

## Notes on Loricata

by

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2. On the occurrence of *Chaetopleura fulva* (Wood, 1815) on the Eastern coast of Latin America.

On my request Mr H. DE SOUZA LOPES of the Instituto 'Oswaldo Cruz', Rio de Janeiro, sent me a collection of chitons, preserved in alcohol, which he collected in 1952 in the Estado Rio de Janeiro, Brazil. Among them were two specimens of a *Chaetopleura* which at first sight reminded me of *Ch. fulva* (Wood, 1815) from the Atlantic coasts of Spain and Portugal. A closer examination and accurate comparison with Spanish examples of *Ch. fulva* convinced me of the identity of the Brazilian specimens and the European ones.

At the same time I had the opportunity to study a lot of 7 *Chaetopleura* collected by Mr J. H. JURRIANSE at Bahia Blanca (Argentina), on June 19th. 1923, which were among the unnamed chitons in the collection of the Rijksmuseum van Natuurlijke Historie, at Leiden. These also showed a close resemblance to *Ch. fulva*, though I observed some slight differences with the Spanish and Brazilian specimens. They might be called *Ch. fulva* (Wood) var. *tebuelcha* (d'Orbigny) for reasons to be set forth in the conclusive part of the present paper.

## BIBLIOGRAPHY

of *Chaetopleura fulva* (Wood)

The references borrowed from PILSBRY (1893, p. 71) and from DAUTZENBERG (1927, p. 232) are included without having been verified.

- 1788 *Chiton candidatus gaditanus* Chemnitz, Conch. Cab., vol. 10, p. 374; pl. 173 fig. 1691.  
 1797 — *angulatus* (?) Spengler, Skrivter Naturh. Selsk., vol. 4, p. 71.  
 1797 — *ferrugineus* (?) Spengler, op. cit., p. 72.  
 1802 — *lusitanicus* (?) Tilesius, Jahrb. Naturgesch., vol. 1 (Leipzig), p. 221; pl. 6 figs. 3-5.  
 1815 — *fulvus* Wood, General Conch. (London), p. 7, pl. 1 fig. 2.  
 1817 — — Dillwyn, Descr. Cat., vol. 1 (London), p. 2.  
 1825 — — Wood, Index Testac. (London), p. 1, pl. 1 fig. 3.  
 1833 — — Sowerby, Conch. Illustr. (London), figs. 53, 83.  
 1842 — — Reeve, Conch. Syst., vol. 2, p. 11; pl. 132 fig. 83.  
 1846 — *tebuelchus* d'Orbigny, Voy. dans l'Amér. Mérid., p. 488; pl. 65 figs. 7-13.  
 1847 — *fulvus* Reeve, Conch. Icon., Monogr. *Chiton*, pl. 7 fig. 39.  
 1847 *Tonicia fulva* Gray, Proc. Zool. Soc., p. 67.  
 1856 *Chiton fulvus* MacAndrew, Rep. Br. Ass. Adv. Sci., pp. 117, 136, 145.

- 1858 *Chaetopleura fulva* H. & A. Adams, Gen. Rec. Moll., vol. 1, p. 476.  
 1860 *Chiton fulvus* Reeve, Elem. Conch., vol. 2, p. 37.  
 1869 — — P. Fischer, Act. Soc. Linn. Bordeaux, vol. 27, p. 107.  
 1884 — — Nobre, Cat. Moll. S.-Ouest Port., p. 14.  
 1885 — — Granger, Hist. Nat. France, part 6 Moll., p. 170.  
 1886 — — Hidalgo, Rev. Progr. Cienc., vol. 21, p. 405.  
 1886 — — Locard, Prodr. Malac. Fr., p. 347.  
 1889 *Chaetopleura fulva* De Rochebrune, Miss. Sc. Cap. Horn, p. 137.  
 1891 *Chiton fulvus* Dautzenberg, Mém. Soc. Zool. Fr., vol. 4, pp. 609, 617.  
 1892 — — Locard, Coq. Mar. Côtes Fr. (Paris), p. 232.  
 1893 — — Pilsbry, in Tryon, Man. Conch., vol. 14, pl. 44 figs. 62-64.  
 1893 *Tonicia tebuelchus* Pilsbry, op. cit., p. 205; pl. 40 figs. 13-15.  
 1893 *Chaetopleura fulva* Pilsbry, op. cit., vol. 15, p. 71.  
 1893 — — Thiele, in Troschel, Gebisz Schnecken, vol. 2, p. 381; pl. 31 fig. 16 (radula).  
 1904 *Chiton (Chaetopleura) fulvus* Clessin, Conch. Cab., 2nd. ed., vol. 6, part. 4, pp. 106, 116; pl. 41 fig. 9.  
 1910 *Chaetopleura fulva* Thiele, Chun's Zoologica, vol. 22, p. 74; pl. 7 fig. 29.  
 1916 — — Hidalgo, Faune Malac. Esp. Port. Bal., p. 225.  
 1927 — — Dautzenberg, Rés. Sc. Alb. Ier Monaco, vol. 72, pp. 232, 357.  
 1935 — — Thiele, Handb. Syst. Weichtierk., vol. 4, 1024, 1128.

