

**THE GENERA *OKENIA*, *GONIODORIDELLA*
AND *GONIODORIS* FROM JAPAN
(NUDIBRANCHIA-GONIODORIDIDAE)**

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With Plates VII-VIII

Four species of *Okenia* and three of *Goniodoris* have hitherto been recorded from our territory:

1. *Okenia* (*Okenia*) *barnardi* BABA, 1937 = *Okenia* (*Idaliella*) *barnardi* BABA, 1937¹⁾ Ibara-umiushi
Loc. : Sugashima near Toba; Osaka Bay; Inland Sea of Seto; Amakusa; Toyama Bay.
2. *Okenia* (*Okenia*) *distincta* BABA, 1940 Mutsu-ibara-umiushi
Loc. : Asamushi; ?Sagami Bay; Osaka Bay; ?Toyama Bay.
3. *Okenia* (*Okenia*) *japonica* BABA, 1949 Shiro-ibara-umiushi
Loc. : Sagami Bay; Kii; Toyama Bay; Togi Kazanashi, W. coast of Noto Peninsula.
4. *Okenia* (*Okenia*) *echinata* BABA, 1949 Kuro-ibara-umiushi
Loc. : Sagami Bay; Togi Kazanashi.
5. *Goniodoris castanea* ALDER & HANCOCK, 1845 Nekojita-umiushi
Loc. : Tateyama Bay; Sagami Bay; Sugashima; Kii; Osaka Bay; Inland Sea of Seto; Amakusa.
Dist. : Atlantic; Mediterranean; Suez; New Zealand.
6. *Goniodoris glabra* BABA, 1937 Koneko-umiushi
Loc. : Hokkaido (Shirikishinai); Sagami Bay; Sugashima; Kii; Osaka Bay; Inland Sea of Seto; Amakusa; Asamushi; Sado I.; Nou, Niigata Pref.; Toyama Bay; Hegura, N. of Noto Peninsula; Togi Kazanashi; Tsuruga Bay.
7. *Goniodoris felis* BABA, 1949 Sagami-koneko-umiushi
Loc. : Sagami Bay.

1) Thanks to the suggestion by Dr. INABA, this species has been transferred to the subgenus *Okenia* s. s. The specimens in our latest collections are obviously marked by a long claviform process in the middle of the back.

The following are here added to our list of the fauna.

Okenia (Okenia) opuntia BABA, n. sp.

Hana-ibara-umiushi (n. n.)

(Pl. VII, Figs. 1A-1E)

Body rather short, flattened, with an expanded mantle-flange. Length 6 mm. Papillae on pallial ridge short club-shaped, some pointed and others swollen at tip. They number about 11 on each side, and in one specimen the last papilla on the right side is divided into two. Small pointed papillae about 45 in number on back, some of them are apt to be arranged in the median line between the two rhinophores. Rhinophores long cylindrical, perfoliated. Gills 7, simply pinnate, set in a semicircle round the anus. Oral tentacles broad lobiform. Tail short, foot broad, sides smooth. Ground-colour of body translucent whitish, the dorsal papillae yellow below, whitish at tip; the marginal papillae on the pallial ridge densely whitish towards the tip; the rhinophores whitish with red-purple pinnae; the gills whitish or with yellow tips; the sides and the sole colourless. Sometimes with a small number of yellow spots on the oral tentacles. The ring-shaped labial armature is formed of tiny hooks, each jagged at edge. Radula formula $40 \times 1.1.0.1.1$. Inner lateral as usual large and hamate, and with a series of 30-35 denticles; outer lateral broad, scale-like, with an apical hook.

Loc.: Tannowa, Osaka Bay, on shore (June 1951 and May 1952, 2 sps., coll. by Mr. HAMATANI). Near Mukaishima, Inland Sea of Seto (Apr. 1958, 2 sps., coll. by Dr. INABA).

A series of species are known of *Okenia* s. s. (see MARCUS, 1957, pp. 436-438). The present form is especially distinct in the dorsal papillation as well as in the colouring.

