

Catalogue of Species of *Porphyra* in the World, with Special Reference to the Type Locality and Bibliography

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Abstract Catalogue of species of *Porphyra* (Bangiaceae, Rhodophyta) was compiled. A total of 133 species from the world were enumerated with bibliography. Type locality of each species was plotted on the maps.

Key words: Bangiaceae, bibliography, *Porphyra*, Rhodophyta, type locality.

The species of *Porphyra* (Bangiaceae, Rhodophyta) are distributed all over the world, and study of local flora of this genus is in progress at various parts of the world. Literatures on taxonomy of *Porphyra* were critically examined, and we recognized 133 species for this genus. Synonym is given as far as possible. This catalogue was compiled from our effort to survey the relevant literatures concerning this group of algae. Major part of this catalogue was based on the cards prepared by Yoshida and kept in SAP (Division of Biological Science, Graduate School of Science, Hokkaido University), extended by comparing with the Index Nominum Algarum made by Dr. Paul C. Silva and maintained in the Herbarium of the University of California. Part of Index Nominum Algarum can be consulted by Internet, under <http://ucjeps.herb.berkeley.edu/rilmoe/po> phyra.html

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Catalogue of Species of *Porphyra* with Bibliography

1. *Porphyra abbottae* Krishnamurthy 1972: 28. f. 1–2.
San Juan Island, Washington.
Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. *Pacific Science* 26: 24–49.
2. *Porphyra abyssicola* Kjellman 1883: 191. pl. 17, f. 4; pl. 18, f. 10, 11.
Norwegian Arctic Sea.
Kjellman F. R. 1883. The algae of the Arctic Sea: A survey of the species, together with an exposition of the general characters and the development of the flora. *Kongl. Sv. Vet-Akad. Handl.* 20(5): 1–350.
Conway, Mumford and Scagel (1975) treat this entity as a synonym of *P. miniata*.
3. *Porphyra acanthophora* Oliveira Filho et Coll 1975: 192. f. 6, 14–16, 19, 21.
Ubatuba, Sao Paulo State, Brazil.
Oliveira Filho, E. C. de and J. Coll. 1975. The genus *Porphyra* C. Ag. (Rhodophyta-Bangiaceae) in the American South Atlantic. I. Brazilian species. *Botanica Marina* 18: 191–197.
4. *Porphyra adamsiae* Nelson 1993: 526. f. 2–4.

- Anchorage Bay, Antipodes Islands, New Zealand.
- Nelson, W. A. 1993. Epiphytic species of *Porphyra* (Bangiales, Rhodophyta) from New Zealand. *Botanica Marina* 36: 525–534.
5. *Porphyra akasakae* Miura 1977: 197. f. 2. pl. 10, 11.
Kesennuma, Miyagi-ken, Japan.
 - Miura, A. 1977. *Porphyra akasakai*, a new species from the Sanriku coast, northeastern district of Honshu, Japan. *Jour. Tokyo Univ. Fish.* 63: 197–202.
 6. *Porphyra amethystea* Kützing 1843: 383. Ireland.
Kützing, F. T. 1843. *Phycologia generalis oder Anatomie, Physiologie und Systematik der Tange*. Leipzig. 458 pp. 80 pls.
 7. *Porphyra amplissima* (Kjellman) Setchell et Hus in Hus 1900: 67.
Norwegian Arctic Sea.
Hus, H.T.A. 1900. Preliminary notes on West Coast *Porphyras*. *Zoe* 5: 61–70.
B: *Diploderma amplissima* Kjellman 1883: 188. pl. 17, f. 1–3. pl. 18, f. 1–8.
 8. *Porphyra angusta* Okamura et Ueda in Ueda 1932: 28. pl. 1, f. 4, 10; pl. 6, f. 8–16; pl. 18, f. 2, 3.
Tokyo Bay (Chiba Pref.).
Ueda, S. 1932. A systematic study of the genus *Porphyra* found on the Japanese coasts. *Jour. Imp. Fish. Inst.* 28: 1–45. pl. 1–24.
 9. *Porphyra argentinensis* Piriz 1981: 599. f. 1–9.
Argentine.
Piriz, M. L. 1981. A new species and a new record of *Porphyra* (Bangiales, Rhodophyta) from Argentina. *Botanica Marina* 24: 599–602.
 10. *Porphyra atropurpurea* (Oliv.) De Toni 1897: 17.
Atlantic Ocean.
De Toni, J. B. 1897. *Sylloge algarum*. Vol. IV. pp. 1–387. Padova.
B: *Ulva atropurpurea* Olivi 1791: 153. pl. 1–3.
Hamel (1924) considers this name as a synonym of *P. leucosticta*.
 11. *Porphyra augustinae* Kützing 1843: 383. Cape, South Africa.
Kützing, F. T. 1843. *Phycologia generalis oder Anatomie, Physiologie und Systematik der Tange*. Leipzig. 458 pp. 80 pls.
 - According to De Toni (1897), this is a synonym of *P. capensis*.
 12. *Porphyra autumnalis* Zanardini 1860: 73. pl. 7B.
Trieste, Adriatic Sea.
Zanardini, G. A. M. 1860. *Iconographia phycologica mediterraneo-adriatica*. Vol. 1. pls. 1–140. Venice.
 13. *Porphyra brumalis* Mumford 1975: 328. f. 17–27.
San Juan Island, Washington.
Mumford, T. F. Jr. 1975. Observations on the distribution and seasonal occurrence of *Porphyra schizophylla* Hollenberg, *Porphyra torta* Krishnamurthy, and *Porphyra brumalis* sp. nov. (Rhodophyta, Bangiales). *Sysis* 8: 321–332.
 14. *Porphyra bulbipes* (Yendo) Okamura 1916: 7.
Shumushu Island, Kurile Islands.
Okamura, K. 1916. Enumeration of Japanese algae. 2nd. ed. Tokyo.
B: *Wildemania bulbipes* Yendo 1913: 276. pl. 13, f. 1–9.
 15. *Porphyra cameronii* Nelson 1993: 527. f. 5–10.
Mangere Island, Chatham Islands, New Zealand.
Nelson, W. A. 1993. Epiphytic species of *Porphyra* (Bangiales, Rhodophyta) from New Zealand. *Botanica Marina* 36: 525–534.
 16. *Porphyra capensis* Kützing 1843: 383. Cape, South Africa.
Kützing, F. T. 1843. *Phycologia generalis oder Anatomie, Physiologie und Systematik der Tange*. Leipzig. 458 pp. 80 pls.
 17. *Porphyra carneae* Grunow in Piccone 1889?
Madeira, Atlantic.
Piccone, A. 1889. Nuove alghe del viaggio de circumnavigazione della Vettor Pisani. Mem. R. Accad. Lincei, Cl. Sci. Fis. Mat. E Nat., Ser. 4, 6: 10–63.
 18. *Porphyra carolinensis* Coll et Cox 1977: 155. f. 1–8.
Fort Macon, Bogue Bank, Carteret Co., North Carolina, Atlantic.
Coll, J. and J. Cox. 1977. The genus *Porphyra* C. Ag. (Rhodophyta, Bangiales) in the

