

Enumeratio Pteridophytorum Japonicorum. II. Lycopodiaceae

Toshiyuki Nakaike

Natural History Museum and Institute, Chiba
955–2 Aoba-cho, Chuo-ku, Chiba 260, Japan

Abstract Twenty-two species and one variety in three genera of Lycopodiaceae are enumerated from Japan, i.e. twelve species with one variety of the genus *Huperzia*, three species of the genus *Lycopodiella*, and seven species of the genus *Lycopodium*. The related literature for the recognition of each taxon in Japan, information from a distribution map, chromosome numbers from Japanese materials, and illustrations of spores are cited.

Key words: Lycopodiaceae, *Huperzia*, *Lycopodiella*, *Lycopodium*, Japan.

The present paper is planned along the same lines as my book 'Enumeratio Pteridophytorum Japonicorum, Filicales' (Nakaike, 1975). The chief aim of this paper is to clarify the taxa of Japanese Lycopodeaceae, their scientific names, and the history of the recognition of each taxon in Japan. The literature for distribution and synonyms of each taxon is cited from the Old and New World. The chromosome numbers are also cited from studies of Japanese materials. In this paper twelve species with one variety of the genus *Huperzia*, three species of the genus *Lycopodiella*, and seven species of the genus *Lycopodium* are enumerated.

The classification of the family and genera follow the system of Øllgaard (1987). The genera and species are arranged in alphabetical order in each genus and species.

Enumeration

Huperzia Bernh.

Bernhardi in J. Bot. (Schrader) 1800(2): 126. 1801.

Lectotype of the genus: *Huperzia selago* (L.) Martius et Scharank; Rothm. in Feddes Repert. 54: 59. 1944.

Huperzia carinata (Desv. ex Poirét) Trevisan in Atti Soc. Ital. Sci. Nat. 17: 247. 1874; Dixit, Census Indian Pterid. 7. 1984; Lycopod. India 62. f. 13A–B. pl. I. f. 10. map. 4. 1988; Øllgaard in Biol. Skr. 34: 11. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium carinatum Desv. ex Poirét, Encycl. Suppl. 3: 555. 1813; Ito, Cat. Pl. Koishik. Bot. Gard.

part 2. 2nd ed. 26. 1881; Bak. Fern Allies 17. 1887; Henry, List Pl. Form. 117. 1896; Warburg in Monsonia 1: 96. 1900; Matsum. Ind. Pl. Jap. 1: 357. 1904; Matsum. and Hayata, Enum. Pl. Form. 554. 1906; Hayata, Ic. Pl. Formos. 4: 131. 1914; v. Ald. v. Rosenb. Malayan Fern Allies 36. 1915; Makino and Nemoto, Fl. Jap. 1555. 1925; Tagawa in Acta Phytotax. Geobot. 8: 22. 1939; 14: 141. 1952; Tagawa and K. Iwats. Southeast As. Stud. 5: 27. 1967; Fl. Thail. 3(1): 8. 1979; Brownlie, Fl. Nouv.-Cal. et Dépend. 3. Pterid. 18. 1969; DeVol in Li et al., Fl. Taiwan 1: 33. 1975; Kuo in Taiwanica 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 20. 1986; 18: 7. 1986; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 30. 1994.

Urostachys carinatus (Desv. ex Poirét) Herter in Bot. Arch. 3: 115. 1923; in Philipp. J. Sci. 22: 64. 1923; 22: 180. 1923; Ind. Lycop. 55. 1949; Nessel, Bärlappgewächse, 179. 1939; Masamune in Sci. Rep. Kanazawa Univ. 1: 33. 1951.

Phlegmariurus carinatus (Desv. ex Poirét) Ching in Acta Bot. Yunnanica 4: 120. 1982.

Lycopodium laxum Presl, Reliq. Haenk. 1: 83. 1825; v. Ald. v. Rosenb. Malayan Fern Allies 35. 1915; Tagawa in Acta Phytotax. Geobot. 14: 91. 1951; 137. 1952; DeVol in Taiwanica 11: 51. pl. III. f. 9. 1965; Hatusima, Fl. Ryukyus 122. 1971; Shieh in Quart. J. Chin. Forest. 6: 37. 1972; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 3. 1975; Walker, Fl. Okinawa & South. Ryukyu Isls. 36. 1976; Hatusima and Amano, Fl. Ryukyus 2. 1977; Nakaike, New Fl. Jap. Pterid. 24. f. 24. 1982; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 3. 1990.

Huperzia laxa (Presl) Trevisan in Atti Soc. Ital. Sci. Nat. 17: 247. 1874.

Lycopodium carinatum var. *laxum* (Presl) Christ in Reinecke, Bot. Jahrb. 23: 365. 1896.

Urostachys carinatus var. *laxus* (Presl) Herter ex Nessel, Bärlappgewächse, 180. 1939.

Lycopodium struthioloides Presl, Reliq. Haenk. 1: 82. 1825.

Selaginella struthioloides (Presl) Underw. in Bull. Torr. Bot. Club 25: 132. 1898.

Urostachys struthioloides (Presl) Herter ex Nessel, Bärlappgewächse, 170. 1939.

Huperzia struthioloides (Presl) Rothm. in Feddes Repert. 54: 61. 1944.

Lycopodium flagellaria Bory in Duperrey, Voy. Monde Bot. 1: 248. t. 26. 1829.

Lycopodium flagellaria var. *minus* Hook. et Grev. Bot. Misc. 2: 370. 1831.

Lycopodium laxum var. *minus* (Hook. et Grev.) Tagawa in Acta Phytotax. Geobot. 14: 91. 1951.

Lycopodium acrostachyum Wall. ex Hook. et Grev. Ic. Fil. 2: t. 181. 1831.

Lycopodium urostachyum Wall. ex Ridley in J. Straits Branch Roy. Asiat. Soc. 80: 142. 1919.

Lycopodium pendulum Roxb. in Calcutta J. Nat. Hist. 4: 472. 1844; Morton in Contr. U.S. Nat. Herb. 38: 327. 1974.

Nom. Jap.: Bou-kazura.

Distr.: Japan (Ryukyu), Taiwan, China, Philippines, Malaesia, Thailand, Southeast Asia, India, and Polynesia.

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium carinatum*).

***Huperzia cryptomerina* (Maxim.) Dixit** in J. Bombay Nat. Hist. Soc. 77(3): 541. 1981; Dixit, Census Indian Pterid. 7. 1984; Lycopod. India 52. f. 6A–C. pl. II. f. 6. map. 2. 1988; Øllgaard in Biol. Skr. 34: 11. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium cryptomerinum Maxim. in Bull. Acad. Imp. Sci. St.-Petersb. 15: 231. 1870; Franch. et Sav. Enum. Pl. Jap. 2: 195. 1877; Ito, Cat. Pl. Koishik. Bot. Gard. part 2, 2nd ed. 26. 1881; Matsumura, Nom. Jap. Pl. 115. 1884; Cat. Pl. Herb. Coll. Sci. Imp. Univ. 239. 1886; Ind. Pl. Jap. 1: 358. 1904; Okubo, Cat. Pl. Bot. Gard. Imp. Univ. 258. 1887; Bak. Handb. Fern Allies 11. 1887; Takeda in Bot. Mag. Tokyo 23: 208. 1909; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1914; Fl. Jap. 1555. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 53. 1930; Ohwi, Fl. Jap. Pterid. 8. 1957; Tagawa, Col. Ill. Jap. Pterid. 10. 228. pl. 1. f. 6. 1959; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 248. 1961; DeVol in Taiwan 11: 52. 1965; in Li *et al.*, Fl. Taiwan 1: 33. 1975; Lee in Bull. Seoul Nat. Univ. Forests 4: 58. 1967; Shieh in Quart. J. Chin. Forest. 6: 38. 1972; Shimura, Phot. Ecol. Guid. Jap. Pterid. 10. f. 9. 1972; Park, Ill. Encycl. Fauna & Fl. Korea 16: 417. 1975;

Oh in Nature & Life 6: 21. 1976; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9–10: 5. map. 4. f. 4. 1977; Nakaike, New Fl. Jap. Pterid. 19. f. 19. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 3: 424. pl. 748. f. 5. 1984; Kuo in Taiwan 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16–17: pl. 16. 1986; 18: 7. 1986; Otsuka, Pterid. Fl. Nagano 18. 1987; Kurata and Nakaike, Ill. Pterid. Jap. 6: 58. 1990; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 35. 1994.

Urostachys cryptomerinus (Maxim.) Herter ex Nessel, Bärlappgewächse, 70. 1939; Herter, Ind. Lycop. 57. 1949; Masamune in Sci. Rep. Kanazawa Univ. 1: 33. 1951.

Urostachys cryptomerinus var. *coreanus* Herter ex Nessel, Bärlappgewächse, 72. t. 11. f. 8. 1939. sine descr. lat.; in Revista Sudamer Bot. 6: 160. 1940.

Urostachys coreanus (Herter ex Nessel) Herter, Ind. Lycop. 57. 1949.

Nom. Jap.: Sugi-ran, iwa-sugi.

Distr.: Japan (Hokkaido, Honshu, Shikoku, and Kyushu), Korea, Taiwan, and India.

Distr. Map. Japan: Otsuka and Satomi (op. cit. as *Lycopodium cryptomerinum*); Kurata and Nakaike (op. cit. as *Lycopodium cryptomerinum*).

Chromosome numbers: $n=136$ (Takamiya and Kurita, op. cit. as *Lycopodium cryptomerinum*).

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium cryptomerinum*); Kurata and Nakaike (op. cit. as *Lycopodium cryptomerinum*).

***Huperzia cunninghamioides* (Hayata) Holub** in Folia Geobot. Phytotax. 20: 72. 1985; Øllgaard in Biol. Skr. 34: 11. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium cunninghamioides Hayata, Ic. Pl. Formos. 4: 131. 1914; Makino and Nemoto, Fl. Jap. 1555. 1925; DeVol in Li *et al.*, Fl. Taiwan 1: 34. 1975; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 3. 1975; Hatusima and Amano, Fl. Ryukyus 1. 1977; Nakaike, New Fl. Jap. Pterid. 20. f. 20a. 20b. 1982; Kuo in Taiwan 30: 12. 1985; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 2. 1990; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 37. 1994.

Urostachys cunninghamioides (Hayata) Herter ex Nessel, Bärlappgewächse, 206. 1939; Herter, Ind. Lycop. 58. 1949.

Phlegmariurus cunninghamioides (Hayata) Ching in Acta Bot. Yunnanica 4: 125. 1982.

Lycopodium cryptomerianum auct.; Hatusima, Fl. Ryukyus 123. 1971.

Nom. Jap.: Kouyouzan-kazura.

Distr.: Japan (Kyushu) and Taiwan.

