

**PRELIMINARY ACCOUNT OF A NEW SPECIES OF *VOLVATELLA*
PEASE, 1860, *V. VIRIDIS* SP. NOV., FOUND IN THE
CAULERPAN MICROFAUNA IN JAPAN
(OPISTHOBRANCHIA: SACOGLOSSA)**

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With Text-figures 1-2 and Plate VI

Surveys on the opisthobranchs inhabiting the caulerpan colonies were made at Cape Shiono-misaki in the Province of Kii, Middle Japan, in August 1974 and in Amami-Ōshima Island in March 1974 and in Yoron Island in March 1975, both belonging to the Amami Islands and situated north to Okinawa. In these collections, eight specimens of a greenish form of the genus *Volvatella* Pease, 1860 were included. They were seemingly conspecific and further detailed examinations revealed that they represented a new species, the features of which are given next preliminarily.

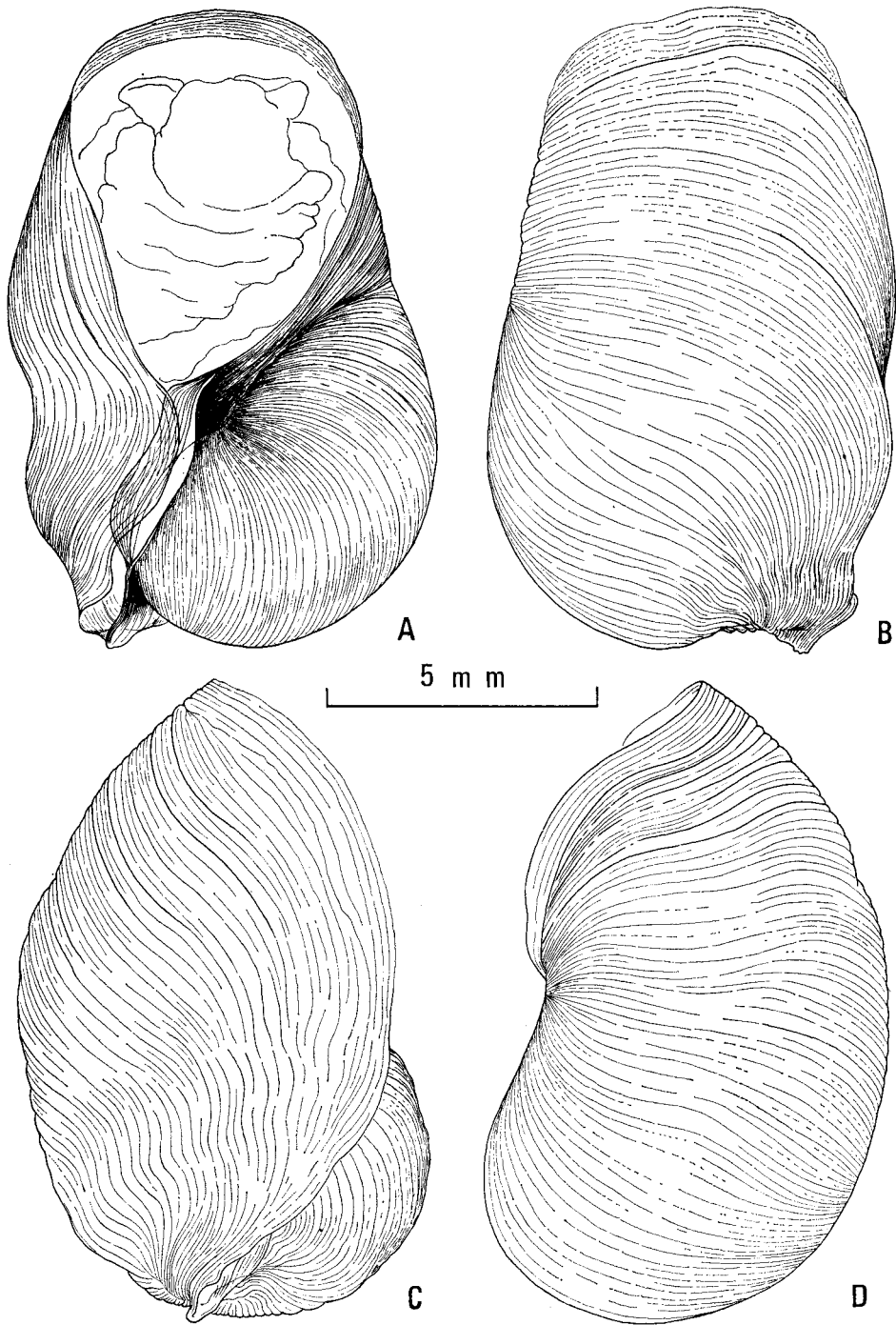
Volvatella viridis sp. nov.