- American North Atlantic. I. New species from North Carolina. *Botanica Marina* 20: 155–159.
19. *Porphyra ceylanica* J. Agardh 1883: 68. pl. 2, f. 59–60
Ceylon.
Agardh, J.G. 1883. Till algernes systematik. Nya Bidrag (Tredje afdelingen). Unds Univ. Årsskr. Afd. Math. Naturv. 19(2) 1–177. 4 pls.
20. *Porphyra columbina* Montagne 1842: 14. Auckland Island.
Montagne, C. 1842. Prodromus generum specierumque phycearum novarum in itinere ad polum antarcticum. 16 pp. Paris.
21. *Porphyra cordata* Meneghini 1844: 303. Italy.
Meneghini, J. 1844. Algarum species novae vel minus notae. Giorn. Bot. Ital. 1: 209–306.
22. *Porphyra coriacea* Zanardini 1842: 213. Venetia.
Zanardini, G. 1842. Synopsis algarum in mari adriatico hucusque cognitarum. Taurini. Mem. R. Ac. Sc. Torino 2(4): 105–258. De Toni (1897) placed this entity under a synonym of *P. atropurpurea*.
23. *Porphyra crassa* Ueda 1932: 27. pl. 1, f. 9–10; pl. 6, f. 1–7; pl. 18, f. 1.
Korea.
Ueda, S. A systematic study of the genus *Porphyra* found on the Japanese coasts. Jour. Imp. Fish. Inst. 28: 1–45. pl. 1–24.
24. *Porphyra crispata* Kjellman 1897: 15. pl. 1, f. 4–5; pl. 3, f. 5–7; pl. 5, f. 15.
Goto, Japan.
Kjellman, F. R. 1897. Japanska arter af slägget *Porphyra*. Bihang till Kongl. Sv. Vet-Akad. Handl. 23(4): 1–34.
According to Kurogi & Yamada (1986), type specimen of this species is *Monostroma*.
25. *Porphyra cuneiformis* (Setchell et Hus) Krishnamurthy 1972: 31.
Whidbey Island, Washington.
Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. Pacific Science 26: 24–49.
B: *Porphyra miniata* f. *cuneiformis* Setchell et Hus in Hus 1900: 58.
26. *Porphyra dentata* Kjellman 1897: 13. pl. 1, f. 7–8; pl. 3, f. 1–4; pl. 5, f. 8–14.
Amakusa, Japan.
- Kjellman, F. R. 1897. Japanska arter af slägget *Porphyra*. Bihang till Kongl. Sv. Vet-Akad. Handl. 23(4): 1–34.
27. *Porphyra denticulata* Levring 1953: 467. f. 5, 6A-G.
Queensland, Australia.
Levring, T. 1953. The marine algae of Australia. I. Rhodophyta, Goniotrichales, Bangiales and Nemalionales. Arkiv fur Botanik, ser. 2, 2: 257–530.
28. *Porphyra dentimarginata* Chu et Wang 1960: 37. pl. 1–4.
China.
Chu, C.-Y. and S.-C. Wang. 1960. Study of *Porphyra dentimarginata* sp. nov. Acta Botanica Sinica 9: 37–41
29. *Porphyra dioica* Brodie et Irvine 1997: 186. f. 1, 3–15.
Sidmouth, Devon, Great Britain.
Brodie, J. and L. M. Irvine. 1997. A comparison of *Porphyra dioica* sp. nov. and *P. purpurea* (Roth) C. Ag. (Rhodophyta: Bangiophycidae) in Europe. Cryptogamie Alologie 18: 283–297.
30. *Porphyra drachii* Feldmann 1979: 426. f. 1–3.
France.
Feldmann, J. 1979. Sur une nouvelle espèce de *Porphyra* (*P. drachii* J. Feldm.) et remarques sur l'évolution des plastes chez les Rhodophycées (Bangiophycidées et Acrochaetales). Vie et Milieu 28–29: 425–435.
31. *Porphyra elongata* (Areschoug) Kylin 1907: 110.
Scandinavia.
Kylin, H. 1907. Studien über die Algenflore schwedischen Westküste. Akad. Abhandl. 287 pp. pls. 1–7. Upsala.
- B: *Porphyra laciniata* var. *elongata* Areschoug, Alg. Scand. Exsicc. No. 117.
32. *Porphyra endiviifolium* (A. et E. S. Gepp) Chamberlain 1963: 151.
South Orkneys.
Chamberlain, Y. M. 1963. The identity of *Monostroma endiviifolium* A. and E. S. Gepp. Nova Hedwigia 5: 151–155.
B: *Monostroma endiviifolium* A. et E. S. Gepp 1905: 105. pl. 470, f. 1–5.
33. *Porphyra fallax* Lindstrom et Cole 1990:

371. f. 1, 3, 5, 7.
Seattle, Washington.
- Lindstrom, S. C. and K. M. Cole. 1990. *Porphyra fallax*, a new species of Rhodophyta from British Columbia and northern Washington. Jpn. J. Phycol. 38: 371–376.
34. *Porphyra fucicola* Krishnamurthy 1972: 32. f. 3, 4.
Mukkaw Bay, Olympic Peninsula.
Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. Pacific Science 26: 24–49.
35. *Porphyra gardneri* (Smith et Hollenberg) Hawkes 1977: 462.
Point Joe, Monterey, California.
Hawkes, M. W. 1977. A field, culture and cytological study of *Porphyra gardneri* (Smith et Hollenberg) comb. nov., (= *Porphyrella gardneri* Smith et Hollenberg), (Bangiales, Rhodophyta). Phycologia 16: 457–469.
B: *Porphyrella gardneri* Smith et Hollenberg 1943: 215.
36. *Porphyra grayana* Reinsch 1875: 59. pl. 31, f. 1.
Atlantic North America.
Reinsch, P. F. 1875. Contributiones ad algologiam et fungologiam. 103 pp. 131 pls. Nurenberg.
37. *Porphyra guangdongensis* Tseng et Chang 1978: 76. f.1. pl.1, f.1–2.
Guangdong, China.
Tseng, C.-K. and T.-J. Chang. 1978. On two new *Porphyra* from China. Oceanol. Limnol. Sinica 9: 76–83.
38. *Porphyra haitanensis* Chang et Zheng 1960: 32. pl. 1–5.
Fukien, China.
Chang, T.-J. and B.-F. Zheng. 1960. *Porphyra haitanensis*, a new species of *Porphyra* from Fukien. Acta Botanica Sinica 9: 32–36.
39. *Porphyra heleneae* Zinova 1948: 442.
Murman Sea.
Zinova, A. D. 1948. On several species of the genus *Porphyra* in Murman and White Sea and a new species *Porphyra heleneae* Zin. Bot. Zhurnal 33: 440–442.
40. *Porphyra hiberna* Lindstrom et Cole 1992: 435. f.11,17–23.
Monterey, California.
Lindstrom, S. C. and C. M. Cole. 1992.
- The *Porphyra lanceolata*-*P. pseudolanceolata* (Bangiales, Rhodophyta) complex unmasked: recognition of new species based on isozymes, morphology, chromosomes and distributions. Phycologia 31: 431–448.
41. *Porphyra hiemalis* Kylin 1907: 112. pl. 3, f. 2.
Sweden.
Kylin, H. 1907. Studien über die Algenflora der schwedischen Westküste. Akad. Abhandl. 287 pp. pls. 1–7. Upsala.
42. *Porphyra hollenbergii* Dawson 1953: 14. pl.13, f.1.
Baja California, Mexico.
Dawson, E. Y. 1953. Marine red algae of Pacific Mexico. Part I. Bangiales to Corallinaeae Subf. Corallinoideae. Allan Hancock Pacific Expedition 17(1): 1–239.
43. *Porphyra hospitans* Zanardini in Frauenfeld 1855: 46.
Dalmatia.
Frauenfeld, G. 1855. Die Algen der dalmatischen Küste. 71 pp. 1 pl. Wien.
44. *Porphyra inaequicrassa* Perestenko 1980: 193. f. 27–28.
Peter the Great Bay, Sea of Japan.
Perestenko, L. P. 1980. Seaweeds of Peter the Great Bay. 232 pp. 404 figs. Leningrad.
45. *Porphyra indica* Krishnamurthy et Baluswami 1984: 36. f. 14–27.
Boria reef, Gulf of Kutch, India.
Krishnamurthy, V. and M. Baluswami. 1984. The species of *Porphyra* from the Indian region. Seaweeds Res. Utilization 7: 31–37.
46. *Porphyra insolita* Kornmann et Sahling 1991: 20. f. 5–10.
Helgoland, Germany.
Kornmann, P. and P.-H. Sahling. 1991. The *Porphyra* species of Helgoland (Bangiales, Rhodophyta). Helgoländer Meeresunters. 45: 1–38.
47. *Porphyra ionae* Ricker 1987: 142. f. 59.
Macquarie Island.
Ricker, R. W. 1987. Taxonomy and biogeography of Macquarie Island seaweeds. 344 pp. British Museum (N. H.), London.
48. *Porphyra irregularis* Fukuhara 1968: 88. pl. 4(2).
Hokkaido, Japan.
Fukuhara, E. 1968. Studies on the taxonomy and ecology of *Porphyra* of Hokkaido

