

Two New Species and Five Common or Rare Species of the Genus *Dermatobranchus* from Japan

(Nudibranchia : Arminoidea : Arminidae)

BY

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(11 Text figures)

IT IS NOTED HERE that *Dermatobranchopsis* Baba, 1949 constitutes an objective synonym of *Pleuroleura* Bergh, 1874. The following is a revised synopsis of the classification of the genus *Dermatobranchus* van Hasselt, 1824 in a wide sense into 2 subgenera (see BABA, 1949: 72-73, 157):

(1) *Dermatobranchus* s. s.

Type: *Dermatobranchus striatus* van Hasselt, 1824

Jaw plates with a masticatory process which is covered with several rows of denticles. Radular formula usually $\infty \cdot 1 \cdot 1 \cdot 1 \cdot \infty$, rarely $\infty \cdot 1 \cdot \infty$. Animals generally small in size.

(2) *Pleuroleura* Bergh, 1874

= *Dermatobranchopsis* Baba, 1949

Type: *Pleuroleura ornata* Bergh, 1874

Jaw plates without a masticatory process. No denticles on jaw edge. Radular formula $\infty \cdot 1 \cdot \infty$. Animals generally large in size.

Up to now there has been reported by ELIOT (1913) and BABA (1937; 1949) a total of 8 species of the genus *Dermatobranchus* s. l. to occur in Japan. As the principal subject of this paper 2 more species, which cover both subgenera of *Dermatobranchus* s. l., are offered from Japan as new to science. In this paper 5 species of *Dermatobranchus* s. l., each being previously known as common or rare from our seas, are also described with some supplementary information on their taxonomic characters.

1. *Dermatobranchus (Dermatobranchus) striatus*
van Hasselt, 1824

(Japanese name: Otome-umiushi)

(Figures 1, 2)

Main Synonymy:

Pleuroleura striata. ELIOT, 1913: 41-42. - Misaki, Sagami Bay
Dermatobranchus striatus. BABA, 1937: 316-317; plt. 2, fig. 1; text fig. 12. - Tomioka, Amakusa; Seto, Kii; Tateyama Bay

Dermatobranchus (Dermatobranchus) striatus. BABA, 1949: 73, 157-158; plt. 29, fig. 109; text fig. 83. - Hayama, Sagami Bay. BABA, HAMATANI & HISAI, 1956: 213; plt. 25, figs. 1a-1b (spawning). ABE, 1964: 56-57; plt. 27, fig. 95; text fig. 23. - Toyama Bay and vicinity

Distribution: Pacific coast of middle and southern Japan: Tateyama Bay; Sagami Bay; Suruga Bay; Sagami Bay near Toba, Shima; Seto, Kii; Osaka Bay; the Inland Sea of Seto; and Tomioka, Amakusa. Japan Sea coast of middle Japan: Sado Island; Toyama Bay; west coast of Noto Peninsula; Echizen coast; and Tsuruga Bay.

Main Material Examined: Six specimens collected by SCUBA-divers of the Marine Science Museum, Tokai University, from Uchiura coast near Awashima, Suruga Bay, May 4, 1972.

Description: The animals measure 15 to 20mm in length. The back is provided with fine longitudinal ridges, about 12 in number. The ground colour of the body above is pale grayish yellow or fleshy white. The black spots, disposed serially along the length of the ridges, are mostly defined by a brownish ocellus. The grooves between these ridges are more or less shaded dark. On the back there is nearly always a semilunar band of blackish pigment passing across the level of the anus. The rhinophores are orange red above, and colourless below. The underside of the body, including the sole, is whitish.

As a rule, the jaw plates have each a masticatory process covered with 5 to 6 rows of denticles. The radular formula is $32 \times 11 - 12 \cdot 1 \cdot 1 \cdot 1 \cdot 11 - 12$. The central tooth is wide with about 10 denticles on either side of the median cusp. The first lateral tooth is differentiated, bearing 6-7 denticles on the edge. The succeeding lateral teeth are all smooth.

Remarks: *Dermatobranchus striatus* van Hasselt, 1824 is known to occur in Indonesia (the type locality) and the