***Huperzia fargesii* (Herter) Holub** in Folia

Geobot. Phytotax. 20: 72. 1985; Øllgaard in Biol. Skr. 34: 13. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium fargesii Herter in Bot. Jahrb. Syst. 43: Beibl. 98: 48. 1909; Tagawa in Acta Phytotax. Geobot. 14: 91. 1951; Col. Ill. Jap. Pterid. 11. pl. 1. f. 8. 1959; Ohwi, Fl. Jap. Pterid. 8. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 248. 1961; DeVol in Taiwan 11: 49. pl. III. f. 8. 1965; in Li et al., Fl. Taiwan 1: 30. 1975; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 85. 1966; Shieh in Quart. J. Chin. Forest. 6: 36. 1972; Nakaike, New Fl. Jap. Pterid. 21. f. 21a. 21b. 1982; Kuo in Taiwan 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 18. 1986; 18: 7. 1986; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 37. 1994.

Urostachys fargesii (Herter) Herter ex Nessel, Bärlappgewächse, 37. 1939; Herter, Ind. Lycop. 61. 1949.

Phlegmariurus fargesii (Herter) Ching in Acta Bot. Yunnanica 4: 120. 1982.

Lycopodium tereticaule Hayata in J. Coll. Sci. Imp. Univ. Tokyo 30: 411. 1911; Ic. Pl. Formos. 4: 133. f. 70. 1914. non Poiret 1814.

Urostachys tereticaulis (Hayata) Herter ex Nessel, Bärlappgewächse, 137. 1939; Masamune in Sci. Rep. Kanazawa Univ. 1: 35. 1951.

Lycopodium fauriei Rosenst. in Hedw. 56: 348. 1915.

Urostachys fauriei (Rosenst.) Herter, Ind. Lycop. 61. 1949.

Lycopodium quasiprimaevum Koidz. in Acta Phytotax. Geobot. 1: 32. 1932; Tagawa in Acta Phytotax. Geobot. 16: 184. 1956.

Urostachys quasiprimaevum (Koidz.) Masamune in Tr. Nat. Hist. Soc. Formos. 25: 409. 1936; Masamune in Sci. Rep. Kanazawa Univ. 1: 34. 1951.

Lycopodium fargesii var. *gracile* Tagawa in Acta Phytotax. Geobot. 14: 92. 1951.

Nom. Jap.: Himo-sugi-ran, hoso-himo-youraku-hiba.

Distr.: Japan (Kyushu {Yaku isl.}), Taiwan, and China.

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium fargesii*).

***Huperzia fordii* (Bak.) Dixit**, Census Indian Pterid. 7. 1984; Lycopod. India 68. f. 15A–B. pl. IV. f. 14. map. 5. 1988; Holub in Fol. Geobot. Phytotax. 20: 72. 1985; Øllgaard in Biol. Skr. 34: 13. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium fordii Bak. Handb. Fern Allies 17. 1887; Tagawa in Acta Phytotax. Geobot. 8: 20. 1939; 14: 137. 1952; Col. Ill. Jap. Pterid. 10. 228. pl.

f. 7. 1959; Ohwi, Fl. Jap. Pterid. 7. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 249. 1961; DeVol in Taiwan 11: 52. pl. IV. f. 12. 1965; in Li et al., Fl. Taiwan 1: 33. 1975; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 86. 1966; Hatusima, Fl. Ryukyus 122. 1971; Shimura, Phot. Ecol. Guid. Jap. Pterid. 11. f. 10. 1972; Shieh in Quart. J. Chin. Forest. 6: 38. 1972; Walker, Fl. Okinawa & South. Ryukyu Isls. 36. 1976; Okuyama, Wild Pl. Jap. new & enlarg. 1: 16. 114. pl. 8. f. 7. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Kuo in Taiwan 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 18. 1986; 18: 7. 1986; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 37. pl. 6. photo 35. 1994.

Urostachys 'fordii (Bak.) Herter ex Nessel, Bärlappgewächse, 69. 1939; Herter, Ind. Lycop. 61. 1949.

Phlegmariurus fordii (Bak.) Ching in Acta Bot. Yunnanica 4: 126. 1982.

Lycopodium hamiltonii var. *petiolatum* Clarke in Trans. Linn. Soc. London, ser. 2. Bot. 1: 590. 1880; Bak. Handb. Fern Allies 10. 1887.

Lycopodium petiolatum (Clarke) Herter in Bot. Jahrb. Syst. 43: Beibl. 98: 36. 1909; Takeda in Bot. Mag. Tokyo 29: (285). 1915.

Urostachys hamiltonii var. *petiolatus* (Clarke) Herter ex Nessel, Bärlappgewächse, 69. 1939.

Huperzia petiolata (Clarke) Dixit in J. Bombay Nat. Hist. Soc. 77: 541. 1981.

Lycopodium subdistichum Makino in Bot. Mag. Tokyo 12: 37. 1898; Matsumura, Ind. Pl. Jap. 1: 360. 395. 1904; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 412, 1914; Fl. Jap. 1558. 1925; Sakaguchi, Gen. Ind. Fl. Okinawa 106. 1924.

Urostachys subdistichus (Makino) Herter ex Nessel, Bärlappgewächse, 196. 1939; Herter, Ind. Lycop. 84. 1949; Masamune in Sci. Rep. Kanazawa Univ. 1: 35. 1951.

Lycopodium poissonii Herter in Bot. Jahrb. Syst. 43: Beibl. 98: 51. 1909.

Urostachys poissonii (Herter) Herter ex Nessel, Bärlappgewächse, 196. f. 52. 1939; Herter, Ind. Lycop. 75. 1949; Masamune in Sci. Rep. Kanazawa Univ. 1: 34. 1951.

Lycopodium juniperstachyum Hayata, Ic. Pl. Form. 4: 132. 1912.

Lycopodium aloifolium auct.; Ito, Cat. Pl. Koishik. Bot. Gard. part 2, 2nd ed. 26. 1881; Matsumura, Cat. Pl. Herb. Coll. Sci. Imp. Univ. 239. 1886; Okubo, Cat. Pl. Bot. Gard. Imp. Univ. 258. 1887.

Lycopodium phlegmaria auct.; Matsumura, Nom. Jap. Pl. 115. 1884.

Lycopodium hamiltonii auct.; Jotani and Ohba in Sci. Rep. Yokosuka City Mus. 14: 51. 1968; Tagawa

and K. Iwats. Southeast As. Stud. 5: 27. 1967; Fl. Thail. 3(1): 9. 1979. p. p.; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 3. 1975; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9–10: 6. map. 5. f. 5. 1977; Hatusima and Amano, Fl. Ryukyus 2. 1977; Nakaike, New Fl. Jap. Pterid. 22. f. 22. 1982; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 2. 1990; Kurata and Nakaike, Ill. Pterid. Jap. 6: 64. 1990.

Nom. Jap.: Nankaku-ran, matsuba-nankaku-ran.

Distr.: Japan (Honshu, shikoku, Kyushu, and Ryukyu), Taiwan, China, Indo-China, and India.

Distr. Map. Japan: Okuyama (op. cit. as *Lycopodium fordii*); Otsuka and Satomi (op. cit. as *Lycopodium hamiltonii*); Kurata and Nakaike (op. cit. as *Lycopodium hamiltonii*).

Chromosome numbers: $n=136$ (Takamiya and Kurita, op. cit. as *Lycopodium fordii*).

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium hamiltonii*); Kurata and Nakaike (op. cit. as *Lycopodium hamiltonii*).

***Huperzia miyoshiana* (Makino) Ching** in Acta Bot. Yunnanica 3: 303. 1981; Øllgaard in Biol. Skr. 34: 17. 1989; Sa-Tou in J. Nipp. Fern. Club 2(83·84): 1728. 1990; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium miyoshianum Makino in Bot. Mag. Tokyo 12: 36. 1898.

Lycopodium selago var. *miyoshianum* (Makino) Makino in Bot. Mag. Tokyo 16: 199. 1902; Matsu-mura, Ind. Pl. Jap. 1: 359. 1904; Ohwi, Fl. Jap. Pterid. 7. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 250. 1961; Hultén in Kungl. Sv. Vetensk. Handl. 8(5): 52. map 46. 1964.

Urostachys miyoshianus (Makino) Herter ex Nessel, Bärappgewächse, 28. abb 4. f. 4. 1939; Herter, Ind. Lycop. 70. 1949.

Lycopodium selago subsp. *miyoshianum* (Makino) Calder et Taylor in Can. J. Bot. 43: 1388. 1965.

Lycopodium chinense Christ ex Baroni et Christ in Nu. Giorn. Bot. Ital. n. s. 2. 4: 101. t. 3. f. 4. 1897. non *L. sinense* Desvaux 1827; Takeda in Bot. Mag. Tokyo 23: 204. 1909; 29: (283). 1915; Nakai in J. Coll. Sci. Imp. Univ. Tokyo 31: 422. 1911; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1914; Fl. Jap. 1555. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 52. 1930; Hara in Bot. Mag. Tokyo 48: 704. 1934; Tagawa, Col. Ill. Jap. Pterid. 8. f. 3. 1959; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 84. 1966; Lee in Bull. Seoul Nat. Univ. Forests 4: 57. 1967; Shimura, Phot. Ecol. Guid. Jap. Pterid. 7. f. 6. 1972; Park, Ill. Encycl. Fauna & Fl. Korea 16: 415. 1975; Oh in Nature & Life 6: 20. 1976; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9–

10: 1. map. 1. f. 1. 1977; Nakaike, New Fl. Jap. Pterid. 16. f. 16a. 16b. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 3: 423. pl. 748. f. 4. 1984; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 9. 1986; 18: 6. 1986; Otsuka, Pterid. Fl. Nagano 18. 1987; Kurata and Nakaike, Ill. Pterid. Jap. 6: 24. 1990.

Urostachys chinensis (Christ ex Baroni et Christ) Herter ex Nessel, Bärappgewächse, 27. abb 4. f. 2. 1939; Herter, Ind. Lycop. 56. 1949; Masamune in Sci. Rep. Kanazawa Univ. 1: 33. 1951.

Lycopodium selago subsp. *chinense* (Christ ex Baroni et Christ) Hult.; Hultén, Fl. Alaska 26. 1968.

Lycopodium tenuifolium Herter in Bot. Jahrb. Syst. 43: Beibl. 98: 41. 1909; Copel. in Univ. Calif. Publ. Bot. 12: 383. 1931.

Lycopodium miyoshiacum var. *coreanum* Hayata, Ic. Pl. Formos. 5: 255. 1915.

Urostachys miyoshianus var. *coreanus* (Hayata) Herter ex Nessel, Bärappgewächse, 28. abb. 4. f. 5. 1939.

Huperzia miyoshiana var. *coreana* (Hayata) Ching in Acta Bot. Yunnanica 3: 304. 1981.

Nom. Jap.: Hime-sugi-ran.

Distr.: Japan (Hokkaido, Honshu, Shikoku and Kyushu), Korea, Russia, N. America, and China.

Distr. Map. Japan: Otsuka and Satomi (op. cit. as *Lycopodium chinense*); Kurata and Nakaike (op. cit. as *Lycopodium chinense*).

