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Title	A list of marine algae from the Island of Shikotan
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Citation	北海道帝國大學理學部海藻研究所歐文報告, 1(2), 199-212
Issue Date	1936-03-30
Doc URL	https://hdl.handle.net/2115/48058
Type	departmental bulletin paper
File Information	1(2)_199-212.pdf



A List of Marine Algae from the Island of Shikotan

By

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The Island of Shikotan is located about 125 km. northeast from Nemuro, Hokkaidô, at latitude $43^{\circ}50'$ North, and longitude $146^{\circ}50'$ East. It belongs to the South Kurile group. The island is nearly rectangular in outline measuring about 18 km. in length and 10 km. in width. The coast is rather poor in sand beaches and it is washed by the cold current running down from Kamtchatka. This has powerful influence on the algal flora of this island that resembles those of Alaska, Kamtchatka and the Pacific coast of North America.

In July, 1933, the writer visited this island for making a collection of marine algae in the vicinity of Shakotan Bay and Chiboi Bay. On the 5th of July, 1934, he landed again on this island and stayed there for about one month.

The present study is made using as a basis those materials which were brought back from those two journeys. It includes 78 species in all, of which 13 belong to the Chlorophyceae, 30 to the Phaeophyceae and 35 to the Rhodophyceae. Seven species such as *Enteromorpha plumosa* KG., *E. micrococca* KG., *Chaetomorpha melagonium* (WEB. et MOHR) KG., *Ulva latissima* L., *Rhizoclonium tortuosum* (DILLW.) KG., *Porphyra occidentalis* SETCH. et HUS and *Pleonosporium Kobayashii* OKAM. are new to the Japanese flora, and one form of *Porphyra amplissima* SETCH. et HUS is described as a new form.

Here the writer wishes to express sincere thanks to Prof. Y. YAMADA under whose guidance the present work was carried out. Thanks are also due to Mr. H. KANAMORI who visited the island with the writer in the summer of 1933.

CHLOROPHYCEAE

ULVACEAE

1. *Monostroma zostericola* TILDEN.

“Amer. alg. (1900) no. 388”; YENDO, Notes on alg. new to Japan, VII

(1917) p. 184, SETCHELL and GARDNER, Mar. alg. Pacif. coast N. Amer., Chlorophyc. (1920) p. 238; YAMADA, Mar. alg. Urup, etc. (1935) p. 9.
Japanese name. *Motsuki-hitoe*.

Hab. On leaves of *Zostera* in the littoral belt, very common in calm water.

2. **Monostroma** sp.

Hab. Growing on other algae in the littoral belt.

3. **Enteromorpha plumosa** KUETZING.

Phyc. gen. (1843) p. 300, pl. 20, fig. 1; COLLINS, Green alg. N. Amer. (1909) p. 198; SETCHELL and GARDNER, l. c. p. 259.

Hab. Notoro, growing on stones and rocks in the upper littoral belt.

4. **Enteromorpha micrococca** KUETZING ?

Tab. Phyc. vol. 6 (1856) p. 11, pl. 30, fig. 2; COLLINS, l. c. p. 204; SAUNDERS, Alg. Harriman Alaska Exp. (1901) p. 411; SETCHELL and GARDNER, l. c. p. 249.

Hab. On stones in the upper littoral belt.

5. **Ulva Linza** LINNE.

Spec. plant. vol. 2 (1753); SETCHELL and GARDNER, l. c. p. 262.

Enteromorpha Linza J. AGARDH, Till alg. syst. part 3 (1883) p. 134, pl. 4, figs. 110-112; COLLINS, l. c. p. 206; OKAMURA, Icon. Japan. alg. vol. 3 (1915) p. 163, pl. 138.

Japanese name. *Usuba-awonori*.

Hab. On rocks in the littoral belt.

6. **Ulva latissima** LINNE.

l. c.; COLLINS, l. c. p. 215; SETCHELL and GARDNER, l. c. p. 266.

Japanese name. *Ōba-awosa*.

Hab. Notoro and Aimisaki, floating or attached to other algae.

7. **Ulva pertusa** KJELLMAN.

