



Title	A List of Marine Algae from the Vicinity of the Institute of Algological Research of Hokkaido University, Muroran, Japan
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Citation	北海道大學理學部海藻研究所歐文報告, 8(1), 1-30
Issue Date	1986-11
Doc URL	http://hdl.handle.net/2115/48104
Type	bulletin (article)
File Information	8(1)_1-30.pdf



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**A List of Marine Algae from the Vicinity of the
Institute of Algological Research of Hokkaido
University, Muroran, Japan**

**By
YOSHIO SAKAI**

The Institute of Algological Research, Faculty of Science, Hokkaido University is located in the middle part of Muroran-Hanto (42° 19' N, 140° 59' E) facing the mouth of Uchiura-wan (Volcano Bay), and about 125 km southwest of Sapporo where the main campus of the University is located. It is a unique institute founded in 1933 for studies of taxonomy, embryology, physiology and ecology of marine algae.

Uchiura-wan is influenced by both the Oyashio Current (cold current from the Pacific Ocean) and the Tsugaru Current (a branch of the warm Tsushima Current from the Sea of Japan). Seawater temperature is 2–5°C in winter and 15–20°C in summer. Along the outer coast of Muroran-hanto, there are exposed rocky and gravelly shores, and marine life is abundant and varied. This area is the northern limit of distribution of *Undaria pinnatifida* and *Gelidium* spp. and the southern limit of *Fucus distichus* ssp. *evanescens* on the Pacific coast of Japan, and it is characterized by an associated growing of *Laminaria japonica* and *L. angustata*. Furthermore, *L. yendoana* and *Kjellmaniella crassifolia* are known as peculiar species of this area.

Here the writer edits a list of benthic marine algae hitherto reported in the literatures to have been collected in the vicinity of Muroran with the addition of those collected by many researchers who were/are on post, in undergraduate and graduate school, and others at the Institute.

Former Director Y. NAKAMURA of the Institute made at first a list of marine algae from Muroran for the Phycological Field Trip to Muroran of the 7th International Seaweed Symposium held in Sapporo, 1971. Although the present list is based on him, the teaching staff of the Chair of Systematic Botany, Department of Biology, Faculty of Science, Hokkaido University, who have been coming the Institute once a year to guide the field exercise in marine botany for students, made a contribution to making this list. Some nomenclatural problems were solved by Dr. M. TATEWAKI of the Institute, and by Prof. T. YOSHIDA of Dept. Biology, Fac. Sci., Hokkaido Univ. Moreover, ecological knowledges are partially due to the results obtained by M. Sc. T. FUNANO of Hokkaido Institute of Mariculture at Shikabe, Hokkaido, who had studied ecologically on the marine algae of Muroran-hanto as master's thesis. Taking this opportunity the writer wishes to express his

respect to the authors of the cited works and the collectors.

Under each taxon listed here, the originally descriptive report and the first report described or enumerated the alga from Japan or its vicinity are cited. In cases in which first reported name from Japan was made to turn into synonym of valid name, these two names and literatures are cited. But, only one literature is cited when the taxon was newly reported from Japan as a listed name.

CYANOPHYCEAE

Chroococcales

Chamaesiphonaceae

1. *Entophysalis conferta* (KÜTZING) DROUET et DAILY
1948, p. 79. *Xenococcus pyriformis* SETCHELL et GARDNER; UMEZAKI, 1950, p. 224, fig. 1.
Hab. On *Cladophora*. Aug.
2. *E. deusta* (MENEHINI) DROUET et DAILY
1948, p. 79. *Aphanocapsa litoralis* HANSGIRG in GEITLER; UMEZAKI, 1952b, p. 219, fig. 18-A
Hab. On *Corallina pilulifera*. Aug.

Oscillatoriales

Oscillatoriaceae

3. *Hydrocoleum lyngbyaceum* KÜTZING Ô-nawamo
1849, p. 259; UMEZAKI, 1951b, p. 269, fig. 16.
Hab. On rocks, upper littoral belt. July.
4. *Lyngbya aestuarii* (MERTENS) GOMONT
1892, p. 127, pl. 3, figs. 1-2; UMEZAKI 1953c, p. 237, fig. 31-C.
Hab. On rocks. July.
5. *L. epiphytica* HIERONYMUS in KIRCHNER Itomakimo
1898, p. 67; UMEZAKI, 1950, p. 226, fig. 5.
Hab. On algae. July.
6. *L. infixa* FRÉMY
1932, p. 1414; UMEZAKI, 1953d, p. 364, fig. 35-A.
Hab. On algae. July.
7. *L. lutea* (C. AGARDH) GOMONT
1890, p. 354; YONEDA, 1938, fig. 120.
Hab. On rocks. July.
8. *L. nordgaardii* WILLE in FRÉMY
1934, p. 111, pl. 29, fig. 5; UMEZAKI, 1951a, p. 203, fig. 8.

Hab. On *Cladophora*. July-Aug.

9. *Oscillatoria chalybea* GOMONT
1892, p. 232, pl. 7, fig. 19; YONEDA, 1940, p. 43, fig. 159.
Hab. Among the plants of filamentous algae. Aug.
10. *O. corallinae* (KÜTZING) GOMONT
1890, p. 356; UMEZAKI, 1951b, p. 268, fig. 13-C.
Hab. On algae. July.
11. *Phormidium corium* (C. AGARDH) GOMONT
1892, p. 172, pl. 5, figs. 1-2; UMEZAKI, 1951b, p. 268, fig. 15.
Hab. On rocks, upper littoral belt. Aug.
12. *Plectonema calothrichoides* GOMONT
1899, p. 30, pl. 1, figs. 6-10; UMEZAKI, 1956b, p. 88, fig. 4-B.
Hab. On rocks, upper littoral belt. July-Aug.
13. *P. norvegicum* GOMONT
1899, p. 34; UMEZAKI, 1956a, p. 421, fig. 6-A.
Hab. Upper littoral belt. July.
14. *Sirocoleum kurzii* (ZELLER) GOMONT Edauchi-nawamo
1892, p. 349, pl. 14, figs. 3-4. *Microcoleus boergesenii* (GARDNER) FRÉMY ;
UMEZAKI, 1952a, p. 119, fig. 17-G.
Hab. On *Corallina pilulifera*. Aug.

Rivulariaceae

15. *Calothrix parasitica* (CHAUVIN) THURET
1875, p. 381; YONEDA, 1940, p. 40, fig. 155.
Hab. Endophytic in *Nemalion*. July-Oct.

Stigonemataceae

16. *Brachytrichia quoyi* (C. AGARDH) BORNET et FLAHAULT Aimidori
1886, p. 373; OKAMURA, 1915, Icones 3, p. 137, pl. 133, figs. 14-17.
Hab. On rocks. July.
17. *Kyrtuthrix maculans* (GOMONT) UMEZAKI Iwasome-aimo
1958, p. 64. *Brachytrichia maculans* GOMONT; OKAMURA, 1916, Mei-i 2nd, p. 266.
Hab. On rocks or pebbles, upper or supralittoral belt. July.
18. *Mastigocoleus testarum* LAGERHEIM Kaitsuki-aimo
1886, p. 65, tab. 1; UMEZAKI, 1953b, p. 203, fig. 30-A.
Hab. On shells. July.

