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The occurrence of *Laurencia saitoi* Perestenko (*L. obtusa* auct. japon.) (Ceramiales, Rhodophyta) in Japan

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An alga widely distributed in Japanese waters and passing under the name *Laurencia obtusa* (Hudson) Lamouroux in Japan is distinguished from the genuine *L. obtusa* (type locality: the British Isles) by the absence of prostrate stolon-like branches and by the presence of projecting superficial cells and one or two *corps en cerise* within each superficial and trichoblast cell. It should be referred to *L. saitoi* Perestenko which was described from Peter the Great Bay, Russia (the Sea of Japan). A basal discoid holdfast, from which many upright axes are produced, and crowded branches due to the production of numerous adventitious branchlets are distinctive features of fully mature plants of *L. saitoi*, although the size of holdfasts, the number of upright axes and the number of adventitious branchlets vary in relation to the environmental condition and/or growth stage.

Key Index Words: Corps en cerise—Laurencia—Laurencia saitoi—Laurencia obtusa—*Rhodomelaceae—Rhodophyta—taxonomy*.

At present 23 species of *Laurencia* (Rhodomelaceae, Rhodophyta) are known in Japanese waters (Yoshida *et al.* 1990, Masuda *et al.* 1992). As pointed out in an earlier paper (Masuda *et al.* 1992), there are several species for which further investigations are necessary. *Laurencia obtusa* (Hudson) Lamouroux is one such species.

The occurrence of *Laurencia obtusa* in Japanese waters was first reported by Okamura (1902) who later gave a more detailed description with some illustrations (Okamura 1922, p. 175, pl. 193). However, Yamada (1931) described this alga as a new species, *Laurencia okamurae* Yamada, on the basis of the presence of lenticular thickenings in the walls of the medullary cells. Although Inagaki (1933) reported *L. obtusa* from Hokkaido, Yamada (in Okamura 1936) questioned its occurrence in Japanese waters. Saito (1967, p. 5, pls. 1-2, text-figs. 1-5) gave a full description of *L. obtusa* with many illustrations. However, this description of the Japanese entity differs from that of the genuine *L. obtusa* in British Isles, the type locality, in the presence of prostrate stolon-like attachment branches in the latter (Turner 1808, Harvey 1848, Saito 1982). The purpose of the present study is to elucidate taxonomic features of *Laurencia obtusa sensu* Saito more clearly in order to establish its specific status.

Materials and Methods

The following specimens were used for morphological studies.

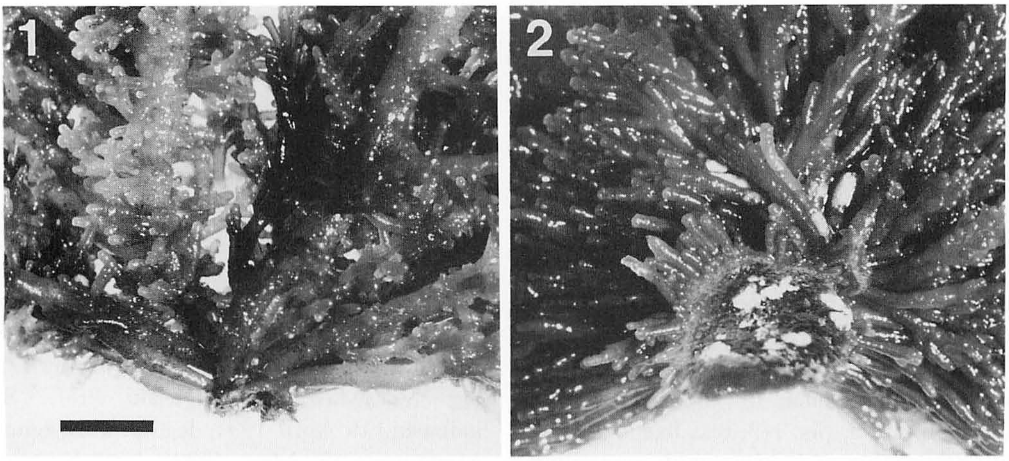
Kanagawa Pref.: Enoshima, 19 July 1990, leg. M. Masuda. Chiba Pref.: Mera, Tateyama, 10 April 1990, leg. M. Masuda, 20 July 1990, leg. M. Masuda, 2 April 1992, leg. M. Masuda; Wada, 11 April 1990, leg. M. Masuda; Emi, Kamogawa, 20 July 1990, leg. M. Masuda. Ehime Pref.: Uojima, 8 May 1990, leg. M. Masuda. Nagasaki Pref.: Saikaibashi, 19 April 1991, leg. S. Kawaguchi; Matsuura, 17 May 1992, leg. Y. Arai. Yamaguchi Pref.: Heki, 3 May 1992, leg. M. Masuda. Shimane Pref.: Orii, Hamada, 2 May 1992, leg. M. Masuda. Ishikawa Pref.:

Togi, 4 June 1992, leg. S. Arai; Monzen, 4 June 1992, leg. S. Arai. Hokkaido: Okushiri, 23 June 1992, leg. T. Abe, 11 August 1992, leg. T. Abe, 9 September 1992, leg. T. Abe; Kawashira, Kamoenai, 27 August 1992, leg. M. Masuda and T. Abe. These field-collected plants were fixed and preserved in 10% formalin in sea-water. Living plants of several collections (Wada, Mera, Heki, Orii, Okushiri and Kamoenai) were transported to laboratory and used for examinations of *corps en cerise*. Voucher specimens are deposited in the Herbarium, Department of Botany, Faculty of Science, Hokkaido University, Sapporo (SAP 058013-058027, 058050-058053).