Mar. Chlorophyc. Japan (1897) p. 4, pl. 1, figs. 1-5, pl. 3, figs. 1-8; OKAMURA, l. c. vol. 4 (1921) p. 79, pl. 169, fig. 8, pl. 170.

Japanese name. *Ana-awosa*.

Hab. Floating or growing on rocks in the littoral belt.

CLADOPHORACEAE

8. **Chaetomorpha melagonium** (WEBER et MOHR) KUETZING.

Phyc. germ. (1845) p. 204; COLLINS, l. c. p. 323; SETCHELL and GARD-

NER, l. c. p. 201.

Hab. Notoro, growing on shells or stones in the littoral belt.

9. **Chaetomorpha aerea** (DILLWYN) KUETZING.

Spec. alg. (1849) p. 379; COLLINS, l. c. p. 324, fig. 115; SETCHELL and GARDNER, l. c. p. 200, pl. 14, figs. 9-11.

Hab. Growing on stones and shells or floating in quiet water, forming an entangled mass.

10. **Chaetomorpha moniligera** KJELLMAN.

Mar. Chlorophy. Japan (1897) p. 24, pl. 4, figs. 17-23; OKAMURA, Icon. Japan. alg. vol. 6 (1929), p. 15, pl. 260, figs. 1-8.

Japanese name. *Tama-juzumo*.

Hab. Growing on rocks in the littoral belt.

11. **Rhizoclonium tortuosum** (DILLWYN) KUETZING.

Phyc. germ. (1845) p. 025; COLLINS, l. c. p. 328; SETCHELL and GARDNER, l. c. p. 185.

Hab. Floating or entangled to other algae in the upper littoral belt.

12. **Spongomorpha duriuscula** (RUPRECHT) COLLINS.

l. c. p. 357; SETCHELL and GARDNER, l. c. p. 225; TOKIDA, Mar. alg. Robben Isl. (1932) p. 4.

Acrosiphonia duriuscula YENDO, Notes. on alg. new to Japan, V (1916) p. 246.

Japanese name. *Motsuregusa*.

Hab. On rocks in the littoral belt.

13. **Spongomorpha saxatilis** (RUPRECHT) COLLINS?

l. c. p. 360; YENDO, Notes on alg. new to Japan, V, p. 245; SETCHELL and GARDNER, l. c. p. 226.

Japanese name. *Togenashi-motsuregusa*.

Hab. On rocks in the littoral zone.

PHAEOPHYCEAE

ECTOCARPACEAE

14. **Pylaiella littoralis** KJELLMAN.

Scand. Ect. och Tilopt. (1872) p. 99; Id., Alg. Arctic sea (1883) p. 281; SETCHELL and GARDNER, Mar. alg. Pacif. coast N. Amer., Melanophyc. (1925) p. 402; YAMADA, Mar. alg. Urup. etc. (1935) p. 11.

Japanese name. *Piraera*.

Hab. Growing on *Fucus evanescens* AG. in the littoral belt.

15. **Coilodesme Cystoseirae** (RUPRECHT) SETCHELL et GARDNER.
Alg. N. W. Amer. (1903) p. 241; Id., Mar. alg. Pacif. coast N. Amer.,
Melanophyce. (1925) p. 583; YENDO, Notes on alg. new to Japan, I
(1909) p. 122; OKAMURA, Icon. Japan. alg. vol. 4 (1918) pl. 164, figs.
10-13.

Japanese name. *Yezo-bukuro*.

Hab. Growing on *Cystophyllum*.

16. **Colpomenia sinuosa** DERBES et SOLIER.
"Mem. Phyc. Alg. (1856) p. 11, pl. 22, figs. 18-20"; OKAMURA, l. c.
vol. 1 (1907) p. 86, pl. 19, figs. 11-12, pl. 20, figs. 10-12; SETCHELL
and GARDNER, l. c. p. 539, pl. 45, figs. 82-86.

Japanese name. *Hukuronori*.

Hab. Growing on other algae in the littoral and sublittoral belts.

17. **Scytosiphon Lomentaria** J. AGARDH.
Spec. alg. vol. 1 (1848) p. 126; OKAMURA, l. c. vol. 1 (1908) p. 144,
pl. 30; SETCHELL and GARDNER, l. c. p. 531, pl. 44, figs. 72, 74.

