

**Article XIII.**—A KEY TO THE SPECIES OF *TRACHURUS*

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*Trachurus* is one of the most sharply marked genera of *Caranx*-like fishes. The species which comprise it, on the other hand, are closely related and difficult to differentiate.

Cuvier and Valenciennes (1833)<sup>1</sup> recognize but a single, wide-ranging species, more or less variable geographically. Lütken (1880)<sup>2</sup> differentiates four species: (1) a North-European, (2) South-European, (3) one occurring at the islands of the eastern Atlantic and also on the western coast of South America, and (4) one in Chinese and Australian waters. Jordan and Evermann (1896)<sup>3</sup> synonymize the Californian form with Lütken's third. Later American writers, in using the name *Trachurus symmetricus* Ayres, with type locality San Francisco, for the Californian fish, as also for the one from the western coast of South America, imply that these are identical and differ from the one with which Lütken placed them. In an Australian Fisheries report (1915),<sup>4</sup> two species from those waters are figured as *declivis* and *novæ-zelandiæ*, differing from the Japanese *japonicus*. The above gives seven current species. There is also reference of *Trachurus* from the Cape of Good Hope, said to resemble the North-European fish, curve of lateral line less abrupt, scutes 65 to 75. Whereas recent authors do not recognize this form as distinct, it should be so, geographically, and has been described as *capensis*.

Six species of *Trachurus* are represented in the collections of The American Museum of Natural History. We have two from Naples. One of these is Lütken's South-European species, which he refers to *mediterraneus* Steind. The other resembles his North-European species, but is more slender. Californian material is referable to *symmetricus*, and Japanese to *japonicus*. Material from Peru has been recently received; as also grown material from the Atlantic United States, which is rare.

In differentiating the species of this genus, Lütken does not make use of depth of body as a criterion, perhaps because he found it subject to such great age-variation in other carangin genera. It seems here, however, to be a reliable character and one of the most convenient, and,

<sup>1</sup>Cuvier and Valenciennes, 1833, Hist. Nat. Poiss., IX, pp. 11-28.

<sup>2</sup>Lütken, C., 1880. Spolia Atlantica, Dansk. Vid. Selsk. Sk., (5) XII, pp. 533-534.

<sup>3</sup>Jordan and Evermann, 1896, Bull. U. S. Nat. Mus., No. 47, part 1, p. 910.

<sup>4</sup>McCulloch, A. R., 1915, Report on some Fishes, etc., Australia, Fisheries, III, Pl. xxxiv.

although Lütken's characters may give a more reliable idea of the interrelation of the species, depth is used in this paper, as by Jordan and Evermann, in separating them.

Lütken records his North-European fish, which he calls *linnaei*, from the Mediterranean also, enabling Jordan and Evermann to retain *Trachurus trachurus*, with type locality the Mediterranean, for that species. In all probability it was the similar, slenderer form which Linnæus had from the Mediterranean. This should, then, stand as *trachurus*, and the northern one become *semispinosus*. One of the current species is thus divided. Furthermore, on examination of three American fish from Orient, Long Island, recently submitted by Mr. Roy Latham (92, 95 and 125 mm. to base of caudal; taken August 28, September 19 and November 1, 1919), it is found that their accessory lateral line stops under the front of soft dorsal instead of continuing farther back, as emphasized by Lütken for the North-European form, with which they otherwise agree. *Trachurus lathamii* is, therefore, proposed for this American form.

Lacking material from the western coast of South America, the figure of a fish from there (Evermann and Radcliffe, 1917, U. S. Nat. Mus., Bull. No. 95, Pl. v) was studied. This was at once seen to differ from Californian *symmetricus*, in which the anterior scutes are very narrow. Furthermore, it was difficult to find characters to differentiate it from Lütken's description of his third species, which he calls *cuvieri* and which, following Jordan and Evermann, is here synonymized with *picturatus*. This leaves *picturatus* with an anomalous range. Examination of two specimens of *picturatus* from Fayal, kindly loaned by the Museum of Comparative Zoology, Cambridge, led to the conclusion that the Peruvian fish was less slender, with perhaps other slight differences, a conclusion since confirmed by two specimens brought from Peru by Mr. Murphy, one of which is made the type of *murphyi*, here proposed.