Okenia (Okenia) plana BABA, n. sp.

Hime-ibara-umiushi (n. n.)

(Pl. VII, Figs. 2A-2D)

Very like a planarian in the general aspect. Length 7-8 mm. Body short, flattened, the head is in a semicircular veil without paired oral tentacles. No marked pallial ridge. With a single median papilla on the back. Marginal papillae 5 on each side (the last ones not bifid); they are claviform and somewhat varying in length. Rhinophores as usual; gills 8-11, simply pinnate, arranged in a semicircle. Foot very expanded. Body above plentifully sprinkled with minute spots of chocolate brown on the translucent whitish ground; rhinophores yellow

on the upper half; gill-plumes colourless; tips of all the papillae, densely whitish; sole colourless. Labial armature an incomplete ring of jagged hooks. Radula very small, the formula $30 \times 1.1.0.1.1$. Inner lateral non-denticulated on the edge of the hook; outer lateral with 4-5 denticles down the tip.

Loc.: Toba (May 1951, 1 sp., attached on *Zostera*). Kada, Osaka Bay, on shore (Jan. 1957, 1 sp.). Near Mukaishima, Inland Sea of Seto (Mar. 1960, many sps., on *Sargassum*, coll. by Dr. INABA).

This is a new species especially characterized by having a semicircular head-veil, and by the mantle not forming a pallial ridge. The radula teeth of this species are also to be noted.

Goniodoridella savignyi PRUVOT-FOL, 1933

Kotohime-umiushi (n. n.)

(Pl. VIII, Figs. 1A-1F)

Goniodoris (*Goniodoridella*) *savignyi* PRUVOT-FOL, 1933, pp. 117-118, pl. 2, figs. 23-26.—Gulf of Suez.

Goniodoridella proposed by PRUVOT-FOL, 1933, appears to be a distinct genus standing between *Goniodoris* and *Okenia* in the external form of the body.

Our specimens referred to *savignyi* are 3-8 mm in length. Back marked with a median longitudinal crest as in *Goniodoris*. Sometimes there is a short ridge on each side of the median crest. Pallial flange distinct, but not recurved; it is provided with a series of marginal papillae somewhat as in *Okenia*. Mantle in front produced into two elongated papillae. Marginal papillae on each side of mantle small, almost knob-like, and about 7-10 in number in different specimens. With a pair of long cylindrical post-branchial processes (see PRUVOT-FOL, 1933, p. 117, the characterization of *Goniodoridella*). Rhinophores long, cylindrical, non-perfoliate (?). Gills 3, bipinnate, non-retractile. Velum of head small, semicircular, not produced into lateral tentacles. No distinct caudal crest. General body-colour whitish. With a tinge of chrome-yellow on mid-dorsal crest (and on bilateral ridges if these are present), on tip of rhinophores and of post-branchial processes, and sometimes on tip of gills. Marginal knob-like papillae of mantle also tipped with chrome-yellow. No labial armature. Radula formula $12-18 \times 1.1.0.1.1$. Inner lateral large, hamate, having a series of fine denticles; outer lateral small, narrow, claw-like.

Loc.: Sugashima near Toba (Apr. 1943, 1 sp., coll. by Dr. SUGIYAMA). In the vicinity of the Sado M. B. L., Sado I. (Aug. 1956, 1 sp., coll. by Dr. HONMA). Abugashima, Toyama Bay (Aug. 1953, 2 sps., coll. by Mr. ABE). Mera, Fukui Pref. (July 1959, 3 sps., coll. by Mr. FUTATSUKA). On shores.

Goniodoris sugashimae BABA, n. sp.

Sugashima-koneko-umiushi (n. n.)