Japanese name. *Kayamonori*.

Hab. Growing on rocks and shells in the littoral belt and in tide
pools.

f. **tortilis** YAMADA.

Mar. alg. Urup, etc. p. 12, pl. 1.

Japanese name. *Yore-kayamo*.

Hab. On rocks in the littoral belt, and in tide pools.

CHORDARIACEAE

18. **Chordaria flagelliformis** AGARDH.
Syn. alg. Scand. (1817) p. 12; Id., Sp. alg. vol. 1 (1848) p. 66;
SETCHELL and GARDNER, l. c. p. 572; OKAMURA, l. c. vol. 2 (1912) p. 140,
pl. 90; YAMADA, l. c. p. 13.

Japanese name. *Naga-matsumo*.

Hab. On rocks in the upper littoral belt.

f. **chordaeformis** KJELLMAN.

Om Spetz. Thall. II (1877) p. 28, 29, pl. 1, figs. 13-15; SETCHELL
and GARDNER, l. c. p. 573; YAMADA, Notes on some Japan. alg. IV
(1932) p. 269, pl. 4; Id., Mar. alg. Urup, etc. (1935) p. 13.

Japanese name. *Himo-nagamatsumo*.

Hab. Growing on rocks in the littoral belt.

19. **Chordaria gracilis** SETCHELL et GARDNER.
Phyc. cont. VII (1924) p. 8; Mar. alg. Pacif. coast N. Amer., Melanophyc. (1925) p. 573, pl. 84; YAMADA, Mar. alg. Urup, etc. (1935) p. 13, pl. 3.
Japanese name. *Hoso-matsumo*.
Hab. On rocks in the upper littoral belt.
20. **Chordaria** sp.
Hab. Chiboi and Shakotan, growing on rocks in the lower littoral belt and in the upper sublittoral belt.
21. **Gobia simplex** (SAUNDERS) SETCHELL et GARDNER.
Phyc. cont. VII. (1924) p. 12; Id., Mar. alg. Pacif. coast N. Amer., Melanophyc. (1925) p. 576, pl. 42, fig. 58, pl. 78, b; OKAMURA, l. c. vol. 6 (1929) p. 2, pl. 251, figs. 8-9.
Mesogloia simplex SAUNDERS, Alg. Harriman Exp. (1901) p. 423, pl. 50, figs. 3-4.
Japanese name. *Gobia*.
Hab. On *Chordaria flagelliformis* f. *chordaeformis* KJELLM.

HETEROCHORDARIACEAE

22. **Heterochordaria abietina** (RUPRECHT) SETCHELL et GARDNER.
Phyc. cont. VII (1924) p. 6; Id., Mar. alg. Pacif. coast N. Amer., Melanophyc. (1925) p. 550, pl. 36, figs. 18-19, pl. 91.
Chordaria abietina RUPRECHT, OKAMURA, l. c. vol. 2 (1910), p. 122, pl. 85, figs. 8-15.
Japanese name. *Matsumo*.
Hab. On rocks in the littoral belt.

AEGIRACEAE

23. **Aegira virescens** (CARMISCHAEI) SETCHELL et GARDNER.
Phyc. cont. VII (1924) p. 11; Id., Mar. alg. Pacif. coast N. Amer., Melanophyc. (1925) p. 547.
Hab. Notoro, on leaves of *Zostera* in the littoral belt.

RALFSIACEAE

24. **Ralfsia fungiformis** SETCHELL et GARDNER.
Phyc. cont. VII (1924) p. 11; Id., Mar. alg. Pacif. coast N. Amer., Melanophyc. (1925) p. 499.
Hab. Chiboi, creeping on rocks in the upper littoral belt.

DESMARESTIACEAE

25. **Desmarestia viridis** LAMOUROUX.
Essai (1812) p. 43; HARVEY, Phyc. Brit. pl. 312; OKAMURA, l. c. vol. 2 (1910) p. 84, pl. 73, figs. 1-3, pl. 74, figs. 5-6.
Japanese name. *Ke-urushigusa*.
Hab. Washed ashore.
26. **Desmarestia ligulata** LAMOUROUX.
l. c. p. 25; HARVEY, l. c. pl. 115; OKAMURA, l. c. vol. 2 (1910), p. 82, pl. 72, figs. 1-3, pl. 75, figs. 1-4; SETCHELL and GARDNER, l. c. p. 566, pl. 87.
Japanese name. *Urushigusa*.
Hab. Washed ashore.

