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日本産ヒザラガヒ類の研究 (6)  
Studies on Japanese Chitons (6)

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Genus *Acanthochiton* (GRAY, 1821, emend.)<sup>1</sup>

Sectio *Acanthochiton* s. str.

*Acanthochiton dissimilis*, new species.

(Pl. VII)

General appearance (fig. 94): A small elongate acanthoid chiton; generally coloured yellowish or purplish brown; valves flat, broader than the width of girdle, weakly sculptured; girdle comparatively narrow, apparently smooth, leathery, clothed with minute granules, the characteristic hair-tufts arranged as usual in the genus.

Head valve (fig. 95): Apex rather low, tegmentum shallowly waved, with five obsolete radial elevations, each of which terminates in a weak lobe at the anterior margin, posterior margin slightly sinuated at the middle; tegmental surface with radially arranged, flat, elongate granules, which, serially connected in radial rows, form low inconspicuous ridges; the granules separated one another at the margin, while the tegmental sculpture becomes obsolete toward the apex. Insertion plate broad, thick, its outer surface irregularly but very faintly striated; with 5 deeply incised

1) *Acanthochitona* GRAY, 1821, London Medical Repository, vol. 15, p. 234, emended by IREDALE. For discussion as regards the emendation, see: IREDALE (1915) Trans. New Zealand Inst., vol. 47, p. 422; ASHBY (1922) Trans. Roy. Soc. S. Austr., vol. 46, p. 9.

slits at the anterior margin, each of them connected with a shallow groove up to the tegmentum, the grooves corresponding to the weak lobes of tegmentum.

Median valve (figs. 96-98): All median valves rather flat, slightly beaked; tegmentum almost as long as broad.

In the 2nd valve (fig. 96), tegmentum a little longer than broad, anterior edge protrudes forward at the middle, lateral margins sinuated at about the anterior third; bluntly beaked; jugum indistinctly separated from latero-pleural area, ornamented with fine longitudinal ridges; latero-pleural area provided with flat, elongated, drop-shaped granules; sutural plate thick, narrow, jugal sinus wide and shallow.

In the 3rd valve, anterior edge of the tegmentum widest of all the median valves, almost straight; those of the 4th to 6th valves (cf. fig. 97) weakly sinuated at the middle, whereas in the 7th valve, the anterior edge is not sinuated, but slightly arcuated; tegmental sculpture of the 3rd to 7th valves similar to that of the 2nd valve, though they are somewhat coarser and weaker than the latter.

Tail valve (figs. 99, 100): Tegmentum very small in comparison with the median valves; inverted trapezoid in outline, its anterior edge broad, slightly arcuated forward, posterior edge narrow and rounded, both sides nearly straight; jugum indistinct, sculptured like that of the median valves; latero-pleural area provided with a few weak ridges, being originally series of granules; posterior area bends downward with a gentle slope, also sculptured with weak radial ridges; mucro low, obtuse, post-median; sutural plate thick, broad, laterally extended, but truncated at the edge; sinus open and shallow; insertion plate well developed, nearly vertical to the tegmentum, posterior margin rounded; articulamentum smooth with no striation at all, a deep slit on each side.

Girdle: Comparatively narrow for a member of the genus, smooth, leathery, matted with extremely minute, ovoid granules (fig. 105), measuring  $15\mu-20\mu$  by  $10\mu$ , arranged in so characteristic a manner that the whole surface appears an irregular network (fig. 106); spicule of hair-tufts (fig. 107) of a shape of very slender needle, pointed, hyaline, measuring about 1 mm. in length; hypnotum covered with hyaline spicules (fig. 108) of  $25\mu-55\mu$  long, apex blunt; marginal spicules (fig. 109) yellowish brown, thick,

bluntly pointed, about  $90\mu$ – $100\mu$  in length.

Ctenidia: Merobranchial, adanal, about 20 ctenidia on each side, occupying approximately the posterior half of the entire length of the foot.