Sections were made by hand using a razor blade and pith stick, mounted in water on microscope slides. Several sections were stained with 0.5% (w/v) cotton blue in a lactic acid/phenol/glycerol/water (1 : 1 : 1 : 1) solution.

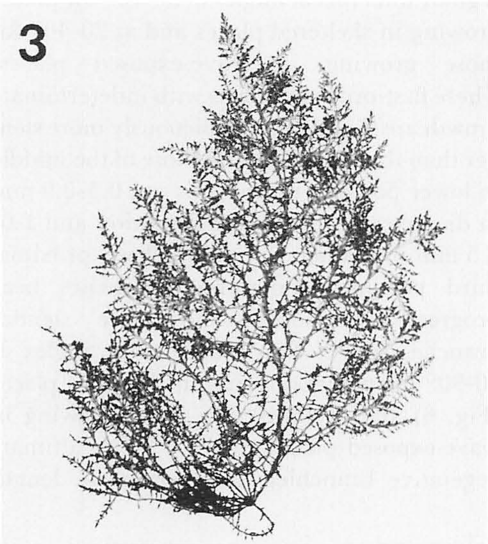
Additionally, herbarium specimens deposited in SAP and the Herbarium of University Museum, University of Tokyo (TI) were reexamined and used in assessing the geographical distribution of the alga under study. Herbarium specimens collected recently were also used and deposited in SAP. Collection data of all these specimens are as follows. The specimen numbers refer to SAP.

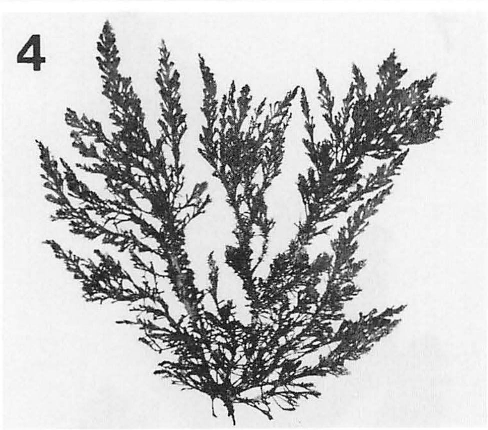
Kochi Pref.: Ashizuri-misaki, 28 April 1956, leg. N. Tazawa (058028); Kami-kawaguchi, Ookata, 24 April 1956, leg. N. Tazawa (058029); Nada, Ookata, 26 April 1956, leg. N. Tazawa (058030); Saga, 27 April 1956, leg. N. Tazawa (058031). Shizuoka Pref.: Omaezaki, 7 April 1990, leg. M. Masuda (058032), 5 August 1990, leg. M. Masuda (058033). Kanagawa Pref.: Shichirigahama, 21 April 1955, leg. Y. Tsuji (058034). Chiba Pref.: Banda, Tateyama, 10 May 1990, leg. H. Ohba (058035); Mera, Tateyama, 15 April 1956, leg. N. Tazawa (058036); Tomisaki, Tateyama, 10 May 1955, leg. Y. Tsuji (058037); Chikura, 12 May 1992, leg. Y. Tsuji (058038); Futomi, Kamogawa, 9 May 1955, leg. Y. Tsuji (058039); Oohara, 12 April 1956, leg. N. Tazawa (058040). Ibaraki Pref.: Ooarai, 5 August 1956, leg. Y. Tsuji (058041). Miyagi Pref.: Enoshima, 31 July 1974, leg. T. Yoshida (031251). Ehime Pref.: Higashi-sotoumi, 7 March 1923, 29 April 1923, leg. Ogata (herb. Okamura in SAP); Oshima, Imabari, 9 May 1990, leg. M. Masuda (058042); Yugejima, 11 May 1990, leg. M. Masuda (058043). Kumamoto Pref.: Tomioka, Amakusa, 11 May 1940, leg. T. Tanaka (058044); Misumi, 4 May 1958, leg. M. Ichiki (058045). Niigata Pref.:

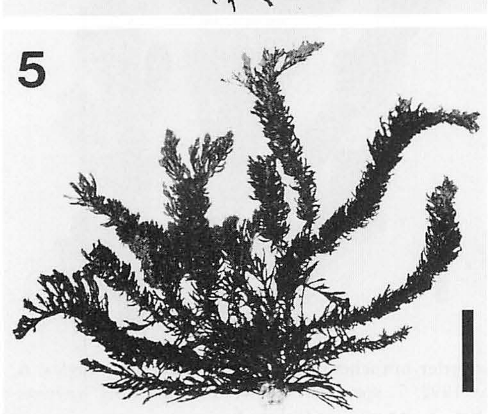


Figs. 1, 2. *Laurencia saitoi* Perestenko. Single basal discoid holdfasts from which many upright axes are produced: 1, specimen collected from a sheltered habitat at Heki, Yamaguchi Prefecture, on 3 May 1992; 2, specimen collected from a fully wave-exposed habitat at Orii, Hamada, Shimane Prefecture, on 2 May 1992. Scale bar=5 mm in Fig. 1 also applies to Fig. 2.