DICTYOSIPHONACEAE

27. **Dictyosiphon foeniculaceus** GREVILLE.
Alg. Brit. (1830) p. 56, pl. 8, figs. 1-4; HARVEY, l. c. pl. 326; SETCHELL and GARDNER, l. c. p. 589; YAMADA, l. c. p. 14.
Japanese name. *Uikyōmo*.
Hab. Growing on *Scytosiphon Lomentaria* J. Ag. and *Chordaria flagelliformis* J. Ag.

LAMINARIACEAE

28. **Alaria fistulosa** POSTELS et RUPRECHT.
Illust. alg. (1840) p. 11, pl. 16; MIYABE, On Laminaria of Hokkaido (1902) p. 76, pl. 1; SETCHELL and GARDNER, l. c. p. 644; MIYABE and NAGAI, Laminariac. Kurile Isl. (1933) p. 96; YAMADA, l. c. p. 15.
Japanese name. *Oni-wakame*.
Hab. Washed ashore.
29. **Alaria macroptera** (RUPRECHT) YENDO.
Monogr. Alaria (1919) p. 79, pl. 2; MIYABE and NAGAI, l. c. p. 99; YAMADA, l. c. p. 20.
Japanese name. *Chishima-wakame*.
Hab. On rocks in the sublittoral belt.
30. **Alaria angusta** KJELLMAN.
Beringhavets Algfl. (1889) p. 38, pl. 3, figs. 1-4; YENDO, l. c. p. 123, pl. 15; MIYABE and NAGAI, l. c. p. 97; YAMADA, l. c. p. 16.
Japanese name. *Hosoba-wakame*.

Hab. Very abundant on rocks in the sublittoral belt.

31. **Laminaria angustata** KJELLMAN f. **longissima** MIYABE.
Laminaria longissima MIYABE, Laminariac. of Hokkaido (1902) p. 37,
pl. 4; MIYABE and NAGAI, l. c. p. 87.
Japanese name. *Naga-konbu*.
Hab. On rocks in the sublittoral belt.
32. **Laminaria coriacea** MIYABE.
l. c. p. 40, pl. 11; MIYABE and NAGAI, l. c. p. 87.
Japanese name. *Gaggara-konbu*.
Hab. On rocks in the sublittoral belt.
33. **Laminaria yezoensis** MIYABE.
l. c. p. 41, pl. 12-13; MIYABE and NAGAI, l. c. p. 90; YAMADA, l. c. p. 18.
Japanese name. *Gohei-konbu*.
Hab. On rocks in the upper sublittoral belt.
34. **Cymathaere crassifolia** (POSTELS et RUPRECHT) DE TONI.
Syll. Alg. vol. 3 (1895) p. 360; MIYABE and NAGAI, *Cym. crassifolia*
DE TONI from the Southern Kuriles (1932) p. 123; Id., Laminariac.
of Kurile Isl. (1933) p. 92.
Laminaria crassifolia POSTELS et RUPRECHT, Ill. alg. (1840) p. 10,
pl. 38, fig. d.
Japanese name. *Atsuba-misujikonbu*.
Hab. Notoro and Shikotan, very common in the sublittoral belt,
often 5-10 m. deep.
35. **Kjellmanniella gyrata** MIYABE f. **latioris** MIYABE et NAGAI.
Laminariac. of Kurile Isl. (1933) p. 93.
Japanese name. *Tororo-konbu*.
Hab. Growing in the lower littoral and in the upper sublittoral
belts.
36. **Costaria costata** SAUNDERS.
in Bot. Gaz., vol. 22 (1895) p. 57; SETCHELL and GARDNER, l. c. p. 610,
pl. 56, b, pl. 79, a.; MIYABE and NAGAI, l. c. p. 93.
Costaria Turneri GREVILLE, Alg. Brit. (1830) p. 39; MIYABE, Lami-
nariac. of Hokkaido (1902) p. 50, pl. 226; OKAMURA, l. c. vol. 5 (1925)
p. 99, pl. 226.
Japanese name. *Sujime*.
Hab. On rocks in the upper sublittoral belt.