Colouration: Tegmental surface generally yellowish brown, latero-pleural area nearly concolorous with the jugum, though the colour becomes gradually deeper toward the margin; interior yellowish green throughout with an yellow-ochre patch on the middle, it is especially deep bluish green in the tail valve; girdle yellowish or purplish brown with small, indistinct, lighter freckles, an isolated granule looks light amber colour, though the entire aspect of the girdle is a deep brown.

Radula (figs. 101–104): Central tooth (fig. 102) oblong, anterior end rounded, posterior margin shallowly bilobed, slightly sinuated at the middle on both sides; centro-lateral (fig. 103 *a, b*) broad, almost squarish in outline, its outer lobe turned a little inward, without a securiform appendage at the anterior corner, basal plate oblong, vertical to the main lobe; major lateral (fig. 104) tricuspid, the cusps thick and short, with stout stalk; major uncinus (fig. 101) arcuate, of a long spoon-shape.

Measurements: The spirit specimen in a rather curved condition measures 11.5 mm. in length, 5.7 mm. in breadth; the total view (fig. 94) is so figured that the girdle is more expanded than in the specimen.

The size and ratio between the length and breadth of each valve are given below.

No. of valve	Length	Breadth	Ratio $\frac{\text{length}}{\text{breadth}}$
I	1.62 mm.	2.00 mm.	0.81
II	2.45	2.40	1.02
III	2.00	2.30	0.87
IV	2.25	2.10	1.07
V	2.15	2.25	0.96
VI	2.20	2.26	0.97
VII	1.80	2.00	0.90
VIII	1.00	1.20	0.83

Locality: Three specimens were collected by Mr. KIVOSHI OKAMOTO in the littoral region near Gobô, Hidaka-gun, Prov. Kii. To him our cordial thanks are due for the opportunity given the authors to describe the present species.

Remarks: By examining the characteristics this species may easily be discriminable from those of *Acanthochiton* already recorded

from Japan. In the median valve, the tegmentum of the present species is nearly as broad as long, viz., it is broader than in *A. rubrolineatus*, and longer than in *A. defilippii*, and moreover it differs from both species in the finer sculpture of the tegmentum, in that the spicules of hair-tufts are much slender, in the shape of hypodontum spicules and also in the feature of the radula. The absence of the securiform appendage in the centro-lateral tooth of the radula is the distinguishable character from *A. scutigera*; the shape of the tegmentum of the median valve and the position of mucro in the tail valve differ from *A. achates*. Furthermore, the most characteristic of the present species is the armature of the girdle, which, as mentioned above, is covered with minute horny granules; this may be a unique character among the other known species in the genus.

The Japanese species of the genus *Acanthochiton* are listed below. In 1861 *A. zelandicus* (QUOY et GAIMARD, 1834), of New Zealand, was recorded from Hakodate by SCHRENCK, but PILSBRY (1893, p. 16) denies its occurrence in Japan, saying: "This species has been reported from Japan (SCHRENCK, Amurl. Moll., p. 273) but incorrectly, the Japanese species being distinct." While DUNKER (1882, p. 160) recorded *A. hirudiniiformis* (SOWERBY, 1832), originally of a species of South American waters, from the coast of Korea, but to our regret this is not confirmed by any subsequent authors. Thus, for the present, we regard it safe to exclude these two species from the Japanese fauna.

1. ACANTHOCHITON ACHATES (GOULD, 1859).

*Chiton (Acanthochaetes) achates* GOULD (1859) Proc. Bost. Soc. Nat. Hist., vol. 7, p. 165; GOULD (1862) Otia Conch., p. 118.

*Acanthochiton achates* DUNKER (1882) Index Moll. Mar. Jap., p. 160.

*Acanthochites achates* PILSBRY (1893) Man. Conch., vol. 15, p. 18-19; NIERSTRASZ (1905) Siboga-Expeditie, no. 20, p. 59; THIELE (1909) Zoologica, vol. 22, no. 56, p. 46-47, pl. 6, figs. 18-23.