Kashiwazaki, 15 May 1991, leg. A. Arai (058046); Moroo, Ryotsu, 9 June 1992, leg. S. Arai (058047). Aomori Pref.: Sai, 27 June 1987, leg. T. Kitayama (052736); Oma, 22 August 1917, leg. L. Rosenbaum (TI); Shiriya, 30 August 1917, leg. L. Rosenbaum (TI). Hokkaido: Hakodate, 19 August 1917, collector unknown (TI); Moheji, 16 August 1962, leg. Y. Saito (035185), 27 August 1963, leg. Y. Saito (053499); Okushiri, July 1934, leg. K. Inagaki (048139); Chatsu, Tomari, 26 July 1985, leg. K. Kobayashi, (058048); Kawashira, Kamoenai, 10 August 1985, leg. K. Kobayashi, (058049); Kurosaki, Teuri, 29 July 1984, leg. M. Marui (044108); Rebunto, 24 August 1934, leg. K. Inagaki (022802).







Figs. 3–5. Herbarium specimens of *Laurencia saitoi*: 3, collected from a sheltered habitat at Monzen, Ishikawa Prefecture, on 4 June 1992 (SAP 058027); 4, collected from a fully wave-exposed habitat at Emi, Kamogawa, Chiba Prefecture, on 20 July 1990 (SAP 058017); 5, collected from a fully wave-exposed habitat at Mera, Tateyama, Chiba Prefecture, on 2 April 1992 (SAP 058015). Scale bar=2 cm in Fig. 5 also applies to Figs. 3 and 4.

Observations

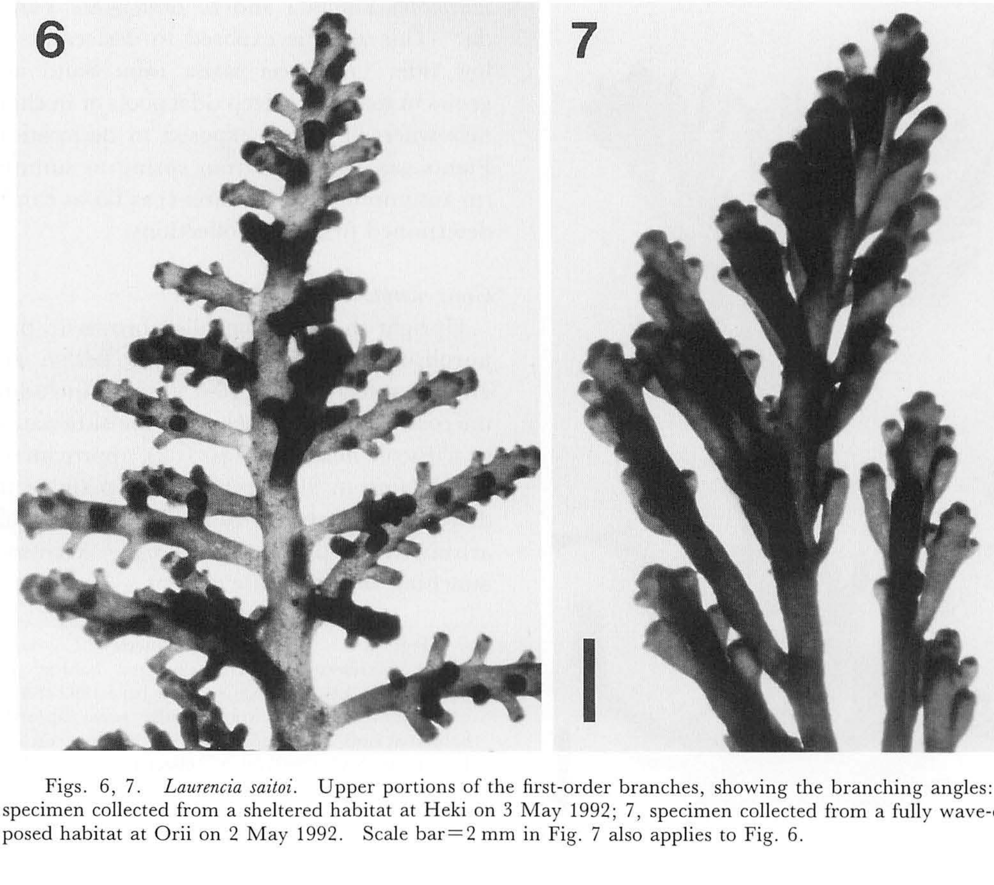
Habitat

In Japan *Laurencia obtusa sensu* Saito grows on rocks in the upper to mid-intertidal zones at sheltered to fully wave-exposed places. Plants are found at the higher tidal zone than the growing zone of the other sympatric species of *Laurencia*, viz, *L. okamurae* Yamada, *L. intermedia* Yamada and *L. cartilaginea* Yamada. This zone is exposed to desiccation at low tide. *Laurencia obtusa sensu* Saito also grows in shallow to deep tidal pools or in channels where it is not exposed to desiccation. Plants can be found from spring to summer (to autumn in northern areas) as far as can be determined from our collections.