Chromosome numbers: $n=68$ (Takamiya and Kurita, op. cit. as *Lycopodium chinense*).

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium chinense*); Kurata and Nakaike (op. cit. as *Lycopodium chinense*).

***Huperzia phlegmaria* (L.) Rothm.** in Feddes Repert. 54: 62. 1944; Øllgaard in Biol. Skr. 34: 18. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 792. 1992.

Lycopodium phlegmaria L. Sp. Pl. 1101. 1753; Franch. et Sav. Enum. Pl. Jap. 2: 613. 1879; Bak. Handb. Fern Allies 22. 1887; Warburg in Monsunia 1: 96. 1900; Matsumura, Ind. Pl. Jap. 1: 359. 1904; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1913; Fl. Jap. 1556. 1925; v. Ald. v. Rosenb. Malayan Fern Allies 44. 1915. cum var.; Sakaguchi, Gen. Ind. Fl. Okinawa 105. 1924; Tagawa in Acta Phytotax. Geobot. 14: 137. 1952; 15: 200. 1954; Col. Ill. Jap. Pterid. 11. 229. pl. 2. f. 10. 1959; Ohwi, Fl. Jap. Pterid. 8. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 249. 1961; DeVol in Taiwan 11: 54. pl. IV. f. 11, 1965; in Li et al., Fl. Taiwan 1: 30. 1975; Brownlie, Fl. Nouv.-Cal. et Dépend. 3. Pterid. 21. 1969; Shieh in Quart. J. Chin. Forest. 6:

38. 1972; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 4. 1975; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 88. 1966; Tagawa and K. Iwats. Southeast As. Stud. 5: 27. 1967; Fl. Thail. 3(1): 10. 1979; Schelpe, Fl. Zambes. Pterid. 20. 1970; Hatusima, Fl. Ryukyus 123. 1971; Shimura, Phot. Ecol. Guid. Jap. Pterid. 15. f. 13. 1972; Walker, Fl. Okinawa & South. Ryukyu Isls. 36. 1976; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9-10: 9. map. 8. f. 8. 1977; Hatusima and Amano, Fl. Ryukyus 2. 1977; Nakaike, New Fl. Jap. Pterid. 27. f. 27 a. 27b. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 3: 431. pl. 752. f. 5. 1984; Kuo in Taiwania 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16-17: pls. 21-22. 1986; 18: 7. 1986; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 3. 1990; Kurata and Nakaike, Ill. Pterid. Jap. 6: 86. 1990; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 39. 1994.

Lepidotis phlegmaria (L.) P. Beauv. Prod. Aethéog. 110. 1805.

Urostachys phlegmaria (L.) Herter in Bot. Arch. 3: 17. 1923; in Phiipp. J. Sci. 22: 65. 1923; 22: 181. 1923; Ind. Lycop. 74. 1949; Nessel, Bärlappgewächse, 215. 1939; Masamune in Sci. Rep. Kanazawa Univ. 1: 34. 1951.

Phlegmariurus phlegmaris (L.) Sen et Sen in Fern Gaz. 11: 421. fig. 4. a-j. 1978; Dixit, Census Indian Pterid. 9. 1984; Lycopod. India 70. 1988.

Lycopodium mirabile Willd. Sp. 5: 11. 1810.

Urostachys mirabilis (Willd.) Herter ex Nessel, Bärlappgewächse, 225. 1939.

Lycopodium filiforme Roxb. in Calcutta J. Nat. Hist. 4: 473. 1844. non Sw. 1806.

Urostachys phlegmaria var. *filiformis* (Roxb.) Herter ex Nessel, Bärlappgewächse, 218. 1939.

Lycopodium vrieseanum Spring, Mon. 2: 33. 1849.

Urostachys vrieseanus (Spring) Herter ex Nessel, Bärlappgewächse, 236. 1949.

Lycopodium coralium Spring in Jungh. Pl. Jungh. 273. 1850.

Lycopodium aloifolium auct.; Franch. et Sav. Enum. Pl. Jap. 2: 196. 1877.

Nom. Jap.: Youraku-hiba, Himo-youraku-hiba

Distr.: Japan (Kyushu and Ryukyu), Taiwan, China, Philippines, Southeast Asia, India, Polynesia, Melanesia, Micronesia, Australia, Africa, and tropical and subtropical zone of the Old World.

Distr. Map. Japan: Otsuka and Satomi (op. cit. as *Lycopodium phlegmaria*); Kurata and Nakaike (op. cit. as *Lycopodium phlegmaria*).

Chromosome numbers: n=ca. 275 (Takamiya and Kurita, op. cit. as *Lycopodium phlegmaria*).

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium phlegmaria*); Kurata and Nakaike (op. cit. as *Lycopodium phlegmaria*).

dium phlegmaria).

***Huperzia salvinoides* (Herter) Holub** in Folia Geobot. Phytotax. 20: 76. 1985; Øllgaard in Biol. Skr. 34: 20. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 792. 1992.

Urostachys salvinoides Herter in Bot. Arch. 3: 18. 1923; in Phiipp. J. Sci. 22: 67. 1923; 22: 181. 1923; Ind. Lycop. 80. 1949; Nessel, Bärlappgewächse, 229. 1939; Masamune in Sci. Rep. Kanazawa Univ. 1: 34. 1951.

Lycopodium salvinoides (Herter) Tagawa in Acta Phytotax. Geobot. 8: 20. 1939; 14: 137. 1952; DeVol in Taiwania 11: 54. pl. VI. f. 14. 1965; in Li *et al.*, Fl. Taiwan 1: 30. pl. 3. 1975; Hatusima, Fl. Ryukyus 123. 1971; Shieh in Quart. J. Chin. Forest. 6: 39. 1972; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 4. 1975; Hatusima and Amano, Fl. Ryukyus 2. 1977; Nakaike, New Fl. Jap. Pterid. 28. f. 28a. 28b. 1982; Kuo in Taiwania 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16-17: pl. 23. 1986; 18: 8. 1986; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 3. 1990; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 39. pl. 8. 1994.

Phlegmariurus salvinoides (Herter) Ching in Acta Bot. Yunnanica 4: 122. 1982.

Urostachys formosanus Herter ex Nessel, Bärlappgewächse, 229. 1939. sine descr. lat.

Nom. Jap.: Hime-yoraku-hiba.

Distr.: Japan (Ryukyu), Taiwan, Philipp., Borneo, and Malaysia.

Ic. Spore: Nasu and Seto (op. cit., as *Lycopodium salvinoides*).

***Huperzia selago* (L.) Martius et Schrank**, Hort. Reg. Monac. 3. 1829; Rothm. in Feddes Repert. 54: 59. 1944; J alas and Suominen, Atl. Fl. Europ. 16. map. 2. 1972; Jermy *et al.* Ferns Brit. Isls. 6. 1978; Sen and Sen in Fern Gaz. 11: 415. f. 1. a-j. 1978; Ching in Acta Bot. Yunnanica 3: 302. 1981; Dostál in Hegi, Ill. Fl. Mitteleur. 1: 19. abb. 3. 1984; Dixit, Census Indian Pterid. 8. 1984; Lycopod. India 42. f. 1A-B. pl. I. f. 1. map. 1. 1988; Kubát in Hejný and Sdavi k, Květena 1: 190. 1988; Øllgaard in Biol. Skr. 34: 20. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 792. 1992.

Lycopodium selago L. Sp. Pl. 1102. 1753; Franch. et Sav. Enum. Pl. Jap. 2: 196. 1877; Matsumura, Cat. Pl. Herb. Coll. Sci. Imp. Univ. 239. 1886; Ind. Pl. Jap. 1: 359. 1904; Bak. Handb. Fern Allies 9. 1887; Takeda in Bot. Mag. Tokyo 23: 203. 1909; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1914; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 51. 1930; Tagawa, Col. Ill. Jap. Pterid. 8. 229. f. 2. 1959; Namegata and Kurata in Namegata, Coll. Cultiv.

Our Ferns & Fern All. 249. 1961; Hultén in Kungl. Sv. Vetensk. Handl. 8(5): 52. map. 46. 1964; Fl. Alaska 25. 1968; DeVol in Taiwanica 11: 47. 1965; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 88. 1966; Lee in Bull. Seoul Nat. Univ. Forests 4: 58. 1967; Shieh in Quart. J. Chin. Forest. 6: 34. 1972; Park, Ill. Encycl. Fauna & Fl. Korea 16: 416. 1975; Oh in Nature & Life 6: 21. 1976; Nakaike, New Fl. Jap. Pterid. 29. f. 29. 1982; Shimizu, New Alpine Fl. Jap. Col. 2: 268. 1983; Kurata and Nakaike, Ill. Pterid. Jap. 6: 90. 1990.

Plananthus selago (L.) Beauv. Prod. Aethéog. 112. 1805.

Urostachys selago (L.) Herter in Beih. Biol. Centr.-Bl. 2/39: 249. 1922; in Philipp. J. Sci. 22: 180. 1923; Ind. Lycop. 81. 1949; Nessel, Bärlappgewächse, 32. abb. 5. f. 11. 1939.

Mirmau selago (L.) Fuchs in Vern. Naturf. Ges. Basel 66: 43. 1955

Plananthus patens Beauv. Prod. Aethéog. 100. 111. 1805. nom. inval.

Lycopodium selago var. *patens* (Beauv.) Desv. in Mem. Soc. Linn. Paris 6: 180. 1827; Tagawa in J. Jap. Bot. 33: 199. 1958; Col. Ill. Jap. Pterid. 8. 229. 1959; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 250. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 88. 1966.

Urostachys selago var. *patens* (Beauv.) Nessel, Bärlappgewächse, 36. abb. 5. f. 17. 1939.

Lycopodium selago ssp. *patens* (Beauv.) Calder and Taylor in Can. J. Bot. 43: 1388. 1965.

Lycopodium recurvum Kitaib. in Willd. Sp. 5: 50. 1810.

Plananthus recurvus (Kitaib.) Opiz in Kratos 4: 19. 1819.

Selago vulgaris Schur, Enum. Pl. Transsilv. 825. 1866.

Lycopodium selago var. *appressum* Desv. in Mem. Soc. Linn. Paris 6: 180. 1827; Ohwi, Fl. Jap. Pterid. 7. 1957; Tagawa, Col. Ill. Jap. Pterid. 8. 229. 1959; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 249. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 88. 1966; Shieh in Quart. J. Chin. Forest. 6: 35. 1972; Shimura, Phot. Ecol. Guid. Jap. Pterid. 16. f. 14. 1972; DeVol in Li *et al.*, Fl. Taiwan 1: 29. 1975; Shimizu, New Alpine Fl. Jap. Col. 2: 268. pl. 144. f. 484. 1983; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 8. 1986; 18: 6. 1986; Otsuka, Pterid. Fl. Nagano 19. 1987; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 42. 1994.

Lycopodium selago forma *appressum* Desv.; Takeda in Bot. Mag. Tokyo 23: 204. 1909; 29: (284). 1915; Makino and Nemoto, Fl. Jap. 1557. 1925.

