

## Note on the Marine Algal Flora of the Oki Isls. XI<sup>1</sup>

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*Sargassum yezoense* (Yamada) Yoshida et Konno (Sargassaceae, Phaeophyta) is reported as a new entry to the present writer's algal list of the Oki Islands in the Sea of Japan.

*Key Index Words:* marine algal flora, *Sargassum yezoense*, the Oki Isls.

### Introduction

The present writer has reported 403 spp. in 84 families and 198 genera of benthic marine 5 spaces algae from the Oki Islands to date since 1970, which include 33 spp. in 5 families and 15 genera of Cyanophyta, 68 spp. in 18 families and 21 genera of Chlorophyta, 93 spp. in 21 families and 47 genera of Phaeophyta, 210 spp. in 40 families and 115 genera of Rhodophyta (Hagihara *et al.* 1970; Hirose and Kajimura 1973; Kajimura 1975a-1990).

Table 1. List of collections of *Sargassum yezoense*.

No.	Locality	Date	Depth	Maturity
OS 10087	Takatori	April 28, 1988	At 0.3 m	Sterile
OS 10088	Takatori	May 20, 1988	At 0.3 m	Sterile
OS 10089	Takatori	May 31, 1988	At 0.5 m	Fruiting
OS 10090	Takatori	June 21, 1988	At 0.5 m	Sterile
OS 10091	Takatori	June 22, 1988	At 0.5 m	Fruiting
OS 10092	Takatori	September 29, 1988	At 0.5 m	Sterile
OS 10093	Takatori	December 21, 1988	At low tide level	Sterile
OS 10094	Shijiki Islet	January 5, 1989	At low tide level	Sterile
OS 10095	Takatori	May 29, 1989	At 0.3 m	Fruiting
OS 10096	Shijiki Islet	May 30, 1989	At low tide level	Fruiting
OS 10097	Shijiki Islet	June 22, 1989	At low tide level	Fruiting
OS 10098	Takatori	June 27, 1989	At low tide level	Fruiting
OS 10099	Takatori	August 15, 1989	At 0.5 m	Sterile
OS 10100	Shijiki Islet	August 16, 1989	At 0.5 m	Sterile

<sup>1</sup> Contribution No. 54 from Oki Marine Biological Station, Shimane University.

The present writer, this time, could add one more new entry *Sargassum yezoense* to his algal list of the Oki Islands.

### Materials and Methods

Many mature specimens as well as the sterile used for this study were collected by the present writer from Takatori and Shijiki Islet in the Oki Islands during the successive two years ranging from April in 1988 to August in 1989 as shown in Table 1.

Fresh specimens as well as specimens dried, preserved in formalin-seawater were used for the morphological and anatomical studies. Various parts of the plant were sectioned with a freezing microtome but hand sections were also made. Sections were mounted in a 50% aqueous solution of rice syrup acidified with acetic acid (33:1 v/v).

## PHAEOPHYTA PHAEOPHYCEAE FUCALES SARGASSACEAE

### *Sargassum yezoense* (Yamada) Yoshida et Konno

Yamada, Y. and T. Kinoshita 1950: 8, pl. 52 as *Sargassum sagamianum* Yendo var. *yezoense* Yamada. Yoshida, T. and T. Konno 1983: 151. Yoshida, T. 1983: 229.

#### *Vegetative structure*

Thallus attains the height of 45 cm (Fig. 1). The primary holdfast is a small disc. Perennial stout main axis (Figs. 6, 8) is cylindrical, prostrate or decumbent, profusely branched pseudodichotomously in three dimensions, entangled, short, of 1.5–2.5 mm in diameter, which produces many annual principal branches dorsally or apically. On the other hand it produces the secondary perennial holdfasts ventrally from part to part. The perennial secondary discoid holdfasts fuse one another as they develop to form a large irregularly shaped disc (Fig. 7). Principal branch primordia are knob-shaped with a terminal depression. Annual principal branches are not twisted, prism-shaped with blunt edges and leave their vestiges on the main axis after their perishing. Lateral branches of the principal branch are many, formed spirally, don't exceed their subtending leaves in length and leave their vestiges there after their perishing.