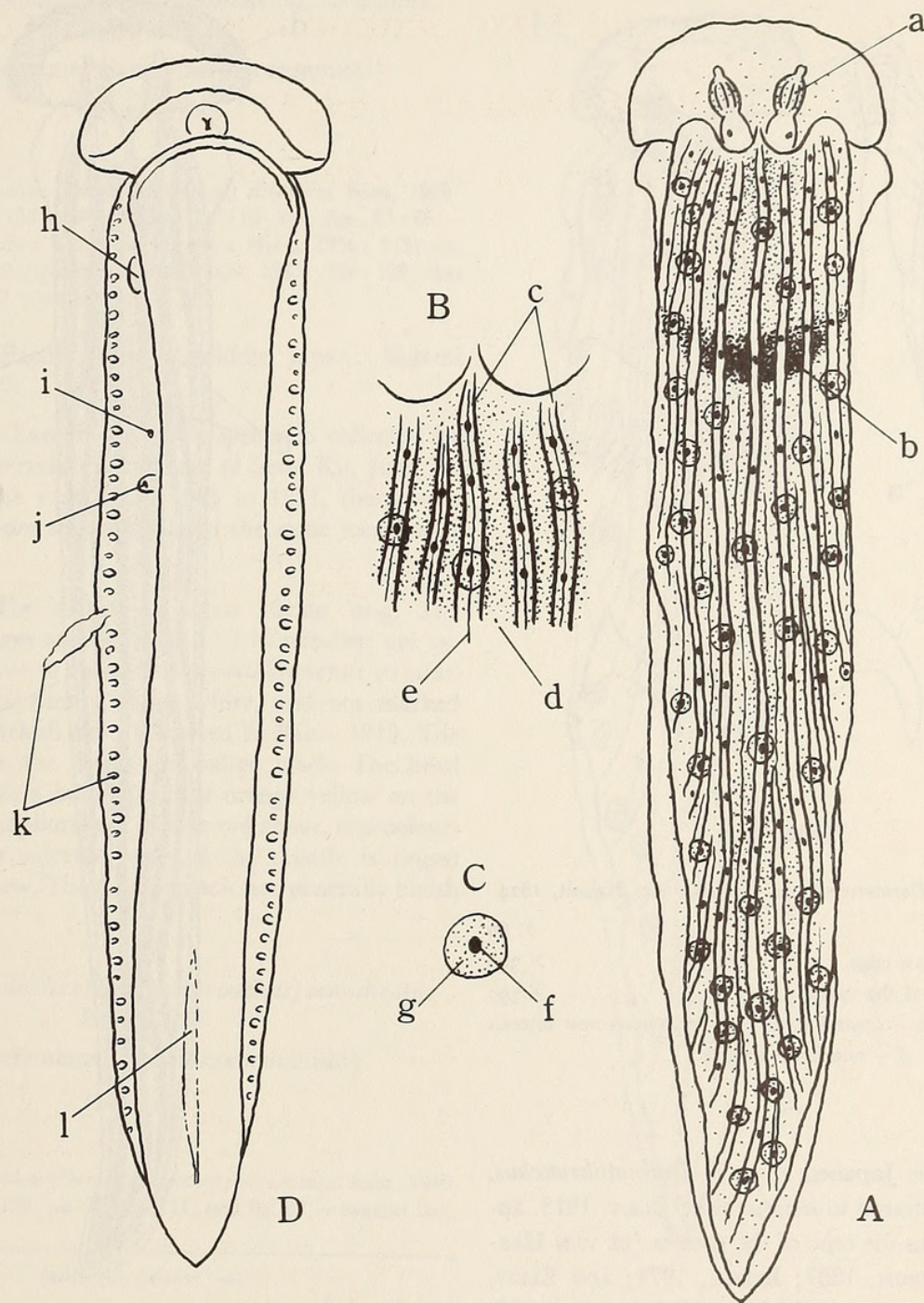


Figure 1

Dermatobranchus (Dermatobranchus) striatus van Hasselt, 1824
from Uchiura coast near Awashima, Suruga Bay, Japan

A: Living animal, collected May 4, 1972; dorsal side; length 20 mm

B: Part of the mantle surface C: An ocellated marking, enlarged

D: The animal from the ventral side

a - orange red rhinophores

c - longitudinal ridges

e - a median black line on the ridge

g - brownish ocellus

j - anus

d - grooves between the ridges

h - genital orifices

k - marginal pores

b - blackish band

f - black spot

i - nephroproct

l - pedal groove

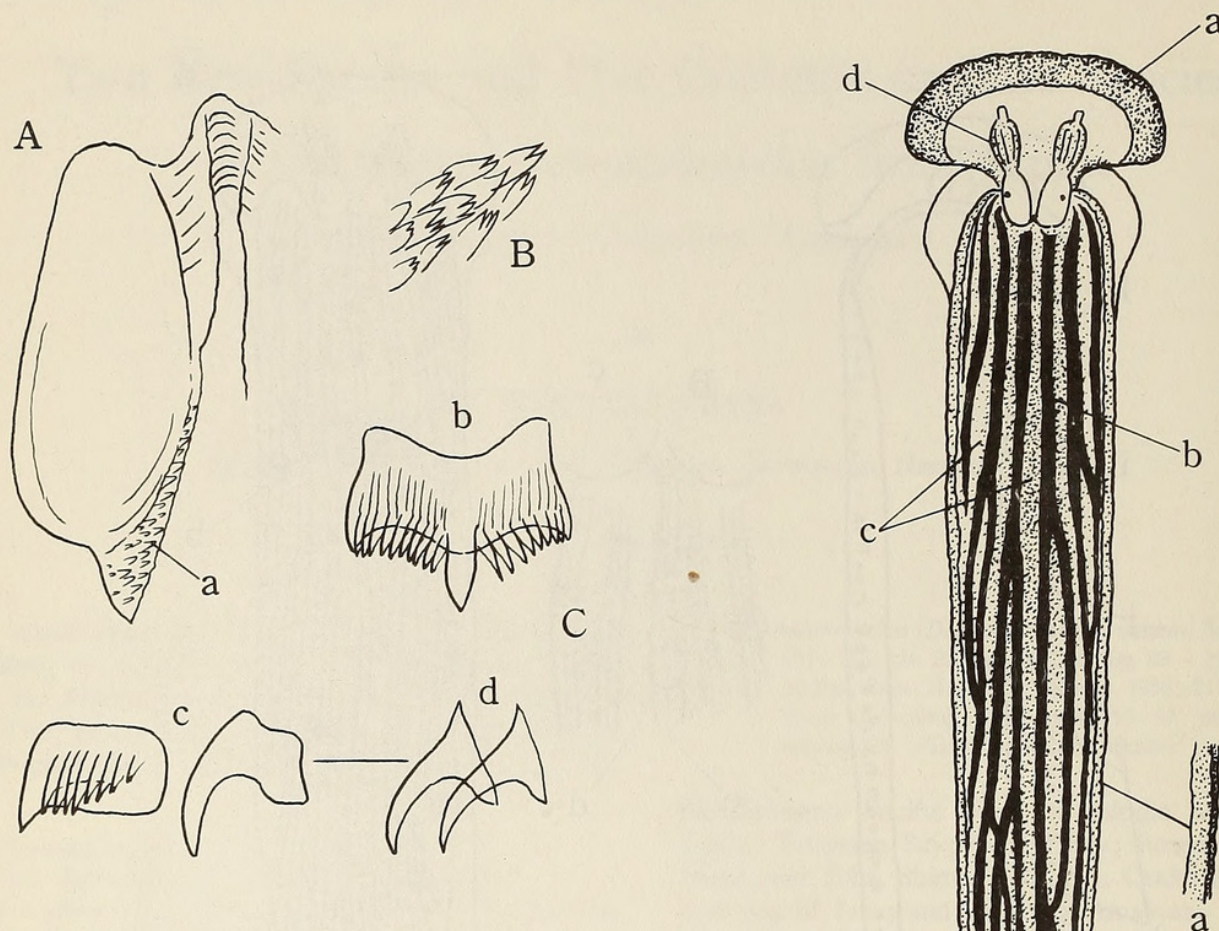


Figure 2

Dermatobranchus (Dermatobranchus) striatus van Hasselt, 1824

A: Right jaw plate × 60
B: Denticles of the jaw edge × 390
C: A right half-row of the radula × 390
a - jaw edge b - central tooth c - innermost laterals
 d - outermost laterals

