOCK (1980) supposed that the ratio three to one (West Atlantic to East Atlantic species) « reflects the greater diversity of the Western Atlantic region; if the western Atlantic can supply more species as potential colonists than the eastern Atlantic, then one would expect (assuming random success in colonization) species from the former region to predominate ». In callionymids, however, this does not seem to be the reason. The cold water of the southeastern Atlantic seems to be an effective barrier for the genus *Callionymus* (but not for genera like *Paracallionymus* or *Draculo*, which are represented by one species each in that area); therefore, a *Callionymus* only could come from the west with the warm tropical Atlantic countercurrent. It does not seem to be probable that a *Callionymus* came from the north along the west coast of Africa; the two temperate and subtropical species from the northeastern Atlantic and Mediterranean which are occurring there, do not go far enough south to reach the equatorial zone (only very rarely south to Senegal), and it does not seem to be likely that they are able to cross the equator.

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ABSTRACT

Callionymus sanctaehelenae n. sp. from St. Helena, central South Atlantic, differs from allied species by the fin formulae D IV + viii, 1/A vii, 1/P₁ i, 19-20, ii, its preopercular spine formula $1 \frac{2}{-} 1$ its first dorsal fin higher than the second dorsal fin at a length of 14.3 mm (SL) (in males), its anal fin which is higher than the second dorsal fin, and its pale caudal and pelvic fins. Similarities to the nearest related species, *C. bairdi* from the tropical West Atlantic, are discussed, as well as zoogeographical affinities.

RIASSUNTO

Callionymus sanctaehelenae, nuova specie di S. Elena, Atlantico centro-meridionale, differisce dalle specie congeneri per la formula delle pinne: D IV + viii, 1 / A vii, 1 / P 20-22 e per quella della spina preopercolare: $1 \frac{2}{-} 1$.

La prima pinna dorsale è più alta della seconda a una lunghezza standard, nel maschio, di mm 14,3; la pinna anale è più alta della seconda dorsale e delle pinne pelviche e codale che sono incolori. Sono discusse le affinità morfologiche e zoogeografiche con la più vicina specie *C. bairdi* dell'Atlantico occidentale tropicale.