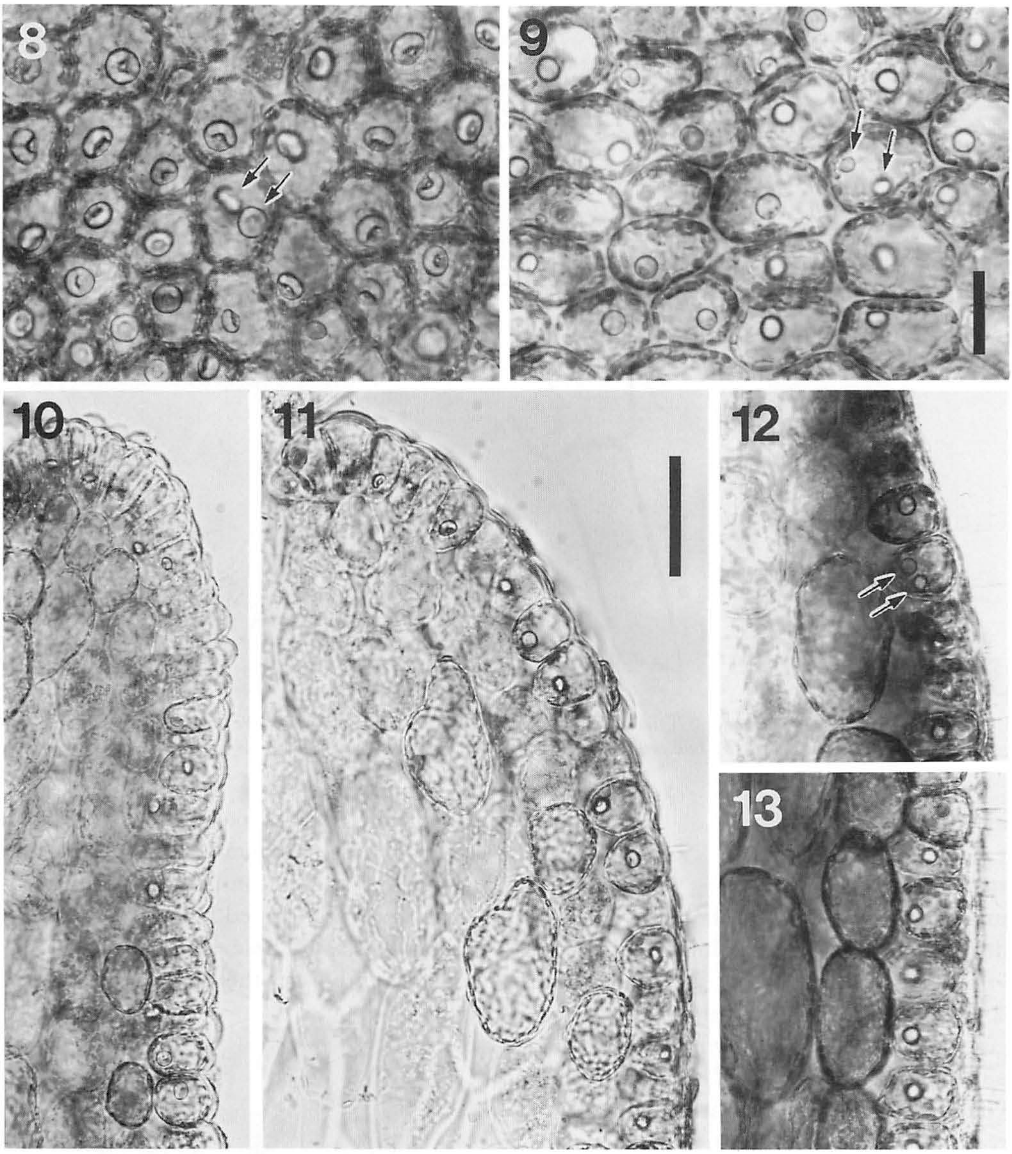
Gross morphology

Upright thalli are purplish brown to dark purplish red in color and softly fleshy, and grow in tufts of about 20-250 thalli including microscopic thalli attached to the substratum by a discoid holdfast (Figs. 1, 2), approximately 3-10 mm in diameter. Thus, a single individual is composed of many upright thalli arising from a primary basal disc. Accessory attaching branches are absent. Number of upright thalli varies according to the localities examined. Individuals growing in sheltered places where they are not exposed to desiccation have smaller discs (<5 mm in diameter) from which less abundant thalli (<30) are formed as in the case of Heki population (Fig. 1). However, individuals growing in fully wave-exposed places where they are emersed at low tide produce larger discs of 6-10 mm in diameter from which numerous upright thalli (100-250) are formed as in the case of Emi, Mera and Orii (Fig. 2) populations. Individuals with intermediate morphologies between these extremes are also found at other localities.

Fertile thalli are 2-13 cm in length. Each upright thallus has a percurrent main axis (Figs. 3-5) which is terete to subterete throughout. Main axes are 0.6-1.9 mm in diameter at the proximal portion, 1.0-2.5 mm in diameter at the lower third to fourth portion, becoming gradually more slender upward, and reach 0.5-0.8 mm in diameter near the apices. Many ascending first-order branches develop from the main axis in various ways, from alternate to subverticillate, at irregular intervals at angles of 30-70° for plants growing in sheltered places and at 20-40° for those growing in wave-exposed places. These first-order branches with indeterminate growth are slightly to conspicuously more slender than the main axis and those of the middle to lower portions on the axis are 0.5-0.9 mm in diameter at the proximal portion and 1.0-1.5 mm in diameter at the thickest, proximal third portion. First-order branches bear progressively shorter and more slender branches (up to fourth-order), at angles of 20-90° for plants growing in sheltered places (Fig. 6) and at 10-40° for those growing in wave-exposed places (Fig. 7). The ultimate vegetative branchlets are various in length