- and its adjacent water. Bull. Hokkaido Reg. Fish. Res. Lab. 34: 40–99.
49. *Porphyra ishigecola* Miura 1967: 65. pl. 1,2,7.
Enoshima, Sagami Bay, Japan.
Miura, A. 1967. Two new species and a new record of *Porphyra* from Enoshima, Sagami Bay. Jour. Tokyo Univ. Fish. 53: 65–71.
50. *Porphyra kanakaensis* Mumford 1973: 239.
San Juan Island, Washington.
Mumford, T. F. Jr. 1973. A new species of *Porphyra* from the west coast of North America. Syesis 6: 239–242.
51. *Porphyra kanyakumariensis* Krishnamurthy et Baluswami 1984: 35. f.1–13.
Kovalam, near Kanniyakumari, Tamil Nadu, India.
Krishnamurthy, V. and M. Baluswami. 1984. The species of *Porphyra* from the Indian region. Seaweeds Res. Utilization 7: 31–37.
52. *Porphyra kaspar* Nelson et Adams 1990: 4. f. 2–8.
Farmer Rock, Great Island, Three Kings Islands, New Zealand.
Nelson, W. A. and N. M. Adams. 1990. A new species of *Porphyra* (Bangiales, Rhodophyta) from the Three Kings Islands, northern New Zealand. Botanica Marina 33: 3–7.
53. *Porphyra katadae* Miura 1968: 55. pl. 1–7.
Ise Ominato, Mie-ken, Japan.
Miura, A. 1968. *Porphyra katadai*, a new species from Japanese coast. Jour. Tokyo Univ. Fish. 54: 55–59.
54. *Porphyra kinositae* (Yamada et Tanaka) Fukuhara 1968: 88.
Utasutsu, Suttsu, Hokkaido, Japan.
Fukuhara, E. 1968. Studies on the taxonomy and ecology of *Porphyra* of Hokkaido and its adjacent water. Bull. Hokkaido Reg. Fish. Res. Lab. 34: 40–99.
B: *Porphyra yezoensis* f. *kinositae* Yamada et Tanaka in Tanaka 1952: 41. f. 20. pl. 5, f. 1.
55. *Porphyra kuniedae* Kurogi 1957: 23.
Matsushima Bay, Japan.
Kurogi, M. 1957. Species of cultivated *Porphyra*. The Aquaculture 4(4): 21–28.
56. *Porphyra kunthiana* Kützing 1843: 383.
Valparaíso, Chile.
Kützing, F. T. 1843. Phycologia generalis oder Anatomie, Physiologie und Systematik der Tange. Leipzig. 458 pp. 80 pls.
- Hamel (1928) treats this entity as a forma of *P. columbina*.
57. *Porphyra kurogii* Lindstrom in Lindstrom et Cole 1992: 2071. f.1–7.
Bridget Cove, Alaska.
Lindstrom, S. C. and K. M. Cole. 1992. A revision of the species of *Porphyra* (Rhodophyta: Bangiales) occurring in British Columbia and adjacent water. Can. J. Bot. 70: 2066–2075.
58. *Porphyra lacerata* Miura 1967: 67. pl. 3, 8.
Enoshima, Sagami Bay, Japan.
Miura, A. 1967. Two new species and a new record of *Porphyra* from Enoshima, Sagami Bay. Jour. Tokyo Univ. Fish. 53: 65–71.
59. *Porphyra laciniata* (Lightfoot) C. Agardh 1824: 190.
Scotland.
Agardh, C. A. 1824. Systema algarum. 312 pp. Lund.
B: *Ulva laciniata* Lightfoot 1777: 974. pl. 33.
60. *Porphyra lanceolata* (Setchell et Hus) Smith in Smith et Hollenberg 1943: 213.
San Francisco, California.
Smith G. M. and G. J. Hollenberg. 1943. On some Rhodophyceae from the Monterey Peninsula, California. Amer. J. Bot. 30: 211–222.
B: *Porphyra perforata* f. *lanceolata* Setchell et Hus in Hus 1900: 65.
61. *Porphyra ledermannii* Pilger 1911: 298.
Cameroon.
Pliger, R. 1911. Die Meeresalgen von Kamerun nach der Sammlung von C. Ledermann. Engler's bot. Jahrb. 46: 294–323.
62. *Porphyra leucosticta* Thuret in Le Jolis 1863: 100.
Cherbourg, France.
Le Jolis, A. 1863. Liste des algues marines de Cherbourg. Mém. Soc. Imp. Sc. Nat. Cherbourg 10: 1–168.
63. *Porphyra linearis* Greville 1830: 170. pl. 18.
Sidmouth, England.
Greville, R. K. 1830. Algae Brittanicae. 218 pp. 19 pls. Edinburgh.
64. *Porphyra lucasii* Levring 1953: 469. f. 6 H-L, 7.
Bunbury, Australia.
Levring, T. 1953. The marine algae of Aus-