We are, again, without material of the two species figured from Australia (1915); the deeper of these identified with *declivis*, the more slender called *novæ-zelandiæ*, reviving an old name credited to Hutton. Comparison with the excellent type figure of *declivis*, however, shows that it is *novæ-zelandiæ*, which should have been referred to it. The deeper is the one left without a name, and for which the name *Trachurus mccullochi* is here proposed. It is close to, possibly identical with, *japonicus*.

The following list epitomizes the writer's views on the synonymy of the eleven species<sup>1</sup> of *Trachurus*, now recognized.

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<sup>1</sup>The material at hand is insufficient to determine whether they should all stand as full species or some or all be reduced to subspecies.

***Trachurus semispinosus* (Nilsson)**

*Caranx semispinosus* NILSSON, 1832, Prodr. Ichthyol. Scand., p. 84. Scandinavia.

Range.—Abundant on the coasts of northern Europe.

***Trachurus trachurus* (Linnæus)**

*Scomber trachurus* LINNÆUS, 1758, Syst. Nat., 10th Ed., p. 298. Mediterranean.

Range.—Mediterranean.

***Trachurus lathami*, new species**

*Trachurus trachurus* JORDAN and EVERMANN, 1896, Bull. U. S. Nat. Mus., No. 47, part 1, p. 910; 1900, *loc. cit.*, part 4, fig. 384. Rhode Island.

Accessory lateral line ending under front of soft dorsal. Depth to base of caudal 3.65; arc of curve of lateral line  $1\frac{1}{2}$  in straight part. Scutes about 75. Scutes about six times as high as broad in the center of the straight part of lateral line. Dorsal soft rays 25 to 30. Anal soft rays 24 to 26.

TYPE.—No. 7351, The American Museum of Natural History; 95 mm. to base caudal; Orient, Long Island; Roy Latham; September 19, 1919.

Range.—Atlantic coast of America. Rare. Young numerous in the Gulf Stream, off the Florida Keys (February 23, 1910).

***Trachurus capensis* Castelnau**

*Trachurus capensis* CASTELNAU, 1861, Mémoire sur les poissons de l'Afrique australe, p. 43.

Range.—Cape Region of Africa. Abundant.

***Trachurus japonicus* (Temminck and Schlegel)**

*Caranx trachurus japonicus* TEMMINCK and SCHLEGEL, 1844, Pisces, in Fauna Japonica, p. 109, Pl. LIX, fig. 1.

Range.—Japanese and adjacent seas.

***Trachurus mccullochi*, new name**

*Trachurus declivis* McCULLOCH, 1915, Report on some Fishes, etc., Australia, Fisheries, III, p. 125, Pl. XXXIV. South Australia.

Range.—Australian seas.

***Trachurus mediterraneus* (Steindachner)**

*Caranx trachurus* var. *mediterranea* STEINDACHNER, 1868, Sitzb. Akad. Wiss. Wien, LVII, part 1, p. 383. Mediterranean.

Range.—Mediterranean, occasional in the Atlantic.

***Trachurus murphyi*, new species**

*Trachurus symmetricus* EVERMANN and RADCLIFFE, 1917, Bull. U. S. Nat. Mus., No. 95, p. 59, Pl. v. Peru.

Accessory lateral line ending under front of soft dorsal. Depth to base of caudal 3.87 to 4.48. Arc of curve of lateral line 1.0 to 1.1 in straight part. Scutes 94 to 101

(usually about 95). Scutes about seven times as high as broad in the center of straight part of lateral line. The anterior scutes from  $\frac{3}{4}$  as high to as high as the posterior. Dorsal soft rays 32 to 33. Anal soft rays 27 to 29.

Type.—No. 7259, The American Museum of Natural History; Central Island of the Chinchas, Peru; R. C. Murphy; October 27, 1919.