(Pl. VIII, Figs. 2A-2B)

The present new species differs from the typical goniodorid, *G. castanea* ALDER & HANCOCK, 1845, in some points of body-form and in colouring. (1) The median crest of the back is heavily waved. (2) The back has 3-5 rounded knobs on each side of the median crest. Otherwise, the general integument of the back and sides are smooth. The gills number 7 (-10). They are tripinnate, and arranged in a circle round the anus. (3) The general body-colour is pale yellowish brown shaded or maculated here and there with dark. Also with clusters of opaque white dots on back and sides. Rhinophores and gills yellowish brown. No transverse yellow band is present on the back in the middle. Radula formula $35 \times 1.1.0.1.1$; inner lateral denticulated, outer lateral scale-like. Near Mukaishima, Inland Sea of Seto (Mar. 1960, 5 sps., coll. by Dr. INABA).

Loc.: Sugashima near Toba, on shore (May 1951, 1 sp.). Tannowa, Osaka Bay, on shore (July 1957, 1 sp., coll. by Mr. HAMATANI). Near Tamano M. B. L., Inland Sea of Seto (May 1957, 1 sp.).

About 15 species of *Goniodoris* have hitherto been recorded from various seas of the world (see also MARCUS, 1955, pp. 162-163; MACNAE, 1959?, pp. 364-368). The present form appears not agreeing with any of these species, and so it is regarded here as separate.

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REFERENCES

- ALDER, J. & HANCOCK, A. 1845. Notice of a new genus and several new species of nudibranchiate Mollusca. *Ann. Mag. Nat. Hist.*, vol. 16. (not consulted)
- BABA, K. 1937. Opisthobranchia of Japan (II). *Journ. Dept. Agric. Kyushu Imp. Univ.*, vol. 5, no. 7.
- 1940. Some additions to the nudibranch fauna of the northern part of Japan. *Bull. Biogeogr. Soc. Japan*, vol. 10, no. 6.
- 1949. Opisthobranchia of Sagami Bay. Iwanami Shoten, Tokyo.
- MACNAE, W. 1959?. The families Polyceridae and Goniodorididae (Mollusca, Nudibranchiata) in Southern Africa. *Trans. Roy. Soc. S. Africa*, vol. 35, pt. 4.
- MARCUS, E. 1955. Opisthobranchia from Brazil. *Bol. Fac. Fil. Ciên. Letr., Univ. São Paulo, Zoologia*, no. 20.
- 1957. On Opisthobranchia from Brazil (2). *Journ. Linn. Soc. London, Zool.*, vol. 43, no. 292.
- PRUVOT-FOL, A. 1933. Mission Robert Ph. DOLLFUS en Égypte. Opisthobranchiata. *Mém. l'Inst. d'Égypte*, tom. 21.