37. **Agarum cribrosum** BORY.

in "Dict. Class. IX (1826) p. 193"; SETCHELL and GARDNER, l. c. p. 615, pl. 63; MIYABE and NAGAI, l. c. p. 94.

Agarum Turneri POSTELS et RUPRECHT, l. c. p. 12, pl. 22; MIYABE, l. c. p. 59, pl. 27; OKAMURA, l. c. vol. 5 (1925) p. 90, pl. 225.

Japanese name. *Aname*.

Hab. Washed ashore.

38. **Arthrothamnus bifidus** J. AGARDH.

De Lamin. (1867) p. 28; MIYABE, l. c. p. 47, pl. 18; OKAMURA, l. c. vol. 5, p. 100, pl. 227; YENDO, *Hedophyllum spirale* n. sp. and its relation to *Thalassiophyllum* and *Arthrothamnus* (1903) p. 16, pl. 6, figs. 9-11; SETCHELL and GARDNER, l. c. p. 620; MIYABE and NAGAI, l. c. p. 95.

Japanese name. *Nekoashi-konbu*.

Hab. In the sublittoral belt.

FUCACEAE

39. **Cystophyllum geminatum** J. AGARDH.

Spec. alg. vol. 1 (1848) p. 232; YENDO, *Fucac. Jap.* (1907) p. 28; SETCHELL and GARDNER, l. c. p. 706; YAMADA, l. c. p. 20.

Japanese name. *Yezomoku*.

Hab. On rocks in the sublittoral belt.

40. **Cystophyllum crassipes** J. AGARDH.

Spec. alg. vol. 1 (1848) p. 232; YENDO, l. c. p. 29, pl. 2, figs. 9-12.

Japanese name. *Nebutomoku*.

Hab. On rocks in the sublittoral belt.

41. **Sargassum Miyabei** YENDO.

l. c. p. 112, pl. 14, figs. 13-14.

Japanese name. *Miyabemoku*.

Hab. Washed ashore.

42. **Fucus evanescens** AGARDH.

Icon. alg. ined. (1821) pl. 132; Id., Spec. alg. vol. 1 (1820) p. 92-93; YENDO, l. c. p. 14, pl. 1, figs. 1-2; GARDNER, *Genus Fucus* (1922) p. 36, pl. 35-59; SETCHELL and GARDNER, l. c. p. 681, pl. 106-107; NAGAI, *Die japan. Form. von F. evanescens* (1935) p. 324.

Japanese name. *Hibamata*.

Hab. Very abundant in the upper littoral belt.

43. **Pelvetia Wrightii** YENDO.

l. c. p. 20, pl. 1, figs. 4-5; OKAMURA, l. c. vol. 5, p. 783, pl. 248.

Japanese name. *Yezo-ishige*.

Hab. In the littoral belt.

RHODOPHYCEAE

BANGIACEAE

44. **Porphyra perforata** J. AGARDH ?

Till alg. Syst. VI (1882) p. 69; HUS, *Porphyra* (1902) p. 212, pl. 20, figs. 4a-10; UEDA, Syst. stud. Japan. *Porphyra* (1932) p. 31, pl. 7, figs. 6-16; TOKIDA, Mar. alg. Robben Isl., Corrigenda; YAMADA, Mar. alg. Urup. etc. (1935) p. 21.

Japanese name. *Ana-amamori*.

Hab. Shakotan, on rocks in the lower littoral belt.

45. **Porphyra pseudolinearis** UEDA.

l. c. p. 29, pl. 6, figs. 17-18, pl. 7, figs. 1-5, pl. 19, figs. 1-2; YAMADA, l. c. p. 20.

Japanese name. *Uppuruinori*.

Hab. On rocks in the littoral belt.

46. **Porphyra umbilicalis** J. AGARDH.

Till Alg. Syst. VI (1893) p. 66, pl. 2, fig. 61; ROSENVINGE, Mar. alg. Denmark, vol. 1 (1909) p. 60, pl. 1; UEDA, l. c. p. 31, pl. 7, figs. 6-16, pl. 8, fig. 1, pl. 20, figs. 1-3, pl. 21, figs. 1-2; YAMADA, l. c. p. 21, pl. 7.

