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ON A NEW SPECIES OF THE GENUS *CALLIONYMUS* FROM THE GREAT METEOR SEAMOUNT (PERCOMORPHI, CALLIONYMOIDEA, CALLIONYMIDAE)

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With 4 text figures

The examination of 17 bicuspid Dragonets taken on the Meteor Bank resulted in the discovery of a new species to science which is described in detail below and is compared to *Callionymus phaëton,* the species it could most easily be confused with and which may also be its most closely related one.

A difficulty in deciding whether the differences found might not be due to sexual dimorphism was removed by comparing males and females in *C. phaëton,* in particular with regard to such characters as distinguish one species from the other.

As the only sexually easily recognizable specimens were females it was necessary to make certain whether males were also present among the specimens of *C. phaëton.* To make sure of this the author is indebted to Dr. R. H. Gibbs, Jr. who kindly examined a number of doubtful gonads and could confirm the presence of 3 testes. I am also grateful to Prof. G. Bini for the loan of 2 male specimens of *C. phaëton* from the Mediterranean and for information on pigmentation and other characters in a large series of specimens of males and females.

Callionymus sousai sp. n.

Holotype. Well preserved male. MMF Reg. No. 22877, S. L. 63 mm., «Meteor» St. 180a, 24. VII. 1967, 30° 01.1' N., 28° 24.0' W., Agassiz Trawl, 315-320 metres.

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Paratypes. Three well preserved specimens: MMF Reg. No. 22389, male, S. L. 33 mm., «Meteor» St. 160a, 18.VII. 67, 29° 50.1'N., 28° 30.2'W., Beyer Sledge Net, 310 metres: MMF Reg. No. 22843, sex uncertain, S. L. 55 mm., and MMF Reg. No. 22483 b, sex uncertain, S. L. 34.3 mm., both from «Meteor« St. 159a, 18.VII.67, 29° 50.2'N., 28° 29.8'W. Agassiz Trawl.

DESCRIPTION OF HOLOTYPE (Fig. 1 & 4a)

Head and body depressed. Eyes large, interorbital narrow, maxillary slightly behind vertical through front edge of orbit. Horizontal diameter of orbit much larger than vertical diameter. Upper profile of snout convex. Posterior process of preopercle short, with two very small upturned spines (see fig. 4a). Total length 82mm., standard length 63mm. Head 4.2 in standard length; tip of snout to first dorsal 3.6; to second dorsal 2.3; to origin of pectoral 2.9; to origin of ventrals 3.5; to anal 2.1; base of second dorsal 3.2; base

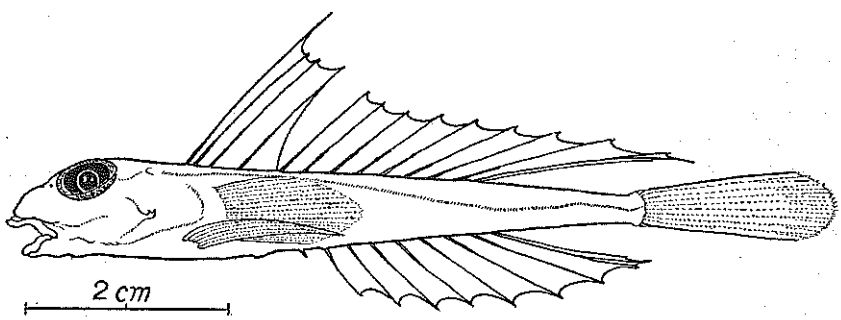

Fig.1. — *Callionymus sousai* sp.n. ♂, Holotype, MMF 22877

of anal 3.6; maximum depth of body (slightly in advance of first dorsal) 7.7. Snout 2.5 in head; longest diameter of orbit 2.5; maxillary (from tip of snout to posterior end) 2.7. Span between ends of points of preopercular spines about 13 times in longest diameter of orbit.

Origin of ventrals very slightly in advance and origin of pectorals distinctly behind vertical through origin of first dorsal. Oirigin of anal well behind that of second dorsal, end of base of anal well behind end of base of second dorsal.

First dorsal much higher than anterior part of second dorsal, its first ray the longest, 2.9 times in starndard length. last ray of

second dorsal as long as first ray of first dorsal, reaching well beyond end of caudal peduncle. Last ray of anal only slightly beyond end of caudal peduncle.

The rays of both second dorsal and anal are undivided, except for the anterior one of the last double rays. First dorsal 4; second dorsal 9; anal 8; pectorals 20; ventrals 6; caudal III, 10, II; spines of preopercular projection 2; gill-raker-like pointed fleshy protuberances of upper branch of first gill arch 7; branchiostegals 5. Membrane behind last ray of first dorsal reaching from its point down to origin of first ray of second dorsal.

Teeth small but sturdy, curved backwards, in bands along edges of upper and lower jaws. None on vomer, palatines or tongue.