Indian Ocean. The Japanese form of *Dermatobranchus*, which has been referred to *striatus* since ELIOT, 1913, appears to differ from the type of the species (cf. VAN HASSELT, 1924 in BERGH, 1887; BERGH, 1874; and ELIOT, 1903) for the rhinophores which are tinged always with orange red, not with black pigment as shown on the rhinophores of the type. A further study on the identification of the species, *D. striatus*, from the type locality and other locations of the Indo-Pacific Ocean is to be expected in the future.

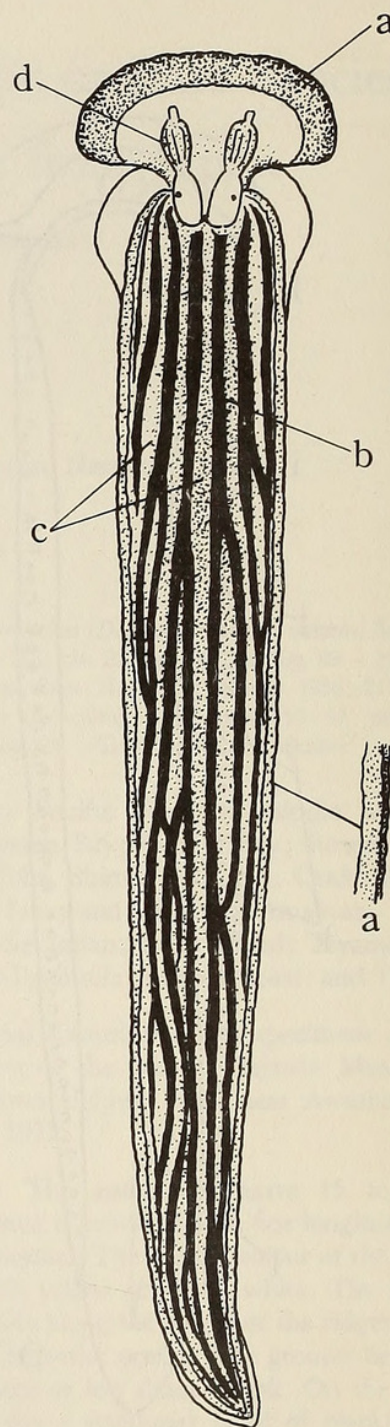


Figure 3

Dermatobranchus (Dermatobranchus) striatellus Baba, 1949
from Seto, Kii, Japan

Living animal, collected June 29, 1964; dorsal side; length 10 mm
a - orange yellow borders b - grooves coloured with indigo black
c - longitudinal ridges coloured with bluish white
d - orange red rhinophores

2. *Dermatobranchus (Dermatobranchus) striatellus*

Baba, 1949

(Japanese name: Samejima-otomeumiushi)

(Figure 3)

Synonymy:

Dermatobranchus (Dermatobranchus) striatellus Baba, 1949: 74-75, 158-159; plt. 30, fig. 110; text figs. 85-86. - Sagami Bay. BABA, HAMATANI & HISAI, 1956: 213; plt. 25, fig. 2 (spawning). HAMATANI, 1967: 124-128; text figs. 4-7 (spawning)

Distribution: Pacific coast of middle Japan: Sagami Bay and Seto, Kii.

Main Material Examined: One specimen collected by me from the intertidal rocky shore of Seto, Kii, June 29, 1964. During the years from 1941 to 1971, there were collections of more specimens from the same location as above.

Description: The animal is about 10mm long. The longitudinal ridges on the back, 6-7 in number, are rather thick relative to those of *Dermatobranchus striatus*. These ridges are simply bluish white, and not marked serially with blackish spots as stated in BABA, 1949. The grooves between the ridges are indigo black. The head veil is white with a broad band of orange yellow on the border. The rhinophores are orange red above, and colourless below. The extreme edge of the mantle is tinged with orange yellow. The sides and sole are generally bluish white.

3. *Dermatobranchus (Dermatobranchus) semistriatus*

Baba, 1949

(Japanese name: Sagiri-otomeumiushi)

(Figure 4)

Synonymy:

Dermatobranchus (Dermatobranchus) semistriatus Baba, 1949: 75-76, 159; plt. 30, fig. 111; text fig. 87. - Sagami Bay

(adjacent column →)