Leaves are shortly petiolate and usually with blunt but sometimes acute apex, arranged spirally in usual phyllotaxis of 1/3 throughout the plant. Midrib of leaves is evanescent midway but sometimes reaches the apex. Leaf margin is entire or sparsely dentate. Lower leaves are often elliptical (Fig. 3), symmetrical, not horizontally extending nor retroflexed, 1.5–4.5 cm in length, 0.4–1 cm in width, with a straight midrib. However, upper leaves are extending horizontally, lanceolate, 1–4 cm in length, 1.5–7

mm in width, asymmetrical with a curved midrib (Figs. 2, 13). Cryptostomata are evident on receptacles as well as leaves. Leaves leave their vestiges on the principal branches after their perishing (Fig. 14).

Vesicles are fusiform and a little compressed with two edges with a filiform coronal leaf (Figs. 4, 5).

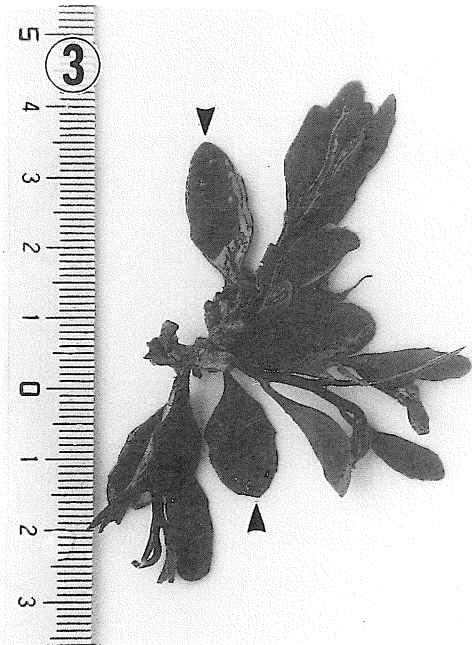
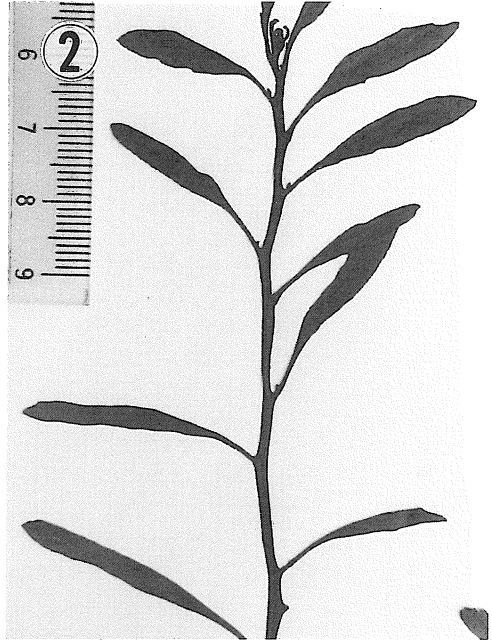
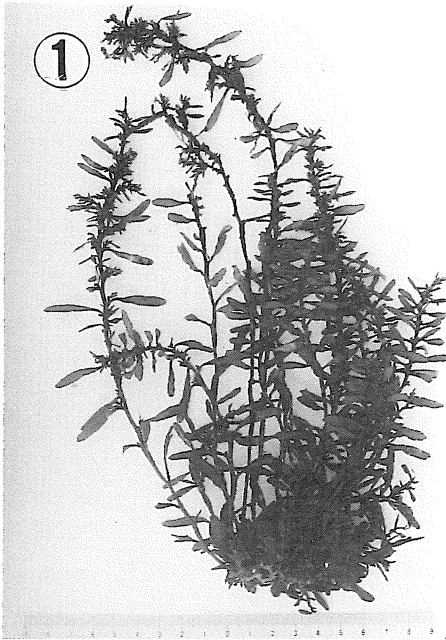
### ***Reproduction***