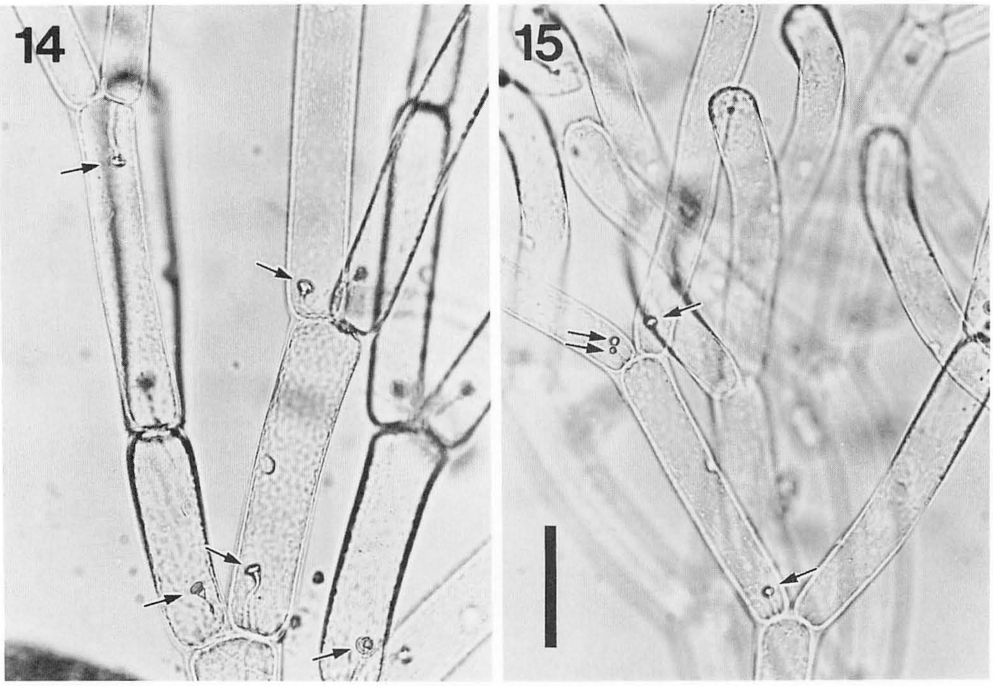
Figs. 6, 7. *Laurencia saitoi*. Upper portions of the first-order branches, showing the branching angles: 6, specimen collected from a sheltered habitat at Heki on 3 May 1992; 7, specimen collected from a fully wave-exposed habitat at Orii on 2 May 1992. Scale bar=2 mm in Fig. 7 also applies to Fig. 6.



Figs. 8–13. *Laurencia saitoi*. 8, 9. Surface views of branch apices, showing *corps en cerise* and chloroplasts: 8, specimen from Heki; 9, specimen from Mera. Arrows indicate cells with two *corps en cerise* within single superficial cells. 10, 11. Longitudinal sections of the uppermost portions of branches, showing slightly projecting superficial cells and *corps en cerise*: 10, Heki specimen; 11, Mera specimen. 12, 13. Longitudinal sections of the upper portions of branches in Mera specimens. Arrows in Fig. 12 show two *corps en cerise* within a cell. Scale bar=25 μm in Fig. 9 also applies to Fig. 8; scale bar=50 μm in Fig. 11 also applies to Figs. 10, 12 and 13.

and 0.2-0.4 mm in diameter. Many adventitious branches develop between these ordinary branches at more variable angles than those ordinary branches, and are short, 1-7 mm long and produce reproductive structures when mature.

Development of ordinary and adventitious branches also varies with habitat. Plants growing in sheltered places form many, regularly developed, long first-order branches and less frequent adventitious branches (Fig. 3), whereas those growing in fully wave-exposed places produce a few long branches (Fig. 4), or short branches (Fig. 5) and numerous ad-



Figs. 14, 15. *Laurencia saitoi*. Trichoblasts, showing *corps en cerise* (arrows): 14, Orii specimen; 15, Mera specimen (double arrows showing two *corps en cerise*). Scale bar=50 μm in Fig. 15 also applies to Fig. 14.

ventitious branches.

Vegetative structures

Superficial cells and trichoblast cells include usually single or sometimes double *corps en cerise* (Figs. 8-15). These *corps en cerise* are 6-12 μm in diameter in superficial cells near apices of branches and 4-10 μm in trichoblast cells. The superficial cells of lower main axes of younger thalli are regularly arranged in many longitudinal rows in surface view, elongated longitudinally, 60-125 μm long by 45-75 μm wide, while those of older thalli become more irregular in arrangement due to further development of cortical cells which are 15-40 μm long by 10-20 μm wide and are intermixed with larger cells. The superficial cells gradually become shorter and narrower upward. They are nearly round to elongated laterally in the apical portions of main axes and branches of any order, 9-18 μm long by 20-30 μm wide in surface view. Surface cells in transverse section are 60-90 μm thick at the lower main axes, 24-40 μm thick at the the apical portions of main axes and branches of any order. These superficial cells do not form a palisade layer. Secondary longitudinal pit-connections are formed between adjacent superficial cells. These superficial cells protrude slightly at the apices of younger

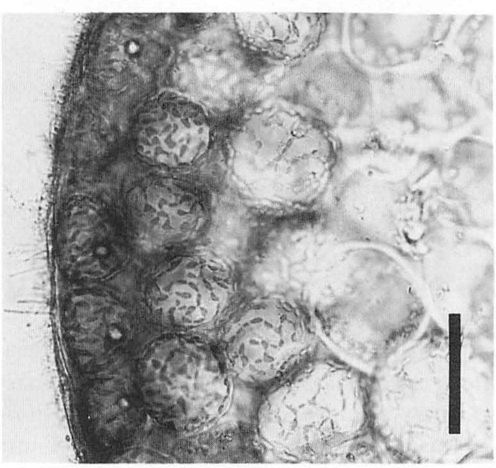


Fig. 16. *Laurencia saitoi*. Transverse section of a branch, showing chloroplasts in inner cortical cells. Scale bar=50 μm.