Figure 4

Dermatobranchus (Dermatobranchus) semistriatus Baba, 1949

from Uchiura coast near Awashima, Suruga Bay, Japan

A: Living animal, collected May 4, 1972; dorsal side; length 20mm

B: Part of the mantle surface

C: Ocellated markings, enlarged

D: The animal from the ventral side

a - black rhinophores

b - orange yellow border

c - longitudinal ridges

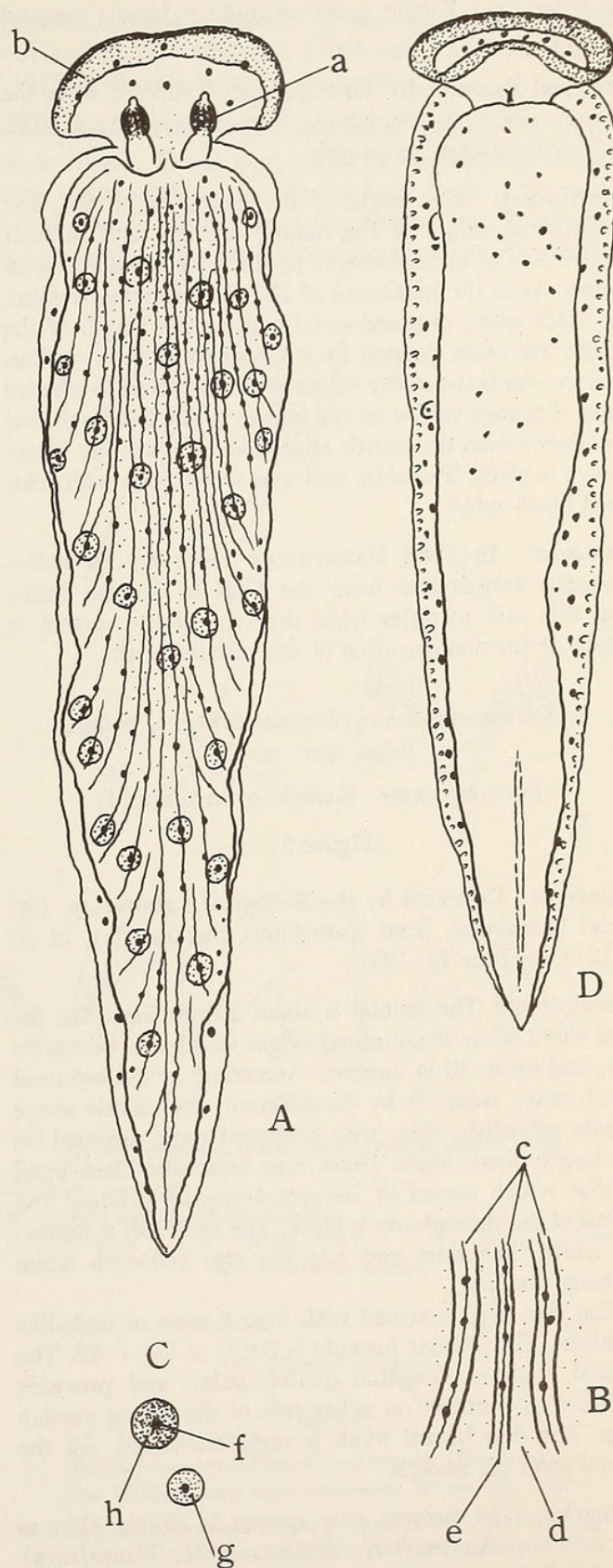
d - grooves between the ridges

e - a median black line on the ridge

f - black spot

g - brownish ocellus

h - dark ocellus



Distribution: Pacific coast of middle Japan: Sagami Bay and Suruga Bay.

Material Examined: One specimen collected from the Uchiura coast near Awashima, Suruga Bay, May 4, 1972. Collectors as stated previously.

Description: The length of the animal is 20 mm. The longitudinal ridges of the mantle are fine and number 20 to 25. The ground-colour of the back is pale grayish yellow. As in the specimens of *Dermatobranchus striatus*, the black spots, disposed serially along the length of the ridges, are often defined by a brownish or dark ocellus. The grooves between the ridges are clear. There is a broad band of orange yellow on the border of the head veil, but it is absent from the mantle edge. The clavus of the rhinophores is black. The sides and sole are whitish with scattered black spots.

Remarks: In 1968 NARAYANAN recorded *Dermatobranchus semistriatus* from the Gulf of Kutch, India. This was said to differ from the type of the species in details of the configuration of the radular teeth.

4. *Dermatobranchus (Dermatobranchus) primus*
Baba, spec. nov.

(Japanese name: Kameki-otomeumiushi)

(Figure 5)

Holotype: Collected by the Biological Laboratory, Imperial Household, from Kamekisho, Sagami Bay, in 10 to 12 m, on June 11, 1957.

Description: The animal is about 10 mm long. On the back there occur longitudinal ridges which are extremely fine, and up to 30 in number. According to the coloured sketch taken from life by the collector, the mantle above is pale yellowish white with ocellated spots disposed on the longitudinal ridges. There is no crescentic black band as that which occurs in *Dermatobranchus striatus*. The clavus of the rhinophores is black. The head veil is yellowish white. The sides and sole are also yellowish white without markings.

The jaw edge is armed with 3 to 4 rows of scale-like denticles. The radular formula is $20(?) \times 22 \cdot 1 \cdot 22$. The central tooth is elongated quadrangular, and provided with 5 to 6 denticles on either side of the strong median cusp. The first lateral tooth is undifferentiated. All the lateral teeth are smooth.

Remarks: The present new species is closely akin to *Dermatobranchus walteri* (Krause, 1892; *Pleuroleura*) from Spitzbergen (and the neighboring stations) in the