- tralia. I. Rhodophyta, Goniotrichales, Bangiales and Nemalionales. *Arkiv för Botanik*, ser. 2, 2: 257–530.
65. *Porphyra maculosa* Conway 1975: 317. f. 1.
Loins' Bay, Howe Sound, British Columbia, Vancouver, Canada.
Conway, E. 1975. *Porphyra maculosa* sp. nov. in British Columbia. *Sysis* 8: 317–320.
66. *Porphyra marcosii* Cordero 1976: 15. f. A-H. pl. 1.
Luzon, the Philippines.
Cordero, P. A. Jr. 1976. Phycological observations, II. *Porphyra marcosii*, a new species from the Philippines. *Acta Manilana*, ser. A, 15(24): 14–24.
67. *Porphyra marginata* Tseng et Chang 1958: 15. f. 1. pl. 1–4.
Tsingtao, China.
Tseng, C.-K. and T.-J. Chang. 1958. On *Porphyra marginata* sp. nov. and its systematic position. *Acta Botanica Sinica* 7: 15–25.
68. *Porphyra martensiana* Suhr 1840: 277.
Catanea.
Suhr, J. N. 1840. Beiträge zur Algenkunde. *Flora* 23: 273–282.
69. *Porphyra microphylla* Zanardini 1860:
69. pl. 7A.
Dalmazia.
Zanardini, G. A. M. 1860. *Iconographia phycologica mediterraneo-adriatica*. Vol. 1. pls. 1–140.
70. *Porphyra microphylla* Reinsch 1875: 58.
pl. 30. nom. illeg.
Adriatic Sea.
Reinsch, P. F. 1875. *Contributions ad algologiam et fungologiam*. 103 pp. 181 pls. Nurenberg.
According to De Toni (1897), this is a synonym of *P. miniata*.
71. *Porphyra miniata* (C. Agardh) C. Agardh 1824: 191.
Greenland.
Agardh, C. A. 1824. *Systema algarum*. 312 pp. Lund.
B: *Ulva purpurea* var. *miniata* C. Agardh 1817: 42.
72. *Porphyra minima* Crouan et Crouan 1867: 132.
Brest, France.
Crouan, P. L. and H. M. Crouan. 1867. *Flo- rule du Finistère. Algues*; 104–262. Brest.
73. *Porphyra minor* Zanardini 1847: 67.
Venezia.
Zanardini, G. A. M. 1847. *Notizie intorno alle cellulari marine delle lagune e de'litoral di Venezia*. *Atti I. R. Ist. Veneto Sci., Lett. Arti*, 6: 185–262.
74. *Porphyra monosporangia* Wang et Zhang 1980: 141. f. 1, 2. pl. 1–3.
Fujian, China.
Wang, S. J. and J. R. Zhang 1980. On *Porphyra monosporangia*, new species from China. *Oceanol. Limnol. Sinica* 11: 141–149
75. *Porphyra moriensis* Ohmi 1954: 231. pl. 1–4.
Mori, Hokkaido.
Ohmi, H. 1954. A new species of *Porphyra*, epiphytic on *Chorda filum* from Hokkaido. *Bull. Fac. Fish. Hokkaido Univ.* 5: 231–234.
76. *Porphyra mumfordii* Lindstrom et Cole 1992: 445. f. 15, 16, 38–44.
Orlebar Point, Gabriola Island, British Columbia, Canada.
Lindstrom, S. C. and C. M. Cole. 1992. The *Porphyra lanceolata*-*P. pseudolanceolata* (Bangiales, Rhodophyta) complex unmasked: recognition of new species based on isozymes, morphology, chromosomes and distributions. *Phycologia* 31: 431–448.
77. *Porphyra nereocystis* Anderson in Blankinship et Keeler 1892: 149.
Farallon Island, California.
Blankinship, J. W. and C. A. Keeler. 1892. On the natural history of the Farallon Islands. *Zoe* 3: 148–150.
78. *Porphyra nobilis* J. Agardh 1883: 62. pl. 2, f. 49, 50.
New Zealand.
Agardh, J. G. 1883. Till algernes systematik. Afd. 3. Lunds Univ. Årsskr. 19: 1–177.
79. *Porphyra norrisii* Krishnamurthy 1972: 35. f. 5, 6.
San Juan Island, Washington.
Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. *Pacific Science* 26: 24–49.
Mumford (1975) considers this entity as a synonym of *P. schizophylla*.
80. *Porphyra occidentalis* Setchell et Hus in Hus 1900: 69.
Monterey, California.

- Hus, H.T.A. 1900. Preliminary notes on West Coast *Porphyras*. *Zoe* 5: 61–70.
81. *Porphyra ochotensis* Nagai 1941: 144. pl. 4, f. 3–8; pl. 6, f. 1–2.
Kurile Islands.
Nagai, M. 1941. Marine algae of the Kurile Islands. II. *J. Fac. Agr. Hokkaido Univ.* 46: 139–310.
82. *Porphyra okamurae* Ueda 1932: 14. pl. 1, f. 9–10; pl. 2, f. 1–6; pl. 12, f. 1–2.
Sea of Japan.
Ueda, S. 1932. A systematic study of the genus *Porphyra* found on the Japanese coasts. *Jour. Imp. Fish. Inst.* 28: 1–45. pl. 1–24.
83. *Porphyra okhaensis* Joshi, Oza et Tewari 1992: 262. f.1–2.
Okha, Gujarat, India.
Joshi, H. V., R. M. Oza and A. Tewari. 1992. Life cycle and growth of *Porphyra okhaensis* sp. nov. in culture. *Indian Jour. Mar. Science* 21: 262–267.
84. *Porphyra oligospermatangia* Tseng et Zheng in Zheng 1981: 447. f. 1.
Qingdao, China.
Zheng, B.-F. 1981 *Porphyra oligospermatangia*, a new species of *Porphyra*. *Oceanol. Limnol. Sinica* 12: 447–451.
85. *Porphyra onoii* Ueda 1932: 34. pl. 1, f. 4, 12; pl. 8, f. 2–10; pl. 21, f. 3–4.
Otaru, Hokkaido, Japan.
Ueda, S. 1932. A systematic study of the genus *Porphyra* found on the Japanese coasts. *Jour. Imp. Fish. Inst.* 28: 1–45. pl. 1–24.
86. *Porphyra papenfussii* Krishnamurthy 1972: 37. f. 7–8.
San Juan Island, Washington.
Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. *Pacific Science* 26: 24–49.
87. *Porphyra pendula* Dawson 1953: 16. pl. 13, f.2.
Gulf of California, Mexico.
Dawson, E. Y. 1953. Marine red algae of Pacific Mexico. Part I. Bangiales to Corallinaceae Subf. Corallinoideae. Allan Hancock Pacific Expedition 17(1): 1–239.
88. *Porphyra perforata* J. Agardh 1883: 69. pl. 2, f. 62–64.
California.
- Agardh, J. G. 1883. Till algernes systematik. Afd. 3. Lunds Univ. Årsskr. 19: 1–177.
89. *Porphyra plocamiestris* Ricker 1987: 144. f. 60.
Macquarie Island.
Ricker, R. W. 1987. Taxonomy and biogeography of Macquarie Island seaweeds. 344 pp. British Museum (N. H.), London.
90. *Porphyra pseudocrassa* Yamada et Mikami in Mikami 1956: 340. f. 1–2.
Erimo, Hokkaido.
Mikami, H. 1956. Two new species of *Porphyra* and their subgeneric relationship. *Bot. Mag. Tokyo* 69: 340–345.
91. *Porphyra pseudolanceolata* Krishnamurthy 1972: 40. f.10.
San Juan Island, Washington.
Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. *Pacific Science* 26: 24–49.
92. *Porphyra pseudolinearis* Ueda 1932: 29. pl. 1, f. 11; pl. 6, f. 17–18; pl. 7, f. 1–5; pl. 19, f. 1–2.
Japan.
Ueda, S. 1932. A systematic study of the genus *Porphyra* found on the Japanese coasts. *Jour. Imp. Fish. Inst.* 28: 1–45. pl. 1–24.
93. *Porphyra pujalsii* Coll et Oliveira 1976: 193. f. 9–16.
Uruguay.
Coll, J. and E. C. de Oliveira Filho. 1976. The genus *Porphyra* C. Ag. (Rhodophyta, Bangiales) in the American South Atlantic. II. Uruguayan species. *Botanica Marina* 19: 191–196.
94. *Porphyra pulchra* Hollenberg in Smith et Hollenberg 1943: 213. f. 11–12.
Moss Beach, near Pacific Grove, California.
Smith, G. M. and G. J. Hollenberg. 1943. On some Rhodophyceae from the Monterey Peninsula, California. *Amer. J. Bot.* 30: 211–222.
95. *Porphyra punctata* Yamada et Mikami in Mikami 1956: 342. f. 3–4.
Hidaka, Hokkaido, Japan.
Mikami, H. 1956. Two new species of *Porphyra* and their subgeneric relationship. *Bot. Mag. Tokyo* 69: 340–345.
96. *Porphyra purpurea* (Roth) C. Agardh