Kikaia<sup>1)</sup> and Hakodadi Bay (STIMPSON): Hakodate (DUNKER; THIELE).

2. ACANTHOCHITON CIRCELLATUS ("ADAMS & REEVE, MS," REEVE, 1847).

*Chiton circellatus* (ADAMS & REEVE) REEVE (1847) Conch. Icon., pl. 27, fig. 180.

*Acanthochites circellatus* PILSBRY (1893) Man. Conch., vol. 15, p. 20, pl. 2, figs. 53, 54; NIERSTRASZ (1905) Siboga-Exped., no. 20, p. 59; THIELE (1909) Zoologica, vol. 22, no. 56, p. 45.

Island of Quelpart, Korean Archipelago (A. ADAMS).

1) This may be Kikai-ga-shima in the Loochoo Group. This locality requires confirmation.

## 3. ACANTHOCHITON DEFILIPPII (TAPPARONE-CANEFFI, 1874).

*Amycula de-filippii* TAPPARONE-CANEFFI (1874) Zool. del Viaggio intorno al Globo della R. Fregata 'Magenta', Malacologia, p. 78-79, pl. 1, fig. 15, 15a-15c.

*Acanthochites defilippii* PILSBRY (1893) Man. Conch., vol. 15, p. 19-20, pl. 2, figs. 45-48; PILSBRY (1895) Cat. Mar. Moll. Jap., p. 115; NIERSTRASZ (1905) Siboga-Exped., no. 20, p. 59; THIELE (1909) Zoologica, vol. 22, no. 56, pp. 45, 47, 72, pl. 6, fig. 30; Y. HIRASE (1909) Kairui-Tebikigusa, p. 69, fig. 68.

*Acanthochites dephilippii* Is. TAKI (1924) Dōbutsugaku-Zasshi, vol. 36, p. 288, with textfig.; BABA (1929) Dōbutsugaku-Zasshi, vol. 41, pp. 108-112, pls. 1-2.

*Acanthochitona dephilippii* S. HIRASE (1927) Nippon Dōbutsu Zukan, p. 1502, fig. 2886.

*Sectoplax porrecta* CARPENTER MS (fide PILSBRY), DALL (1881) Proc. U. S. Nat. Mus., p. 288 (no description): cf. PILSBRY (1893) l.c., p. 19-20, pl. 2, figs. 36-44.

Nagasaki (Petersburg Museum, after THIELE); Fukura, Awaji (from HIRASE collection, identified by THIELE); Yokohama (TAPPARONE-CANEFFI); Sylvia Bay, Maldive Archipelago ("Planet", after THIELE); Toyama Bay (K. KIKUCHI); Provinces Iyo, Kii, Sagami, Higo, etc. (TAKI).

## 4. ACANTHOCHITON DISSIMILIS Is. &amp; Iw. TAKI, 1931.

Gobō, Prov. Kii (K. OKAMOTO).

## 5. ACANTHOCHITON RUBROLINEATUS (LISCHKE, 1873).

*Chiton rubro-lineatus* LISCHKE (1873) Malakozoologische Blätter, vol. 21, p. 24; LISCHKE (1874) Jap. Meeres-Conchyl., vol. 3, p. 73-74, pl. 5, fig. 12.

*Acanthochiton rubro-lineatus* DUNKER (1882) Index Moll. Mar. Jap., p. 160; THIELE (1891-'93) Das Gebiss der Schnecken, vol. 2, p. 399, pl. 32, figs. 32, 33.

*Acanthochiton zealandicus* THIELE (1891-'93) Gebiss d. Schnecken, no. 117.