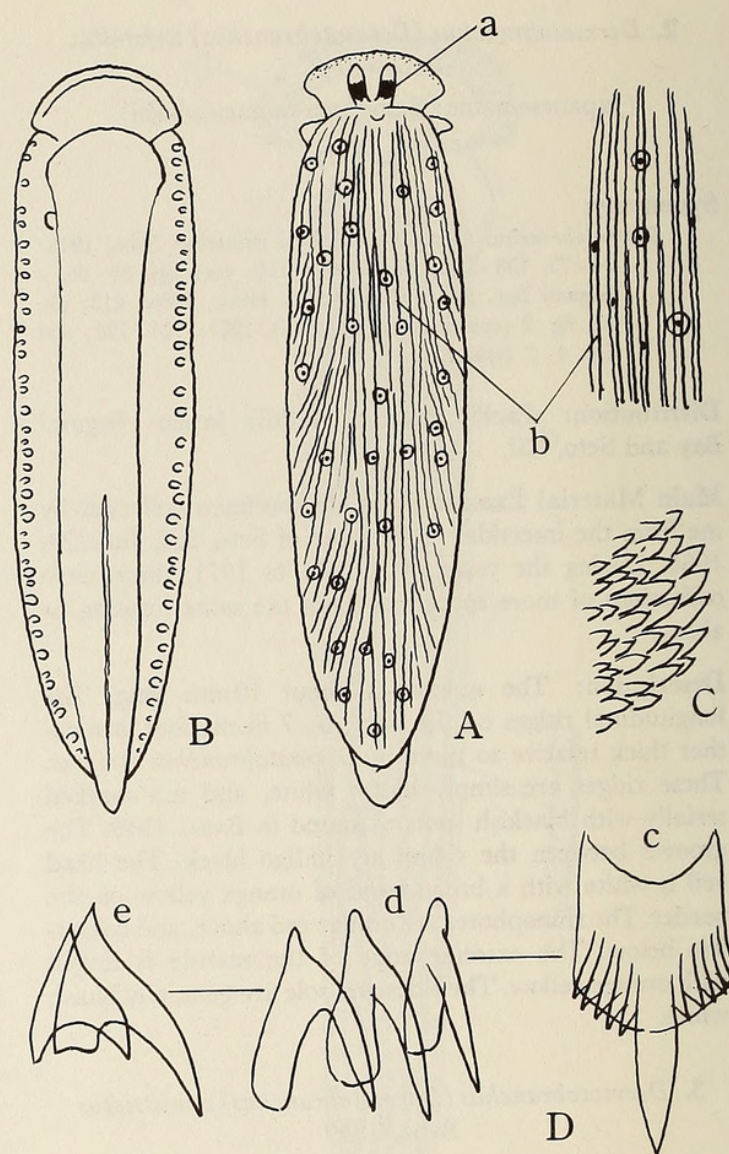


Figure 5

Dermatobranchus (Dermatobranchus) primus Baba, spec. nov.
from Kamekisho, Sagami Bay, Japan

A: Living animal, collected June 11, 1957; dorsal side; length 10 mm

B: The animal from the ventral side

C: Denticles of the jaw edge $\times 580$

D: A left half-row of the radula $\times 700$

a - black rhinophores b - longitudinal ridges c - central tooth

d - innermost laterals e - outermost laterals

absence of denticulation on all of the lateral teeth of the radula. But the latter species is distinguished from the former by the possession of pustules set in irregular rows on the back.

5. *Dermatobranchus (Pleuroleura) ornatus* (Bergh, 1874)

(Japanese name: Hana-otomeumiushi)

(Figures 6, 7)

Synonymy:

Pleuroleura ornata Bergh, 1874: 278-285; pl. 25, fig. 3; pl. 34, figs. 27-32; pl. 35, figs. 2-29. — Philippines (Pandanon). BERGH, 1888: 353; pl. 11, fig. 22

Dermatobranchus (*Dermatobranchopsis*) *ornatus*. BABA, 1949: 76, 159-160; plt. 30, fig. 112; text fig. 88. - Sagami Bay

Dermatobranchius ornatus. LIM & CHOU, 1970: 135; fig. 1A.
- Singapore

Distribution: Philippines and Singapore. Localities of this species in Japan are: Sagami Bay; Suruga Bay; Seto, Kii; and Tomioka, Amakusa.

Main Material Examined: Three specimens collected from the Uchiura coast near Awashima, Suruga Bay, May 4, 1972. Collectors as stated previously.

Description: The present specimens measure 15 to 55 mm in length. The ground-colour of the body above and below is yellowish white. On the back there is a row of dark shades on either side of the median line. The truncated extremity of the dorsal tubercles is orange. The rhino-

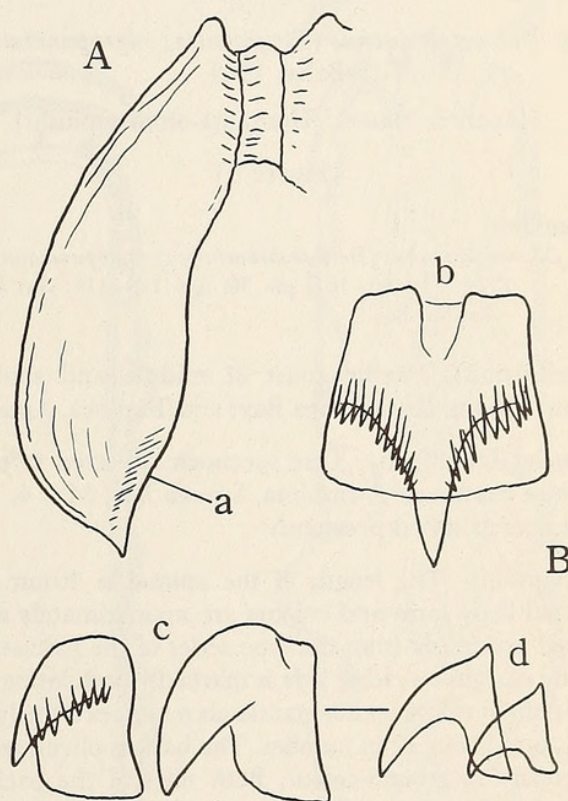


Figure 7

Dermatobranchus (Pleuroleura) ornatus (Bergh, 1874)

A: Right jaw plate × 15
B: A right half-row of the radula × 240
a - jaw edge b - central tooth c - innermost laterals
 d - outermost laterals