(Japanese name: Midori-budōginugai, nov.)

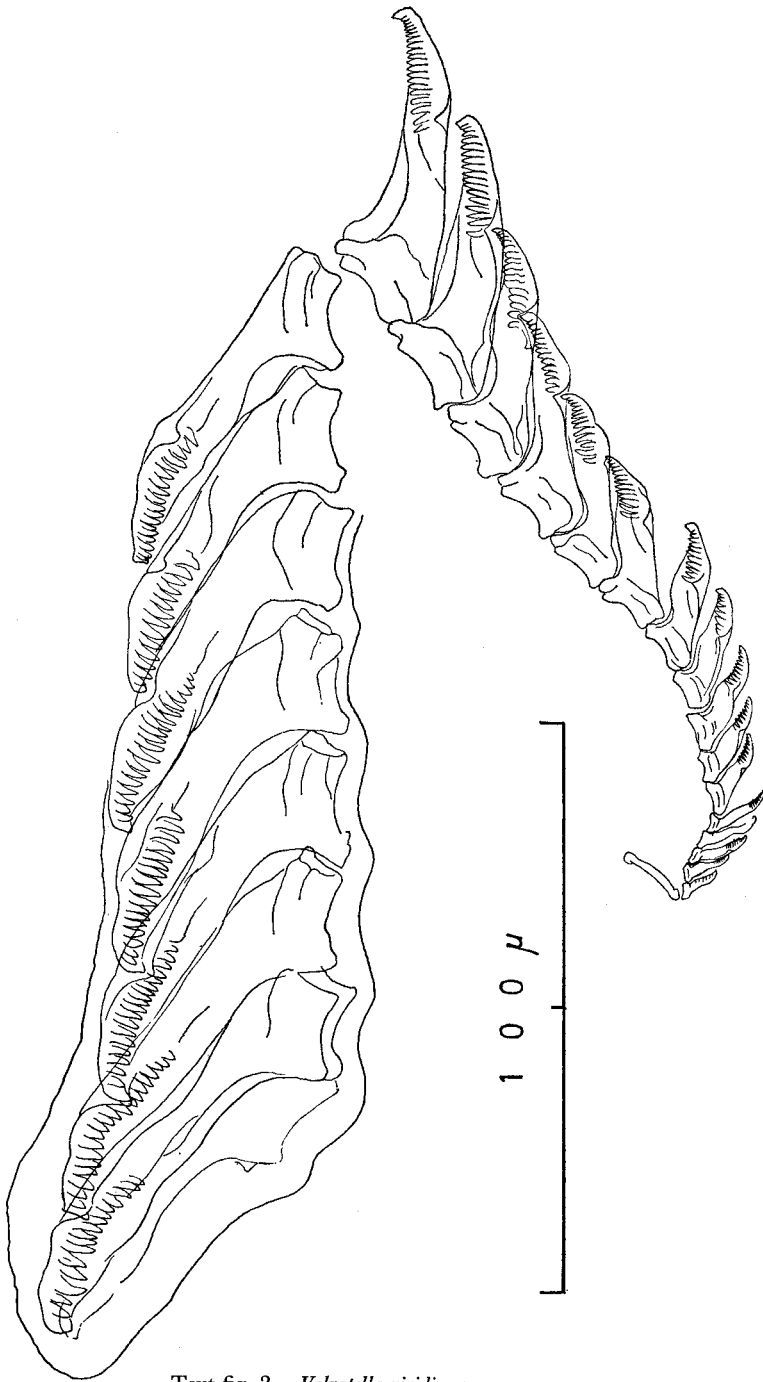
Materials: All specimens were fixed by 4 % sea-water solution of form-aldehyde and then preserved in 70 % ethyl alcohol. Seven of the eight specimens were designated as types as seen in the following table.

Specimen number	Type number	Shell length	Shell breadth	Date	Locality
1	Holotype	11.7 mm	7.2 mm	III-1975	Yoron Is.
2	Paratype 1	7.6 mm	5.3 mm	III-1974	Amami-Ōshima Is.
3	Paratype 2	7.3 mm	4.2 mm	VIII-1974	Cape-Shionomisaki
4	Paratype 3	9.3 mm	5.3 mm	III-1975	Yoron Is.
5	Paratype 4	9.3 mm	5.3 mm	III-1975	Yoron Is.
6	Paratype 5	6.6 mm	3.8 mm	III-1975	Yoron Is.
7	Paratype 6	5.0 mm	—	III-1975	Yoron Is.