Japanese name. *Chishima-kuronori*.

Hab. On rocks in the littoral belt.

47. **Porphyra variegata** (KJELLMAN) HUS.

Porphyra (1902) p. 225, pl. 21, fig. 18; UEDA, l. c. p. 38, pl. 9, fig. 7, pl. 10, figs. 1-3, pl. 23, fig. 2, pl. 24, fig. 1.

Diploderma variegata KJELLMAN, Om Beringhafv. Algfl. (1889) p. 33, pl. 2, figs. 1-4.

Japanese name. *Fuiri-tasa*.

Hab. Floating or attached to other algae.

48. **Porphyra occidentalis** SETCHELL et HUS.

Prel. Not. on West Coast *Porphyra* (1900) p. 69; Id., *Porphyra* (1902) p. 228, pl. 21, figs. 15a-17b.

Japanese name. *Kiuro-tasa*.

Hab. Floating or on rocks in the littoral zone.

49. **Porphyra amplissima** (KJELLMAN) SETCHELL et HUS.

Prel. Not. on West coast *Porphyra* (1900) p. 67; Id., *Porphyra* (1902)

p. 215; UEDA, l. c. p. 40, pl. 10, figs. 6-7, pl. 11, figs. 1-5, pl. 24, fig. 3.
Diploderma amplissima KJELLMAN, Alg. Arctic Sea (1883) p. 183,
pl. 17, figs. 1-3, pl. 18, figs. 1-8.

Japanese name. *Beni-tasa*.

Hab. On rocks in the lower littoral belt.

f. **crassa** KAWABATA f. nov.

Fronde 145-152 μ thick.

Japanese name. *Atsuba-benitasa*.

Hab. Floating.

ENDOCLADIACEAE

50. **Gloiopeltis furcata** J. AGARDH.

Spec. alg. vol. 2 (1862) p. 235; OKAMURA, l. c. vol. 5 (1927), p. 164,
pl. 244.

Japanese name. *Fukuro-funori*.

Hab. Growing on rocks in the littoral belt, especially in the upper
littoral belt.

DUMONTIACEAE

51. **Dumontia filiformis** GREVILLE.

Alg. Brit. (1830) p. 165, pl. 17; HARVEY, Phyc. Brit. pl. 59; OKAMURA,
l. c. vol. 1 (1907), p. 65, pl. 16, figs. 1-8.

Japanese name. *Ryūmonsō*.

Hab. On rocks in the littoral belt.

52. **Dilsea edulis** STACKHOUSE.

"Mem. Soc. Mosc. II, p. 55, 71"; YENDO, Not. on alg. new to Japan,
I (1909) p. 133; OKAMURA, l. c. vol. 4 (1921), p. 115, pl. 180.

Iridaea edulis HARVEY, l. c. pl. 97.

Japanese name. *Akaba*.

Hab. On rocks in the lower littoral belt.

53. **Constantinea subulifera** SETCHELL.

Revision of *Constantinea* (1906) p. 172; NAGAI, On *C. rosa-marina* P.
et R. and *C. subulifera* SETCH. (Jour. of Japan. Bot., vol. 11) p. 780.

Japanese name. *Oba-okitsubara*.

Hab. On rocks and shells in the lower littoral and the upper sub-
littoral belts.

GIGARTINACEAE

54. **Chondrus pinnulatus** (HARVEY) OKAMURA.
l. c. vol. 6 (1930) p. 19, pl. 262, figs. 1-4, pl. 263, figs. 1-6.
Gymnogongrus pinnulatus HARVEY, in GRAY's list of plants coll. in Japan (1857) p. 332.
Japanese name. *Hira-kotoji*.
Hab. On rocks in the lower littoral belt.
55. **Iridaea laminarioides** BORY.
Voy. Coq. (1828) p. 105, pl. 11, fig. 1, a-c.; YENDO, Not. on alg. new to Japan, VI (1916) p. 77; YAMADA, l. c. p. 23.
Japanese name. *Atsuba-ginnansō*.
Hab. On rocks in the littoral belt.
56. **Iridaea pulchra** KUETZING.
Spec. alg. (1849) p. 725; Id., Tab. Phyc. vol. 17 (1867) pl. 5, figs. c-d; YENDO, l. c. VI. p. 81.
Japanese name. *Usuba-ginnansō*.
Hab. On rocks in the littoral belt.
57. **Gigartina unalaskensis** RUPRECHT.
YENDO, l. c. IV, p. 54.
Gigartina pacifica KJELLMAN, Beringhafv. Algfl. (1889) p. 31, pl. 1, figs. 21-22; OKAMURA, l. c. vol. 1 (1908) p. 165, pl. 34, figs. 1-8.
Japanese name. *Ibonori*.
Hab. On rocks in the upper littoral belt.