Range.—Western coast of South America.

### **Trachurus declivis** (Jenyns)

*Caranx declivis* JENYNS, 1842, Zoology of the 'Beagle,' Fishes, p. 68, Pl. xiv. Australia.

*Trachurus novæ-zelandiæ* Hutton. McCULLOCH, 1915, Report on Some Fishes, etc., Australia, Fisheries, III, p. 123, Pl. xxxiv.

Range.—Australian seas.

### **Trachurus picturatus** (Bowdich)

*Seriola picturata* BOWDICH, 1825, Excursion to Madeira, p. 123, fig. 27. Madeira.

Range.—Islands of the eastern Atlantic; coast of southwest Europe (Lütken).

### **Trachurus symmetricus** (Ayres)

*Caranx symmetricus* AYRES, 1855, Proc. Cal. Ac. Nat. Sci., I, p. 62. San Francisco.

Range.—Off the southwest coast of North America, north to San Francisco.

### KEY

1. Body comparatively deep and compressed, the depth  $3\frac{3}{4}$  to  $4\frac{1}{2}$  in length to base of caudal.....2.  
Body elongate, little compressed, the depth  $4\frac{1}{2}$  or more in length.....7.
2. Scutes 70 or 80 (68 to 92) in number.....3.  
Scutes 94 to 101 in number.....*murphyi*.
3. Chord of curve of lateral line  $1\frac{1}{8}$  to  $1\frac{3}{8}$  in straight part.....4.  
Chord of curve of lateral line 1.2 in straight part; depth 4.1; upper accessory lateral line to front of soft dorsal only; scutes 79 to 92; height 4 or 5 times their length; dorsal with about 28, anal about 26 soft rays....*mediterraneus*.
4. Depth about 3.6 or 3.7; scutes about 75 to 77, about 6 or 7 times as high as long in center of straight part of lateral line; dorsal with 25 to 30, anal 24 to 28 soft rays<sup>1</sup>.....5.  
Depth 3.8 to 4.2; upper, accessory, lateral line to front of soft dorsal only (not described in *mccullochi*); height of scutes 4 or 5 times their length; dorsal with 30 to 34 soft rays, anal with 26 to 31.....6.
5. Accessory lateral line continuous under soft dorsal.....*semispinosus*.  
Accessory lateral line to under front of soft dorsal only.....*lathami*.

<sup>1</sup>*Capensis* probably comes here. Flexure of lateral line less abrupt; scutes 65 to 75.

6. Bend in lateral line abrupt, scutes 68 to 75.....*mccullochi*.  
 Bend in lateral line not particularly abrupt, scutes 72 to 80.....*japonicus*.
7. Chord of curve of lateral line  $1\frac{1}{3}$  in straight part; upper, accessory, lateral line continuous under soft dorsal; height of central-posterior scutes 6 or 7 times their length; depth about 4.7; scutes about 75; dorsal with about 29, anal about 28 soft rays.....*trachurus*.  
 Chord of curve of lateral line scarcely if at all shorter than straight part; upper, accessory, lateral line to front of soft dorsal only (not described for *declivis*). 8.
8. Scutes 81 or 82 (74 to 85); anterior and posterior portions of lateral line horizontal, connected by a short oblique portion; depth about 4.5; dorsal with 30 to 35, anal 28 to 30 soft rays; height central-posterior scutes 6 or 7 times their length.....*declivis*.  
 Scutes 96 or 99 (90 to 108); depth 4.5 to 4.7; dorsal with 31 to 33, anal 27 to 29 soft rays.....9.
9. Anterior scutes  $\frac{3}{4}$  as high to as high as posterior, the height of which (centrally) is 5 to 7 times their length.....10.  
 Anterior scutes narrow,  $\frac{1}{2}$  or less as high as posterior, the height of which (centrally) is 4 or 5 times their length.....*symmetricus*.
10. Slender. Depth 4.5 or more.....*picturatus*.  
 Less slender. Depth less than 4.5.....*murphyi*