Lycopodium appresum (Desv.) Petrov. Fl. Iakut. 1. 1930. non Floyd and Underw. 1900; Kuo in Taiwa-

nia 30: 11. 1985.

Urostachys selago var. *appressus* (Desv.) Herter ex Nessel, Bärlappgewächse, 38. 1939.

Huperzia appressa (Desv.) Löve et Löve in Bot. Not. 114: 34. 1961.

Huperzia selago var. *appressa* (Desv.) Ching in Acta Bot. Yunnanica 3: 303. 1981.

Lycopodium selago forma *reductum* Christ in Bull. Soc. Bot. Ital. 1898: 184.

Urostachys selago forma *reductus* (Christ) Herter ex Nessel, Bärlappgewächse, 37. 1939.

Lycopodium selago forma *reductum-angustum* Christ in Bull. Soc. Bot. Ital. 1898: 184.

Urostachys selago forma *reductus-angustinus* (Christ) Herter ex Nessel, Bärlappgewächse, 37. 1939.

Lycopodium selago var. *acuminatum* Sugimoto, Keys Herbac. Pl. Jap. Pterid. 88. 409. 1966; Mitui in Bull. Nipp. Den. Univ. Gen. Educ. 9: 219. 1980.

Nom. Jap.: Ko-sugi-ran, chishima-sugi-ran, ezo-no-kosugi-ran.

Distr.: Japan (Hokkaido, Honshu, and Kyushu {Yaku isl.}), Taiwan, and temperate zone of the Northern Hemisphere.

Distr. Map. Circumpolar: Hultén (op. cit. as *Lycopodium selago*). Europe: Jalas and Suominen (op. cit.). British Isles: Jermy *et al.* (op. cit.). Japan: Kurata and Nakaike (op. cit. as *Lycopodium selago*).

Chromosome numbers: $n = 136$ (Mitui, op. cit. as *Lycopodium selago* var. *acuminatum*).

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium selago* var. *appressum*); Kurata and Nakaike (op. cit. as *Lycopodium selago*).

Note. Otsuka (1977) described *Lycopodium mura-matsui* K. Otsuka (nom. nud.), which was an intermediate form between *Huperzia miyoshianum* and *H. selago*. He commented that this plant may be a hybrid between these two species, judging from its external morphology and irregularities of the spores.

***Huperzia serrata* (Thunb. ex Murray) Trevisan** in Atti Soc. Ital. Sci. Nat. 17: 248. 1874; Sen and Sen in Fern Gaz. 11: 417. f. 1. s-z, aa-cc. 1978; Ching in Acta Bot. Yunnanica 3: 294. 1981; Dixit, Census Indian Pterid. 8. 1984; Lycopod. India 55. f. 8A-B. pl. II. f. 8. map. 3. 1988; Øllgaard in Biol. Skr. 34: 20. 1989; Nakaike in Watanabe and Malla, Crypt. Himal. 2: 192. 1990; New Fl. Jap. Pterid. rev. & enlarg. 792. 1992.

Lycopodium serratum Thunb. ex Murray, Syst. Veg. ed. 14. 944. 1784 (May-Jul.); Thunb. Fl. Jap. 341. t. 38. 1784 (Aug.); Hook. and Grev. Ic. Fil. 1: tab. 37. 1827; Franch. et Sav. Enum. Pl. Jap. 2: 196. 1877; Ito, Cat. Pl. Koishik. Bot. Gard. part 2, 2nd ed. 26. 1881; Matsumura, Nom. Jap. Pl. 115. 1884; Cat.

Pl. Herb. Coll. Sci. Imp. Univ. 239. 1886; Okubo, Cat. Pl. Bot. Gard. Imp. Univ. 258. 1887; Bak. Handb. Fern Allies 12. 1887; Warburg in Monsunia 1: 96. 1900; Hayata in J. Coll. Sci. Imp. Univ. Tokyo 25: 242. 1908; Takeda in Bot. Mag. Tokyo 23: 206. 1909; 29: (284). 1915; v. Ald. v. Rosenb. Malayan Fern Allies 90. 1915; Sakaguchi, Gen. Ind. Fl. Okinawa 105. 1924; Ohwi, Fl. Jap. Pterid. 7. 1957; Tagawa, Col. Ill. Jap. Pterid. 10. 229. pl. 1. f. 5-a. 1959; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 250. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 88. 1966; Tagawa and K. Iwats. Southeast As. Stud. 5: 26. 1967; Fl. Thail. 3(1): 7. 1979; Lee in Bull. Seoul Nat. Univ. Forests 4: 58. 1967; Brownlie, Fl. Nouv.-Cal. et Dépend. 3. Pterid. 17. 1969; Shieh in Quart. J. Chin. Forest. 6: 35. 1972; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 4. 1975; Park, Ill. Encycl. Fauna & Fl. Korea 16: 418. 1975; Oh in Nature & Life 6: 21. 1976; Hatusima and Amano, Fl. Ryukyus 2. 1977; Nakaike, New Fl. Jap. Pterid. 30. f. 30. 1982; Okuyama, Wild Pl. Jap. new & enlarg. 1: 457. pl. 228. f. 3. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Takamiya in Chrom. Inf. Ser. 37: 25. 1984; Kuo in Taiwan 30: 11. 51. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 12. 1986; 18: 6. 1986; Otsuka, Pterid. Fl. Nagano 19. 1987; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 3. 1990; Kurata and Nakaike, Ill. Pterid. Jap. 6: 94. 1990; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 42. 1994.

Plananthus serratus (Thunb. ex Murray) Beauv. Prod. Aethéog. 100. 111. 1805.

Urostachys serratus (Thunb. ex Murray) Herter in Bot. Arch. 3: 13. 1923; in Phiipp. J. Sci. 22: 61. 1923; 22: 180. 1923; Ind. Lycop. 81. 1949; Nessel, Bärlappgewächse, 56. 1939; Masamune in Sci. Rep. Kanazawa Univ. 1: 34. 1951.

Huperzia selago subsp. *serrata* (Thunb. ex Murray) Löve et Löve in Univ. Colorado Stud. (Biol.) 17: 5. 1965.

Lycopodium javanicum Sw. in Schrad. J. Bot. 1800 (2): 114. 1801.

Lycopodium serratum var. *javanicum* (Sw.) Makino in Bot. Mag. Tokyo 12: (13). 1898; Matsumura, Ind. Pl. Jap. 1: 359. 1904; Takeda in Bot. Mag. Tokyo 23: 207. 1909; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1914; Fl. Jap. 1557. 1925.

Urostachys serratus var. *javanicus* (Sw.) Herter ex Nessel, Bärlappgewächse, 58. 1939.

Urostachys javanicus (Sw.) Herter Ind. Lycop. 66. 1949.

Lycopodium sargassifolium Liebm. Overs. K. Danske Vidensk. Selsk. Forh. 1847. 4: 41. 1848.

Lycopodium serratum var. *longipetiolatum* Spring

in Mém. Acad. Roy. Sci. Belg. 24: 18. 1849; Tagawa in Acta Phytotax. Geobot. 14: 137. 1952; Col. Ill. Jap. Pterid. 10. 229. pl. 1. f. 5-b. 1959; Ohwi, Fl. Jap. Pterid. 7. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 250. 1961; DeVol in Taiwan 11: 49. pl. II. f. 6. 1965; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 89. 1966; Hatusima, Fl. Ryukyus 122. 1971; DeVol in Li *et al.*, Fl. Taiwan 1: 29. 1975; Shieh in Quart. J. Chin. Forest. 6: 36. 1972; Walker, Fl. Okinawa & South. Ryukyu Isls. 35. 1976; Hatusima and Amano, Fl. Ryukyus 2. 1977; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 15. 1986; 18: 7. 1986.

Urostachys serratus var. *javanicus* forma *longipetiolatus* (Spring) Herter ex Nessel, Bärlappgewächse, 59. 1939.

Urostachys serratus var. *longipetiolatus* (Spring) Masamune in Sci. Rep. Kanazawa Univ. 1: 34. 1951.

Huperzia serrata forma *longipetiolata* (Spring) Ching in Acta Bot. Yunnanica 3: 294. 1981.

Lycopodium serratum var. *thunbergii* Makino in Bot. Mag. Tokyo 12: (12). 1898; Matsumura, Ind. Pl. Jap. 1: 359. 1904; Takeda in Bot. Mag. Tokyo 23: 206. 1909; Nakai in J. Coll. Sci. Imp. Univ. Tokyo 31: 423. 1911; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 412. 1914; Ohwi, Fl. Jap. Pterid. 7. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 250. 1961; Shimura, Phot. Ecol. Guid. Jap. Pterid. 17. f. 15. 1972.

Urostachys serratus var. *thunbergii* (Makino) Herter ex Nessel, Bärlappgewächse, 59. 1939; Masamune in Sci. Rep. Kanazawa Univ. 1: 34. 1951.

Lycopodium helleri Herter in Bot. Jahrb. Syst. 43: Beibl. 98: 43. 1909.

Urostaachys helleri (Herter) Herter ex Nessel, Bärlappgewächse, 53. 1939.

Lycopodium serratum var. *integrifolium* Matsuda in Bot. Mag. Tokyo 25: 124. 1911.

Lycopodium integrifolium (Matsuda) Matsuda et Nakai ex Nakai in Bot. Mag. Tokyo 28: 102. 1914.

Urostachys serratus var. *integrifolius* (Matsuda) Herter ex Nessel, Bärlappgewächse, 57. 1939.

Lycopodium serratum var. *myriophyllifolium* Hayata, Ic. Pl. Formos. 4: 133. 1914; DeVol in Taiwan 11: 49. pl. 2. f. 5. 1965; in Li *et al.*, Fl. Taiwan 1: 30. 1975; Shieh in Quart. J. Chin. Forest. 6: 36. 1972.

Urostachys serratus var. *myriophyllifolius* (Hayata) Herter ex Nessel, Bärlappgewächse, 59. 1939.

Lycopodium serratum forma *intermedium* Nakai in Bot. Mag. Tokyo 39: 196. 1925; Tagawa in Acta Phytotax. Geobot. 14: 137. 1952; Col. Ill. Jap. Pterid. 10. 229. 1959; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 89. 1966; Shimura, Phot. Ecol. Guid. Jap.

Pterid. 18. f. 16. 1972; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pls. 13–14. 1986; 18: 6. 1986; Otsuka, Pterid. Fl. Nagano 19. 1978.

Lycopodium serratum var. *intermedium* (Nakai) Miyabe et Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 53. 1930.

Hperzia serrata forma *intermedia* (Nakai) Ching in Acta Bot. Yunnanica 3: 294. 1981.

Lycopodium serratum var. *alpestre* Christ; Makino and Nemoto, Fl. Jap. 1557. 1925; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 89. 1966.

Urostachys serratus var. *sachalinensis* Nessel in Fedd. Repert. 36: 174. 1934.

Urostachys serratus var. *kiyosumiyamaensis* Onuma ex Nessel, Bärlappgewächse, 60. 1939.