RHODOPHYCEAE

Porphyridiales

Goniotrichaceae

19. *Goniotrichum alsidii* (ZANARDINI) HOWE Benimidoro
 1914, p. 75; INAGAKI, 1933, p. 12, pl. 5.
 Hab. On *Cladophora*, lower littoral belt. May-June.

Erythropeltidales

Erythropeltidaceae

20. *Erythrotrichia carnea* (DILLWYN) J. AGARDH Hoshinoito
 1883, Till alg. VI, p. 15, t. 1, figs. 8-10; YAMADA, 1935, p. 28.
 Hab. On algae, lower littoral belt. Apr.-Nov.

Bangiales

Bangiaceae

21. *Bangia atropurpurea* (ROTH) C. AGARDH Ushikenori
 1824, p. 76. *B. fuscopurpurea* (ROTH) C. AGARDH; OKAMURA, 1902, Mei-i, p. 5.
 Hab. On rocks or algae, supra- to middle littoral belt. Oct.-June.
22. *Porphyra kuniedae* KUROGI Maruba-asakusanori
 1957, p. 23.
 Hab.
23. *P. moriensis* OHMI Kayabenori
 1954, p. 231, pls. I-IV.
 Hab.
24. *P. onoi* UEDA Ônonori
 1932, p. 34, pl. 1, figs. 4, 12, pl. 8, figs. 2-10, pl. 21, figs. 3-4.
 Hab. On algae, middle to lower littoral belt. Feb.-June.
25. *P. pseudolinearis* UEDA Uppuruinori
 1932, p. 29, pl. 6, figs. 1-5, pl. 19.
 Hab. On rocks or algae, upper to middle littoral belt. Nov.-Apr.
26. *P. purpurea* (ROTH) C. AGARDH Chishimakuronori
 1817, p. 42. *P. umbilicalis* (L.) J. AGARDH; UEDA, 1932, p. 31, pl. 1, figs. 10, 11,
 15, pl. VII, figs. 6-16, pl. VIII, fig. 1, pl. XX, figs. 1-3, pl. XXXI, figs. 1-2.
 Hab. On rocks or algae, supra- to upperlittoral belt. Jan.-June.
27. *P. seriata* KJELLMAN Ichimatsunori
 1897a, p. 17, t. 3, figs. 8-10, t. 4, fig. 1, t. 5, figs. 16-21.
 Hab.

28. *P. suborbiculata* KJELLMAN Maruba-amanori
1897a, p. 10, t. 1, figs. 1-3, t. 2, figs. 5-9, t. 7, figs. 4-7.
Hab. On rocks or algae, upper to middle littoral belt. Oct.-May.
29. *P. tenera* KJELLMAN Asakusanori
1897a, p. 35, t. 1, fig. 6, t. 4, figs. 2-5, t. 5, figs. 22-26
Hab.
30. *P. variegata* (KJELLMAN) KJELLMAN in HUS Fuiri-tasa
1900, p. 69; Ueda, 1932, p. 38, pl. 1, fig. 9, pl. 9, fig. 7, pl. 10, figs. 1-3, pl. 14,
fig. 1.
Hab. On algae, middle to lower littoral belt. March-June.
31. *P. yezoensis* UEDA Susabinori
1932, p. 23, pl. 1, figs. 9, 14, pl. 4, figs. 11-17, pl. 16, figs. 3-4.
Hab. On rocks or algae, middle littoral belt. Nov.-June.

Nemalionales

Acrochaetiaceae

32. *Auduinella alariae* (JÓNSSON) WOELKERLING
1973, p. 541, figs. 1-9; LEE and KUROI, 1983, p. 57-76, figs. 1-9.
Hab. On algae, lower littoral belt. All seasons.
33. *A. hyalosiphoniae* (NAKAMURA) GARBARY
1979, p. 490. *Rhodochorton hyalosiphoniae* NAKAMURA, 1941, p. 287, figs. 14-16.
Hab. On algae, middle to lower littoral belt. July-Oct.
34. *A. purpurea* (LIGHTF.) WOELKERLING
1973, p. 536. *Rhodochorton rothii* auct. non NÄGELI; YENDO, 1916a, Notes IV, p.
65.
Hab. On rocks, supra- to upper littoral belt. All seasons.
35. *A. rhizoidea* (DREW) GARBARY
1979, p. 490. *Rhodochorton rhizoideum* DREW; NAKAMURA, 1944, p. 115, fig. 11.
Hab. Epiphytic on *Cystoseira hakodatense*.
36. *A. sessilis* (NAKAMURA) GARBARY
1979, p. 490. *Rhodochorton sessile* NAKAMURA, 1941, p. 278, fig. 4.
Hab. On algae, middle littoral belt. June-Oct.
37. *A. subimmersa* (SETCHELL et GARDNER) GARBARY et RUENESS
1980, p. 22. *Rhodochorton subimmersum* SETCHELL et GARDNER; NAKAMURA, 1941,
p. 290, fig. 17.
Hab. Endophytic in *Grateloupia turuturu*. Dec.-March.

Helminthocladiaceae

38. *Helminthocladia yendoana* NARITA Hosobenimozuku
1918, p. 191, pl. 4, figs. 2-3.

Hab. Collected only once (Summer of 1934).

39. *Nemalion vermiculare* SURINGAR Umizōmen
1872, p. 91, pl. 54.
Hab. On rocks, upper to middle littoral belt. July–Nov.

Bonnemaisoniaceae

40. *Bonnemaisonia hamifera* HARIOT Kaginori
1891, p. 223.
Hab. Cast ashore. May.

Gelidiales

Gelidiaceae

41. *Gelidium subfastigiatum* OKAMURA Nanbugusa
1934, p. 57, pl. 24, pl. 32, figs. 1–3.
Hab. On rocks, lower to infralittoral belt. All seasons.
42. *G. vagum* OKAMURA Yorekusa
1934, p. 58, pl. 25, pl. 32, figs. 8–10.
Hab. On rocks, middle to infralittoral belt. All seasons.
43. *Pterocladia capillacea* (GMELIN) BORNET in BORNET et THURET Obakusa
1876, p. 57. *P. tenuis* OKAMURA, 1934, p. 62, pl. 29, pl. 30, fig. 3, pl. 33, figs. 1–3.
Hab. Cast ashore. June–Aug.

Cryptonemiales

Dumontiaceae

44. *Dumontia simplex* COTTON Heraryūmon
1906, p. 372; OKAMURA, 1927, p. 17.
Hab. On rocks, middle to lower littoral belt. Nov.–July.
45. *Hyalosiphonia caespitosa* OKAMURA Isoumemodoki
1902, Mei-i, p. 113.
Hab.
46. *Neodilsea integra* (KJELLMAN) A. ZINOVA var. *longissima* MASUDA Naga-akaba
1973, p. 459, figs. 1–4, pls. 1–2.
Hab. On rocks, lower to infralittoral belt. June–Oct.
47. *N. tenuipes* YAMADA et MIKAMI in MIKAMI Maruba-akaba
1954, p. 83, figs. 1–2.
Hab. Cast ashore. Aug.
48. *N. yendoana* TOKIDA Akaba
1943, p. 93, figs. 1–9. *Dilsea edulis* auct. non STACKHOUSE; YENDO, 1909, Notes I,
p. 133.
Hab. On rocks, middle to infralittoral belt. All seasons.