EXPLANATION OF PLATES VII-VIII

PLATE VII

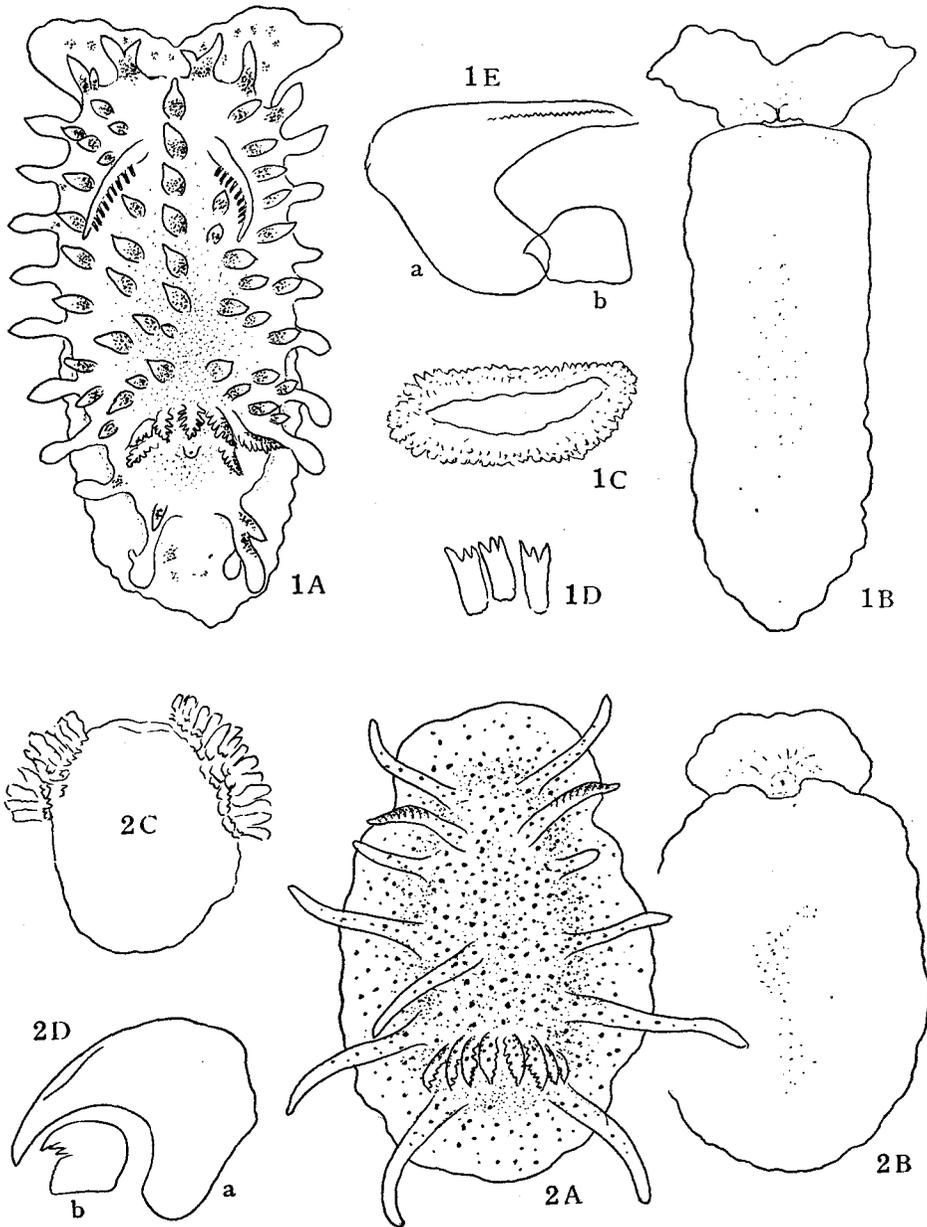
Figs. 1A-1E. *Okenia opuntia*. 1A. Entire animal (Tannowa, Osaka Bay, June 3, 1951, length 6 mm); 1B. Head and foot from below; 1C. Ring of labial armature ($\times 90$); 1D. Elements of labial armature ($\times 430$); 1E. A half-row of radula ($\times 410$), a. inner lateral, b. outer lateral.

Figs. 2A-2D. *Okenia plana*. 2A. Entire animal (Kada, Osaka Bay, Jan. 4, 1957, length 7 mm); 2B. Head and foot from below; 2C. Incomplete ring of labial armature ($\times 210$); 2D. A half-row of radula ($\times 400$), a. inner lateral, b. outer lateral.