- 1824: 191.
Europe.
- Agardh, C. A. 1824. *Systema algarum*. 312 pp. Lund.
- B: *Ulva purpurea* Roth 1787: 209. pl. 6, f. 1.
97. *Porphyra purpureo-violacea* (Roth) Krishnamurthy 1972: 42.
Germany.
- Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. *Pacific Science* 26: 24–49.
- B: *Ulva purpureo-violacea* Roth 1788: 524.
98. *Porphyra rediviva* Stiller et Waaland 1996: 328. f. 1–3.
Fidalgo Bay, Anacortes, Skagit County, Washington.
- Stiller, J. W. and J. R. Waaland. 1996. *Porphyra rediviva* sp. nov. (Rhodophyta): a new species from northeast Pacific salt marshes. *J. Phycol.* 32: 323–332.
99. *Porphyra rizzinii* Coll et Oliveira 1976: 193. f. 17–24.
Uruguay.
- Coll, J. and E. C. de Oliveira Filho. 1976. The genus *Porphyra* C. Ag. (Rhodophyta, Bangiales) in the American South Atlantic. II. Uruguayan species. *Botanica Marina* 19: 191–196.
100. *Porphyra roseana* Howe 1928: 190. f. 1.
Rio de Janeiro, Brazil.
- Howe, M. A. 1928. Notes on some marine algae from Brazil and Barbados. *J. Wash. Acad. Sci.* 18: 186–194.
101. *Porphyra rosengurtii* Coll et Cox 1977: 157. f. 9–16.
Pivers Island, Beaufort, Carteret Co., North Carolina.
- Coll, J. and J. Cox. 1977. The genus *Porphyra* C. Ag. (Rhodophyta, Bangiales) in the American North Atlantic. I. New species from North Carolina. *Botanica Marina* 20: 155–159.
102. *Porphyra sanjuanensis* Krishnamurthy 1972: 43. f. 11.
San Juan Island, Washington.
- Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. *Pacific Science* 26: 24–49.
- Lindstrom and Cole (1990) placed this name under a synonym of *P. perforata*.
103. *Porphyra schizophylla* Hollenberg in Smith et Hollenberg 1943: 213. f. 6–7.
Pescadero Point, Monterey Peninsula, California.
- Smith, G. M. and G. J. Hollenberg. 1943. On some Rhodophyceae from the Monterey Peninsula, California. *Amer. J. Bot.* 30: 211–222.
104. *Porphyra segregata* (Setchell et Hus) Krishnamurthy 1972: 44.
San Diego, California.
- Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. *Pacific Science* 26: 24–49.
- B: *Porphyra perforata* f. *segregata* Setchell et Hus in Hus 1900: 64.
105. *Porphyra seriata* Kjellman 1897: 17. pl. 3, f. 8–10; pl. 4, f. 1; pl. 5, f. 16–21.
Kyushu, Japan.
- Kjellman, F. R. 1897. Japanska arter af slägtet *Porphyra*. Bihang till Kongl. Sv. Vet-Akad. Handl. 23(4): 1–34.
106. *Porphyra smithii* Hollenberg et Abbott 1968: 1241. f. 7.
Mission Point, Monterey Peninsula, California.
- Hollenberg, G. J. and I. A. Abbott. 1968. New species of marine algae from California. *Can. J. Bot.* 46: 1235–1251.
107. *Porphyra spiralis* Oliveira et Coll 1975: 194. f. 1, 2, 7–9, 11–13.
Praia da Costa, Espírito Santo State, Brazil.
- Oliveira, E. C. de and J. Coll. 1975. The genus *Porphyra* C. Ag. (Rhodophyta-Bangiales) in the American South Atlantic. I. Brazilian species. *Botanica Marina* 18: 191–197.
108. *Porphyra suborbiculata* Kjellman 1897: 11. pl. 1, f. 1–3; pl. 2, f. 5–9; pl. 5, f. 4–7.
Goto, Japan.
- Kjellman, F. R. 1897. Japanska arter af slägtet *Porphyra*. Bihang till Kongl. Sv. Vet-Akad. Handl. 23(4): 1–34.
= *Porphyra areolata* Kjellman 1897: 8. pl. 2, f. 1–4; pl. 5, f. 1–3. Kobe, Japan.
109. *Porphyra subtumens* J. Agardh ex Laing 1928: 45. pl. 6.
New Zealand.
- Laing, R. M. 1928. New Zealand Bangiales. *Trans. N. Z. Inst.* 59: 34.
110. *Porphyra tanegashimensis* Shinmura

- 1974: 735. f. 1, 3–5, 9.
Iseki, Tanegashima, Japan.
- Shinmura, I. 1974. *Porphyra tanegashimensis*, a new species of Rhodophyceae from Tanegashima Island in southern Japan. Bull. Jap. Soc. Sci. Fish. 40: 735–749.
111. *Porphyra tasa* (Yendo) Ueda 1932: 35. Kurile Islands.
Ueda, S. 1932. A systematic study of the genus *Porphyra* found on the Japanese coasts. Jour. Imp. Fish. Inst. 28: 1–45. pl. 1–24.
B: *Wildemania tasa* Yendo 1920: 3.
112. *Porphyra tenera* Kjellman 1897: 20. pl. 1, f. 6; pl. 4, f. 2–5; pl. 5, f. 22–26. Japan.
Kjellman, F. R. 1897. Japanska arter af slægten *Porphyra*. Bihang till Kongl. Sv. Vet-Akad. Handl. 23(4): 1–34.
113. *Porphyra tenuipedalis* Miura 1961: 305. pl. 11–13, f. A–F. Tokyo Bay, Japan.
Miura, A. 1961. A new species of *Porphyra* and its *Conchocelis*-phase in nature. Jour. Tokyo Univ. Fish. 47: 305–311.
114. *Porphyra tenuissima* C. Agardh in Frauenfeld 1855. Dalmazia.
Frauenfeld, G. 1855. Die Algen der dalmatischen Küste. 71 pp. 1 pl. Wien.
115. *Porphyra tenuissima* (Strömfelt) Setchell et Hus in Hus 1900: 68 nom. illeg. Iceland.
Hus, H.T.A. 1900. Preliminary notes on West Coast *Porphyras*. Zoe 5: 61–70.
B: *Diploderma tenuissima* Strömfelt 1886: 173.
This combinations is a later homonym and hence illegitimate.
116. *Porphyra thulaea* Munda et Pedersen 1978: 286. f.1–10. Greenland.
Munda, I. M. and P. M. Pedersen. 1978. *Porphyra thulaea* sp. nov. (Rhodophyceae, Bangiales) from east Iceland and west Greenland. Botanica Marina 21: 283–388.
117. *Porphyra thuretii* Setchell et Dawson in Dawson 1944: 253. Carmel Bay, Monterey Peninsula, California.
Dawson, E. Y. 1944. The marine algae of the Gulf of California. A. Hancock pacific Exped. 3: 189–464.
118. *Porphyra torta* Krishnamurthy 1972: 45. f. 12. San Juan Island, Washington.
Krishnamurthy, V. 1972. A revision of the species of the algal genus *Porphyra* occurring on the Pacific coast of North America. Pacific Science 26: 24–49.
119. *Porphyra tristanensis* Baardseth 1941: 36. f. 14, 15F. Tristan da Cunha.
Baardseth, E. 1941. The marine algae of Tristan da Cunha. Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937–1938. No. 9. 173 pp. Oslo.
120. *Porphyra umbilicalis* (Linnaeus) Kützing 1843: 383. Europe.
Kützing, F. T. 1843. Phycologia generalis oder Anatomie, Physiologie und Systematik der Tange. Leipzig. 458 pp. 80 pls.
B: *Ulva umbilicalis* Linnaeus 1753: 1163.
121. *Porphyra umbilicata* Ruprecht in Middendorff 1851: 393. Sea of Okhotsk.
Middendorff, A. T. 1851. Reise in den äußersten Norden und Osten Siberiens während der Jahre 1843 und 1844. Botanik. Vol. 1(2): 191–435. St. Petersburg.
122. *Porphyra variegata* (Kjellman) Kjellman in Hus 1900: 69. Bering Island, Commander Islands, Bering Sea.
Hus, H.T.A. 1900. Preliminary notes on West Coast *Porphyras*. Zoe 5: 61–70.
B: *Diploderma variegata* Kjellman 1889: 33. pl. 2, f. 1–4.
= *Porphyra tenuitasa* Fukuhara 1968: 88. pl. 2(2), 4(3). Hokkaido, Japan.
= *Porphyra uedae* Fukuhara 1968: 88. pl. 2 (4), 5(1). Hokkaido.
123. *Porphyra vermicellifera* Kützing 1843: 383. Trieste, Adriatic Sea.
Kützing, F. T. 1843. Phycologia generalis oder Anatomie, Physiologie und Systematik der Tange. Leipzig. 458 pp. 80 pls.
According to De Toni (1897), this is a synonym of *P. atropurpurea*.
124. *Porphyra vietnamensis* Tanaka et Ho 1962: 34. f. 10–11. Vung-Tau, Vietnam.