Lycopodium serratum forma *paucidentatum* Sugimoto, Keys Herbac. Pl. Jap. Pterid. 88. 409. 1966.

Lycopodium lucidulum auct. non Michaux; Warburg in Monsunia 1: 96. 1900; Nakai in Bot. Mag. Tokyo 39: 199. 1925.

Nom. Jap.: Touge-shiba, touge-hiba, ootouge-shiba, hiroha-tuge-shiba, hosoba-touge-shiba, toyo-guchi-touge-shiba, chabo-touge-shiba, oni-touge-shiba.

Distr.: Japan (Hokkaido, Honshu, Shikoku, Kyushu, and Ryukyu), Korea, Taiwan, China, Philippines, Nepal, India, Southeast Asia, New Caledonia, Hawaii, and Mexico.

Distr. Map. Japan: Kurata and Nakaike (op. cit. as *Lycopodium serratum*). Chromosome numbers: $n=68$ (Takamiya and Kurita, op. cit. as *Lycopodium serratum*), $n=136$ (Takamiya and Kurita op. cit. as *Lycopodium serratum*), $2n=204$ (Takamiya, op. cit. as *Lycopodium serratum*).

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium serratum*; as *L. serratum* forma *intermedium*; as *L. serratum* var. *longipetiolatum*); Kurata and Nakaike (op. cit. as *Lycopodium serratum*).

***Huperzia sieboldii* (Miq.) Holub** in Folia Geobot. Phytotax. 20: 76. 1985; Øllgaard in Biol. Skr. 34: 20. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 792. 1992.

Lycopodium sieboldii Miq. in Ann. Mus. Bot. Lugd. Batav. 3: 184. 1867; Franch. et Sav. Enum. Pl. Jap. 2: 196. 1877; Ito, Cat. Pl. Koishik. Bot. Gard. part 2, 2nd ed. 26. 1881; Matsumura, Nom. Jap. Pl. 115. 1884; Cat. Pl. Herb. Coll. Sci. Imp. Univ. 239. 1886; Ind. Pl. Jap. 1: 359. 395. 1904; Okubo, Cat. Pl. Bot. Gard. Imp. Univ. 258. 1887; Bak. Handb. Fern Allies 13. 1887; Nakai in J. Coll. Imp. Univ. Tokyo 31: 423. 1911; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. 412. 1914; Fl. Jap. 1557. 1925; Copel. in Univ. Calif. Publ. Bot. 12: 284. 1934; Ohwi, Fl. Jap. Pterid. 8. 1957; Tagawa, Col. Ill. Jap. Pterid. 11. 230. pl. 1. f. 9. 1959; Namekata and

Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 250. 1961; DeVol in Taiwania 11: 51. pl. III. f. 7. 1965; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 89. 1966; Lee in Bull. Seoul Nat. Univ. Forests 4: 59. 1967; Shieh in Quart. J. Chin. Forest. 6: 37. 1972; Shimura, Phot. Ecol. Guid. Jap. Pterid. 19. f. 17. 1972; Park, Ill. Encycl. Fauna & Fl. Korea 16: 419. 1975; Oh in Nature & Life 6: 22. 1976; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9–10: 8. map. 6. 1977; Nakaike, New Fl. Jap. Pterid. 31. f. 31. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 3: 430. 432. pl. 752. f. 7. 1984; Kuo in Taiwania 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 19. 1986; 18: 7. 1986; Kurata and Nakaike, Ill. Pterid. Jap. 6: 96. 1990; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 42. 1994.

Urostachys sieboldii (Miq.) Herter ex Nessel, Bärlappgewächse, 138. 1939; Herter, Ind. Lycop. 81. 1949; Masamune in Sci. Rep. Kanazawa Univ. 1: 34. 1951.

Phlegmariurus sieboldii (Miq.) Ching in Acta Bot. Yunnanica 4: 121. 1982.

Nom. Jap.: Himo-ran, Iwa-himo.

Distr.: Japan (Honshu, Shikoku, and Kyushu), Korea, and Taiwan.

Distr. Map. Japan: Okuyama (op. cit. as *Lycopodium sieboldii*); Otsuka and Satomi (op. cit. as *Lycopodium sieboldii*); Kurata and Nakaike (op. cit. as *Lycopodium sieboldii*).

Chromosome numbers: $n=136$ (Takamiya and Kurita, op. cit. as *Lycopodium sieboldii*).

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium sieboldii*); Kurata and Nakaike (op. cit. as *Lycopodium sieboldii*).

***Huperzia sieboldii* var. *christenseniana* (Christ et Herter ex Herter) Nakaike**, New Fl. Jap. Pterid. rev. & enlarg. 792. 841. 1992.

Lycopodium christensenianum Christ et Herter ex Herter in Hedw. 49: 89. 1909.

Lycopodium sieboldii var. *christensenianum* (Christ et Herter ex Herter) Tagawa in Acta Phytotax. Geobot. 14: 137. 1952; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 89. 1966; Hatusima, Fl. Ryukyus 122. 1971; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 4. 1975; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9–10: 8. map. 6. f. 6. 1977; Hatusima and Amano, Fl. Ryukyus 2. 1977; Nakaike, New Fl. Jap. Pterid. 32. f. 32. 1982; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 4. 1990.

Urostachys christensenianus (Christ ex Herter) Herter ex Nessel, Bärlappgewächse, 139. 1939; Herter, Ind. Lycop. 56. 1949.

Lycopodium sieboldii auct.; Walker, Fl. Okinawa & South. Ryukyu Isls. 36. 1976.

Nom. Jap.: Ryukyu-himo-ran

Distr.: Japan (Kyushu and Ryukyu), Korea, and China.

***Huperzia somae* (Hayata) Ching** in Acta Bot. Yunnanica 3: 301. 1981; Øllgaard in Biol. Skr. 34: 21. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 792. 1992.

Lycopodium somae Hayata, Ic. Pl. Formos. 5: 255. f. 91. 1915; Makino and Nemoto, Fl. Jap. 1558. 1925; Tagawa, Col. Ill. Jap. Pterid. 9. pl. I. f. 4. 1959; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 251. 1961; DeVol in Taiwan 11: 47, pl. II. fig. 3. 1965; in Li et al., Fl. Taiwan 1: 29. 1975; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 90. 1966; Shieh in Quart. J. Chin. Forest. 6: 35. 1972; Shimura, Phot. Ecol. Guid. Jap. Pterid. 29. f. 18. 1972; Nakaike, New Fl. Jap. Pterid. 33. f. 33. 1982; Øllgaard in Biol. Skr. 34: 71. 1989; Kuo in Taiwan 30: 11. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pls. 10–11. 1986; 18: 6. 1986; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 42. 1994.

Urostachys somae (Hayata) Herter ex Nessel, Bär-lappgewächse, 54. 1939; Herter, Ind. Lycop. 82. 1949.

Lycopodium chinensis var. *somae* (Hayata) Masamune in Mem. Fac. Sci. Agr. Taihoku Imp. Univ. 11: 114. 1934.

Lycopodium selago var. *somae* (Hayata) Masamune, Short Fl. Formos. 32. 1936; Ohwi, Fl. Jap. Pterid. 8. 1957.

Lycopodium yakusimensis Masamune, Prel. Rep. Veg. Yak. 35. 1929.

Urostachys yakusimensis (Masamune) Herter ex Nessel, Bär-lappgewächse, 65. 1939; in Revista Sud-amer. Bot. 6: 160. t. 8. f. 27. 1940; Masamune in Sci. Rep. Kanazawa Univ. 1: 35. 1951.

Nom. Jap.: Kosugi-touge-shiba.

Distr.: Japan (Kyushu {Yaku Isl.}), Taiwan, and Philippines

Ic. Spore: Nasu and Seto (op. cit. as *Lycopodium somae*).

***Lycopodiella* Holub**

Holub in Preslia 36: 20. 22. 1964.

Type of the genus: *Lycopodilla inundata* (L.) Holub

***Lycopodiella caroliniana* (L.) Pichi Sermolli** in Webbia 23: 165. 1968; Ching in Acta Bot. Yunnanica 4: 215. 1982; Øllgaard in Biol. Skr. 34: 25. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium carolinianum L. Sp. Pl. 1104. 1753; Bak. Handb. Fern Allies 28. 1887; v. Ald. v. Rosenb. Malayan Fern Allies 50. 1915; Nessel, Bär-lappgewächse, 270. 1939; Herter, Ind. Lycop. 9. 1949; Tagawa in Acta Phytotax. Geobot. 14: 92. 1951; Col. Ill. Jap. Pterid. 14. 228. pl. 3. f. 18. 1959; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 247. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 84. 1966; Nakaike, New Fl. Jap. Pterid. 13. f. 13a. 13b. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 25. 1986; 18: 8. 1986; Kurata and Nakaike, Ill. Pterid. Jap. 6: 8. 1990.

Lepidotis caroliniana (L.) Beauv. Prodr. Aethéog. 108. 1895.

Pseudolycopodiella caroliniana (L.) Holub in Folia Geobot. Phytotax. 18: 442. 1983.

Lycopodium pinnatum Lam. Enc. 3: 654. 1789.

Plananthus pinnatus (Lam.) Beauv. Prod. Aethéog. 111. 1805.

Lycopodium drepanoides Bl. Enum. Pl. Jav. 2: 264. 1828.

Lycopodium carolinianum var. *drepanoides* (Bl.) Nessel, Bär-lappgewächse, 274. 1939.

Lycopodium subinundatum Tagawa in Acta Phytotax. Geobot. 10: 75. 1941.

Nom. Jap.: Inu-yachi-sugi-ran.

Distr.: Japan (Honshu {Shiga Pref.}), China, India, Java, New Guinea, New Zealand, Africa, and North and South America.

Distr. Map. Japan: Kurata and Nakaike (op. cit. as *Lycopodium carolinianum*).

Chromosome numbers: n=68 (Takamiya and Kurita, op. cit. as *Lycopodium carolinianum*).

Ic. Spore: Nasu and Seto (op. cit., as *Lycopodium carolinianum*). Kurata and Nakaike (op. cit. as *Lycopodium carolinianum*).

***Lycopodiella cernua* (L.) Pichi Sermolli** in Webbia 23: 166. 1968; Jalas and Suominen, Atl. Fl. Europ. 17. map. 3. 1972; Øllgaard and Windisch in Bradea 5(1): 25. 1987; Øllgaard in Biol. Skr. 34: 25. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium cernuum L. Sp. Pl. 1103. 1753; Franch. et Sav. Enum. Pl. Jap. 2: 197. 1877; Ito, Cat. Pl. Koishik. Bot. Gard. part 2, 2nd ed. 26. 1881; Luerksen in Engl. Bot. Jahrb. 4: 366. 1883; Matsumura, Nom. Jap. Pl. 115. 1884; Cat. Pl. Herb. Coll. Sci. Imp. Univ. 239. 1886; Ind. Pl. Jap. 1: 357. 1904; Bak. Handb. Fern Allies 23. 1887; Okubo, Cat. Pl. Bot. Gard. Imp. Univ. 258. 1887; Warburg in Mon-sunia 1: 97. 1900; Makino in Bot. Mag. Tokyo 22: 236. 1908; Takeda in Bot. Mag. Tokyo 23: 211. 1909; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat.