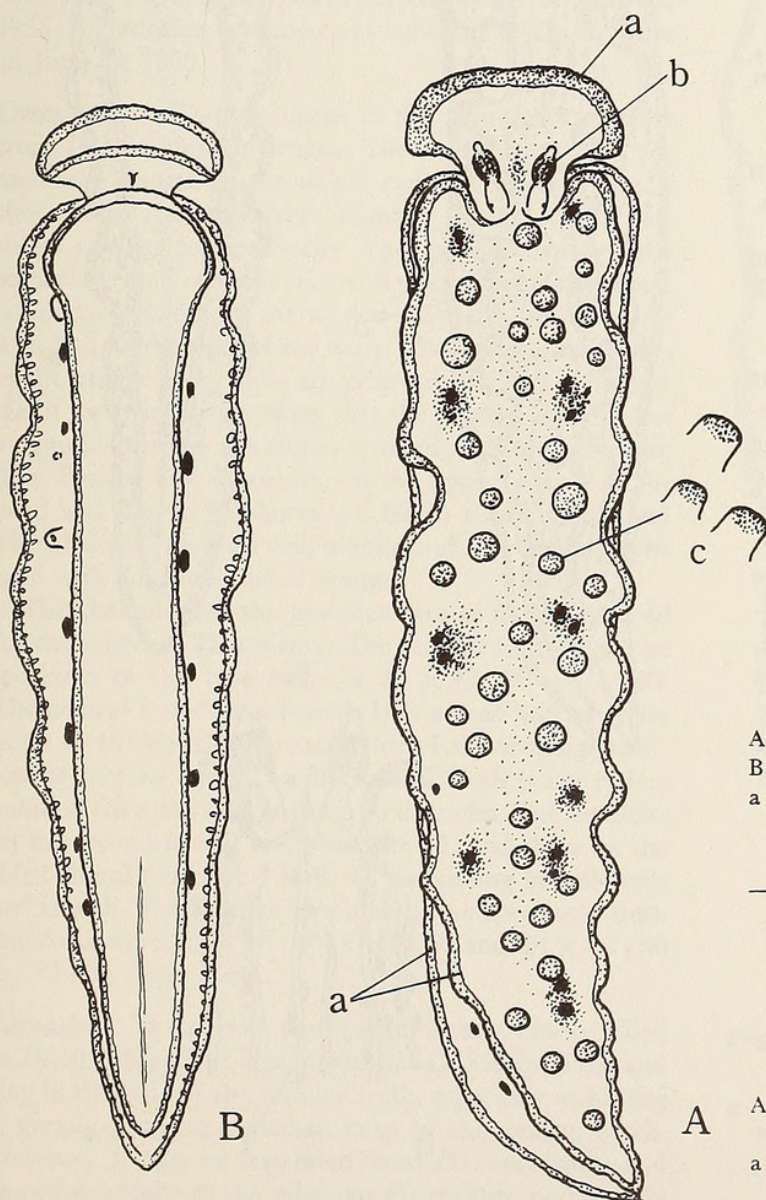
(← adjacent column)

Figure 6

Dermatobranchus (Pleuroleura) ornatus (Bergh, 1874)
from Uchiura coast near Awashima, Suruga Bay, Japan

A: Living animal, collected May 4, 1972; dorsal side; length 35 mm
B: The animal from the ventral side

a - orange borders b - bluish black rhinophores
c - dorsal tubercles topped with orange



phore is bluish black above, and white below. The head veil, mantle and foot are each margined with orange. A number of black spots are visible on the sides of the body.

The jaw plates are characterized as described in the subgenus *Pleuroleura*. The radular formula is $30 \times 30 - 40 : 1 : 30 - 40$. The central tooth is provided with 18 - 20 denticles on either side of the median cusp. The first lateral tooth bears 12 denticles on the outer edge. All the succeeding lateral teeth are smooth.

6. *Dermatobranchus* (*Pleuroleura*) *nigropunctatus*
Baba, 1949

(Japanese name: Hosojima-otomeumiushi)

(Figure 8)

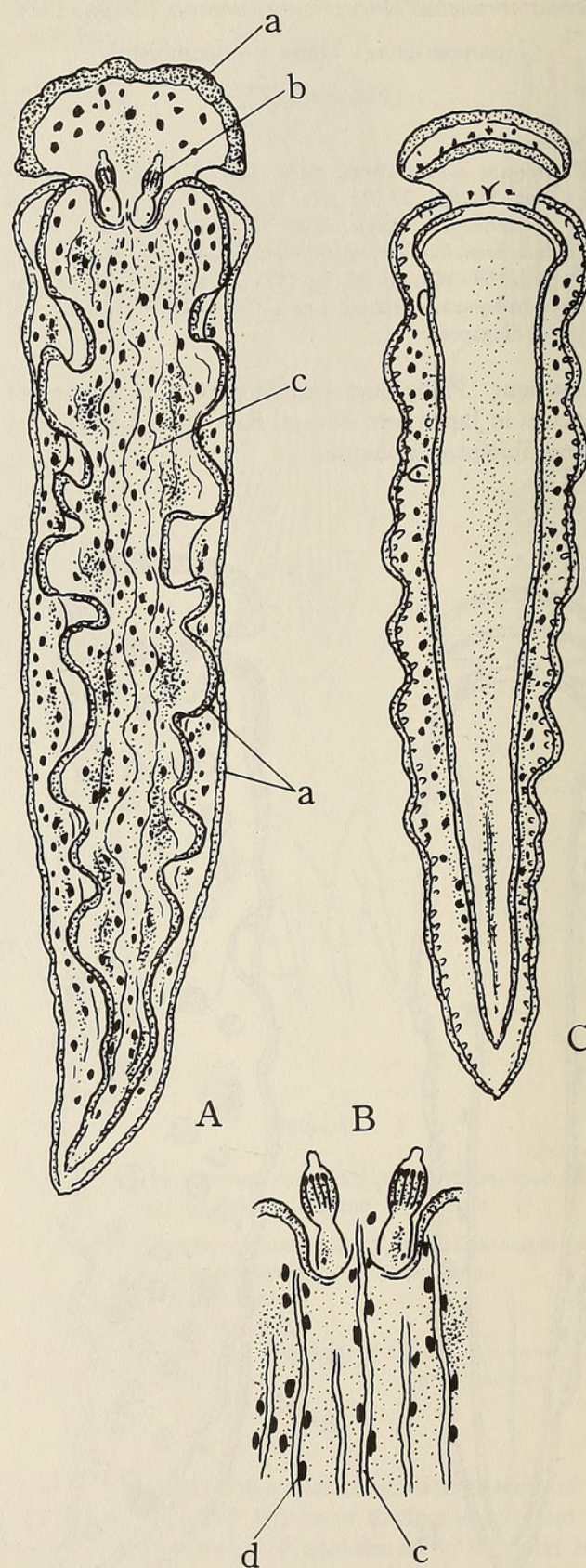
Synonymy:

Dermatobranchus (*Dermatobranchopsis*) *nigropunctatus* Baba,
1949: 77, 160 - 161; plt. 30, figs. 113 - 114; text fig. 89.
- Sagami Bay

Distribution: Pacific coast of middle and southern Japan: Sagami Bay; Suruga Bay; and Tomioka, Amakusa.

Material Examined: One specimen collected from the Uchiura coast near Awashima, Suruga Bay, May 4, 1972. Collectors as stated previously.

Description: The length of the animal is 40mm. The external body form and colours are approximately as described previously from the type series of the species. The mantle margin on either side is markedly undulating. The longitudinal ridges on the mantle above are extremely fine, wavy, and about 12 in number. The back is olive (yellowish green) in ground-colour. Both sides of the back are covered with a row of dark shades. The longitudinal ridges show themselves as opaque white lines, which, in turn, are accompanied by a large number of black spots. The rhinophores are orange yellow above, and whitish below. The head veil, spotted with black, bears a broad band of orange yellow. The outer edges of the mantle and foot



(adjacent column →)

Figure 8

Dermatobranchus (*Pleuroleura*) *nigropunctatus* Baba, 1949
from Uchiura coast near Awashima, Suruga Bay, Japan

A: Living animal, collected May 4, 1972; dorsal side; length 40mm

B: Part of the mantle surface

C: The animal from the ventral side

a - orange yellow borders

b - orange yellow rhinophores

c - longitudinal ridges coloured with opaque white

d - black spots

are also orange yellow. Below the body is as a rule yellowish white. There occur black spots on the sides of the body.

7. *Dermatobranchus (Pleuroleura) albopunctulatus*

Baba, spec. nov.

(Japanese name: Awashima-otomeumiushi)

(Figures 9, 10, 11)

Distribution: Pacific coast of middle and southern Japan: Suruga Bay and Tomioka, Amakusa.

Type Series: In all, 6 specimens collected from the Uchiura coast near Awashima, Suruga Bay, June 16, 1971; September 15, 1971; November 17, 1971; and May 4, 1972. Collectors as stated previously. From Tomioka, Amakusa, one specimen was collected by me on July 12, 1936, and another specimen was collected by Dr. T. Habe on June 19, 1960.

Description: The specimens in the type series measure from 10 to 60 mm in length. The upper surface of the mantle is smooth to the naked eye, but under a lens it shows a considerably large number (30 to 35) of fine ridges running longitudinally. The ground-colour of the body above and below is yellowish white. Sometimes there occur dark shades on the median parts of the back and sole, and on the sides of the body. The longitudinal ridges of the mantle themselves are yellowish white. In this species it is particularly striking that the grooves between the longitudinal ridges are closely covered with opaque white dots. Similar dots occur also on the upper surface of the head veil. The rhinophores are bluish black above, and white below. The head veil, mantle and foot are bordered each with a narrow line of orange.

The characters of the jaw plate are as those described for the subgenus *Pleuroleura*. The radular formula in one specimen of the type series is $35 \times 75 - 80 \cdot 1 \cdot 75 - 80$. The central tooth is narrowed. It is armed with a series of 40 to 45 denticles on either side of the strikingly projecting median cusp. The first lateral tooth is not differentiated from the rest. It bears 10 denticles. The denticles on the second lateral tooth number 15, and those on the third lateral tooth are 5 to 6. All succeeding lateral teeth are smooth. The radular formulae in the specimens from Amakusa were $25 \times 40 - 50 \cdot 1 \cdot 40 - 50$ and $30 \times 40 - 50 \cdot 1 \cdot 40 - 50$, respectively.

Remarks: The present new species is most closely allied to *Dermatobranchus sagamianus* Baba, 1949 from Sagami Bay in the type of the radular teeth, especially in having a greatly projecting median cusp of the central tooth. However, it may be separated from *D. sagamianus* and the other species of the subgenus *Pleuroleura* particularly

by (1) the possession of a considerably large number of fine longitudinal ridges of the mantle surface, and (2) the distribution of opaque white dots along the grooves between these ridges and on the head veil. I was informed by the collectors mentioned previously that the specimens of *D. albopunctulatus*, and also of *D. ornatus*