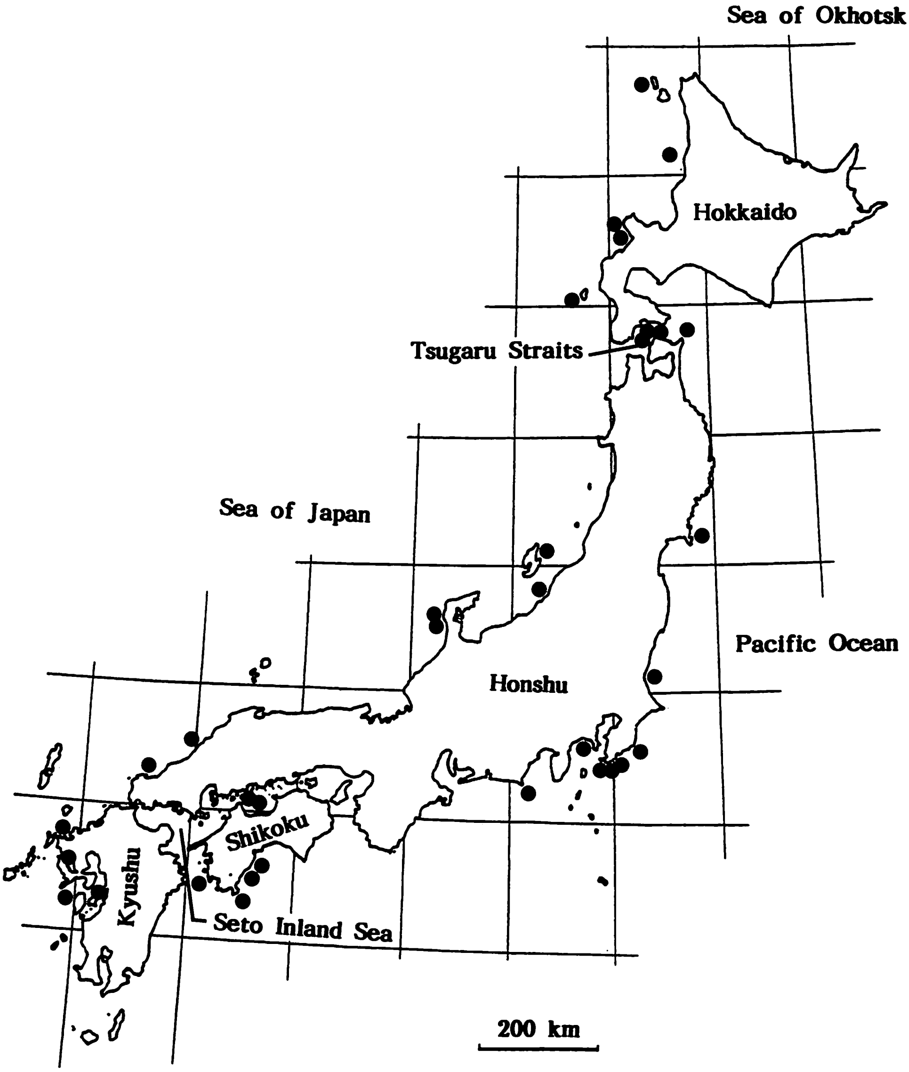


Fig. 17. Geographical distribution of *Laurencia saitoi* in Japan.

branchlets (Figs. 10, 11). The superficial cells contain small, discoid chloroplasts (Figs. 8, 9), but the chloroplasts of inner cortical cells are reticulate (Fig. 16). No lenticular thickenings are present in the walls of the medullary cells.

Reproductive structures

Reproductive structures have been described in detail by Saito (1967) and have been confirmed during the present study. Some supplementary data are given here. Tetrasporangia are formed in acropetal succession on the first- to fourth-order ordinary branches and adventitious branches. In younger reproductive plants tetrasporangia are formed on the first- to second-order branches, but the tetrasporangium formation extends further third- to fourth-order branches with age. The tetrasporangial portions are variable in length and in diameter according to the season and 0.2-4.5 mm long and 0.3-0.5 mm wide. Mature tetrasporangia are 120-160 μm long and 110-130 μm wide.

Cystocarps are ovoid and formed on the first- to fourth-order ordinary branches and adventitious branches. Well-developed cystocarps are 700–1050 μm long and 600–860 μm wide.

Spermatangia are formed in the apical depressions of the first- to fourth-order branches and adventitious branches. These spermatangial conceptacular branchlets are thick at their terminal portions and 400–1240 μm wide.

Geographical distribution

Laurencia obtusa sensu Saito is widely distributed along the coasts of the Pacific and the Sea of Japan, and on the coast of Seto Inland Sea (Fig. 17). These coasts are influenced by the warm waters of the Kuroshio, the Tsushima and the Tsugaru Currents.