RHODYMENIACEAE

58. **Rhodymenia pertusa** J. AGARDH.
Spec. alg. vol. 2 (1852) p. 376; OKAMURA, l. c. vol. 1 (1907) p. 93, pl. 21, figs. 1-7.
Japanese name. *Ana-darusu*.
Hab. On rocks and shells in the lower littoral belt.
59. **Rhodymenia palmata** GREVILLE.
Alg. Brit. (1830) p. 93; Harvey, l. c. pl. 217; OKAMURA, Alg. from Alaska, etc. (1933) p. 90; YAMADA, l. c. p. 23.
Japanese name. *Darusu*.
Hab. On rocks in the lower littoral belt.
60. **Halosaccion saccatum** KUETZING.
Tab. Phyc. vol. 16 (1866) pl. 78, figs. a-b; YENDO, l. c. I (1909) p. 129;

TOKIDA, Mar. alg. Robben Isl. (1932) p. 17; YAMADA, l. c. p. 24.

Japanese name. *Beni-fukuronori*.

Hab. On rocks or on other algae in the littoral belt.

RHODOPHYLLIDACEAE

61. **Turnerella Mertensiana** SCHMITZ.

Syst. Uebersicht Florid. (1889) p. 7; OKAMURA, l. c. vol. 3 (1914) p. 83, pl. 123, figs. 1-8; TOKIDA, l. c. p. 18; YAMADA, l. c. p. 22.

Japanese name. *Yezonameshi*.

Hab. Washed ashore.

62. **Tichocarpus crinitus** RUPRECHT.

Tange des Ocht. Meeres (1851) p. 320, pl. 17; OKAMURA, l. c. vol. 3 (1914) p. 79, pl. 121-123.

Japanese name. *Karekigusa*.

Hab. On rocks in the lower littoral and in the upper sublittoral belts.

63. **Euthora fruticulosa** J. AGARDH.

Spec. alg. vol. 2 (1862) p. 705; SETCHELL and GARDNER, Alg. N. W. Amer. (1903) p. 311; TOKIDA, l. c. p. 15, pl. 2, figs. c-d, pl. 6, figs. b-c.

Hab. On *Agarum cribrosum* BORY.

SPHAEROCOCCACEAE

64. **Gracilaria confervoides** GREVILLE.

l. c. p. 123; HARVEY, l. c. pl. 65; OKAMURA, l. c. vol. 4 (1916) p. 1, pl. 151.

Japanese name. *Ogonori*.

Hab. Notoro, on rocks in the littoral belt.

CERAMIACEAE

65. **Ceramium rubrum** AGARDH.

"Disp. alg. (1810) p. 16"; J. AGARDH, Spec. alg. vol. 2 (1851) p. 127; HARVEY, l. c. pl. 181.

Japanese name. *Igisu*.

Hab. Growing on other algae or on rocks in the upper littoral belt.

66. **Ceramium hypnaeoides** (J. AGARDH) OKAMURA.

On *Campylaephora hypnaeoides* J. AG. (1927) p. 365.

Campylaephora hypnaeoides J. AGARDH, Spec. Alg. vol. 2 (1851) p. 150;

OKAMURA, Icon. Japan. alg. vol. 2 (1910) p. 99, pl. 79, figs. 1-13.

Japanese name. *Yegonori*.

Hab. Floating.

67. **Pleonosporium Kobayashii** OKAMURA.

Alg. from Alaska etc. (1933) p. 91, pl. 5; Id., Icon. Japan. alg. vol. 7 (1933) p. 4, pl. 302, figs. 7-13.