#### MATERIAL EXAMINED

- a) Spain. - R. DAMON, Rijksmuseum van Natuurlijke Historie, Leiden, cat. no. 1a, 2 dried specimens, 39 × 23, and 26 × 15 mm.  
 b) ? - Rijksmus. Nat. Hist., Leiden, cat. no. 1b, 1 dried specimen (disarticulated), length ± 45 mm.  
 c) Ilha de Sta. Ana, Macahé, Est. do Rio, Brazil, V 1952. - H. DE SOUZA LOPES leg., in coll. P. KAAS & A. N. CH. TEN BROEK, reg. no. 3259, 2 specimens in alcohol, too curled to be measured, length approximately 40, and 35 mm.  
 d) Bahía Blanca, Argentina, 19 VI 1923. - J. H. JURRIANSE leg., Rijksmus. Nat. Hist., Leiden, cat. no. 1c, 7 specimens, dried and curled, 1 of which is now in coll. P. KAAS & A. N. CH. TEN BROEK, reg. no. 3261.  
 e) From ballast sand, imported from Argentina. - J. VAN DER MEULEN leg., in coll. P. KAAS & A. N. CH. TEN BROEK, reg. no. 3260, 3 fragments.  
 f) ? - Rijksmus. Nat. Hist., Leiden, cat. no. 1047, 1 specimen in alcohol, length ± 40 mm.

#### DISCUSSION

There is no doubt as to the identity of the Brazilian and the Spanish specimens. The two specimens (a) are of a warm reddish

brown, the white, beaded, longitudinal threads on the central areas are marked as very fine stitch work. The lateral areas and end valves show several subobsolete, bifurcating and diverging radii of a lighter colour. In the Brazilian specimens (c), which are of a lighter brown colour, the radii of the lateral areas are of a very pale blue; in the larger specimen the lateral areas are radially streaked with the same pale blue and light brown. This specimen shows also white blotches near the apices of the valves. The disarticulated specimen of unknown provenance (b) and the alcoholic specimen (f) are light brown with a dark brown dorsal stripe. The only difference I can trace between the two Brazilian specimens and those from the lots (a) and (b) is to be found in the posterior slope, which is conspicuously concave in the first, convex in the latter. Yet I consider this difference not of specific nor of subspecific value, but falling within the range of specific variation. This conception is justified by the 7 specimens from Bahia Blanca (d), some of which show a slightly concave, others a convex posterior slope. The alcoholic specimen (f) also shows a slightly concave posterior slope.

The Argentine specimens are smaller — they are too curled to be measured — and differ from the others by the possession of much stronger longitudinal folds. The beaded threads on the central areas are more crowded together, the radii on the lateral areas and end valves more strongly developed. In some specimens they become fine, interrupted threads. The general characters, however, are the same as in those of the other lots, so one is quite justified in considering them at best a variety of *C. fulva* (Wood).

The fragments of a *Chaetopleura* sp. (e) found with other South American marine Mollusca at Amsterdam by Mr. J. VAN DER MEULEN in ballast sand imported from Argentina show the same characters as the Bahia Blanca specimens and no doubt belong to this species.

A. d'ORBIGNY, in his „Voyage dans l'Amérique Méridionale”, described a *Chiton tehuelchus* (after the Tehuelcha Indians, which inhabit the greater part of Patagonia). His description is too short to make the species recognizable. PILSBRY, in TRYON's Manual, vol. 15, p. 205, placed it in the genus *Tonicia*, stating, however, that „the sculpture reminds one of *Chaetopleura fulva* Wood. The generic position is not certain.” The same author gives a reproduction of d'ORBIGNY's figures of *Chiton tehuelchus* on plate 40 figs. 13-15. These give a rather good picture of *Chaetopleura fulva* (Wood). The broad, yellowish brown girdle, the pale brown streaks and the interrupted, bifurcating, subobsolete radials on the lateral areas agree with the species discussed here, more in particular with the Argentine form with more prominent radials on the end valves and lateral

areas and the more crowded, beaded threads on the centrals. Hence this form may be called *Chaetopleura fulva* (Wood) var. *tehuelcha* (d'Orbigny).

In the light of these discoveries it becomes also clear that DE ROCHEBRUNE's statement of having taken *Cb. fulva* from a ship's cable at Cape Horn may be considered a reliable observation.