*Acanthochites rubrolineatus* PILSBRY (1893) Man. Conch., vol. 15, p. 18, pl. 2, fig. 50; PILSBRY (1895) Cat. Mar. Moll. Jap., p. 115; NIERSTRASZ (1905) Siboga-Exped., no. 20, p. 59; THIELE (1909) Zoologica, vol. 22, no. 56, pp. 45, 46, pl. 6, fig. 14-17.

? *Acanthochites subachates* PILSBRY, MS; THIELE (1909) Zoologica, vol. 22, no. 56, p. 47-48; Is. TAKI (1924) Dōbutsugaku-Zasshi, vol. 36, p. 288-289, with textfig.; BABA (1929) Dōbutsugaku-Zasshi, vol. 41, p. 112, pl. 1, fig. 1, D.

Nagasaki (LISCHKE; DUNKER; THIELE); Prov. Iyo; Kii (TAKI); Enoshima, Sagami (THIELE); East coast of Japan (STEARNS); Hakodate (THIELE); Tsingtau; Tschifu, China (THIELE).

## 6. ACANTHOCHITON SCUTIGER ("ADAMS &amp; REEVE, MS." REEVE, 1847).

*Chiton scutigera* (ADAMS & REEVE) REEVE (1847) Conch. Icon., pl. 7, fig. 178.

*Acanthochiton scutigera* DUNKER (1882) Index Moll. Mar. Jap., p. 159.

*Acanthochites scutigera* PILSBRY (1893) *Man. Conch.*, vol. 15, p. 20-21, pl. 2, figs. 51, 52; PILSBRY (1895) *Cat. Mar. Moll. Jap.*, p. 115; NIEBSTRASZ (1905) *Siboga-Exped.*, no. 20, p. 59; THIELE (1909) *Zoologica*, vol. 22, no. 56, pp. 45, 47, pl. 6, figs. 24-29.

Island of Quelpart, Korean Archipelago (A. ADAMS); Coast of Korea (DUNKER); York Peninsula, Australia (THIELE).

*Acanthochiton dissimilis* (新種). ピロウドヒザラガヒ (新稱).

(第7圖版)

小形のケハダヒザラガヒで、中間板は縦横略等長、肋側域は微細不顕著な水滴状顆粒を以て覆はれ、背域との境は判然しない。頭板は極めて微弱な5條の放射状の隆起を有し、尾板は著しく小さく；齒隙は前者に5、後者に2個。肉帶上には此屬に一般に見られる細針を缺き、全面小顆粒を網目状に配し外見平滑であるが、棘叢束は9對あり通常の場合と變らない。殻板は黄褐色、縁邊は黒褐色、内面黄綠色；肉帶は黄色乃至紫褐色、體長 11.5、幅 5.7 耗。本種は本邦中部に最も普通なケハダヒザラガヒ *A. defilippii* (TAPPARONE-CANEFRI) 及びヒメケハダヒザラガヒ *A. rubrolineatus* (LISCHKE) に比して殻板の外形、彫刻、棘叢の針、肉帶の性質、齒舌等の特徴により區別せられる。紀伊日高郡御坊の海岸にて岡本清氏採集。