Discussion

Three basic types of attachment are known in species of *Laurencia*: 1) a single primary discoid holdfast only; 2) a single primary discoid holdfast and stolon-like prostrate branches from which secondary holdfasts are formed; and 3) a single primary discoid holdfast and secondary holdfasts formed on a prostrate axis and/or descending branches (Cribb 1958). Many species have the second type of attachment and the species with the first or third type of attachment are relatively less frequent (Cribb 1958, Dawson 1963, Saito and Womersley 1974, McDermid 1988b). *Laurencia obtusa sensu* Saito is characterized by a single attachment, the primary discoid holdfast from which numerous upright thalli develop. It can be distinguished from many of the other species of *Laurencia* with stolon-like prostrate branches including genuine *L. obtusa* in the British Isles (Turner 1808, Harvey 1848, Saito 1982). This feature was confirmed by examination of specimens from Ile Verte, Roscoff, France, on 30 June 1973 by T. Yoshida (SAP 030919, 030920).

The occurrence of secondary longitudinal pit-connections between adjacent superficial cells and the parallel arrangement of tetrasporangia, which have been used as diagnostic features of subgenus *Laurencia* by Saito (1967), are not completely correlated (Cribb, 1983, McDermid 1989, Wynne and Ballantine 1991, Masuda unpublished observations), and it is questionable whether or not these characters are significant at the subgeneric level. However, Saito's discovery of these two characters has much contributed to the distinction of species of this troublesome genus and they can be used separately for the discrimination of species. *Laurencia obtusa sensu* Saito has both features by which the alga is distinguished from many species with a single discoid holdfast and without secondary longitudinal pit-connections and the parallel-type tetrasporangial arrangement (Saito 1967. p. 73).

Fully mature plants of *Laurencia obtusa sensu* Saito are characterized by the bushy habit with crowded branches according to the production of numerous adventitious branchlets. Plants growing in fully wave-exposed places where they are also exposed to desiccation at low tide produce numerous, short, determinate adventitious branchlets which completely obscure the main axis (Figs. 4, 5). Some such plants (Fig. 5) are similar in gross morphology to *L. snyderiae* Dawson which is known from southern California to Baja California (Dawson 1944, 1963). *Laurencia snyderiae*, however, has prostrate stolons (Dawson 1944, 1963).

Single individuals of *Laurencia obtusa sensu* Saito produce numerous upright thalli (approximately up to 250). Such large numbers of upright thalli from a single discoid holdfast are not known in any other species of *Laurencia*. For the present study we counted all uprights from single discs using a dissecting microscope. *Laurencia crustiformans* McDermid may have a large number of uprights developing from an expanded basal discoid holdfast (McDermid 1989); however, the arrangement of tetrasporangia of this Hawaiian alga is of the right-angle type (McDermid 1989).

The presence or absence of projecting cells at branch apices is considered to be a useful specific feature of *Laurencia* (Yamada 1931, Saito 1969, Cribb 1983, McDermid 1988b, Zhang and Xia 1988). According to these authors, several species such as *L. mariannensis* Yamada, *L. pinnata* Yamada, *L. galtsoffi* Howe, *L. majuscula* (Harvey) Lucas, *L. carolinensis* Saito, and *L. dotyi* Saito have conspicuously projecting superficial cells by which they can be distinguished from related species. Superficial cells near the apices of younger branches in *Laurencia obtusa sensu* Saito are slightly projected above the thallus surface, which is not the case in the genuine *L. obtusa* (Saito 1982). This feature was also confirmed by our observations of the specimens from Roscoff, France mentioned above.

Corps en cerise are primarily reported in members of the subgenus *Laurencia* (Feldmann and Feldmann 1950, 1958, Bodard 1968, Yoshida and Yoshida 1974, Notoya *et al.* 1976, Young *et al.* 1980, Saito 1982, McDermid 1988a, 1988b, Gil-Rodriguez and Haroun 1992). Many species including genuine *L. obtusa* have only one such body per cell. *Laurencia obtusa sensu* Saito has one or two *corps en cerise*, and *L. microcladia* Kützing (Feldmann and Feldmann 1958, as *L. densa*) and *L. majuscula* (Gil-Rodriguez and Haroun 1992, Masuda and Kamura unpublished observations) have two or three. Although Gil-Rodriguez and Haroun (1992) reported that *L. obtusa* from the Canaries possesses 1–3 *corps en cerise*, their species seems to be heterogeneous because of its two different basal systems: stoloniferous branches and a discoid holdfast. *Laurencia obtusa* from Europe always has a single *corps en cerise* (Feldmann and Feldmann 1950, 1958, Bodard 1968, Saito 1982). Living specimens of *L. obtusa sensu* Saito collected along the coast of the Pacific, at Wada and Tateyama, Chiba Prefecture, and along the coast of the Sea of Japan, at Heki, Yamaguchi Prefecture, at Hamada, Shimane Prefecture, and at Okushiri and Kamoenai, Hokkaido, always have one or two *corps en cerise*. The presence or absence of *corps en cerise*, or their number per superficial cell is useful to distinguish several species similar in gross morphology quickly, although the taxonomic usefulness is limited to living material (McDermid, 1988a). These cell organelles are said to be the site of synthesis and/or storage of the halogenated secondary metabolites of *Laurencia* (Young *et al.* 1980). *Laurencia obtusa sensu* Saito produces specific sesqui-, di- and triterpenoids (Suzuki *et al.* 1987, 1989, Takeda *et al.* 1990a, 1990b, 1990c), which have not been reported from European *L. obtusa* (Erickson 1983).

