

ICHTHYOLOGY.—*Flatfishes of the genus Symphurus from the U.S.S. Albatross Expedition to the Philippines, 1907–1910.* PAUL CHABANAUD. (Translated by Mme. Patricia Isham.) (Communicated by Leonard P. Schultz.)

Max Weber and L. F. de Beaufort,<sup>1</sup> who published the most recent summary of the fish fauna of the Indo-Australian Archipelago, mention only three species in the genus *Symphurus*: *S. regani* Weber and de Beaufort, *S. gilesi* (Alcock), and *S. micro-rhynchus* Weber and de Beaufort. An additional species, *S. marmoratus* Fowler, was described from Jolo Island, Philippines. No less than six species are represented among the 139 *Symphurus* specimens captured between April 10, 1908, and December 16, 1909, in that archipelago or its immediate environs between lat. 20° 37' N., long. 115° 43' E, and lat. 5° 24' S., long. 122° 18' 15" E., by the U. S. Bureau of Fisheries steamer *Albatross* in the course of its successive cruises, which, altogether, constituted the *Albatross* Expedition to the Philippines (1907–1910). I cannot thank too warmly Dr. Leonard P. Schultz, Curator, Division of Fishes, U. S. National Museum, for his favor in trusting to me the study of this material of exceptional scientific value and interest. Also I thank Mme. Patricia Isham for translating this paper.

Among the three species captured by the *Siboga* in 1899–1900, and mentioned or described by Weber and de Beaufort, only *Symphurus regani* was found again by the *Albatross*. However, the investigations of the latter ship augmented the fauna of the Indo-Australian Archipelago by three species, *S. woodmasoni* (Alcock), *S. septemstriatus* (Alcock), and *S. strictus* Gilbert, that are more or less widely scattered in the tropical Indo-Pacific complex, and by two new species, *S. schultzi* and *S. luzonensis*, which are described in the lines that follow.

In reality, *S. woodmasoni* was captured by the *Siboga* in the Banda Sea; but the unique specimen is mentioned by Weber, without determination (*Siboga*, Fishes, 1913: 445, No. 4).

The following abbreviations are used: A, anal fin; C, caudal fin; D, dorsal fin (also the letter D indicates dissection); Mx, Maxillary; R precedes the meristic formula

determined from radiography; S, number of scales, counted between the vertical of the opercular opening and the base of the caudal fin; V, pelvic fin; n, blind side; z, eyed side.

The position of the caudal extremity of the maxillary (Mx) on the eyed side is indicated in the following fashion: I, in front of the vertical of the anterior border of the fixed eye; II, underneath the anterior half of the fixed eye; III, underneath the posterior half of the fixed eye; IV, in back of the fixed eye. The intermediary positions are indicated I/II, II/III, and III/IV.

The same symbols determine the position of the first dorsal ray (D 1), in relation to the movable eye.

The formula for number of vertebrae conforms with the example:  $a\ 9\ [3 + 6] + c\ 44 = t\ 53$ . The letter *a* means number of abdominal vertebrae. The letter *c* means number of caudal vertebrae. The letter *t* indicates the total of the preceding numbers. The numbers put between brackets  $[3 + 6]$  analyze the composition of the abdominal vertebrae. The first number (3) is that of the vertebrae deprived of the hemal arch; the second (6) that of the vertebrae that possess that arch. In all the *Symphurus*, except individual abnormalities not yet found, all the abdominal hemal arches are closed by distal coössification of the two hemitoxes<sup>2</sup>.

*Symphurus woodmasoni* (Alcock, 1889)

D 91–99. A 78–86. C 14. V 4. S 80–90 (+?). Mx: II–III (III/IV<sup>3</sup>). D 1: II–III (III/IV<sup>3</sup>). In hundredths of the standard length: head 20–25; height 23–26 (27–29). In hundredths of the length of the head: eye 12–14(15); space between the eyes 0; C 52–76 (90–115<sup>4</sup>). In hundredths of the body height: height of D or of A 36–45. In alcohol the eyed side is of bright reddish

<sup>2</sup> Cf. Chabanaud, *Morphologie comparée des arcs hémaux abdominaux des téléostéens symétriques et dyssymétriques*. C. R. Acad. Sci. 233: 1393, eff. 5. 1951.

<sup>3</sup> Only one case.

<sup>4</sup> When its length does not attain about 60 percent of that of the head, the caudal fin can be considered deteriorated.

<sup>1</sup> *The fishes of the Indo-Australian Archipelago* 5: 208–211. 1929.



brown, generally even, but often enough varied with dark brown marblelike veins. The fins are brown, more or less dark, but becoming lighter from front to back, so the caudal fin is often colorless. The blind side is colorless and the reddish tint of the musculature is readily visible. The peritoneum is generally black.

Number of specimens studied: 85. Standard length (largest observed): ♂103 mm; ♀121 mm. Sex ratio (82 observations): ♂28; ♀54. Vertebrae (6 observations): 50–52, 9 of which [3 + 6] abdominal.