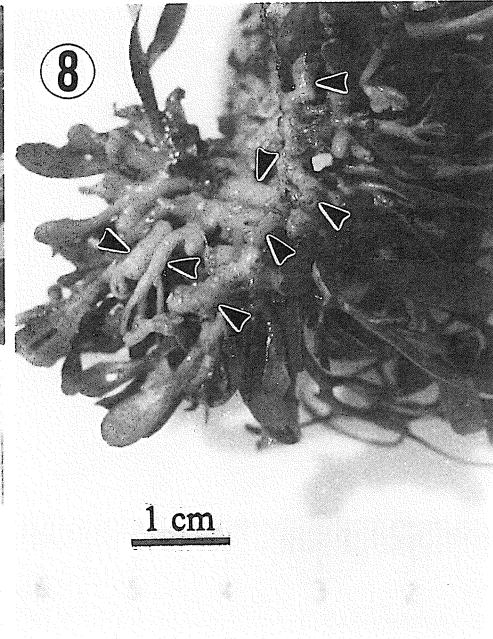
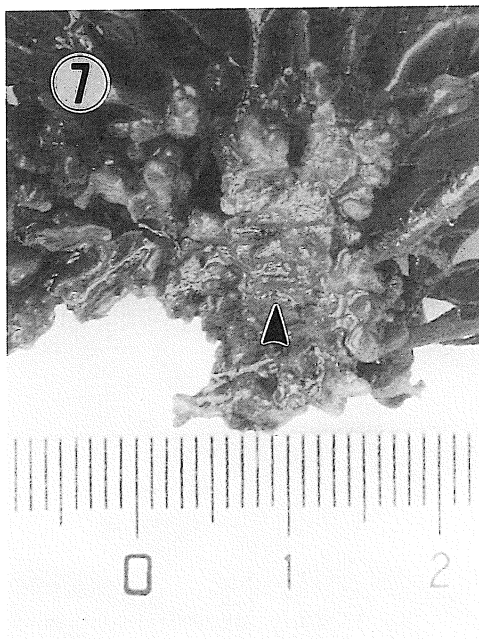
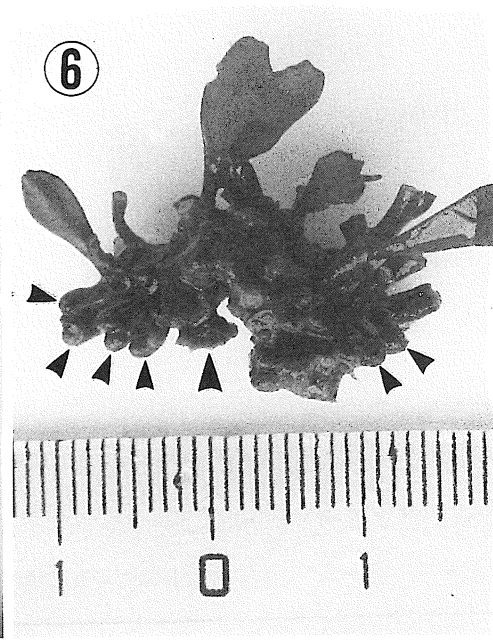
Plants are dioecious. Specimens collected from Takatori are all male but those collected from Shijiki Islet are all female. Receptacles are compressed but sometimes three-edged and more or less spatulate (Figs. 9–12) with a terminal depression, 1–5 mm in length, 1–2 mm in width, formed singly or racemously in axils of subtending leaves (Figs. 9, 10). Receptacles of both sexes are undistinguishable in appearance. However, ostioles of male conceptacles are ca. 10  $\mu\text{m}$  in diameter and the ones of female conceptacles are ca. 33  $\mu\text{m}$ , therefore receptacles of both sexes are distinguishable each other according to the size of ostioles. The receptacle is not provided with a bractial leaf. Fruiting season of this species is restricted to one month ranging from the end of May to the end of June in the studied area (Table 1). Annual principal branches perish soon after the fruiting season (Figs. 6, 13, 14).