- Tanaka, T. and P.-H. Ho. 1962. Notes on some marine algae from Viet-Nam. I. Mem. Fac. Fish. Kagoshima Univ. 11: 24–40.
125. *Porphyra vulgaris* C. Agardh 1830: no. 28.
Europe.
Agardh, C. A. 1830. *Icones Algarum Europaeorum. Representation d'algues européennes suivi de celles des espèces exotiques les plus remarquables récemment découvertes.* 40 pp. 40 pls. Leipsic.
126. *Porphyra vulgaris* Kützing 1843: 382.
nom. illeg.
Europe.
Kützing, F. T. 1843. *Phycologia generalis oder Anatomie, Physiologie und Systematik der Thange.* Leipzig. 458 pp. 80 pls.
This name is a later homonym and illegitimate.
127. *Porphyra woolhousiae* Harvey 1863: pl. 265.
Tasmania.
Harvey, W. H. 1863. *Phycologia australica.* Vol. V. pls. 241–300. London.
128. *Porphyra yamadae* Yoshida 1997: 166.
f. 5.
Goto, Japan.
Yoshida, T. 1997. Japanese marine algae: New combinations, new names and new species. *Phycological Research* 45: 163–167.
This name was proposed for *P. crispata* sensu Ueda 1932: 18, non Kjellman.
129. *Porphyra yezoensis* Ueda 1932: 23. pl. 1, f. 9, 14; pl. 4, f. 11–17; pl. 16, f. 3–4.
Hakodate, Japan.
Ueda, S. 1932. A systematic study of the genus *Porphyra* found on the Japanese coasts. *Jour. Imp. Fish. Inst.* 28: 1–45. pl. 1–24.
= *Porphyra palleola* Noda 1964: 9. f. 8. Sado Island, Japan.
- Addenda.**
130. *Porphyra chauhanii* Kumar et Panikkar 1995: 153. f. 1a, 2.
Thirumullavaram, Kerala, India.
Kumar, C. A. and M. V. N. Panikkar. 1995. The species of *Porphyra* C. A. Agardh from kerala. *Seaweeds Res. Utilization* 17: 151–160.
131. *Porphyra koreana* Hwang et Lee 1994: 170. f. 2–4.
Pukpyongdong, Tonghaeshi, Kangwondo, Korea.
Hwang, M. S. and I. K. Lee. 1994. Two species of *Porphyra* (Bangiales, Rhodophyta), *P. koreana* sp. nov. and *P. lacerata* Miura from Korea. *Korean J. Phycol.* 9: 169–177.
132. *Porphyra livida* De Notaris 1846: 72.
Liguria, Italy.
De Notaris, D. G. 1846. Crittogramme. In *Prospetto della Flora Ligustica e dei zoofiti, del Mare Ligustico*, pp. 59–80. Genova.
133. *Porphyra violacea* J. Agardh 1899: 154.
California.
Agardh, J. G. 1899. *Analecta algologica. Observationes de speciebus algarum minus cognitis earumque dispositione. Continuatio V.* Lunds Univ. Årsskr. 35 (Afd. 2, Nr 35): 154.

Species Not Included in the Catalogue

- Porphyra bangiaeformis* Kützing 1849: 691 = *Erythrotrichia carnea*.
Porphyra boryana Montagne 1846: 150. Pl. 13, f. 2 = *Erythrotrichia boryana*.
Porphyra ceramicola (Lyngbye) Crouan frat. 1867: 132 = *Erythrotrichia carnea*.
Porphyra ciliaris (Carmichael) Crouan frat. 1867: 132 = *Erythrotrichia bertholdii*.
Porphyra coccinea J. Agardh 1850: 407 = *Porphyropsis coccinea*.
Porphyra elegans Crouan frat. 1867: 132 = *Goniotrichum alsidii*.
Porphyra fuscopurpurea (Dillwyn) Crouan frat. 1867: 132 = *Bangia fuscopurpurea*.
Porphyra lejolisii (De Notaris) Crouan frat. 1867: 132 = *Bangia lejolisii*.
Porphyra naiadum Anderson in Blankinship et Keeler 1892: 148 = *Smithora naiadum*.
Porphyra pertusa Postels et Ruprecht 1840: 20. f. 36 = *Rhodymenia pertusa*.
Porphyra pumila (Areschoug) Crouan frat. 1867: 132 = *Bangia pumila*.
Porphyra reflexa Crouan frat. 1867: 132. f. 73 = *Erythrotrichia carnea*.
Porphyra vexillaris Montagne 1856: 450 = *Porphyropsis vexillavis*.