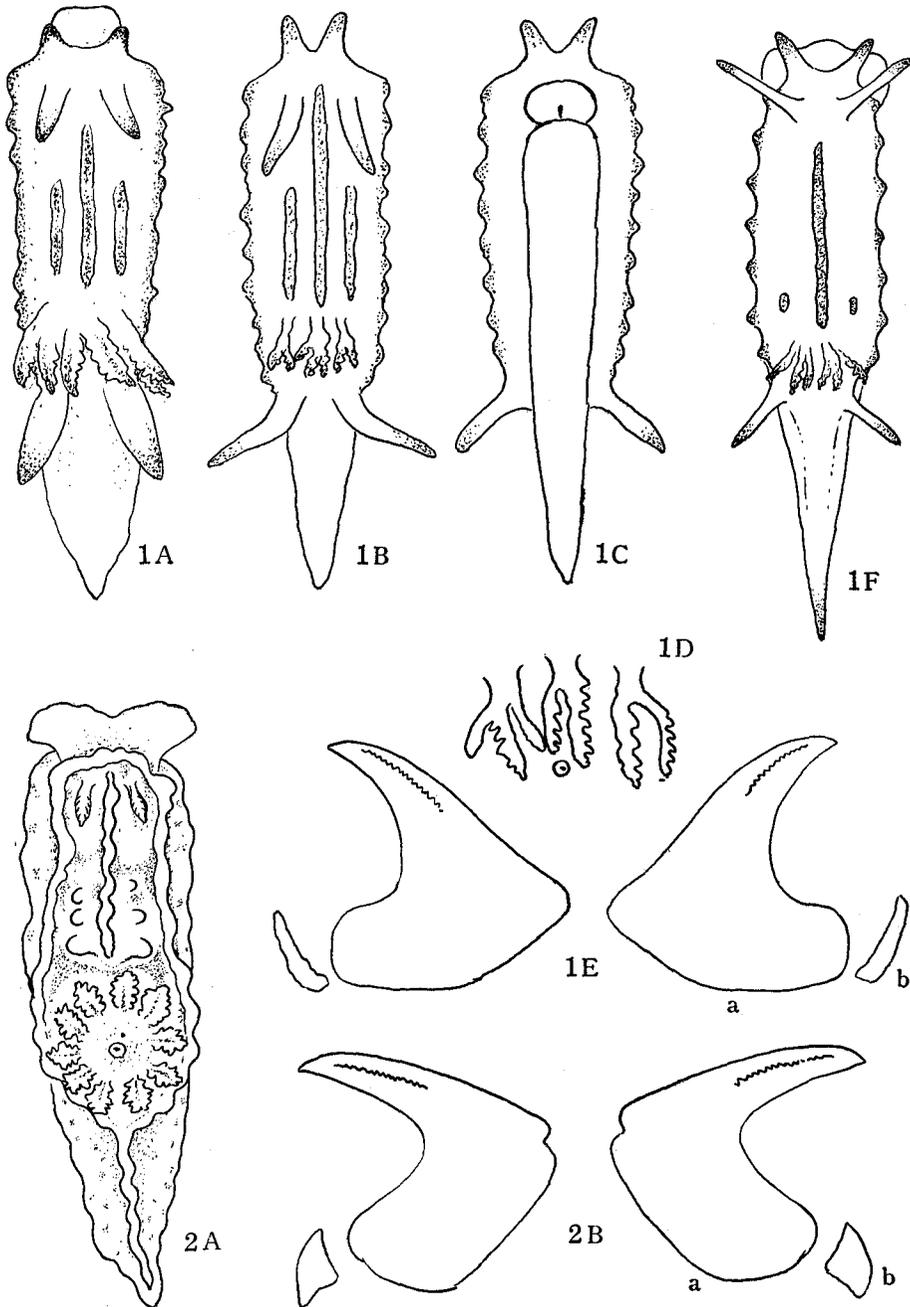
PLATE VIII

Figs. 1A-1F. *Goniodoridella savignyi*. 1A. Entire animal in life (Sugashima near Toba, Apr. 15, 1943, length 7 mm, original fig. taken by Dr. SUGIYAMA); 1B. Preserved animal from above; 1C. The same from below; 1D. Gills; 1E. A row of radula ($\times 500$), a. inner lateral, b. outer lateral; 1F. Entire animal in life (Mera, Fukui Pref., July 29, 1959, length 8 mm, original fig. taken by Mr. FUTATSUKA).

Figs. 2A-2B. *Goniodoris sugashimae*. 2A. Entire animal (Sugashima, May 6, 1951, length 15 mm); 2B. A row of radula ($\times 160$), a. inner lateral, b. outer lateral.



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