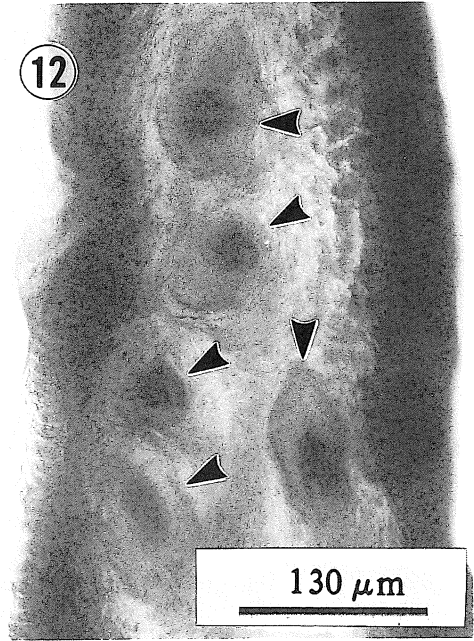
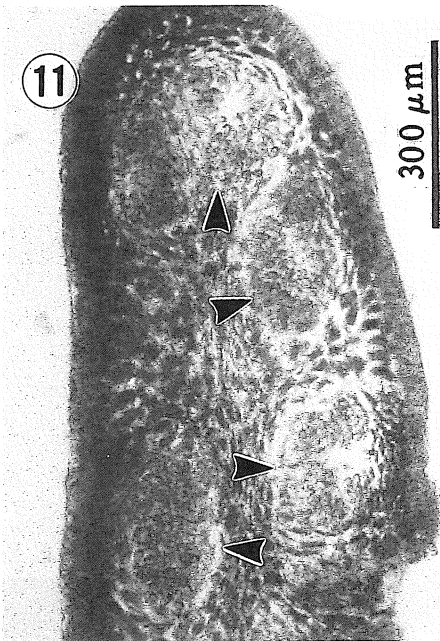
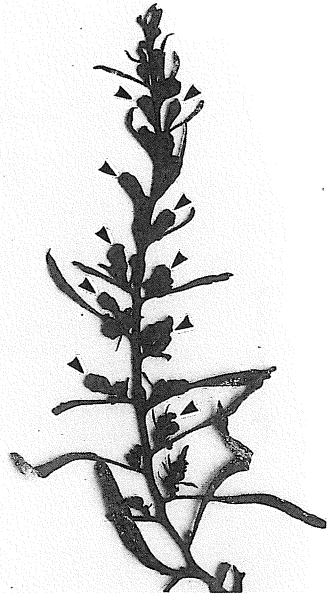
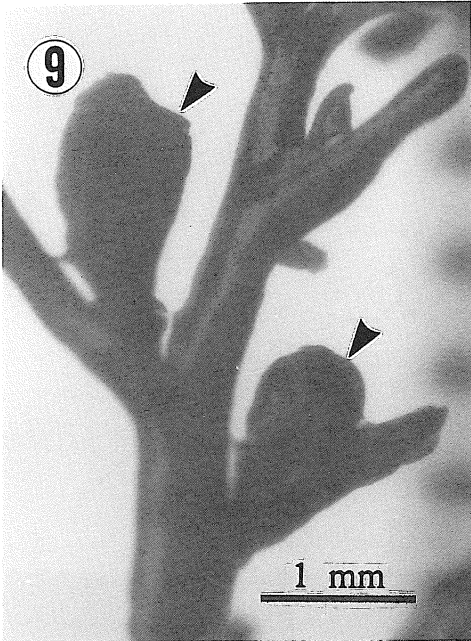
### ***Habitat***

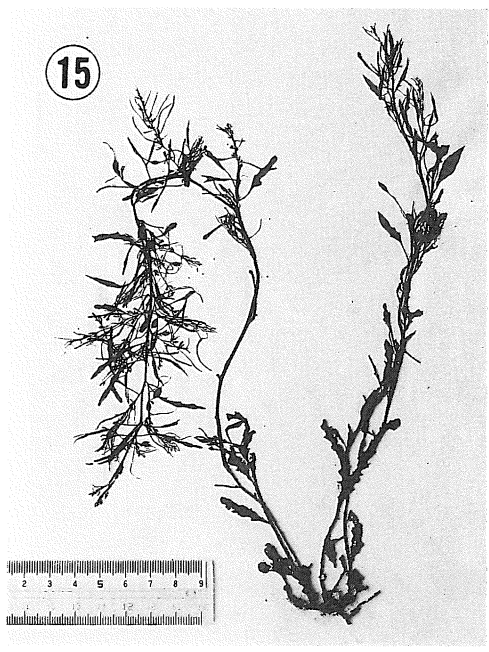
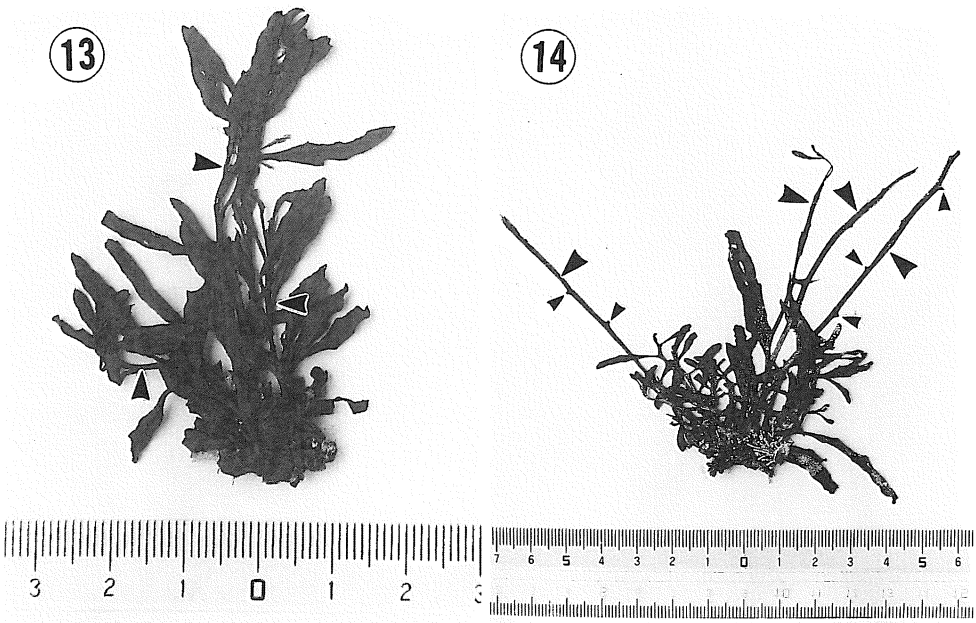
This alga is growing on rocky bottom at the region between low tide level and 0.5 m depth in upper sublittoral zone (Table 1) of very exposed area to strong wave action especially in typhoon and monsoon seasons.