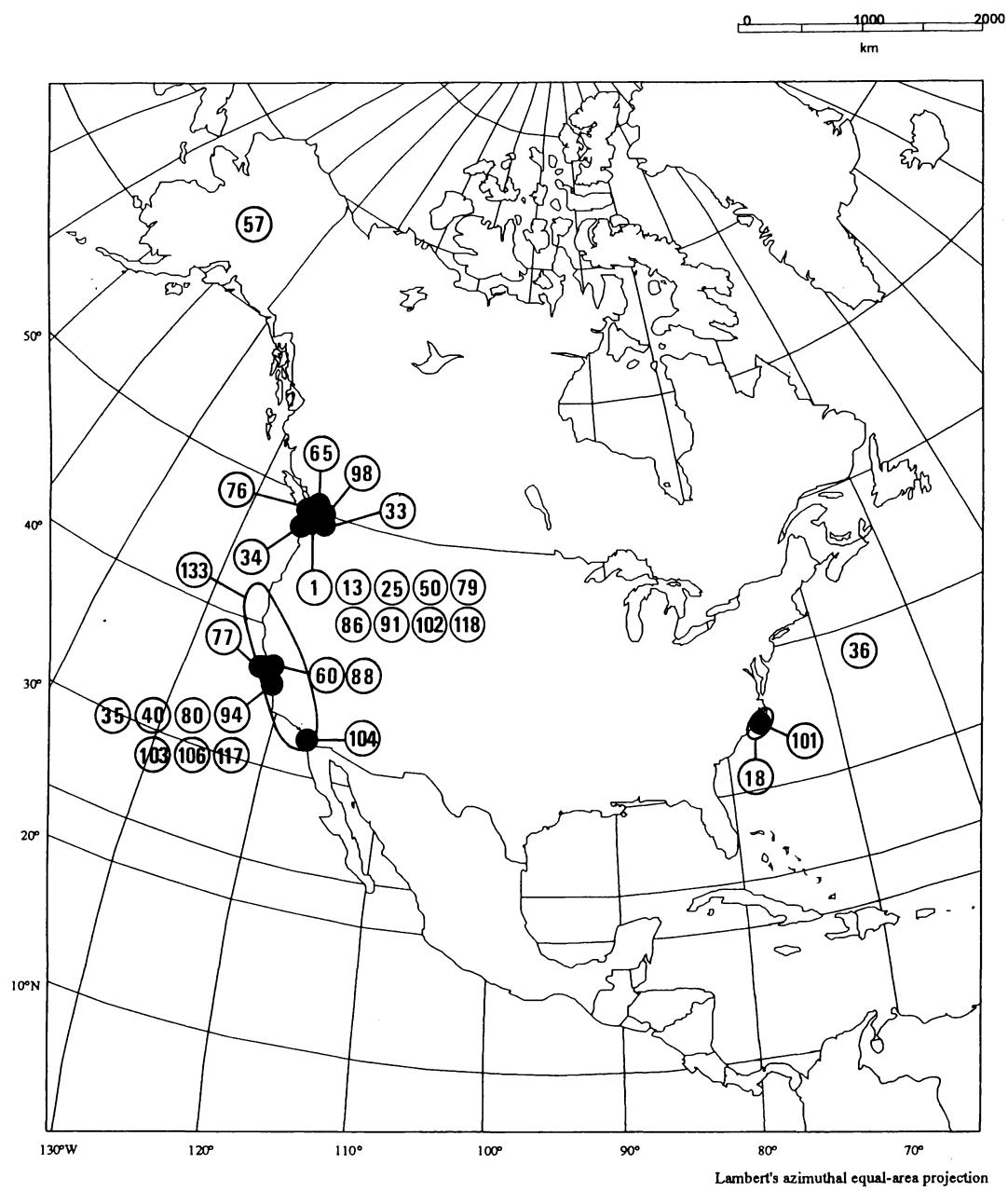
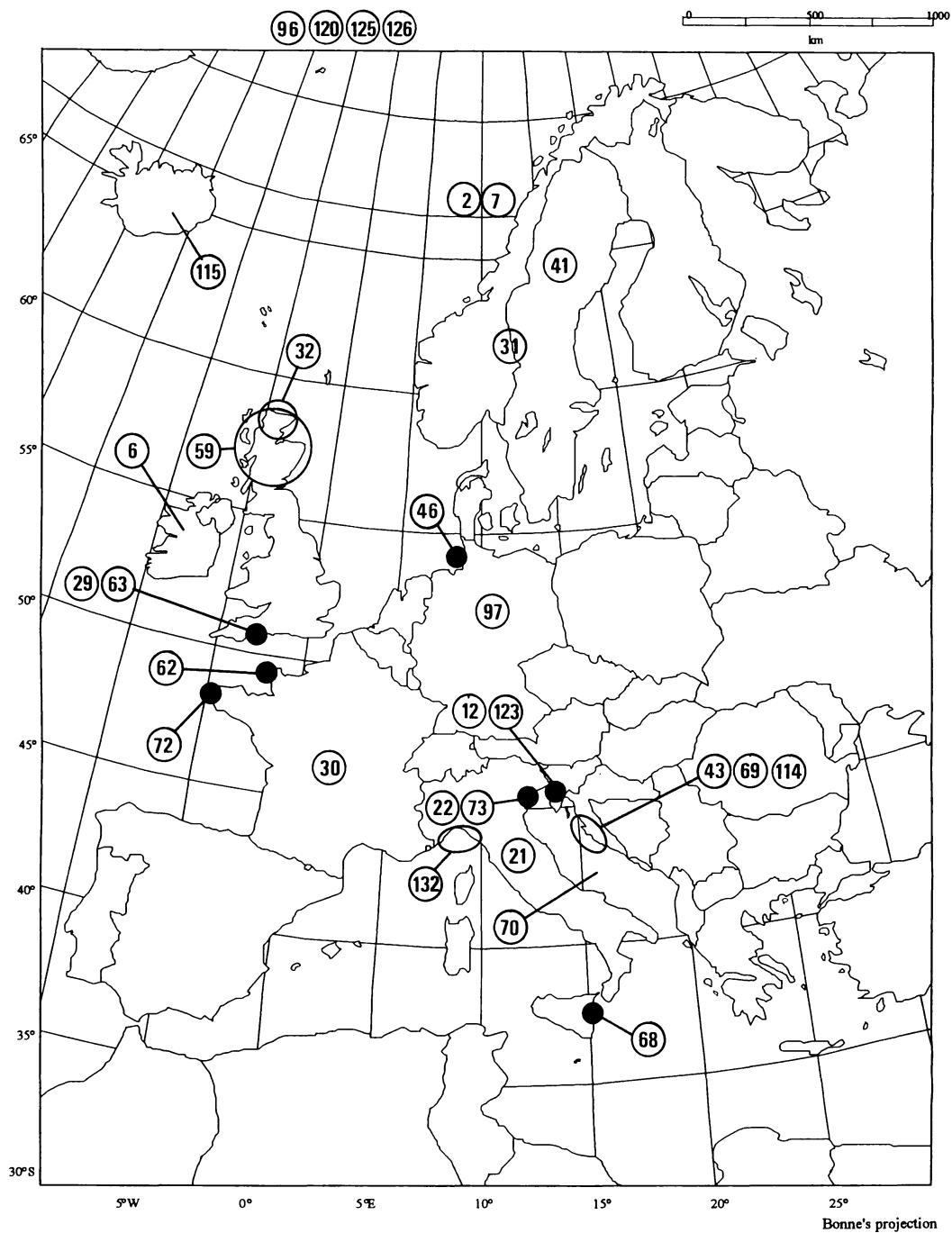


Fig. 1. The type localities of *Porphyra* species in north America. The numbers coincide with the catalogue's number.