Record of specimens for *Albatross* dredging stations<sup>5</sup>: U.S.N.M. 138049, station 5247, 2 specimens; U.S.N.M. 138058, station 5402, 1 specimen; U.S.N.M. 138062, station 5403, 7 specimens; U.S.N.M. 138034, station 5404, 1 specimen; U.S.N.M. 138035, station 5405, 2 specimens; U.S.N.M. 138036, station 5409, 1 specimen; U.S.N.M. 138038, station 5412, 1 specimen; U.S.N.M. 138039, station 5418, 1 specimen; U.S.N.M. 138059, station 5501, 13 specimens; U.S.N.M. 138060, station 5502, 27 specimens; U.S.N.M. 138061, station 5503, 22 specimens; U.S.N.M. 138041, station 5508, 1 specimen; U.S.N.M. 138021, station 5516, 1 specimen; U.S.N.M. 138048, station 5537, 1 specimen; U.S.N.M. 138047, station 5538, 1 specimen; U.S.N.M. 138051, station 5623, 1 specimen; U.S.N.M. 138052, station 5626, 1 specimen; U.S.N.M. 138056, 1 specimen from Philippines without locality.

*Symphurus schultzi*, n. sp.

D 85–87: A 72–75. C 14. V 4. S  $\pm$  70–80. Mx II. D 1: II/III–III/IV. In hundredths of the standard length: head 21–25; height 24–30. In hundredths of the head length: eyes 17–19; interorbital space 0; C 50–62. In hundredths of the body height: height of D 42–47. In alcohol: The eyed side is an even reddish brown, now light, now dark; the fins are more or less brown or blackish, progressively lighter from front to back. The blind side is pale or pigmented. The peritoneum is black. On two dissected specimens, U.S.N.M. 138046 and 138057 the vertebrae number 48 of which  $a$  9 [3 + 6] are abdominal.

Named in honor of Dr. Leonard P. Schultz, curator of fishes, United States National Museum, *S. schultzi* differs from *S. woodmasoni* in the fewer rays, D (85–87, instead of 91–99); A (72–75 instead of 78–86), and by its eyes that

appear a little larger (17–19 hundredths of the head length instead of 12–15), also in fewer vertebrae (48 instead of 50–52), the formula of the abdominal vertebrae is the same 9 [3 + 6].

This species is described from 5 specimens, 2 ♂ and 3 ♀; maximum standard length ♂ 70 mm., ♀ 64 mm.

Record of specimens for *Albatross* dredging stations: U.S.N.M. 138044, holotype; ♀, station 5508. Paratypes: U.S.N.M. 138025, Station 5201; U.S.N.M. 138033, Station 5373; U.S.N.M. 138057, St. 5506; U.S.N.M. 138046, Station 5536.

*Symphurus septemstriatus* (Alcock, 1891)

D 93–101. A 81–89. C 12. V 4. S 96–100. Mx, (I/II)<sup>6</sup> II–III. D 1: II–II/III (III)<sup>6</sup>. In hundredths of the standard length: head 18–22; height 21–27. In hundredths of the length of the head: eye (12) 14–18 (19); interorbital space 0; C 60–86. In hundredths of the body height: height of D or of A 36–41. In alcohol, the eyed side is of reddish brown, more or less clear with nebulous dark brown areas, arranged in transverse bands; rarely indistinct, and numbering about 7 to 12, between the operculum and the base of C; fins brownish, pale towards the rear. The blind side is usually reddish brown, lighter than the eyed side, but always of uniform color. Peritoneum is black.

Specimens studied numbered 38; maximum standard length ♂ 78 mm. ♀ 77 mm. Sex ratio for 33 observations: ♂ 21, ♀ 12. Vertebrae (4 observations):  $a$  9 [3 + 6] +  $c$  44 =  $t$  53 (3 individuals),  $a$  9 [3 + 6] +  $c$  45 =  $t$  54 (1 individual).

Record of specimens for *Albatross* dredging stations: U.S.N.M. 138026, station 5216, 4 specimens; U.S.N.M. 138023, station 5265, 2 specimens; U.S.N.M. 138043, station 5268, 2 specimens; U.S.N.M. 138028, station 5298, 1 specimen; U.S.N.M. 138029, station 5301, 1 specimen; U.S.N.M. station 138040, station 5326, 2 specimens; U.S.N.M. 138042, station 5387, 16 specimens; U.S.N.M. 138041, station 5388, 1 specimen; U.S.N.M. 138031, station 5391, 1 specimen; U.S.N.M. 138032, station 5392, 2 specimens; U.S.N.M. 138035, station 5405, 1 specimen; U.S.N.M. 138037, station 5411, 1 specimen; U.S.N.M. 138038, station 5412, 1 specimen; U.S.N.M. 138060, station 5502, 1 specimen; U.S.N.M. 138044, station 5508, 1 specimen.

<sup>5</sup> *Albatross* dredging station records were published in: Rept. Comm. Fish., 1910 (741): 1–97. Nov. 29, 1910.

<sup>6</sup> Only one case.