Holotype: The specimen was obtained at low water from among the thallus of the green alga, *Caulerpa racemosa* Weber van Bosse var. *clavifera* f. *macrophysa* Weber van Bosse, growing on the land side of a protecting reef of Yoron, the southern-most island of the Amami Islands, and it is now deposited in the private collection of the



Text-fig. 1. *Volvatella viridis* sp. nov., the holotype.
A-ventral side, B-dorsal side, C-right side, D-left side.



Text-fig. 2. *Volvatella viridis* sp. nov.
The whole radular teeth of paratype no. 2.

present author.

Paratypes: Paratypes nos. 3–6 were found on *Caulerpa racemosa* var. *clavifera* f. *macrophyssa*, while nos. 1 and 2 on *C. r. laete-virens* Weber van Bosse. Paratypes nos. 2, 3 and 5 are especially in an excellent state of preservation, showing their original condition best, and two of them, nos. 3 and 5, are to be sectioned for morphological studies. The paratype no. 4 was studied for the morphology of the shell, nos. 1 and 6 for the details of the radular teeth and nos. 1 and 4 for the structure of the penis.

Description: The animals are very characteristic in that the whole shell looks grass-green when they are alive, this colouration is due to the green pigments in the mantle tissue. The soft body of the living animal extended out of the shell is milky white, but preserved specimens in alcohol are discoloured to horny yellow. The whole animal is roughly roundish. The soft body extensible out of the shell is usually short, as it is limited to the cephalic portion of the body. A pair of rhinophores on the head are apparently conical, never taking the form of an elevation, conspicuous but gently raised as in *Volvatella ayakii* Hamatani, 1972 (see Hamatani, 1972, p. 16). A pure black eye is seen faintly through the thick tissue in a deep groove formed on each lateral side of the head. The anterior corners of the head are protruded out a little and function as an oral tentacle, and the Hancock's organ is sited at these sites on the inner surface of the lateral groove. The foot is rather small, but broad; the anterior end is broader than the posterior; the foot corners are rounded. Numerous white opaque dots are scattered over the soft body, especially densely along the anterior margin of the foot, on oral tentacles and rhinophores.

The shell is roundish ovoid, very thin, flexible, and extremely gracile. It is calcareous, but covered with the membraneous epidermis coloured pale straw. The shell aperture is rather large and occupies a half or slightly more of the shell length, thus the body whorl of the shell is characteristically smaller, but sharply dilated towards the ventral side of the shell. This feature is very similar to that of *Volvatella cumingi* (A. Adams, 1855) from St. Elena and W. Columbia. The posterior part of the shell is formed into the spout as usual in the genus. In this new species, however, the spout is very short, about one-tenth of the shell length, and characteristically situated on the right side significantly apart from the median line when the shell is observed from the dorsal side.

The radular teeth are blade-like and uniserial as usual in sacoglossans. The radula consists, in Paratype no. 1, of 7 teeth in the ascending and of 16 teeth and a pre-radular tooth in the descending series, while in Paratype no. 5 of 6 teeth in the ascending and 16 teeth and a pre-radular tooth in the descending series. Each tooth is hooked slightly at the apex. The tooth-blade is denticulated minutely on each side; there are about 17 denticles in an effective tooth, but in general teeth, more than 20 at the maximum and less than 12 at the minimum. The teeth in the present new species are broader than in *Volvatella vigourouxii* (Montrouzier, 1861) (see Baba, 1966, pl. IX, fig. 9), but narrower than in *Volvatella ayakii* (see Hamatani, 1972, Text-fig. 3). They are almost transparent, though faintly yellowish. The preradular tooth is rod-like as in *Ascobulla japonica* (Hamatani, 1971) and *Volvatella*

ayakii. All these features of radular teeth remind us of those in *Ascobulla* and *Volvatella*.

No penial stylet is found at the tip of the penis as far as Paratypes nos. 1 and 4 are examined.

Further anatomical studies of this new species will be done in detail in near future in comparison with other shelled sacoglossan species from Japan.

For literature see Hamatani, 1972 (Publ. Seto Mar. Biol. Lab., Vol. 21, no. 1, pp. 19-22).

P. S.: An additional locality of *Volvatella viridis* sp. nov. was given to the author by Mr. Kōzi Kitao as follows: A single specimen with about 5 mm long shell was collected on May 2, 1975 by Mr. Kitao at Kabira, Ishigaki Island, one of the southern islands of the Ryūkyū Archipelago from *Caulerpa racemosa* var. *laete-virens*. The author expresses his hearty thanks for this kind information.

EXPLANATION OF PLATE VI

Volvatella viridis sp. nov., the holotype, preserved in alcohol.
The photographs A-D correspond to Text-figs. 1, A-D respectively.



I. HAMATANI: *A New Species of Volvatella.*