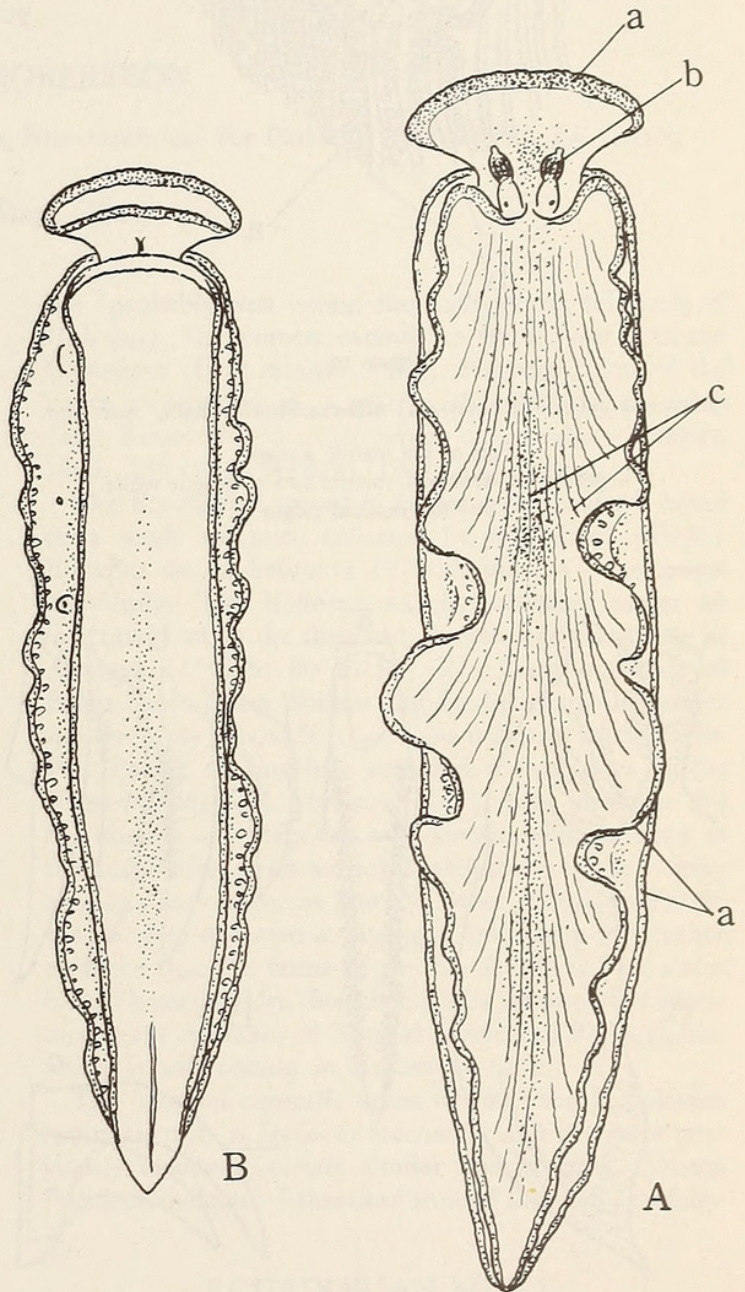


Figure 9

Dermatobranchus (Pleuroleura) albopunctulatus Baba, spec. nov.
from Uchiura coast near Awashima, Suruga Bay, Japan

A: Living animal, collected May 4, 1972; dorsal side; length 60 mm

B: The animal from the ventral side

a - orange borders

b - bluish black rhinophores

c - longitudinal ridges

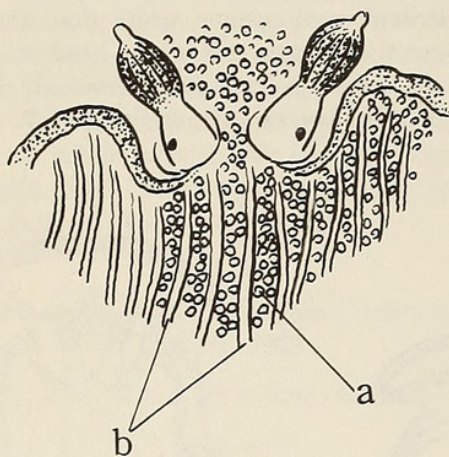


Figure 10

Dermatobranchus (Pleuroleura) albopunctulatus Baba, spec. nov.

Part of the mantle surface

a - grooves covered with minute dots of opaque white

b - longitudinal ridges

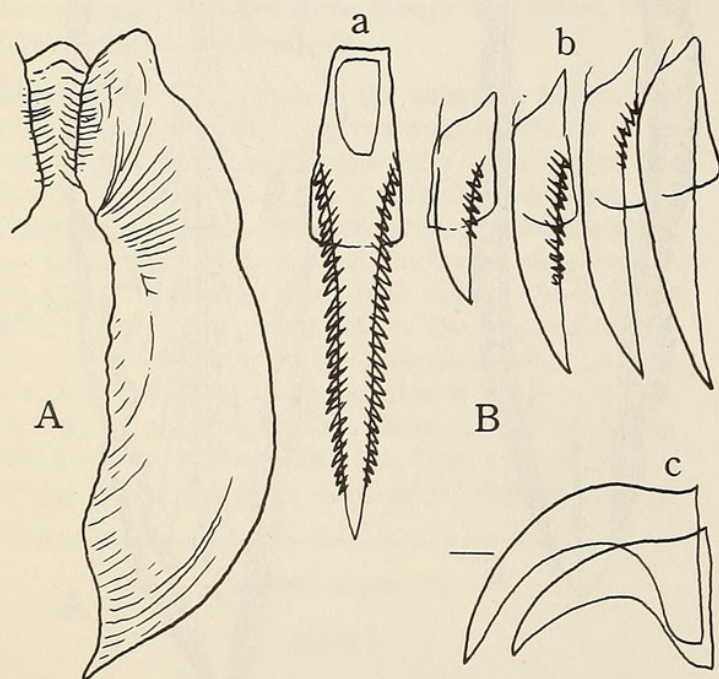


Figure 11

Dermatobranchus (Pleuroleura) albopunctulatus Baba, spec. nov.

A: Left jaw plate × 15

B: A right half-row of the radula × 150

a - central tooth b - innermost laterals c - outermost laterals

and *D. nigropunctatus*, were often found in Suruga Bay in association with colonies of some coelenterate gorgonians growing in 15 to 30m deep water.

SUMMARY

1. It is again suggested (see BABA, 1949: 72-73, 157) to classify the genus *Dermatobranchus* s. l. into 2 subgenera: *Dermatobranchus* s. s. and *Pleuroleura* Bergh, 1874. *Dermatobranchopsis* Baba, 1949 is withdrawn as an objective synonym of *Pleuroleura*.

2. Two new species, *Dermatobranchus primus* and *D. albopunctulatus*, are presented. The types of both species occur in Japan. Also 5 species of *Dermatobranchus*, each recorded previously from Japan, are redescribed.

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