- Hist. Dept. Tokyo Imp. Mus. 410. 1914; Fl. Jap. 1555. 1925; v. Ald. v. Rosenb. Malayan Fern Allies 47. 1915. cum var.; Herter in Philipp. J. Sci. 22: 69. 1923; 22: 1923; Domin in Mem. Roy. Czech Soc. Sci. Div. Nat. Hist. & Math. new ser. 2: 34. 1929; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 54. 1930; Nessel, Bärlappgewächse, 350. 1939; Herter, Ind. Lycop. 10. 1949; Nakai in Bull. Nat. Sci. Mus. Tokyo 27: 26. 1949; Masamune in Sci. Rep. Kanazawa Univ. 1: 35. 1951; Tagawa in Acta Phytotax. Geobot. 14: 137. 1952; Col. Ill. Jap. Pterid. 15. pl. 3. 228. f. 20. 1959; Ohwi, Fl. Jap. Pterid. 9. 1957; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 247. 1961; DeVol in Taiwan 11: 44. 1965; in Li et al., Fl. Taiwan 1: 35. pl. 4. 1975; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 84. 1966; Brownlie, Fl. Nouv.-Cal. et Dépend. 3. Pterid. 26. 1969; Shimura, Phot. Ecol. Guid. Jap. Pterid. 6. f. 5. 1972; Schelpe, Fl. Zambes. Pterid. 20. 1970; Consp. Fl. Angol. 19. 1977; Hatusima, Fl. Ryukyus 123. 1971; Shieh in Quart. J. Chin. Forest. 6: 32. 1972; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 2. 1975; Park, Ill. Encycl. Fauna & Fl. Korea 16: 415. 1975; Walker, Fl. Okinawa & South. Ryukyu Isls. 35. 1976; Oh in Nature & Life 6: 20. 1976; Hatusima and Amano, Fl. Ryukyus 1. 1977; Kornas, Distr. Ecol. Pterid. Zambia 28. f. 9B. 1979; Nakaike, New Fl. Jap. Pterid. 15. f. 15a. 15b. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 3: 144. pl. 608. f. 6. 1984; Kuo in Taiwan 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16: 17: pl. 27. 1986; 18: 9. 1986; Otsuka, Pterid. Fl. Nagano 11. 18. 1987; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 2. 1990; Kurata and Nakaike, Ill. Pterid. Jap. 6: 16. 1990; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 31. pl. 3. 1994.
- Lepidotis cernua* (L.) Beauv. Mag. Encycl. 5: 479. 1804; Rothm. Fl. Europ. 1: 6. 1964.
- Palhinhaea cernua* (L.) Franco et Vasc. ex Vasc. et Franco in Bot. Soc. Brother. ser. 2: 41: 25. 1967; Sen and Sen in Fern Gaz. 11: 423. fig. 4. k-u. 1978; Ching in Acta Bot. Yunnanica 3: 6. 1981; 4: 213. 1982; Dixit, Census Indian Pterid. 10. 1984; Lycopod. India 90. f. 24B. F. 49. pl. VI. f. 24. map. 8. 1988; Nakaike in Watanabe and Malla, Crypt. Himal. 2: 195. 1990.
- Lycopodium marianum* Willd. Sp. 5: 31. 1810.
- Lycopodium frutescens* Dill. Hist. Musc. Reimpr. 456. t. 63. f. 10. 1811.
- Lycopodium cernuum* var. *laxum* Bl. Enum. Pl. Jav. 2: 266. 1828.
- Lycopodium cernuum* forma *laxum* (Bl.) Nakai in Bull. Nat. Sci. Mus. 27: 26. 1949; Namekata and Kurata in Namekata, Coll. Cultiv. Ferns & allies, 247. 1961.
- Lycopodium boryanum* A. Rich. Sert. Astrol. 42. 1834.
- Lycopodium cernuum* var. *capillaceum* Spring in Mém. Acad. Roy. Belg. 15: 80. 1842.
- Lycopodium capillaceum* (Spring) Hieron. in Bot. Jahrb. 34: 573. 1905.
- Palhinhaea capillacea* (Spring) Holub in Folia Geobot. Phytotax. 20: 78. 1985.
- Lycopodium sikkimense* Müller in Bot. Zeit. 19: 164. 1861.
- Lycopodium cernuum* var. *sikkimense* (Müller) Clarke in Trans. Linn. Soc. Bot. II. ser. 1. 592. 1880; Nessel, Bärlappgewächse, 356. 1939.
- Palhinhaea cernua* var. *sikkimensis* (Müller) Ching in Acta Bot. Yunnanica 3: 6. 1981.
- Lycopodium heeschii* Müller in Bot. Zeit. 19: 164. 1861.
- Lycopodium hupeanum* Müller in Bot. Zeit. 19: 165. 1861.
- Lycopodium mexicanum* Müller in Bot. Zeit. 19: 161. 1861.
- Lycopodium moritzii* Müller in Bot. Zeit. 19: 165. 1861.
- Lycopodium secundum* Müller in Bot. Zeit. 19: 164. 1861.
- Lycopodium cymosum* L'Herm. ex Hieronim. in Engl. Jahrb. 34: 574. 1905.
- Lycopodium lehmannii* Hieronim. in Engl. Jahrb. 34: 574. 1905.
- Lycopodium trianae* Hieronim. in Engl. Jahrb. 34: 574. 1905.
- Lycopodium cernuum* forma *typica* Herter in Philipp. J. Sci. 22: 182. 1923.
- Lycopodium cernuum* forma *longiflora* Herter in Philipp. J. Sci. 22: 182. 1923.
- Lycopodium cernuum* var. *vulcanicum* Herter in Philipp. J. Sci. 22: 182. 1923.
- Nom. Jap.:** Mizu-sugi, sawa-sugi, Nagaba-mizu-sugi.
- Distr.: Japan (Hokkaido, Honshu, Shikoku, and Kyushu), tropical and subtropical zone of the Old and New World.
- Distr. Map. Europe: Jalas and Suominen (op. cit.). Japan: Okuyama (op. cit. as *Lycopodium cernuum*); Otsuka (op. cit. as *Lycopodium cernuum*).
- Chromosome numbers: $n=108$ (Takamiya and Kurita, op. cit. as *Lycopodium cernuum*).
- Ic. Spore: Kurata and Nakaike (op. cit. as *Lycopodium cernuum*).
- Lycopodiella inundata* (L.) Holub in Preslia 36: 21. 1964; Jalas and Suominen, Atl. Fl. Europ. 17. map. 4. 1872; Jermy et al. Ferns Brit. Isls. 5. 1978; Ching in Acta Bot. Yunnanica 4: 214. 1982; Dostál in Hegi, Ill. Fl. Mitteleur. 1: 21. abb. 5. 1984; Kubát in Hejný and Sdávík, Květena 1: 192. 1988; Øllga-

ard in Biol. Skr. 34: 26. 1989; Nakaike, New Fl. Jap. Pterid. rev. & enlarg. 791. 1992.

Lycopodium inundatum L. Sp. Pl. 1102. 1753; Bak. Handb. Fern Allies 18. 1887; Matsumura, Ind. Pl. Jap. 1: 358. 1904; Takeda in Bot. Mag. Tokyo 23: 210. 1909; 29: (285). 1915; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1914; Fl. Jap. 1556. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 54. 1930; Nessel, Bärlappgewächse, 258. 1939; Herter, Ind. Lycop. 24. 1949; Ohwi, Fl. Jap. Pterid. 9. 1957; Tagawa, Col. Ill. Jap. Pterid. 14. 229. pl. 3. f. 17. 1959; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 249. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 86. 1966; Hultén, Fl. Alaska 26. 1968; Shimura, Phot. Ecol. Guid. Jap. Pterid. 13. f. 11. 1972; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9–10: 3. map. 2. f. 2. 1977; Nakaike, New Fl. Jap. Pterid. 23. f. 23a. 23b. 1982; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 24. 1986; 18: 8. 1986; Otsuka, Pterid. Fl. Nagano 18, 1987; Kurata and Nakaike, Ill. Pterid. Jap. 6: 68. 1990.

Plananthus inundatus (L.) P. Beauv. Prod. Aethéog. 111. 1805.

Lepidotis inundata (L.) Opiz, Seznam 195. 1852.

Lycopodium palustre Lam. Fl. Franac. 1: (33). 1779.

Lepidotis incurva Opiz in Kratos 4: 17. 1819.

Lycopodium anderweitii Nessel in Fedd. Repert. 36: 190. t. 176. 1934.

Lycopodium inundatum var. *anderweitii* (Nessel) Nessel, Bärlappgewächse, 260. 1939.

Lycopodium pallidum Herter ex Nessel, Bärlappgewächse, 262. 1939. sine descr. lat.; in Revista Sudamer. Bot. 6: 168. t. 15. f. 73. 1940. non Grev. et Hook. 1831; Øllgaard in Biol. Skr. 34: 60. 1989.

Nom. Jap.: Yachi-sugi-ran.

Distr.: Japan (Hokkaido, and Honshu), China, Russia, Europe, and North America.

Distr. Map. Europe: Jalas and Suominen (op. cit.). British Isles: Jermy et al. (op. cit.). Japan: Otsuka and Satomi (op. cit. as *Lycopodium inundatum*); Kurata and Nakaike (op. cit. as *Lycopodium inundatum*).

Ic. Spore: Nasu and Seto (op. cit., as *Lycopodium inundatum*); Kurata and Nakaike (op. cit. as *Lycopodium inundatum*).

***Lycopodium* L.**

Linnaeus, Sp. Pl. 1100. 1753.

Lectotype of the genus: *Lycopodium clavatum* L.; Pichi Sermolii in Webbia 26: 138. 1971.

Lycopodium alpinum L. Sp. Pl. 1104. 1753; Takeda in Bot. Mag. Tokyo 23: 227. 1909; 29: (289).

1915; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 61. 1930; Nessel, Bärlappgewächse, 338. 1939; Herter, Ind. Lycop. 3. 1949; Ohwi, Fl. Jap. Pterid. 11. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 246. 1961; Tagawa, Col. Ill. Jap. Pterid. 14. 227. 1959; Wilce in Beih. Nova Hedw. 19: 130. pl. 33. 1965; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 83. 1966; Hultén, Fl. Alaska 30. 1968; Park, Ill. Encycl. Fauna & Fl. Korea 16: 414. 1975; Oh in Nature & Life 6: 20. 1976; Nakaike, New Fl. Jap. Pterid. 11. f. 11. 1982; Shimizu, New Alpine Fl. Jap. Col. 2: 264. pl. 143. f. 480. 1983; Otsuka, Pterid. Fl. Nagano 10. 17. 1987; Øllgaard in Biol. Skr. 34: 30. 1989.