Japanese name. *Chishima-kusudama*.

Hab. Growing on rocks in a pool in the littoral belt.

68. **Ptilota pectinata** KJELLMAN.

Alg. Arctic Sea (1883) p. 174, pl. 15, fig. 6; OKAMURA, Icon. of Japan. alg. vol. 1 (1909) p. 235, pl. 47, figs. 1-15; TOKIDA, l. c. p. 21; YAMADA, l. c. 24.

Japanese name. *Kushi-benihiba*.

Hab. On rocks in the lower littoral belt.

69. **Ptilota asplenioides** AGARDH.

Spec. alg. vol. 1 (1882) p. 387; J. AGARDH, Spec. alg. vol. 2 (1863) p. 98; OKAMURA, l. c. vol. 1 (1909) p. 239, pl. 48; YAMADA, l. c. p. 24.

Japanese name. *Katawa-benihiba*.

Hab. On rocks in the lower littoral belt.

DELESSERIACEAE

70. **Laingia pacifica** YAMADA.

Notes on some Japan. alg., III (1932) p. 122.

Pseudophycodrys pacifica YAMADA l. c. I (1930) p. 32, pl. 2.

Delesseria crassifolia OKAMURA (non RUPRECHT), l. c. vol. 4 (1921) p. 72, pl. 168.

Japanese name. *Konohanori*.

Hab. Washed ashore.

RHODOMELACEAE

71. **Polysiphonia senticulosa** HARVEY.

In J. AGARDH's Spec. alg. vol. 2 (1863) p. 974; YENDO, l. c. II (1914) p. 276.

Hab. Washed ashore.

72. **Polysiphonia japonica** HARVEY.

Narrat. Exp. Amer. Squad. to China and Jap. vol. 2, p. 331; YAMADA, Mar. alg. Mutsu Bay etc. (1928) p. 522.

Japanese name.

Hab. On rocks in the upper littoral belt.

73. **Pterosiphonia bipinnata** FALKENBERG.

Rhodomelac. (1901) p. 273; SETCHELL and GARDNER, Alg. N. W. Amer. (1903) p. 328; OKAMURA, l. c. vol. 4 (1921) p. 134, pl. 175, figs. 1-7; YAMADA, Mar. alg. Urup etc. (1935) p. 24.

Japanese name. *Itoyanagi*.

Hab. On rocks in the littoral belt.

74. **Odonthalia Lyallii** J. AGARDH.

Spec. alg. vol. 2 (1863) p. 894; SETCHELL and GARDNER, l. c. p. 335, pl. 27, figs. 51-53; OKAMURA, l. c. vol. 7 (1933) p. 12, pl. 308, figs. 1-5.

Japanese name. *Raiaru-nokogirihiba*.

Hab. On rocks in the upper or middle littoral belt.

75. **Odonthalia corymbifera** J. AGARDH.

l. c. p. 894; OKAMURA, l. c. vol. 2 (1912) p. 143, pl. 91; YAMADA, l. c. p. 25.

Japanese name. *Hakesaki-nokogirihiba*.

Hab. On rocks in the lower littoral belt.

76. **Odonthalia aleutica** J. AGARDH.

l. c. p. 895; OKAMURA, l. c. vol. 6 (1932) p. 75, pl. 286; Id., Alg. from Alaska (1933) p. 94; TOKIDA, l. c. p. 23, pl. 3, pl. 4a; YAMADA, l. c. p. 25.

Japanese name. *Aryūshan-nokogirihiba*.

Hab. On rocks in the littoral belt.

77. **Rhodomela Larix** AGARDH.

Spec. alg. (1823) p. 376; J. AGARDH, l. c. p. 886; OKAMURA, Icon. Japan. alg. vol. 4 (1922) p. 154, pl. 188, figs. 1-4.

Japanese name. *Fujimatsumo*.

Hab. On rocks in the littoral belt.

78. **Rhodomela subfusca** AGARDH.

l. c. p. 378; J. AGARDH, l. c. p. 883; OKAMURA, l. c. vol. 4 (1922) p. 151, pl. 186, figs. 1-4, pl. 187, figs. 1-3.

Japanese name. *Ito-fujimatsu*.

Hab. In tide pools.