Hildenbrandiaceae

49. *Hildenbrandtia rubra* (SOMMERFELT) MENEGHINI Benimadara
1841, p. 10. *H. prototypus* NARDO ; SEGAWA, 1956, p. 68, fig. 306.
Hab.

Corallinaceae

50. *Bossiella cretacea* (POSTELS et RUPRECHT) JOHANSEN Isokiri
1969, p. 59. *Amphiroa cretacea* ENDLICHER ; YENDO, 1902b, p. 7, pl. I-4, pl. IV-2.
Hab. Lower to littoral belt.
51. *Corallina pilulifera* POSTELS et RUPRECHT Pirihiba
1840, p. 20, pl. 40, fig. 101 ; YENDO, 1902b, p. 30, pl. 3, figs. 14-16, pl. 7, figs. 14-16.
Hab. Upper to middle littoral belt. All seasons.
52. *Fosliella zostericola* (FOSLIE) SEGAWA in YOSHIDA Mokasa
1976, p. 143. *Lithophyllum zostericum* FOSLIE ; YENDO, 1902a, p. 188.
Hab. On *Phyllospadix* or *Zostera*, middle to lower littoral belt. Oct.-March.
53. *Lithothamnion japonicum* FOSLIE Miyabeokoshi
1900, p. 6 ; OKAMURA, 1902, Mei-i, p. 120.
Hab.
54. *Melobesia pacifica* MASAKI Abata-mokasa
1968, p. 8, pls. 1, 39, 40.
Hab. On *Phyllospadix*.
55. *Neopolyporolithon reclinatum* (FOSLIE) ADEY et JOHANSEN Kasakino-koishimo
1972, p. 160. *Polyporolithon reclinatum* (FOSLIE) MASON ; TOKIDA and MASAKI,
1960, p. 497.
Hab. Hemiparasitic on *Bossiella cretacea*.

Halymeniaceae

56. *Carpopeltis affinis* (HARVEY) OKAMURA Matsunori
1902, Mei-i, p. 106. *Gigartina affinis* HARVEY, 1859, p. 331.
Hab. On rocks, middle to lower littoral belt. July-Jan.
57. *Grateloupia divaricata* OKAMURA Katanori
1895, p. 428, pl. 9, figs. 1-2.
Hab. On rocks, middle to lower littoral belt. June-Jan.
58. *G. filicina* (LAMOUROUX) C. AGARDH Mukadenori
1822, Sp. alg. I, p. 223 ; OKAMURA, 1916, Mei-i 2nd, p. 107.
Hab. On rocks or algae, middle to lower littoral belt. Aug.-Jan.
59. *G. turuturu* YAMADA Tsurutsuru
1941, Notes IX, p. 205, pl. 46.
Hab. On rocks, middle to lower littoral belt. Aug.-Feb.
60. *Pachymeniopsis yendoii* YAMADA in KAWABATA Akahada
1952, p. 29, pls. 7-10. *Pachymenia carnosa* auct. non J. AGARDH ; YENDO, 1914,

Notes II, p. 279.

Hab.

Gloiosiphoniaceae

61. *Gloiosiphonia capillaris* (HUDSON) CARMISCHAEI in BERKELEY Ito-funori
1833, p. 45, t. 17, fig. 3; OKAMURA, 1902, Mei-i, p. 102.
Hab.

Endocladaceae

62. *Gloiopeltis furcata* (POSTELS et RUPRECHT) J. AGARDH Fukuro-funori
1851, Sp. alg. II, p. 235; OKAMURA, 1902, Mei-i, p. 84.
Hab. On rocks, upper littoral belt. Jan.-Oct.

Tichocarpaceae

63. *Tichocarpus crinitus* (GMELIN) RUPRECHT in MIDDENDORFF Karekigusa
1851, p. 320, pl. 17; TOKIDA, 1932c, p. 20.
Hab. On rocks, middle to infralittoral belt. Aug.-April.

Kallymeniaceae

64. *Callophyllis cristata* (C. AGARDH) KÜTZING Yūsora
1849, p. 747; TOKIDA, 1932c, p. 15, fig. 4, pl. 2, figs. c-d, pl. 6, figs. b-c.
Hab. On hydrocaulus of hydroid, elittoral. Feb.
65. *C. rhynchocarpa* RUPRECHT in MIDDENDORFF Hime-tosakamodoki
1851, p. 260, pl. 13; OKAMURA, 1902, Mei-i, p. 34.
Hab. Cast ashore. March.
66. *Kallymenia reniformis* (TURNER) J. AGARDH var. *cuneata* J. AGARDH Ezotsukasanori
1876, Sp. alg. III, p. 221; YENDO, 1916b, Notes V, p. 257.
Hab.

Incertae sedis

67. *Pseudorhododiscus nipponicus* MASUDA Benigoromo
1976, p. 123, figs. 1-3.
Hab. On *Phyllospadix*. Feb.-Dec.
68. *Rhodophysema elegans* (CROUAN ex J. AGARDH) DIXON Usu-fuchitoribeni
1964, p. 56. *Rhododermis elegans* CROUAN; YENDO, 1915, Notes III, p. 116.
Hab. On rocks, middle to lower littoral belt. April-June.
69. *R. georgii* BATTERS Fuchitoribeni
1900, p. 377, pl. 414, figs. 8-13. *Rhododermis georgii* (BATTERS) COLLINS;
TOKIDA 1954, p. 158.
Hab. On algae, middle to lower littoral belt. Dec.-April.
70. *R. odonthaliae* MASUDA et OHTA Hime-fuchitoribeni
1981, p. 15, figs. 1-3.
Hab. On *Odonthalia corymbifera*. April.

Gigartinales

Nemastomataceae

71. *Schizymenia dubyi* (CHAUVIN in DUBY) J. AGARDH Benisunago
1851, Sp. alg. II, p. 171; YENDO, 1917a, Notes VI, p. 93.
Hab. On rocks, middle littoral belt. June–Nov.

Caulacanthaceae

72. *Caulacanthus okamurae* YAMADA Isodantsû
1933, Notes V, p. 278. *Endocladia complanata* auct. non HARVEY; OKAMURA,
1902, Mei-i, p. 28.
Hab. On rocks, supra- to middle littoral belt. Sept.–May.

Rhodophyllidaceae

73. *Rhodophyllis capillaris* TOKIDA Itoamihada
1932b, p. 13, pl. 1, figs. 1–6, text-figs. 1–2.
Hab. On hydrocaulus of hydroid, littoral belt. Feb.