Lepidotis alpina (L.) P. Beauv. Prodr. Aethéog. 107. 1805.

Stachygynandrum alpinum (L.) C. Presl, Abh. K. nigl. B. hm. Ges. Wiss. 3: 583. 1845.

Diphasium alpinum (L.) Rothm. in Fedd. Repert. 54: 65. 1944; Jalas and Suominen, Atl. Fl. Europ. 23. 1972; Sen and Sen in Fern Gaz. 11: 424. fig. 5. k–r. 1978.

Diphasiastrum alpinum (L.) Holub in Preslia 47: 107. 1975; Jermy et al. Ferns Brit. Isls. 7. 1978; Ching in Acta Bot. Yunnanica 4: 128. 1982; Dostál in Hegi, Ill. Fl. Mitteleur. 1: 40. abb. 24. 1984; Dixit, Census Indian Pterid. 10. 1984; Lycopod. India 88. f. 23B. F. 48. pl. VI. f. 23. map. 7. 1988; Kubát in Hejny and Sdavič, Květena 1: 199. 1988.

Diphasiastrum complanatum subsp. *alpinum* (L.) Jermy in Fern Gaz. 13: 260. 1989.

Lycopodium cupressifolium Opiz in Kratos 4: 15. 1819.

Lycopodium alpinum subsp. *cupressifolium* (Opiz) Dosatál, Květena/ČSR 8. 1948.

Lycopodium alpinum var. *genuinum* Takeda in Bot. Mag. Tokyo 23: 227. 1909; 29: (289); Makino and Nemoto, Fl. Jap. 1554. 1925.

Lycopodium alpinum var. *planiramulosum* Takeda in Bot. Mag. Tokyo 23: 229. 1909; 29: (289). 1915; Makino and Nemoto, Fl. Jap. 1554. 1925; Nessel, Bärlappgewächse, 340. 1939; Tagawa, Col. Ill. Jap. Pterid. 14. 227. figs. 3–4. pl. 3. f. 15. 1959; Namagata and Kurata in Namagata, Coll. Cultiv. Ferns & allies, 246. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 83. 1966; Lee in Bull. Seoul Nat. Univ. Forests 4: 57. 1967; Shimura, Phot. Ecol. Guid. Jap. Pterid. 3. f. 2. 1972; Otsuka, Pterid. Fl. Nagano 17. 1987.

Dipasium alpinum var. *planiramulosum* (Takeda) Toyokuni in Mem. Nat. Sci. Mus. 5: 185. 1972.

Nom. Jap.: Chishima-hikage-no-kazura, miyama-hikage-no-kazura.

Distr. Japan (Hokkaido, and Honshu), Korea, China, India, Russia, Europe, and North America.

Distr. Map. Europe: Jalas and Suominen (op. cit.)

as *Diphasium alpinum*). British Isles: Jermy et al. (op. cit. as *Diphasiastrum alpinum*). Japan: Otsuka (op. cit.).

Note: Lectotype of this species has been selected by Wilce (1965).

Lycopodium annotinum L. Sp. Pl. 1103. 1753; Matsumura, Cat. Pl. Herb. Coll. Sci. Imp. Univ. 240. 1886; Ind. Pl. Jap. 1: 357. 1904; Bak. Handb. Fern Allies 25. 1887; Takeda in Bot. Mag. Tokyo 23: 214. 1909; 29: (286). 1915; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 410. 1914; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 56. 1930; Nessel, Bärlappgewächse, 277. 1939; Herter, Ind. Lycop. 4. 1949; Ohwi, Fl. Jap. Pterid. 10. 1957; Tagawa, Col. Ill. Jap. Pterid. 12. 227. f. 4/1. pl. 2. f. 14. 1959; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 246. 1961; Hultén in Kungl. Sv. Vetensk. Handl. 8 (5): 70. map. 62. 1968; Fl. Alaska 27. 1968; DeVol in Taiwan 11: 44. 1965; in Li et al., Fl. Taiwan 1: 35. 1975; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 83. 1966; Lee in Bull. Seoul Nat. Univ. Forests 4: 57. 1967; Jalas and Suominen, Atl. Fl. Europ. 18. map. 5. 1972; Shieh in Quart. J. Chin. Forest. 6: 32. 1972; Park, Ill. Encycl. Fauna & Fl. Korea 16: 415. 1975; Jermy et al. Ferns Brit. Isls. 3. 1978; Ching in Acta Bot. Yunnanica 4: 217. 1982; Nakaike, New Fl. Jap. Pterid. 12. f. 12a. 12b. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Dostál in Hegi, Ill. Fl. Mitteleur. 1: 24. abb. 7. 1984; Okuyama, Wild Pl. Jap. new & enlarg. 3: 38. 40. pl. 556. f. 6. 1984; Dixt, Census Indian Pterid. 9. 1984; Lycopod. India 81. f. 20A-B. 45. pl. V. F. 20. 1988; Kuo in Taiwan 30: 12. 1985; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pls. 31-32. 1986; 18: 10. 1986; Otsuka, Pterid. Fl. Nagano 17. 1987; Kubát in Hejný and Sdavič, Květena 1: 194. 1988; Øllgaard in Biol. Skr. 34: 31. 1989; Kurata and Nakaike, Ill. Pterid. Jap. 6: 2. 1990; Takamiya in Bot. Mag. Tokyo 105: 580. 1992; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 30. 1994.

Lepidotis annotina (L.) Beauv. Prodr. Aethéog. 107. 1805.

Lycopodium juniperifolium Lam. Fl. Franc. 1: (33). 1779.

Lycopodium bryophyllum Presl, Reliq. Haenk. 1: 81. 1825.

Lycopodium annotinum var. *pungens* Desv. Mem. Soc. Linn. Paris 6: n. 36. 1827; Takeda in Bot. Mag. Tokyo 23: 217. 1909; Makino and Nemoto, Fl. Jap. 1555. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 57. 1930; Nessel, Bärlappgewächse, 281. 1939; Hara in Bot. Mag. Tokyo 48: 704. 1934; Tagawa in Acta Phytotax. Geobot. 14: 92. 1951; Ohwi, Fl. Jap. Pterid. 10. 1957; Namegata and

Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 247. 1961; Hultén in Kungl. Sv. Vetensk. Handl. 8(5): 244. map. 62. 1964; Fl. Alaska 27. 1968.

Lycopodium annotinum var. *angustatum* Takeda in Bot. Mag. Tokyo 23: 214. f. 7. 1909; Makino and Nemoto, Fl. Jap. 1554. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 56. 1930; Ohwi, Fl. Jap. Pterid. 10. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns and Fern All. 247. 1961; Oh in Nature & Life 6: 20. 1976.

Lycopodium annotinum var. *latifolium* Takeda in Bot. Mag. Tokyo 23: 215. f. 8. 1909; Makino and Nemoto, Fl. Jap. 1554. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 56. 1930; Tagawa in Acta Phytotax. Geobot. 14: 92. 1951; Ohwi, Fl. Jap. Pterid. 10. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 247. 1961.

Lycopodium annotinum forma *latifolium* (Takeda) Tagawa in J. Jap. Bot. 33: 200. 1958; Col. Ill. Jap. Pterid. 12. 227. f. 4/2-3. 1959; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 83. 1966; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 33. 1986; 18: 10. 1986; Otsuka, Pterid. Fl. Nagano 17. 1987.

Lycopodium annotinum var. *pungens* forma *latifolia* (Takeda) Nessel, Bärlappgewächse, 283. 1939.

Lycopodium annotinum var. *acrifolium* Fernald in Rhodora 17: 124. 1915; Tagawa, Col. Ill. Jap. Pterid. 12. 227. f. 4/4. 1959; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 84. 1966; Shimura, Phot. Ecol. Guid. Jap. Pterid. 4. f. 3. 1972; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Shimizu, New Alpine Fl. Jap. Col. 2: 264. pl. 143. f. 481. 1983; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pl. 34. 1986; 18: 10. 1986; Otsuka, Pterid. Fl. Nagano 18. 1987.

Lycopodium annotinum var. *tenuifolium* Nessel in Fedd. Repert. 36: 191. t. 76. 1936; Bärlappgewächse, 284, 1939.

Lycopodium annotinum var. *kamtschatkanum* Th. P. Ria ex Nessel, Bärlappgewächse, 280. 1939, sine descr. lat.

Lycopodium annotinum var. *pungens* forma *alpestris* Hartmann ex Nessel, Bärlappgewächse, 282. 1939, sine descr. lat.

Lycopodium annotinum var. *pungens* forma *montanum* Tur. ex Nessel, Bärlappgewächse, 282. 1939, sine descr. lat.

Lycopodium annotinum var. *pungens* forma *orientalis* Herter ex Nessel, Bärlappgewächse, 282. 1939, sine descr. lat.

Lycopodium annotinum var. *pungens* forma *juniperoides* Lam. et Opitz. ex Nessel, Bärlappgewächse, 283. 1939, sine descr. lat.

Lycopodium annotinum var. *pungens* forma *circumpolaris* Herter ex Nessel, Bärlappgewächse, 283.

1939, sine descr. lat.

Nom. Jap.: Sugi-kazura, hoso-sugi-kazura, hiroh-a-sugi-kazura, takane-sugi-kazura, shin-no-sugi-kazura, maruba-sugi-kazura.

Distr.: Japan (Hokkaido, and Honshu), Korea, Taiwan, China, Himalaya, and temperate zone of Northern Hemisphere.

Distr. Map. Circumpolar: Hultén (op. cit.). Europe: Jalas and Suominen (op. cit.). British Isles: Jermy et al. (op. cit.). Japan: Okuyama (op. cit.); Kurata and Nakaike (op. cit.).

Chromosome numbers: $n=34$ (Takamiya and Kurita, op. cit.), $2n=68$ (Takamiya, op. cit.).

Ic. Spor: Nasu and Seto (op. cit., as *Lycopodium annotinum*; as *L. annotinum* forma *latifolium*; as *L. annotinum* var. *acrifolium*). Kurata and Nakaike (op. cit.).