Except for the black iris of the eyes, no pigmentation of any kind, either on body or fins, can be seen. This may be due to bleeching.

PARATYPES (Figs. 2 & 4b)

The 3 paratypes agree meristically well with the holotype. No. 22843 b has on one side only one upturned spine on the preopercular projection and 19 pectoral rays instead of 20. Gill-raker-like protuberances and branchiostegals were not counted. Proportions compared to the holotype are as follows:

	Holotype	Paratypes		
MILIMETRES	22877	22389	22843a	22843b
Total length	82	48.5	72	42.7
Standard length	63	39	55	34.3
PERCENTAGE OF STANDARD LENGTH				
Snout to respiratory aperture	23.8	25.1	24.4	27.1
Snout	9.5	9.2	9.6	8.7
Orbit (horizontal)	9.5	10.8	9.6	11.7
Maxillary (snout to end of maxillary	8.7	9.0	8.5	10.2
Snout to first dorsal	28.1	29.5	28.2	33.5
Snout to second dorsal	44.4	43.6	42.7	47.5
Snout to pectoral	34.9	35.4	34.5	35.6
Snout to ventral	28.3	28.2	27.3	28.0
Base of second dorsal	31.7	30.0	32.7	29.2
Base of anal	27.8	25.6	26.4	23.9
Depth of body (maximum slightly in advance of first dorsal)	13.0	12.3	13.1	14.6
Least depth of caudal peduncle	4.8	4.6	4.8	5.0
Span between ends of preopercular spines	0.72	0.90	0.82	0.76

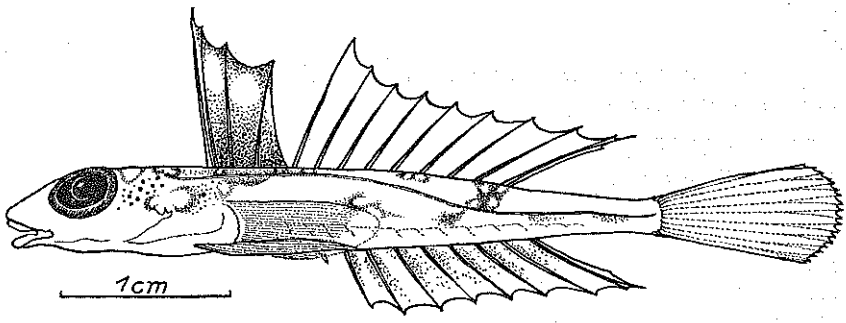

Fig.2. — *Callionymus sousai* sp.n., Paratype, MMF 22389

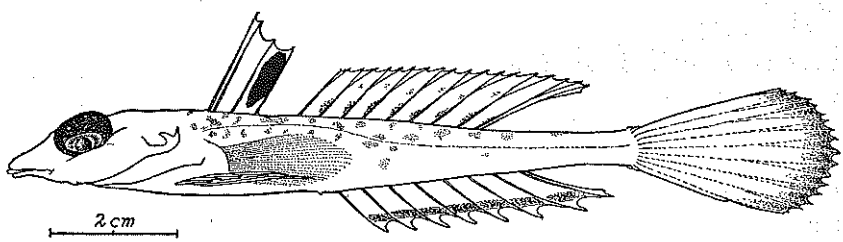

Fig. 3. — *Callionymus phaëton* Günther, MMF 22352

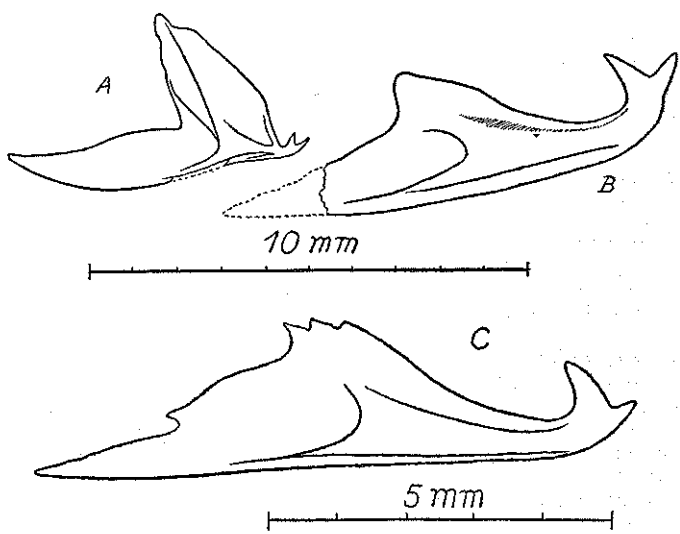

Fig.4. — Preopercular bones: *A* of paratype of *C. sousai,* 63mm. S. L., MMF 22877; *B* of *C. phaëton,* 60 mm. S. L., MMF 22862, Portuguese shelf; *C* of *C. phaëton* ♂, 104 mm. S. L., Rome Hydrobiological Laboratory collection Medierranean

The length of the rays of the dorsal fins and the anal is different from the holotype and varies among the three.