A basal discoid holdfast, from which many upright axes are produced, and crowded branches due to the production of numerous adventitious branchlets are distinctive features of *L. obtusa sensu* Saito. Additionally, this species can be distinguished from European *L. obtusa* by the absence of prostrate stolon-like branches, the presence of projecting superficial cells and one or two *corps en cerise* within each superficial and trichoblast cell. The combinations of these features and other critical features of *Laurencia* such as terete thalli, the occurrence of secondary longitudinal pit-connections between adjacent superficial cells, the parallel-type tetrasporangial arrangement, and the absence of lenticular thickenings distinguish *L. obtusa sensu* Saito from the vast majority of the known species of the genus. Only a few species require further discussion.

A Pacific tropical to subtropical species, *Laurencia tropica* Yamada, which has an expanded discoid holdfast, differs from *L. obtusa sensu* Saito in that it has very solidly cartilaginous thalli and *corps en cerise* are absent (Masuda and Kamura unpublished observations on specimens collected at Okinawa Islands).

Laurencia saitoi Perestenko (1980, p. 192, fig. 251) described from tetrasporangial specimens collected in Peter the Great Bay, Russia seems to be more similar to *L. obtusa sensu* Saito, although her description lacks details of some characters now considered to be necessary for comparison of species of this genus. *Laurencia saitoi*, which has a single discoid holdfast, possesses secondary pit-connections, but the tetrasporangial arrangement was not described. Perestenko (1980) considers *L.*

saitoi to be most allied to *L. obtusa sensu* Saito (1967) and distinguishes *L. saitoi* from *L. obtusa sensu* Saito by: the smaller dimension of thalli (2–6 cm tall); fewer orders of branches (up to third); and branches issuing at right angles to the parent axis. The last feature is clearly shown in an illustration (Perestenko 1980, fig. 251). Plants of *Laurencia obtusa sensu* Saito growing in calm places have such branches (Fig. 6), whereas plants growing in wave-exposed places have branches with acute angles to the parent axis. Perestenko (1980) did not mention the number of upright axes from single discoid holdfasts, the presence of adventitious branches, projecting superficial cells, and the presence or absence of *corps en cerise*. As her material was collected in early August, her observations may have been based on younger reproductive plants with smaller thalli and fewer orders of branches and without adventitious branches.

Seasonal variation in the morphology of *Laurencia obtusa sensu* Saito growing along the west coast of Hokkaido can be summarized as follows. Plants have less abundant adventitious branches during June and July and later produce more adventitious branches. As reproductive stages advance, branches of a further fourth order become apparent. It is likely that *L. saitoi* shows the similar seasonal variation in Peter the Great Bay. On the basis of this consideration and relative geographical proximity of these two algae in the Sea of Japan, it is reasonably concluded that they are conspecific.

Of the species of *Laurencia* found in Japanese waters, *L. saitoi* is most adapted to higher tidal zone and is thus exposed to more desiccation. This species must therefore have a higher tolerance to desiccation than the other species. Crowded branches and crowded upright axes may have adaptive advantage to the higher tidal zones, because these features are probably effective in the retention of water during low tide.

Development of the first-order branches in *Laurencia saitoi* may also be affected by environmental conditions. Plants growing in sheltered places such as tidal pools or bays form many, regularly developed, long branches, whereas those growing in fully wave-exposed places form short branches, or a few long branches. Dawson (1963, p. 458) reported the wide range of gross morphological variation under different habitats from quiet-water bays to surfy shores for *L. pacifica* Kylin distributed along the Pacific coast of the United States and Mexico. This species assumes a more diffuse habit in quiet-water habitats, but it has percurrent axes on wave-exposed shores. Furthermore, Masuda *et al.* (1992) described a similar situation in *L. nipponica* Yamada.

The occurrence of *Laurencia obtusa sensu stricto* in the western Pacific (Collins 1919, Howe 1924, Inagaki, 1933, Cribb 1958, Saito 1969, Tseng 1983, Zhang and Xia 1988) is questionable. Inagaki's (1933) voucher specimens deposited in SAP (014156, 048137, 048138) are not *L. obtusa*, but represent three different species, viz, *L. venusta* Yamada (014156), *L. intricata* Lamouroux (048137) and *L. nipponica* Yamada (048138). Cribb (1958) reported *L. obtusa* from southeastern Queensland, Australia; however, he states that "one to several erect axes [arising] from a discoid holdfast without accessory stoloniferous attaching branches", indicating a misidentification. Further studies of the status of *Laurencia obtusa* in the western Pacific are clearly needed.

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増田道夫・阿部剛史：紅藻マギレソゾについて

日本沿岸に広く分布し，*Laurencia obtusa* (Hudson) Lamouroux とされてきた紅藻マギレソゾ（フジマツモ科）は，匍匐枝を欠くこと，若い枝の先端部表面細胞が突出すること及びサクランボ小体の数が 1 または 2 個であることで，イギリス諸島を基準標本産地とする真の該種とは異なる。マギレソゾは日本海のピョートル大帝湾から記載された *L. saitoi* Perestenko と同一種である。本種の成熟個体は単一の盤状付着器から多数の直立体を生じ，その直立体には側枝と不定枝が密生する。盤状付着器の発達，それに伴う直立体数及び不定枝数には，生育地の環境と生育季節による変異が認められる。（060 札幌市北区北10条西 8 丁目　北海道大学理学部植物学教室）