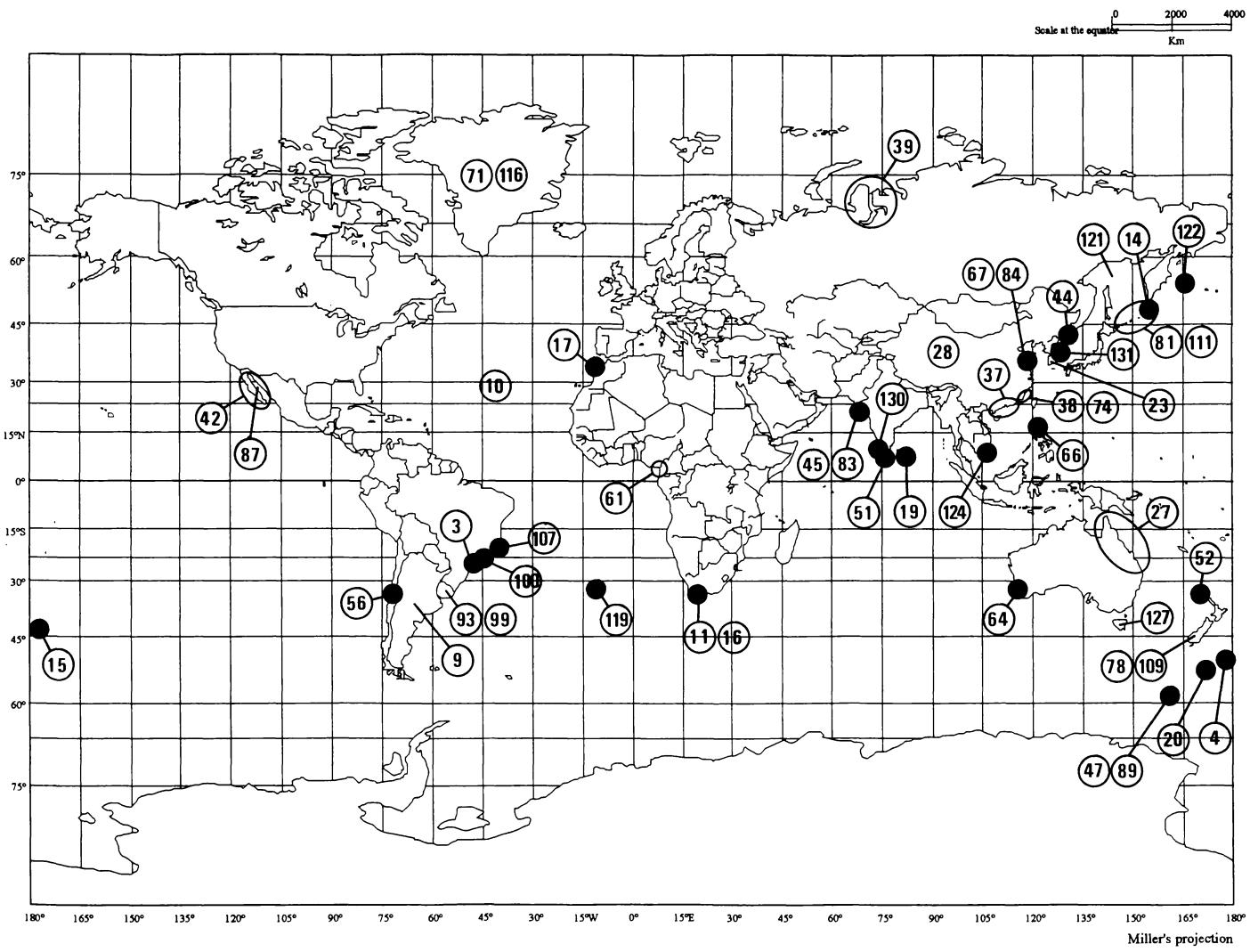


Fig. 3. The type localities of *Porphyra* species in the world. The numbers coincide with the catalogue's number.

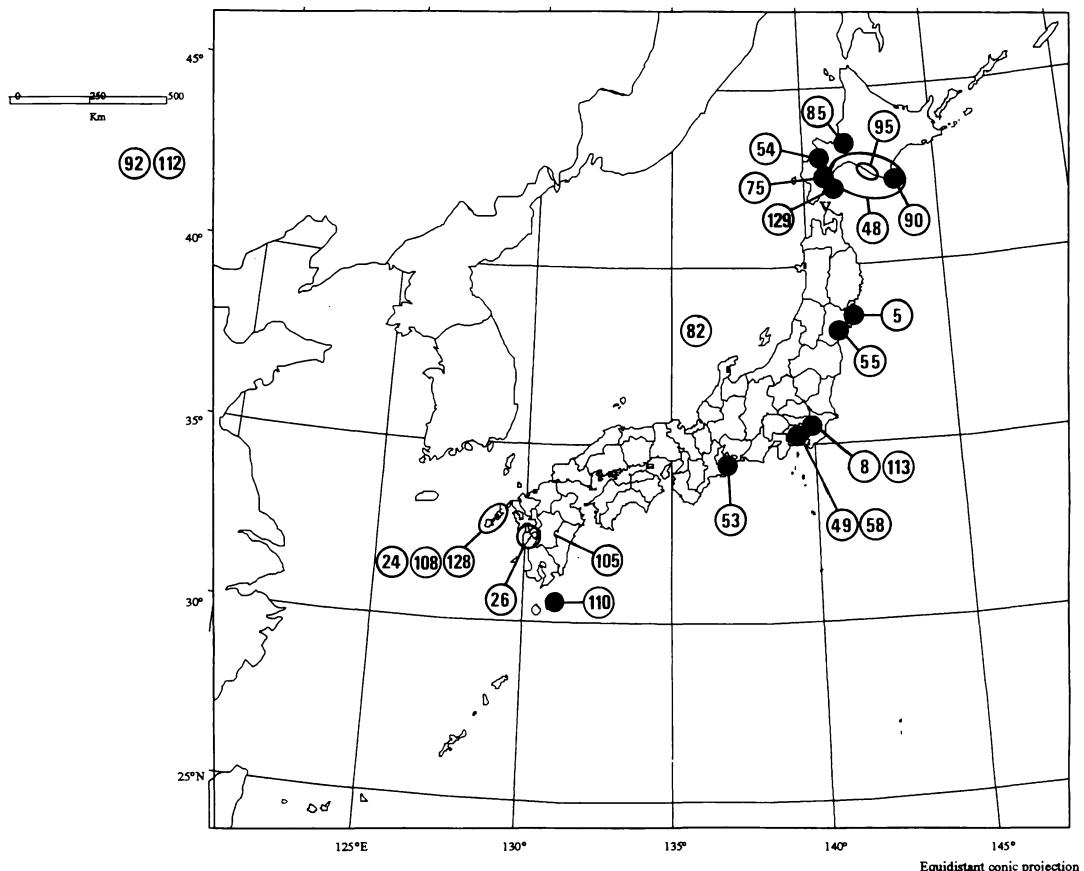


Fig. 4. The type localities of *Porphyra* species in Japan. The numbers coincide with the catalogue's number, and marginal numbers indicate species which the type locality is Japan in the original description.

アマノリ属（紅藻・ウシケノリ科）総目録 (原記載論文および基準産地を含む)

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ウシケノリ科アマノリ属に 133 種を認め、その原記載論文、および基準産地を地図上に示した。また、本目録は、ポール・シルバ博士（カリフォルニア大学植物標本室: UC）が編集し、インターネットで公開している Index Nominum Algarum: <http://ucjeps.herb.berkeley.edu/rilmoe/porphyra.html> と比較検討された。参考とした文献は北海道大学大学院理学研究科生物学専攻 (SAP) に保管されている、1996 年以降に有効発表されたアマノリ属の分類学的研究論文と報告書の別刷りを千葉県立中央博物館植物標本室 (CBM) で収集している。

これまでに報告された有効文献をレビューし、紅藻