Gracilariaceae

74. *Gracilaria verrucosa* (HUDSON) PAPENFUSS Ogonori
1950, p. 195. *G. confervoides* (L.) GREVILLE; OKAMURA, 1902, Mei-i, p. 42.
Hab. On rocks, middle to infralittoral belt. Aug.–Oct.

Phylloporaceae

75. *Ahnfeltia plicata* (HUDSON) FRIES var. *tobuchiensis* KANNO et MATSUBARA Itanigusa
1932, p. 97, pls. 1–2.
Hab. Cast ashore.
76. *Gymnogongrus flabelliformis* HARVEY in GRAY Okitsunori
1856, p. 332.
Hab. On rocks, middle to lower littoral belt. June–Dec.

Gigartinaceae

77. *Chondrus pinnulatus* (HARVEY in GRAY) OKAMURA f. *armatus* (HARVEY in GRAY)
YAMADA et MIKAMI in MIKAMI Toge-tsunomata
1965, p. 225, pl. 2, fig. 25. *Cystoclonium* ? *armatum* HARVEY in GRAY, 1856, p.
332.
Hab. On rocks, upper to middle littoral belt. All seasons.
78. *C. pinnulatus* f. *pinnulatus* Hirakotoji
1902, Mei-i, p. 33. *Gymnogongrus pinnulatus* HARVEY in GRAY, 1856, p. 332.
Hab. On rocks, middle to lower littoral belt. All seasons.
79. *C. yendoi* YAMADA et MIKAMI in MIKAMI Ezo-tsunomata
1965, p. 236, figs. 31–33. *Iridaea laminarioides* auct. non BORY; YENDO, 1917a,
Notes VI, p. 77.
Hab. On rocks, middle to lower littoral belt. All seasons.

80. *Rhodoglossum japonicum* MIKAMI Akaba-ginnansō
1965, p. 264, pl. IX, figs. 46-50. *Iridaea pulchra* auct. non KÜTZING; YENDO, 1911,
p. 603, fig. 169.
Hab. On rocks, littoral belt. All seasons.

Petrocelidaceae

81. *Mastocarpus pacificus* (KJELLMAN) PERESTENKO Ibonori
1980, p. 72. *Gigartina pacifica* KJELLMAN; OKAMURA, 1908, Icones I, p. 165, pl.
34, figs. 1-8.
Hab. On rocks, middle to lower littoral belt. May-Nov.
82. *Petrocelis* sp.
FUNANO, 1972, p. 72, figs. 1-3.
Hab. On rocks, lower to infralittoral belt. Nov.-March.

Rhodymeniales

Rhodymeniaceae

83. *Chrysiomenia wrightii* (HARVEY) YAMADA Taoyagisō
1932a, Notes III, p. 118, pl. 25, fig. 4. *Halosaccion (Halocoelia) wrightii* HARVEY,
1859, p. 332.
Hab.
84. *Rhodymenia pertusa* (POSTELS et RUPRECHT) J. AGARDH Ana-darusu
1852, Sp. alg. II, p. 376; OKAMURA, 1902, Mei-i, p. 48.
Hab. On rocks, middle to infralittoral belt. All seasons.

Champiaceae

85. *Champia parvula* (C. AGARDH) HARVEY Watsunagisō
1853, p. 76; OKAMURA, 1902, Mei-i, p. 49.
Hab. On rocks or algae, middle to lower littoral belt. July-Dec.
86. *Lomentaria hakodatensis* YENDO Kosuji-fushitsunagi
1920, p. 6.
Hab. On rocks or algae, middle to lower littoral belt. June-March.

Palmariales

Palmariaceae

87. *Halosaccion yendoi* I. K. LEE Beni-fukuronori
1978, p. 7, figs. 2-7, pl. 1, A-B. *Halosaccion saccatum* auct. non KÜTZING; YENDO,
1909, Notes I, p. 129.
Hab. Cast ashore. Dec.-June.
88. *Palmaria palmata* (L.) O. KUNTZE Darusu
1891, p. 909, *Rhodymenia palmata* (L.) GREVILLE; OKAMURA, 1916, Mei-i 2nd, p.

48.

Hab. On rocks, middle to lower littoral belt. All seasons.

Ceramiales

Ceramiaceae

89. *Antithamnion defectum* KYLIN Kinuito-futatsugasane
1925, p. 46, fig. 27. *A. sparsum* TOKIDA, 1932a, p. 105, figs. 1-2, pl. 3, fig. a.
Hab.
90. *A. nipponicum* YAMADA et INAGAKI Futatsugasane
1935, p. 38, figs. 1-3.
Hab. On algae, lower to infralittoral belt. Oct.-March.
91. *Callithamnion minutissima* YAMADA Hinano-kinuitogusa
1944, Notes X, p. 14.
Hab.
92. *Campylaeophora crassa* (OKAMURA) NAKAMURA f. *borealis* (OKAMURA) NAKAMURA
1950, p. 170. *Ceramium boreale* OKAMURA in Herb.
Hab. On algae, lower to infralittoral belt. April-Sept.
93. *C. crassa* f. *cymosa* (OKAMURA) NAKAMURA
1950, p. 168, fig. 7. *Ceramium cymosum* OKAMURA in Herb.
Hab. On algae, lower to infralittoral belt. April-Sept.
94. *C. hypnaeoides* J. AGARDH Egonori
1851, Sp. alg. II, p. 150; SURINGAR, 1870, p. 28, t. 14, figs. 1-4.
Hab. On *Coccolophora* or other algae. April-Sept.
95. *Ceramium cimbricum* PETERSEN in ROSENVINGE Matsubara-igisu
1923-24, p. 378, figs. 318-319; TOKIDA, 1948, p. 100, figs. 10-28.
Hab. On rocks or algae, lower to infralittoral belt. April-Dec.
96. *C. fastigiatum* HARVEY in HOOKER et ARNOTT Hime-igisu
1833, p. 303. *C. tenuissimum* auct. non J. AGARDH; YAMADA, 1928, p. 530, fig. 23.
Hab. On *Zostera*.
97. *C. japonicum* OKAMURA Hane-igisu
1896, p. 38, figs. 24-28
Hab. On rocks or algae, littoral belt. July-Nov.
98. *C. kondoi* YENDO Kondō-igisu
1920, p. 9.
Hab. On rocks or algae, littoral belt. May-Sept.
98. *Herpochondria elegans* (OKAMURA) ITONO Saeda
1977, p. 28. *Microcladia glandulosa* (?) GREV.; OKAMURA, 1900, p. 4, pl. 1, figs. 2-7.
Hab.