In the 3 paratypes the pigmentation is well preserved and the same in all. On body there is a marbelled design as shown in fig. 2 (paratype No. 22389). The 3 posterior rays and the membranes between the second and third and third and fourth rays of the first dorsal as well as the membrane reaching from the tip of the last rays down to the origin of the first ray of the second dorsal are heavily pigmented, particularly towards their proximal and distal ends, thus leaving round unpigmented areas sligtly nearer the distal than the proximal ends. All the membranes of the anal fin are pigmented along their anterior parts.

AFFINITY

Of the 6 species of *Callionymus (belenus* Risso, *pusillus* Delaroche, *lyra* L., *maculatus* Rafinesque, *reticulatus* Valenciennes, and *phaëton* Günther) of both the eastern North Atlantic and the Mediterranean only the last has two spines on the posterior preopercular projection. From this the above described new species is distinguished by the following characters:

	C. sousai n. sp. (Fig. 1 & 2)	*C. phaëton* Günther (Fig. 3)
Pigmentation on body	marbelled in well defined pattern	brown marks of irregular varying shape, more or less evenly distributed over body
Pigmentation on first dorsal	difuse brown on all membranes	one single large well defined deep-black mark on membrane between third and fourth spine
Span between points of spines of preopercular projection	less han 1% of standard length (on 4 specimens of type material 0.72-0.90% — mean 0.80%)	well over 2% of standard length (on 17 specimens from the eastern North Atlantic, 34--179mm.S.L., 2.23.50% — mean 3.03%)
Rays of second dorsal	all unbranched except last one	all branched

Membrane behind last ray of first dorsal	large, extending from tip of ray to origin of second dorsal	minute, in angle of last ray and back
Preopercle (see fig. 4 a-c)	Anteriorly deeply notched, forming an upper and a lower wing. Its maximum depth less than twice in its length. Its posterior projection quite short and weak.	Anteriorly not notched. Its maximum depth 4 times in is length. Its posterior projection long and strong.

With the discovery of this new species the number of species recorded from both the eastern North Atlantic and the Mediterranean amounts to 7. They can be distinguished from one another by the following characters:

I. Spines on preopercular projection 2

A. All membranes of first dorsal difusely pigmented. Rays of second dorsal undivided. Span between ends of preopercular spines about 12-13 times in longest diameter of orbit..... *C. sousai* sp. n.
Great Meteor Seamount.

B. Large, well-defined black blotch on membrane between third and fourth ray of first dorsal. Rays of second dorsal divided. Span between ends of preopercular spines about 3 times in longest diameter of orbit .... *C. phaëton* Günther, 1861
Eastern subtropical and tropical North and South Atlantic and Mediterranean.

II. More than 2 spines on preopercular projection

A. First dorsal 3 rays .....*C. belenus* Risso, 1813
Coast of Portugal and Mediterranean.

B. First dorsal 4 rays

1. Second dorsal 6-7 rays. ..... *C. pusillus* Delaroche, 1809
Gulf of Cadiz (one record) and Mediterranean.

2. Second dorsal 9-10 rays

a. Three preopercular spines. Second dorsal always 10 rays..... .....*C. reticulatus* Valenciennes, 1837
Southern part of North Sea, English Channel, northern Irish Sea and western Mediterranean.

b. Four preopercular spines (3 pointing upward and backward, one forward). Second dorsal 9 rays, rarely 10
*. Dorsal fins with dark spots on membranes in both sexes..... ..... *C. maculatus* Raminesque-Schmaltz, 1810

Off southwestern coasts of Scandinavia and the British Isles, south coast of Iceland and the Mediterranean.

**. No spots on dorsal fins .....*C. lyra Linnaeus, 1758*
Off the coasts of south western Norway, north western Baltic Sea, off the coasts of the Britsh Isles, Iceland, Bay of Biscay, Portugal, Azores (Fowler, 1936:1323) and the Mediterranean. (Lozano y Rey (1960) says it extends along the west coast of Africa as far as the Canaries, and Bini (1968) even mentions Senegal. These semitropical and tropical localities seem doubtful. There is no record in Cadenat (1950, 1953, 1960, 1961), the southernmost one apparently being the one by Roule & Angel (1930) from about 150 miles due east of Madeira at 33°47'N., 14°21'W.).

The author has much pleasure in dedicating this new species to the former Captain of the Port of Funchal, Commander Manuel António Pereira Cristiano de Sousa, to whom he personally and the Museum are greatly indebted for his untiring interest and help he gave during the period he occupied his post here.

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