- Figs. 1–4. *Sargassum yezoense* (Yamada) Yoshida et Konno.
- Fig. 1. Habit of a fresh male specimen collected at Takatori on June 22, 1988.
- Fig. 2. Part of a dried sterile specimen collected at Shijiki Islet on January 5, 1989, showing asymmetrical upper leaves.
- Fig. 3. Part of a sterile specimen collected at Takatori on April 28, 1988, showing two symmetrical elliptical lower leaves in a young principal branch pointed by arrowheads.
- Fig. 4. Part of a dried female specimen collected at Shijiki Islet on June 22, 1989, showing some vesicles with a perishable filiform coronal leaf.
- Figs. 5–8. *Sargassum yezoense* (Yamada) Yoshida et Konno.
- Fig. 5. Part of a male plant collected at Takatori on June 22, 1988 and preserved in formalin-seawater, showing an edge on a vesicle pointed by an arrowhead.
- Fig. 6. Part of a sterile specimen collected at Takatori on April 28, 1988, showing a discoid secondary holdfast (large arrowhead) and some terminal branches of the stout prostrate main axis (small arrowheads).
- Fig. 7. Part of a sterile specimen collected at Takatori on April 28, 1988 and preserved in formalin-seawater, showing an irregularly shaped large disc consisting of some fused discoid holdfasts.
- Fig. 8. Part of a sterile specimen collected at Takatori on June 22, 1988 and preserved in formalin-seawater, showing some branches of the prostrate main axis pointed by arrowheads.
- Figs. 9–12. *Sargassum yezoense* (Yamada) Yoshida et Konno.
- Fig. 9. Part of a male plant collected at Takatori on June 22, 1988 and preserved in formalin-seawater, showing two male receptacles pointed by arrowheads.
- Fig. 10. Part of the same specimen as shown in Fig. 4, showing some female receptacles pointed by arrowheads.
- Fig. 11. Part of a male plant collected at Takatori on June 22, 1988 and preserved in formalin-seawater, showing four male conceptacles pointed by arrowheads.
- Fig. 12. Part of the same specimen as shown in Fig. 4, showing five oogonia pointed by arrowheads.
- Figs. 13–15. *Sargassum yezoense* (Yamada) Yoshida et Konno.
- Fig. 13. Habit of a dried specimen collected at Takatori on December 21, 1988, showing three young principal branches pointed by arrowheads.
- Fig. 14. Habit of a dried sterile specimen collected at Shijiki Islet on August 16, 1989, showing four perishing principal branches pointed by large arrowheads as well as some vestiges of perished leaves left on them pointed by small arrowheads.
- Fig. 15. Lectotype specimen of *Sargassum sagamianum* var. *yezoense* Yamada (SAP 024318).











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