This makes *Cb. fulva* a wide-spread species, occurring in the Atlantic Ocean from lat. 45° N. to lat. 55° S. Judging from the fact that the ballast sand from Argentina contained fragments of this chiton species only, it seems to be a rather common inhabitant-of South American shores.

As its occurrence in European seas is very limited — it has only been found in Atlantic waters from Portugal and the adjacent coast of Spain and France, N. to Arcachon<sup>1)</sup>, the question arises whether *Cb. fulva* has been introduced in the past by Portuguese and Spanish merchant vessels which maintained a frequent traffic between their countries and Latin America.

Considering the adaptive power of the species, living in hot (Brazil), warm (Portugal), moderate (Patagonia, Gulf of Gascony) and, perhaps, cold (Cape Horn?) climate zones, as well as the fact that DE ROCHEBRUNE claims to have taken it from a ship's cable, the possibility of it being introduced into Europe in this way is by no means improbable.

### 3. On the bibliography of *Ischnochiton adamsii* (Carpenter) and *I. tenuisculptus* (Carpenter).

In his Monograph on the Polyplacophora H. A. PILSBRY (1892, pp. 111, 112) recorded *Ischnochiton adamsii* (Carpenter) and *I. tenuisculptus* (Carpenter). In his bibliography of both species the author shows a remarkable inconsistency, according to which the dating of the former species should be fixed on 1863 and of the latter species on 1865.

PILSBRY's synonymy of *I. adamsii* namely reads (p. 112): „*Lophyrus adamsii* Cpr., P.Z.S. 1863, p. 24. - *Lepidopleurus adamsii* Cpr., P.Z.S. 1865, p. 274.”

For *I. tenuisculptus* the same author gives (p. 112, below): „*Chiton*

<sup>1)</sup> J. THIELE, 1910, p. 74, mentions a specimen of *Cb. fulva* from Tenerife in the collection of the Berlin Museum, a statement apparently overlooked by J. R. M. BERGENHAYN in his „Beiträge zur Malakozoologie der Kanarischen Inseln. Die Loricaten” (Arkiv för Zoologi, vol. 23A, no. 13, 1931). The species has never since been found in the Canaries.

*dispar* C. B. Ad., Cat. Panam. Sh. no. 373 (part.). - *Lepidopleurus tenuisculptus* Cpr., P.Z.S. 1865, p. 275."

The reference of the former species to P.Z.S. 1863, p. 24, is incorrect. CARPENTER used both names for the first time in P.Z.S. 1863 on p. 362, that is to say on the 24th page of his paper. Presumably PILSBRY had a separate copy of this paper, numbered 1-31.

Both species were among the duplicates of the „*Chiton dispar*” lot in the Panama collection of C. B. ADAMS. CARPENTER, having examined these shells, wrote of them (1863, p. 362, no. 373 - *Chiton dispar*, C.B.Ad.; not *Lophyrus dispar*, Sby.): „... Among the duplicates were two (if not three) species: - the principal one with side-sculpture in lobated knobs, which may be named *Lophyrus adamsii*; a variety with simple knobs; and a well-marked species without distinct side areas, which may be called *Lophyrus tenuisculptus*.” In 1864 (p. 551) he referred to them as *Lepidopleurus adamsii* and *Lepidopleurus tenuisculptus*.

In his publication of 1865 CARPENTER gave (pp. 274-275) more detailed descriptions of both species, which were reprinted in PILSBRY's work.

From the above it will be clear that both of the bibliographies as given by PILSBRY are incorrect and incomplete. They have to run:

*Ischnochiton adamsii* (Carpenter, 1863)

*Chiton dispar* C. B. Adams (not *Chiton dispar* Sowerby, P.Z.S. 1832, p. 58), Cat. Panama Sh., 1852, no. 373 (part.) - *Lophyrus adamsii* Carpenter, P.Z.S. 1863, p. 362. - *Lepidopleurus adamsii* Carpenter, Rep. Brit. Ass. Adv. Sci. 1863 (1864), p. 551; id., P.Z.S. 1865, p. 274. - *Ischnochiton adamsii* Pilsbry, Man. Conch. 14, 1892, p. 111, pl. 18 figs. 51-55.

*Ischnochiton tenuisculptus* (Carpenter, 1863)

*Chiton dispar* C. B. Adams (not *Chiton dispar* Sowerby, P.Z.S. 1832, p. 58), Cat. Panama Sh., 1852, no. 373 (part.) - *Lophyrus tenuisculptus* Carpenter, P.Z.S. 1863, p. 362. - *Lepidopleurus tenuisculptus* Carpenter, Rep. Brit. Ass. Adv. Sci. 1863 (1864), p. 551; id., P.Z.S. 1865, p. 275. - *Ischnochiton tenuisculptus* Pilsbry, Man. Conch. 14, 1892, p. 112.

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