100. *Neoptilota californica* (RUPRECHT) KYLIN Kashiwaba-benihiba
1956, p. 392. *Ptilota californica* RUPR.; OKAMURA, 1902, Mei-i, p. 93.
Hab. On rocks, littoral belt.
101. *Ptilota serrata* KÜTZING Kushi-benihiba
1847, p. 36. *P. pectinata* (GUNNERUS) KJELLMAN; OKAMURA, 1909, Icones I, p. 235, pl. 47.
Hab. On rocks or algae, upper to infralittoral belt. All seasons.
102. *Scagelia corallina* (KJELLMAN) HANSEN et SCAGEL Karafuto-yotsugasane
1981, p. 211. *Antithamnion corallina* (RUPR.) KJELLMAN; TOKIDA, 1932b, p. 23, text-figs. 7-8, pl. 3, figs. b-d, pl. 8, fig. a.
Hab. On hydrocaulus of hydroid, elittoral. Feb.
103. *Tokidaea corticata* (TOKIDA) YOSHIDA Beni-hanemo
1973, p. 61. *Antithamnion corticatum* TOKIDA, 1932a, p. 108, figs. 3-5, pl. 3, figs. b-d.
Hab. Cast ashore. April-Aug.
- Delesseriaceae
104. *Acrosorium yendoi* YAMADA Haiusubanori
1930, Notes I, p. 33, fig. 4. *Nitophyllum monanthos* auct. non J. AGARDH; YENDO, 1918, Notes VIII, p. 69.
Hab. On rocks or algae, upper to middle littoral belt. All seasons.
105. *Branchioglossum nanum* INAGAKI Himemurasaki
1935, p. 45, fig. 3.
Hab. On rocks or *Polysiphonia*.
106. *Congregatocarpus pacificus* (YAMADA) MIKAMI Konohanori
1971, p. 243, figs. 1-9. *Pseudophycodrys pacifica* YAMADA, 1930, Notes I, p. 32, pl. 2, fig. 1.
Hab. Cast ashore. April-July.
107. *Delesseria serrulata* HARVEY in GRAY Numehanori
1856, p. 331.
Hab.
108. *Nitophyllum yezoense* (YAMADA et TOKIDA in YAMADA) MIKAMI Atsuba-sujiginu
1972, p. 14, figs. 1-16. *Myriogramme yezoensis* YAMADA et TOKIDA in YAMADA, 1935, Notes VI, p. 30, pl. 13, fig. 2, pl. 14.
Hab. Cast ashore. June-Sept.
109. *Phycodrys radicata* (OKAMURA) YAMADA et INAGAKI in YAMADA Hime-konohanori
1933, Notes V, p. 283. *Delesseria radicata* OKAMURA, 1896, p. 25, pl. 3, figs. 5-7.
Hab. On the base of *Symphyocladia latiuscula*.

Dasyaceae

110. *Dasya sessilis* YAMADA Enashi-dajia

1928, p. 524, fig. 19.

Hab. On rocks, lower to infralittoral belt. May–Sept.

Rhodomelaceae

111. *Benzaitenia yenoshimensis* YENDO Bentenmo
 1913a, p. 283, pl. 14, figs. 1–12.
 Hab. Parasitic on *Laurencia*.
112. *Chondria crassicaulis* HARVEY Yuna
 1859, p. 329.
 Hab. On rocks or algae, lower to infralittoral belt. Aug.–Feb.
113. *C. dasyphylla* (WOODWARD) C. AGARDH Yanaginori
 1817, p. 43. *C. tenuissima* auct. non AGARDH; OKAMURA, 1902, Mei-i, p. 71.
 Hab. On rocks, lower to infralittoral belt. Oct.–Aug.
114. *Enelittosiphonia hakodatensis* (YENDO) SEGI Maki-itogusa
 1949, p. 134, figs. 1–3. *Polysiphonia hakodatensis* YENDO, 1920, p. 7.
 Hab. On algae, littoral belt. Nov.–June.
115. *Janczewskia morimotoi* TOKIDA Morimoto-sozomakura
 1947, p. 127.
 Hab. Parasitic on *Laurencia nipponica*.
116. *Laurencia nipponica* YAMADA Ura-sozo
 1931, p. 209, pl. 9.
 Hab. On rocks, lower to infralittoral belt. April–Oct.
117. *L. yendoi* YAMADA Kita-sozo
 1931, p. 237, pl. 24. *L. heterocladia* auct. non HARVEY; YENDO, 1917b, Notes VI,
 p. 89.
 Hab.
118. *Neorhodomela aculeata* (PERESTENKO) MASUDA Fujimatsumo
 1982, p. 291, figs. 42–49. *Rhodomela larix* auct. non C. AGARDH; OKAMURA, 1902,
 Mei-i, p. 66.
 Hab. On rocks, middle to lower littoral belt. All seasons.
119. *N. munita* (PERESTENKO) MASUDA Ito-fujimatsu
 1982, p. 276, figs. 35–41. *Rhodomela subfusca* auct. non C. AGARDH; OKAMURA,
 1902, Mei-i, p. 66.
 Hab. On rocks, middle to lower littoral belt. All seasons.
120. *Odonthalia corymbifera* (GMELIN) GREVILLE Hakesaki-nokogirihiba
 1830, p. 1; OKAMURA, 1902, Mei-i, p. 81.
 Hab. On rocks, infralittoral belt. All seasons.
121. *O. macrocarpa* MASUDA Ô-nokogirihiba
 1982, p. 365, figs. 84–88. *O. corymbifera* auct. non GREVILLE; OKAMURA, 1902,
 Mei-i, p. 81.

- Hab. On rocks, infralittoral belt. All seasons.
122. *Polysiphonia fragilis* SURINGAR Kuro-itogusa
1870, p. 37, pl. 25, B, figs. 1-4.
Hab.
123. *P. japonica* HARVEY in GRAY Kiburi-itogusa
1856, p. 331.
Hab. On rocks or algae.
124. *P. morrowii* HARVEY in GRAY Moro-itogusa
1856, p. 331.
Hab. On rocks, middle to lower littoral belt. Nov.-Aug.
125. *P. urceolata* (DILLWYN) GREVILLE Shōjōkenori
1824, p. 309; YENDO, 1916a, Notes IV, p. 60.
Hab. On rocks, infralittoral belt. June-Sept.
126. *P. yendoii* SEGI Endō-itogusa
1951, p. 211, pl. 6, text-fig. 15. *P. fibrata* auct. non HARVEY; YENDO, 1918,
Notes VIII, p. 74.
Hab. On rocks or algae, littoral belt. Aug.-Oct.
127. *Rhodomela teres* (PERESTENKO) MASUDA Hosoba-fujimatsumo
1982, p. 255, figs. 23-34. *R. gracilis* YAMADA et NAKAMURA in YAMADA et TANAKA,
1944b, p. 171.
Hab. On rocks, infralittoral belt. All seasons.
128. *Symphyclocladia latiuscula* (HARVEY in GRAY) YAMADA Isomurasaki
1941, Notes IX, p. 215. *Rytiphloea latiuscula* HARVEY in GRAY 1856, p. 331.
Hab. On algae, middle to lower littoral belt. All seasons.
129. *S. marchantioides* (HARVEY in HOOKER) FALKENBERG in ENGLER et PRANTL Kozanemo
1897, p. 444. *Placophora latiuscula* OKAMURA in DE TONI, 1895, p. 340.
Hab. On rocks or algae, middle to infralittoral belt. Aug.-Jan.