**Symphurus regani** Weber and Beaufort, 1929

D 103-104. A 89-92. C 14. V 4. S  $\pm$  100. Mx III. D 1: I-II. In hundredths of the standard length: head 17; height 24-26. In hundredths of the length of the head: eye 15; interorbital space 0; caudal fin  $\pm$  73. In hundredths of the body height: height of D or of A:  $\pm$  30. In alcohol, the eyed side is of an even reddish brown, not dark, the fins dark brown. The blind side is colorless or whitish.

Record of specimens for *Albatross* dredging stations: U.S.N.M. 138045, station 5526, 1 ♂ specimen, 112 mm standard length, R:a 10 [3 + 7] + c 47 = t 57; U.S.N.M. 138053, station 5646, 1 ♂ specimen, 122 mm, R:a 10 [3 + 7] + c 47 = t 57; U.S.N.M. 138054, station 5647, 1 ♀ specimen, 96 mm. R:a 10 [3 + 7] + c 47 = t 57.

**Symphurus luzonensis**, n. sp.

Holotype ♂. Total length 80 mm. Standard length 72 mm. Length of the head 13 mm. D 99. A 84. C 12. V 4. S 104. Mx II. D 1: II/III. In hundredths of the standard length: head 18; height 23. In hundredths of the length of the head: eye 14; interorbital space 0; C 61. In hundredths of the body height, height of D or of A 38. In alcohol, the eyed side is of a light reddish brown; fins pale; blind side colorless. U.S.N.M. 138043, holotype from Station 5268, ♂ specimen, R:a 10 [4 + 6] + c 42  $\approx$  t 52.

Captured near the island of Luzon, the holotype of *Symphurus luzonensis* differs from

*S. regani* in the fewer rays of its three median fins, notably of C (12 instead of 14); also by its caudal vertebrae (42 instead of 46 or 47), the formula for abdominal vertebrae are the same, a 10 [4 + 6], proof of the close affinity existing between these two species.

**Symphurus strictus** Gilbert, 1905

D 116-121. A 101-106. C (13) 14. V (3) 4.<sup>7</sup> S 130-140. Mx II-III. D 1: I-II. In hundredths of the standard length: head 15-18; height 21-24 (27). In hundredths of the length of the head: eye 11-14; interorbital space 0; C ? In hundredths of the body height: height of D or of A 33. In alcohol the eyed side is evenly bright red, with the fins brownish grey, becoming lighter from front to back. The peritoneum is black. Blind side same color as eyed side, but a little lighter.

Seven specimens studied, 4 ♂ and 3 ♀. Standard length (maxima observed): ♂ 126 mm; ♀ 86 mm.

Record of specimens for *Albatross* dredging stations: U.S.N.M. 138024, station 5269, 1 ♂ specimen; U.S.N.M. 138027, station 5290, 1 ♂ specimen, R:a 9 [3 + 6] + c 52 = t 61; U.S.N.M. 138030, station 5294, 1 ♀ specimen; U.S.N.M. 138022, station 5589, 1 ♂, R:a 9 [3 + 6] + c 52 = t 61; U.S.N.M. 138050, station 5621, 1 ♀ specimen; U.S.N.M. 152779, station 5623, 1 ♀ specimen; U.S.N.M. 138055, station 5645, 1 ♂ specimen.

<sup>7</sup> C 13, for U.S.N.M. 138024. V 3, for U.S.N.M. 138050.

**MALACOLOGY.**—*Conus eldredi*, new name for one of the poison cones. J. P. E. MORRISON, U. S. National Museum.

The subgenus *Gastridium* Modeer (Svenska Vet.-Akad. Handl. (n. s.) 14: 196. 1793) includes a few relatively large but thin-shelled species of the genus *Conus*. It is probable that these species are more active and much more rapid in growth of shell than the great majority of cone species. One species somewhat smaller than the genotype of *Gastridium* (*Conus geographus* Linnaeus) but most closely related to it, and therefore to be handled with equal caution against its poison bite, is without a valid scientific name.

The earliest name *Conus geographus rosea* Sowerby (Conch. Illus., pt. 32: fig. 33. 1833) was twice preoccupied by *C. roseus* Fischer, 1807, and Lamarck, 1810. The next name given, *Conus intermedius* Reeve (Conch. Icon.: pl. 23, fig. 129. 1843) is preoccupied

by the name *C. intermedius* Lamarck, 1810. Likewise the third name *Conus mappa* Crosse (Rev. Mag. Zool. (2d ser.) 10: 200, 205. 1858), given as a nomen novum for *intermedius* Reeve, is preoccupied by the name *Conus mappa* Solander (in Humphrey, Portland Catalogue: 116, No. 2554. 1786). This poison cone is here given the new name *Conus (Gastridium) eldredi*, in honor of my brother Lt. Cmdr. R. Ray Eldred Morrison (U.S.N.R.), who collected the species at Abamama in the Gilbert Islands in 1944. This new name may commemorate in a small way the considerable contributions to the knowledge of mollusks made by interested members of the United States Armed Forces (both regular and reserve) during World War II.





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