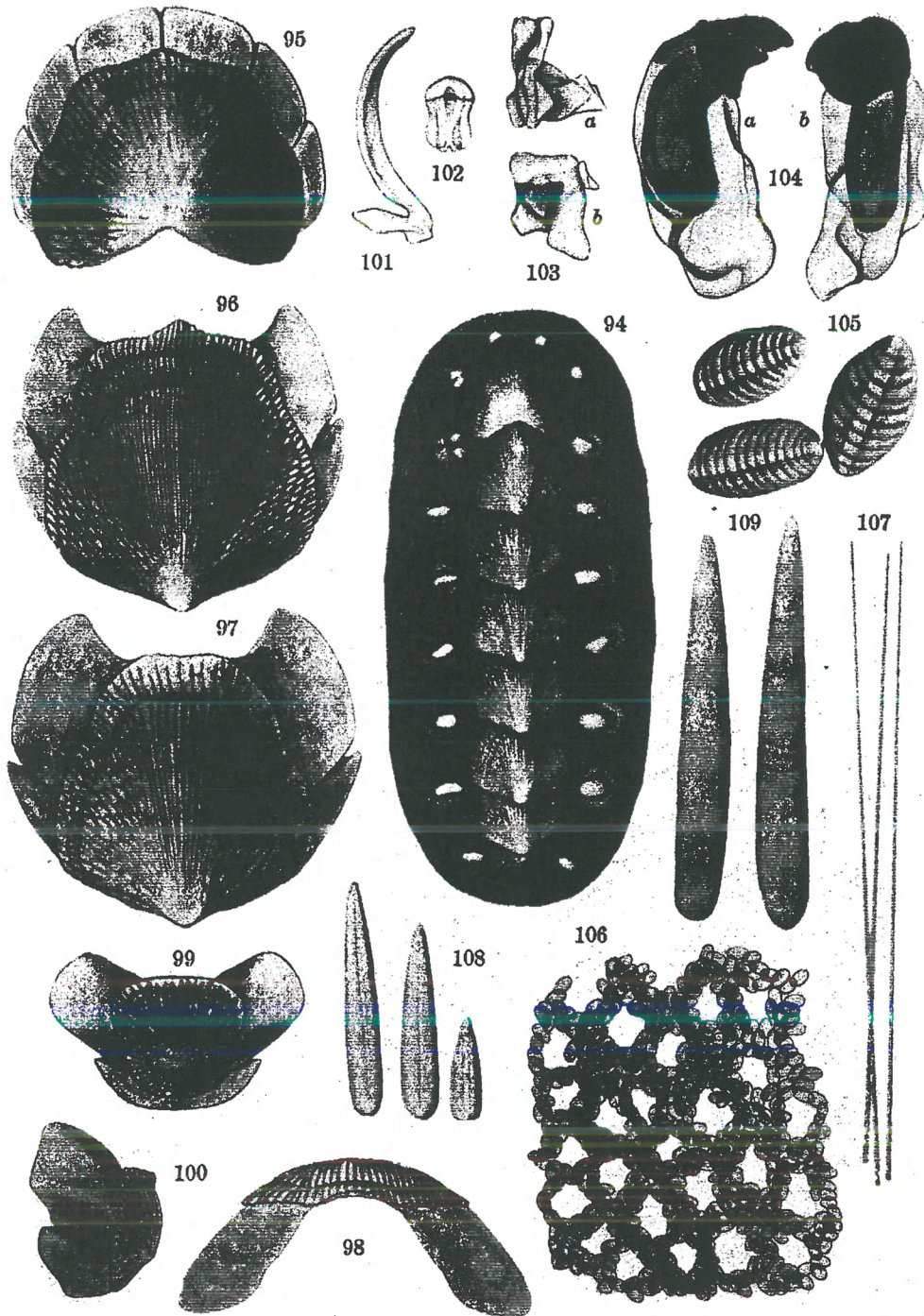
#### Explanation of Pl. VII.

*Acanthochiton dissimilis*, n. sp.

Fig. 94. Dorsal view,  $\times 6.5$ ; Fig. 95. Head valve; Fig. 96. 2nd valve; Fig. 97. 5th valve; Fig. 98. The same, seen from front; Fig. 99. Tail valve; Fig. 100. The same, view from left side; Fig. 101. Major uncinus; Fig. 102. Central tooth; Fig. 103. Centro-lateral, (a) side view, (b) basal view; Fig. 104. Major lateral, (a) view from outside, (b) view from inside; Fig. 105. Granules of girdle,  $\times$  ca. 1000; Fig. 106. Girdle armature; Fig. 107. Spicules of hair-tufts; Fig. 108. Spicules of hyponotum; Fig. 109. Marginal spicules.

正 誤

p. 184 line 12 for *umaciformis* read *limaciformis*.



Is. & Iw. TAKI: Japanese Chitons.