PHAEOPHYCEAE

Ectocarpales

Ectocarpaceae

130. *Ectocarpus arctus* KÜTZING Kenashi-shiomidoro
1843, p. 289. *E. confervoides* (ROTH) LE JOLIS; TAKAMATSU, 1936, p. 7.
Hab. On *Desmarestia*. June-Oct.
131. *E. fusiformis* NAGAI Tsumugata-shiomidoro
1940, p. 38, pl. 2, figs. 16-18.
Hab. On old blade of *Laminaria*. Feb.
132. *Pilayella littoralis* (L.) KJELLMAN Piraera

1872, p. 99; YAMADA, 1935, p. 11.

Hab. On *Neorhodomela* and *Fucus*, upper to middle littoral belt. March-June.

133. *Spongonema tomentosum* (HUDSON) KÜTZING Kagi-shiomidoro
1849, p. 461. *Ectocarpus tomentosus* (HUDSON) LYNGBYE; YAMADA and TANAKA,
1944a, p. 52, fig. 2.

Hab. On *Fucus* and *Pelvetia*. April-June.

Sorocarpaceae

134. *Botrytella micromora* BORY Isobudô
1822, p. 425. *Sorocarpus uvaeformis* (LYNGBYE) PRINGSHEIM; OKAMURA, 1929,
Icones VI, p. 1, pl. 251, figs. 1-7.

Hab.

135. *Polytretus reinboldii* (REINKE) SAUVAGEAU f. *minutus* KUROGI
1978, p. 246, pl. 1.

Hab. On *Sargassum thunbergii* growing in the tide pool. Sept.

Ralfsiales

Ralfsiaceae

136. *Analipus filiformis* (RUPRECHT) PAPENFUSS Ito-matsumo
1967, p. 320. ? *Ruprechtella filiformis* (RUPRECHT) YENDO, 1913b, p. 118.

Hab. On rocks, upper littoral belt. Dec.-June.

137. *A. japonicus* (HARVEY) WYNNE Matsumo
1971, p. 172. *Halosaccion (Halocoelia) japonicum* HARVEY, 1859, p. 332.

Hab. On rocks, upper to middle littoral belt. Nov.-Aug.

138. *Hapterophycus canaliculatus* SETCHELL et GARDNER Isogawara-modoki
1912, p. 233; NAKAMURA, 1972, p. 153.

Hab.

139. *Ralfsia verrucosa* (ARESCHOUG) J. AGARDH Isoiwatake
1848, Sp. alg. I, p. 62; YENDO, 1918, Notes VIII, p. 65.

Hab. On rocks, littoral belt. Oct.-March.

Chordariales

Acrotrichaceae

140. *Acrothrix pacifica* OKAMURA et YAMADA in YAMADA Nise-mozuku
1932a, Notes III, p. 113, pl. 24, fig. 2.

Hab. On algae, lower to infralittoral belt. May-Aug.

Chordariaceae

141. *Chordaria flagelliformis* (MÜLLER) C. AGARDH f. *flagelliformis* Naga-matsumo
1817, p. 12, pl. 12; OKAMURA, 1902, Mei-i, p. 190.

Hab. On rocks or algae, middle to lower littoral belt. May-Sept.

142. *Eudesme virescens* (CARMICHAEL ex HARVEY in HOOKER) J. AGARDH Nise-fotomozuku
1885, Till alg. IV, p. 31. *Aegira virescens* (CARM.) SETCHELL et GARDNER;
KAWABATA, 1936, p. 203.
Hab. On rocks or algae, middle to lower littoral belt. May-Aug.
143. *Sphaerotrichia divaricata* (C. AGARDH) KYLIN f. *divaricata* Ishi-mozuku
1940, p. 38, fig. 20 c-d. *Chordaria cladosiphon* auct. non KÜTZING; OKAMURA,
1902, Mei-i, p. 313.
Hab. On rocks or algae, middle to lower littoral belt. May-Sept.

Elachistaceae

144. *Elachista tenuis* YAMADA Hosonamimakura
1928, p. 511, fig. 11.
Hab. On *Sargassum confusum*. April.
145. *Halothrix ambigua* YAMADA Somewakegusa
1928, p. 513, fig. 12.
Hab. On algae, littoral belt. March-Nov.

Leathesiaceae

146. *Leathesia difformis* (L.) ARESCHOUG Nebarimo
1847, p. 376; OKAMURA, 1902, Mei-i, p. 159.
Hab. On rocks or algae, littoral belt. All seasons.
147. *L. difformoides* TAKAMATSU
1939, p. 6, pl. 1, fig. 3, text-fig. 4.
Hab. On *Neorhodomela aculeata*.
148. *L. monilicellulata* TAKAMATSU Nankin-nebarimo
1939, p. 11, pl. 3, fig. 1, text-fig. 7.
Hab. On *Sargassum confusum*.
149. *L. sphaerocephala* YAMADA Hime-nebarimo
1932b, Notes IV, p. 269, fig. 2.
Hab. On rocks or algae, middle to infralittoral belt. May-Aug.

Myrionemataceae

150. *Hecatonema terminale* (KÜTZING) KYLIN
1937, p. 8, fig. 2; KUROGI, 1954, p. 66, figs. 3-4.
Hab. On *Fucus* or *Sargassum thunbergii*. Sept.
151. *Myrionema cornnae* SAUVAGEAU
1897, p. 237, fig. 14; KUROGI, 1954, p. 63, figs. 1-2.
Hab. On *Alaria crassifolia*, lower to infralittoral belt. Aug.-Nov.

Scytosiphonales

Scytosiphonaceae

152. *Colpomenia bullosa* (SAUNDERS) YAMADA in YAMADA et KINOSHITA Watamo

- 1948, p. 6, pl. 4. *Macrosiphon asperococcoides* OKAMURA, 1902, Mei-i, p. 118.
 Mab. On rocks or algae, middle littoral belt. Feb.-Aug.
153. *C. sinuosa* (MERTENS ex ROTH) DERBES et SOLIER in CASTAGNE Fukuronori
 1851, p. 11, pl. 22, figs. 18-20; OKAMURA, 1898, p. 9.
 Hab. On rocks or algae, middle littoral belt. Feb.-Aug.
154. *Petalonia fascia* (MÜLLER) O. KUNTZE Seiyō-habanori
 1898, p. 419. *Phyllitis fascia* (MÜLLER) KÜTZING; OKAMURA, 1902, Mei-i, p. 153.
 Hab. On rocks, middle littoral belt. Oct.
155. *P. zosterifolia* (REINKE) O. KUNTZE Hosoba-seiyōhabanori
 1898, p. 419. *Ilea fascia* f. *zosterifolia* (REINKE) SETCHELL et GARDNER; YAMADA,
 1944, Notes X, p. 12.
 Hab.
156. *Scytosiphon lomentaria* (LYNGBYE) LINK Kayamonori
 1833, p. 232; OKAMURA, 1902, Mei-i, p. 152.
 Hab. On rocks, littoral belt. Nov.-July.

Dictyosiphonales

Asperococcaceae

157. *Melanosiphon intestinalis* (SAUNDERS) WYNNE Kita-iwahige
 1969, p. 45, figs. 11-12, pl. 24. *Mylophycus intestinale* SAUNDERS; OKAMURA, 1933,
 p. 86.
 Hab. On rocks, middle littoral belt. Nov.-March.

Coilodesmaceae

158. *Coilodesme japonica* YAMADA Ezofukuro
 1938, Notes VIII, p. 120, pl. 20. *C. cystoseriae* auct. non SETCHELL et GARDNER;
 YENDO, 1909, Notes I, p. 122.
 Hab. On algae, middle to lower littoral belt. Feb.-July.

Dictyosiphonaceae

159. *Dictyosiphon foeniculaceus* (HUDSON) GREVILLE Uikyōmo
 1830, p. 56, pl. 8, figs. 1-4; YAMADA, 1928, p. 507, fig. 8.
 Hab. On *Scytosiphon*, middle to lower littoral belt. May-Aug.

Punctariaceae

160. *Litosiphon groenlandicus* LUND var. *japonicus* KAWAI et KUROGI Isohigemo
 1983, p. 25, figs. 1-5.
 Hab. On rocks, upper infralittoral belt. May.
161. *Pogotrichum yezoense* (YAMADA et NAKAMURA in YAMADA) SAKAI et SAGA Kobunohige
 1981, p. 8. *Litosiphon yezoense* YAMADA et NAKAMURA in YAMADA, 1944, Notes X,
 p. 12, fig. 1.

- Hab. On *Laminaria*, middle to infralittoral belt. Jan.–July.
162. *Punctaria chartacea* SETCHELL et GARDNER Gasagasa–habamodoki
1925, p. 521, pl. 45, fig. 79, pl. 81; UMEZAKI, 1961, p. 364, fig. 1c–d.
Hab. Cast ashore. July.
163. *P. flaccida* NAGAI Chishima–habamodoki
1940, p. 56, pl. II, figs. 12–13, pl. III, fig. 7.
Hab. On *Phyllospadix*. April–July.
164. *P. latifolia* GREVILLE Habamodoki
1830, p. 52. *Homoeostroma latifolia* (BORNET) J. AGARDH; OKAMURA, 1902, Mei–i,
p. 150.
Hab. On rocks or algae, middle to lower littoral belt. March–July.
165. *P. plantaginea* (ROTH) GREVILLE Habadamashi
1830, p. 53, t. 9. *Homoeostroma plantagineum* J. AGARDH; YENDO, 1909, Notes I,
p. 121.
Hab. On rocks, middle to lower littoral belt. June–Oct.

Sphacelariales

Sphacelariaceae

166. *Sphacelaria subfusca* SETCHELL et GARDNER Mitsumata–kurogashira
1924, p. 1; NAGAI, 1940, p. 41, pl. 2, figs. 9–11.
Hab. On rocks or algae, upper to middle littoral belt. Jan.–July.

Desmarestiales

Desmarestiaceae

167. *Desmarestia ligulata* (STACKHOUSE) LAMOUROUX Urushigusa
1813, p. 45; OKAMURA, 1902, Mei–i, p. 155.
Hab. On rocks, lower to infralittoral belt. Feb.–Aug.
168. *D. viridis* (MÜLLER) LAMOUROUX Ke–urushigusa
1813, p. 43; OKAMURA, 1902, Mei–i, p. 155.
Hab. On rocks, lower to infralittoral belt. Feb.–Aug.

Laminariales

Alariceae

169. *Alaria crassifolia* KJELLMAN in KJELLMAN et PETERSEN Chigaiso
1885, p. 267, t. 10, figs. 9–12.
Hab. On rocks, lower to infralittoral belt. All seasons.
170. *Undaria pinnatifida* (HARVEY) SURINGAR var. *distans* MIYABE et OKAMURA in
OKAMURA Nanbu–wakame
1902, Mei–i, p. 128.

Hab. On rocks, infralittoral belt. Jan.–Aug.

Chordaceae

171. *Chorda filum* (L.) STACKHOUSE Tsurumo
1801, p. 16 et 24, pl. 10; OKAMURA, 1901, p. 55, pl. 20.
Hab. On rocks, lower to infralittoral belt. May–Sept.

Laminariaceae

172. *Agarum cribrosum* BORY f. *rugosum* I. YAMADA Zara-aname
1974, p. 39, pls. 2, 5 B, D.
Hab. On rocks, infralittoral belt. All seasons.
173. *Costaria costata* (C. AGARDH) SAUNDERS Sujime
1895, p. 57. *C. turneri* GREVILLE; OKAMURA, 1902, Mei-i, p. 176.
Hab. On rocks, infralittoral belt. All seasons.
174. *Kjellmaniella crassifolia* MIYABE in OKAMURA Gagome
1902, Mei-i, p. 134.
Hab. On rocks, infralittoral belt. All seasons.
175. *Laminaria angustata* KJELLMAN in KJELLMAN et PETERSEN Mitsuishi-kombu
1885, p. 266.
Hab. On rocks, lower to infralittoral belt. All seasons.
176. *L. japonica* ARESCHOUG Ma-kombu
1851, p. 29.
Hab. On rocks, lower to infralittoral belt. All seasons.
177. *L. yendoana* MIYABE in OKAMURA Endô-kombu
1936, p. 253 & 288.
Hab. On pebbels or shells, infralittoral belt. All seasons.

Dictyotales

Dictyotaceae

178. *Dictyopteris divaricata* (OKAMURA) OKAMARA Ezo-yahazu
1932, p. 75. *Haliseris divaricata* OKAMURA, 1902, Mei-i, p. 183.
Hag. On rocks, middle to lower littoral belt. Jan.–Aug.
179. *Dictyota dichotoma* (HUDSON) LAMOUROUX Amijigusa
1809, p. 42; OKAMURA, 1902, Mei-i, p. 185.
Hab. On rocks or algae, littoral belt. May–Nov.

Fucales

Cystoseiraceae

180. *Coccophora langsдорфii* (TURNER) GREVILLE Sugimoku
1830, p. 34; DE TONI, 1895, p. 48.
Hab. On rocks, lower to infralittoral belt. All seasons.

181. *Cystoseira hakodatensis* (YENDO) FENSHOLT Uganomoku
 1955, p. 305. *Cystophyllum hakodatense* YENDO, 1907, p. 32, pl. 2, figs. 13-16.
 Hab. On rocks, lower to infralittoral belt. All seasons.
- Fucaceae
182. *Fucus distichus* L. ssp. *evanescens* (C. AGARDH) POWELL Hibamata
 1957, p. 426. *Fucus evanescens* C. AGARDH; YENDO, 1907, p. 14, pl. 1, figs. 1-2.
 Hab. On rocks, supra- to middle littoral belt. All seasons.
183. *Pelvetia wrightii* OKAMURA Ezoishige
 1902, Mei-i, p. 138. *Fucus wrightii* auct. non TURNER; HARVEY, 1859, p. 328.
 Hab. On rocks, supra- to middle littoral belt. All seasons.
- Sargassaceae
184. *Sargassum confusum* C. AGARDH Fushisujimoku
 1824, p. 301; YENDO, 1907, p. 106, pl. 14, figs. 1-12.
 Hab. On rocks, lower to infralittoral belt. All seasons.
185. *S. horneri* (TURNER) C. AGARDH Akamoku
 1820, p. 38; YENDO, 1907, p. 74, pl. 10.
 Hab. On rocks, sublittoral belt. All seasons
186. *S. thunbergii* (MERTENS ex ROTH) O. KUNTZE Umitoranowo
 1880, p. 215; YENDO, 1907, p. 114, pl. 15, fig. 5.
 Hab. On rocks, middle to infralittoral belt. All seasons.

PRASINOPHYCEAE

Prasinocladales

Prasinocladaceae

187. *Prasinocladus* sp.
 YAMADA, 1934, p. 327, figs. 1-2.
 Hab.

CHLOROPHYCEAE

Tetrasporales

Tetrasporaceae

188. *Collinsiella tuberculata* SETCHELL et GARDNER Ransōmodoki
 1903, p. 204, pl. 17, figs. 1-7. *Ecballocystis willeana* YENDO, 1903, p. 199, pl. 8,
 figs. 1-15.
 Hab. On rocks or algae, supra- to upper littoral belt. Jan.-July.

Ulotrighales

Ulotrighaceae

189. *Ulothrix flacca* (DILLWYN) THURET in LE JOLIS Hibimidoro
1863, p. 56; YENDO, 1909, Notes I, p. 119.
Hab. On rocks or algae, upper to middle littoral belt. Nov.-Apr.

Ulvales

Monostromataceae

190. *Kornmannia zostericola* (TILDEN) BLIDING Motsukihitoe
1968, p. 620. *Monostroma zostericum* TILDEN; YENDO, 1917b, Notes VII, p. 184.
Hab. On *Phyllospadix*. Jan.-June.
191. *Monostroma angicava* KJELLMAN Ezo-hitoegusa
1883, p. 279, pl. 29; YAMADA, 1932a, Notes III, p. 109, pls. 21, 22.
Hab. On rocks or algae, upper to middle littoral belt. Jan.-June.
192. *Protomonostroma undulatum* (WITTROCK) VINOGRADOVA Shiwa-hitoegusa
1969, p. 1354. *Monostroma pulchrum* FARLOW; YENDO, 1917b, Notes VII, p. 186.
Hab. On rocks or algae, middle to lower littoral belt. Feb.-June.

Ulvaceae

193. *Blidingia minima* (NÄGELI in KÜTZING) KYLIN Hime-aonori
1947, p. 181. *Enteromorpha micrococca* KÜTZING; OKAMURA, 1902, Mei-i, p. 225.
Hab. On rocks, upper littoral belt. Nov.-July.
194. *Enteromorpha compressa* (L.) GREVILLE Hira-aonori
1830, p. 180; OKAMURA, 1902, Mei-i, p. 227.
Hab. On rocks or algae, littoral belt. Dec.-Aug.
195. *E. intestinalis* (L.) LINK in NEES Bô-aonori
1820, p. 5; OKAMURA, 1916, Mei-i 2nd, p. 226.
Hab. On rocks, middle littoral belt. Feb.-Aug.
196. *E. linza* (L.) J. AGARDH Usuba-aonori
1883, Till alg. III, p. 134; OKAMURA, 1902, Mei-i, p. 226.
Hab. On rocks or algae, littoral belt. Jan.-Sept.
197. *Ulva pertusa* KJELLMAN Ana-aosa
1897b, p. 4, pl. I, figs. 1-5, pl. 3, figs. 1-8.
Hab. On rocks, littoral belt. All seasons.
198. *Ulvaria obscura* (KÜTZING) GAYRAL var. *blyttii* (ARESCHOUG) BLIDING Kuro-hitoegusa
1968, p. 517, figs. 27-30. *Monostroma fuscum* f. *splendens* ROSENVINGE; YENDO,
1909, Notes I, p. 117.

Hab. On rocks or algae, middle to infralittoral belt. March-July.

Acrosiphoniales

Acrosiphoniaceae

199. *Spongomorpha heterocladia* SAKAI Iburi-motsuregusa
 1954, p. 78, fig. 6.
 Hab. On *Phyllospadix*, littoral belt. March-July.
200. *S. saxatilis* (RUPRECHT) COLLINS Togenashi-motsuregusa
 1909, p. 360; YENDO, 1916b, Notes V, p. 245.
 Hab. On rocks, middle littoral belt. March-June.
201. *S. spiralis* SAKAI Uzu-motsuregusa
 1954, p. 80, fig. 7.
 Hab. On rocks, middle littoral belt. March-June.
202. *Urospora penicilliformis* (ROTH) ARESCHOUG Shiriomidoro
 1866, p. 16; YENDO, 1915, Notes III, p. 101.
 Hab. On rocks or algae, supra- to upper littoral belt. Dec.-Aug.

Cladophorales

Cladophoraceae

203. *Chaetomorpha moniligera* KJELLMAN Tama-juzumo
 1897b, p. 24, pl. 4, figs. 17-23.
 Hab. On rocks, upper to middle littoral belt. May-Aug.
204. *Cladophora arenaria* SAKAI Suna-shiogusa
 1964, p. 64, figs. 29, 30, pl. 16-1.
 Hab. On sand-covered rocks, upper to middle littoral belt. June-Sept.
205. *C. opaca* SAKAI Tsuyanashi-shiogusa
 1964, p. 62, pl. 11-2. *C. glaucescens* auct. non HARVEY; YENDO, 1916b, Notes V,
 p. 248.
 Hab. On rocks, upper to middle littoral belt. April-Sept.
206. *C. rudolphiana* (C. AGARDH) HARVEY Tamari-shiogusa
 1846-51, pl. 86; OKAMURA, 1936, p. 54.
 Hab. Floating. May-Aug.
207. *C. sakaii* ABBOTT Asamidori-shiogusa
 1972, p. 259. *C. densa* auct. non KÜTZING; HARVEY, 1859, p. 333.
 Hab. On rocks, middle to infralittoral belt. April-Sept.
208. *C. speciosa* SAKAI Miyabi-shiogusa
 1964, p. 35, figs. 13, 14, pl. 5-2.
 Hab. On shells, infralittoral belt. Aug.
209. *C. stimpsonii* HARVEY Kinu-shiogusa

1859, p. 333.

Hab. On rocks, littoral belt. April–Aug.

210. *Rhizoclonium tortuosum* (DILLWYN) KÜTZING Nagamotsure
1845, p. 205; KAWABATA, 1936, p. 201.
Hab. On *Neorhodomela aculeata*, upper to middle littoral belt. May–Sept.

Codiales

Bryopsidaceae

211. *Bryopsis plumosa* (HUDSON) C. AGARDH Hanemo
1822, Sp. alg. I, p. 448; OKAMURA, 1902, Mei-i, p. 249.
Hab. On rocks or algae, middle to lower littoral belt. July–March.

Codiaceae

212. *Codium fragile* (SURINGAR) HARIOT Miru
1889, p. 32. *C. mucronatum* J. AGARDH var. *californicum* J. AGARDH; OKAMURA,
1902, Mei-i, p. 262.
Hab.

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