***Lycopodium casuarinoides* Spring** in Bull. Acad. Roy. Sci. Belg. 8: 521. 1841; Bak. Handb. Fern Allies 24. 1887; Warburg in Monsunia 1: 97. 1900; v. Ald. v. Rosenb. Malayan Fern Allies 49. 1915; Herter in Phiipp. J. Sci. 22: 70. 1923; 22: 183. 1923; Ind. Lycop. 9. 1949; Nessel, Bärlappgewächse, 371. 1939; Ohwi, Fl. Jap. Pterid. 9. 1957; Tagawa, Col. Ill. Jap. Pterid. 15. 228. f. 6. pl. 3. f. 19. 1959; Namekata and Kurata in Namekata, Coll. Cultiv. Our. Ferns & Fern All. 247. 1961; DeVol in Taiwan 11: 47. 1965; in Li et al., Fl. Taiwan 1: 49. pl. 7. 1975; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 84. 1966; Tagawa and K. Iwats. Southeast As. Stud. 3: 71. 1965; 5: 28. 1967; in Acta Phytotax. Geobot. 23: 51. 1968; Fl. Thail. 3(1): 12. 1979; Shieh in Quart. J. Chin. Forest. 6: 34. 1972; Shimura, Phot. Ecol. Guid. Jap. Pterid. 5. f. 4. 1972; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9-10: 9. map. 7. f. 7. 1977; Nakaike, New Fl. Jap. Pterid. 14. f. 14a. 14b. 1982; Takamiya and Tanaka in Chrom. Inf. Ser. 35: 27. 1983; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16-17: pl. 26. 1986; 18: 9. 1986; Øllgaard in Biol. Skr. 34: 36. 1989; Kurata and Nakaike, Ill. Pterid. Jap. 6: 12. 1990; Takamiya in Bot. Mag. Tokyo 105: 580. 1992; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 31. pl. 2. 1994.

Lepidotis casuarinoides (Spring) Rothm. in Fedd. Repert. 54: 67. 1944.

Lycopodiastrium casuarinoides (Spring) Holub ex Dixit in J. Bombay Nat. Hist. Soc. 77: 540. 1981; Census Indian Pterid. 10. 1984; Lycopod. India 94. f. 25B, F, 50. pl. VI. f. 25. map. 8. 1988; Holub in Fol. Geobot. Phytotax. 18: 441. 1983; Ching in Acta Bot. Yunnanica 3: 8. 1981.

Lycopodium comans Hook. f. Fl. Antarct. 1: 112. 1844.

Lycopodium filicaule Hook. f. Fl. Antarct. 1: 112. 1844.

Lycopodium rubellum Presl in Abh. Bohm. Ges. Wiss. 3: 583. 1845.

Lycopodium jacobsonii v. Ald. v. Rosenb. in Bull. Jard. Buit. ser. 2. 23: 22. t. 3-4. 1916.

Lycopodium casuarinoides var. *jacobsonii* (v. Ald. v. Rosenb.) Nessel, Bärlappgewächse, 373. 1939.

Lycopodium leucolepis Junghuhn et Vriese in Vriese, Nederl. Kruidk. Arch. 1: 13. 1848.

Lycopodium pennicilliferum v. Ald. v. Rosenb. in Bull. Jard. Bot. Buit. ser. 2. 16: 40. t. 10. 1914.

Lycopodium casuarinoides var. *pennicilliferum* (v. Ald. v. Rosenb.) Nessel, Bärlappgewächse, 372. abb. 84. figs. 6. 9. 1939.

Lycopodium rubellum Presl in Abh. Boh. Ges. Wiss. 3: 583. 1845.

Lycopodium casuarinoides var. *rubellum* (Presl) Nessel, Bärlappgewächse, 373. 1939.

Lycopodium casuarinoides forma *elongatum* David ex Nessel, Bärlappgewächse, 371. pl. 84. t. 7. 1939.

Lycopodium casuarinoides var. *japonicum* Nakai in Bot. Mag. Tokyo 46: 63. 1932; Sato in J. Jap. Bot. 12: 827. 1936; Masamune in Sci. Rep. Kanazawa Univ. 1: 35. 1951; Ogawa in Acta Phytotax. Geobot. 14: 163. 1952.

Lycopodium casuarinoides var. *scandens* Herter ex Nessel, Bärlappgewächse 373. 1939. sine descr. lat.

Nom. Jap.: Himo-zuru.

Distr.: Japan (Honshu and Kyushu), Taiwan, China, Philippines, Malaysia, Borneo, New Guinea, Sumatra, India, Myanmar, and Bhutan.

Distr. Map. Japan: Otsuka and Satomi (op. cit.); Kurata and Nakaike (op. cit.).

Chromosome numbers: $2n=68$ (Takamiya and Tanaka, op. cit.; Takamiya, op. cit.).

Ic. Spore: Nasu and Seto (op. cit.); Kurata and Nakaike (op. cit.).

***Lycopodium clavatum* L.** Sp. Pl. 1101. 1753; Franch. et Sav. Enum. Pl. Jap. 2: 197. 1877; Ito, Cat. Pl. Koishik. Bot. Gard. part 2, 2nd ed. 26. 1881; Luerssen in Engl. Bot. Jahrb. 4: 366. 1883; Matsumura, Nom. Jap. Pl. 115. 1884; Cat. Pl. Herb. Col. Sci. Imp. Univ. 239. 1886; Ind. Pl. Jap. 1: 357. 1904; Bak. Handb. Fern Allies 26. 1887; Okubo, Cat. Pl. Bot. Gard. Imp. Univ. 258. 1887; Warburg in Monsunia 1: 97. 1900; Hayata in J. Coll. Sci. Imp. Univ. Tokyo 25: 241. 1908; Takeda in Bot. Mag. Tokyo 23: 218. 1909; 29: (287). 1915; Nakai in J. Coll. Sci. Imp. Univ. Tokyo 31: 422. 1911; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1914; Fl. Jap. 1555. 1925; v. Ald. v. Rosenb. Malayan Fern Allies 46. 1915; Miyabe and Kudo in Journ. Fac. Agr. Hokkaido Imp. Univ. 26: 56. 1930; Nessel, Bärlappgewächse, 287. 1939. cum var. et

- forma; Herter, Ind. Lycop. 11. 1949; Tagawa in Acta Phytotax. Geobot. 14: 137. 1957; Hultén in Kungl. Sv. Vetensk. Handl. 8(5): 70. map. 61. 1964; Fl. Alaska 28. 1968; DeVol in Taiwania 11: 44. 1965; in Li et al. Fl. Taiwan 1: 35. 1975; Tagawa and K. Iwats. Southeast As. Stud. 5: 28. 1967; Fl. Thail. 3(1): 11. 1979; Brownlie, Fl. Nouv.-Cal. et D pénd. 3. Pterid. 25. 1969; Shieh in Quart. J. Chin. Forest. 6: 32. 1972; Jalas and Suominen, Atl. Fl. Europ. 19, map. 6. 1972; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 3. 1975; Park, Ill. Encycl. Fauna & Fl. Korea 16: 416. 1975; Jermy et al. Ferns Brit. Isls. 4. 1978; Sen and Sen in Fern Gaz. 11: 426. fig. 5. s-z. aa. 1978; Tanaka and Takamiya in Chrom. Inf. Ser. 31: 5. 1981; Takamiya and Tanaka in Bot. Mag. Tokyo 95. 419. 1982; Nakaike, New Fl. Jap. Pterid. 17. f. 17a. 17b. 17c. 1982; Daigobo in J. Jap. Bot. 58: 212-220. 1983; Dostál in Hegi, Ill. Fl. Mitteleur. 1: 25. abb. 9. 1984; Nakaike in Watanabe and Malla, Crypt. Himal. 2: 193. 1990; Øllgaard and Windisch in Bradea 5(1): 21. 1987; Otsuka, Pterid. Fl. Nagano 18. 1987; Kubát in Hejný and Sdávík, Květena 1: 193. 1988; Øllgaard in Biol.Skr. 34: 38. 1989; Shimabuku, Check List Vasc. Fl. Ryukyu Isls. 2. 1990; Kurata and Nakaike, Ill. Pterid. Jap. 6: 30. 1990; Takamiya in Bot. Mag. Tokyo 105: 580. 1992; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 31. 1994.
- Lepidotis clavata* (L.) P. Beauv. Prod. Aethéog. 108. 1805.
- Lycopodium officinale* Necker, Meth. Musc. 150. 1771.
- Lycopodium japonicum* Thunb. ex Murray, Syst. Veg. ed. 14. 944. (May-Jul.); Thunb. Fl. Jap. 341. 1784 (Aug.); Ching in Acta Bot. Yunnanica 4: 219. 1982; Dixit, Census Indian Pterid. 9. 1984; Lycopod. India 78. f. 18A-B. 43. pl. V. f. 19. 1988; Kuo in Taiwania 30: 12. 1985.
- Stachygnandrum japonicum* (Thunb. ex Murray) P. Beauv. Prod. Aethéog. 113. 1805.
- Lycopodium clavatum* var. *japonicum* (Thunb. ex Murray) Nessel, Bärlappgewächse, 297. 1939; Masamune in Sci. Rep. Kanazawa Univ. 1: 35. 1951.
- Lycopodium obscurum* var. *japonicum* (Thunb. ex Murray) Nessel, Bärlappgewächse, 325. 1939. excl. type.
- Lycopodium trichiatum* Bory, Voy. Iles Afr. 1: 350. 1804.
- Lycopodium clavatum* var. *trichiatum* (Bory) Nessel, Bärlappgewächse, 301. t. 69. f. 47. f. 48. 1939.
- Lepidotis ciliata* P. Beauv. Prodr. Aethéog. 108. 1805.
- Lycopodium ciliatum* (P. Beauv.) Sw. Syn. Fil. 179. 1806. non Lam. 1779.
- Lepidotis inflexa* P. Beauv. Prodr. Aethéog. 109. 1805.
- Lycopodium inflexum* (P. Beauv.) Sw. Syn. Fil. 179. 1806.
- Lycopodium aristatum* Humb. et Bonpl. ex Willd. Sp. 5: 17. 1810.
- Lycopodium clavatum* var. *aristatum* (Humb. et Bonpl. ex Willd.) Spring in Flora 21(1): 173. 1838.
- Lycopodium vulgare* Dill. Hist. Musc. Reimpr. 471. 1811; Hert. Bärlappgewächse, 47. 1949; Øllgaard in Biol. Skr. 34: 77. 1989. nom. inval.
- Copodium oxynemum* Raf. Amer. Monthly Mag. Crit. Rev. 2: 44. 1817.
- Lycopodium integrifolium* Goldie, Edinb. Philos. J. 6: 332. 1822.
- Lycopodium piliferum* Raddi, Pl. Bras. Nov. Gen. 79. 1825.
- Lycopodium clavatum* var. *piliferum* (Raddi) Nessel in Arch. Bot. Est. S. Paulo 1: 435. 1927.
- Lycopodium trichophyes* Sprengel, Syst. Veg. 4(1): 13. 1827.
- Lycopodium trichophyllum* Desv. Mém. Soc. Linn. Paris 6: 184. 1827.
- Lycopodium clavatum* var. *trichophyllum* (Desv.) Nessel in Arach. Bot. Est. S. Paulo 1: 436. 1927; Bärlappgewächse, 303. 1939.
- Lycopodium clavatum* var. *monostachyum* Desv. in Ann. Soc. Linn. Paris 6: 184. 1827; Nakai in Bot. Mag. Tokyo 39: 198. 1925; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 247. 1961.
- Lycopodium torridum* Gaudich. Voy. Uranie 1: 283. 1828.
- Lycopodium divaricatum* Wall. ex Grev. et Hook. in Bot. Misc. 2: 377. 1831.
- Lycopodium clavatum* var. *divarictaum* (Wall. ex Grev. Hook.) Nessel, Bärlappgewächse 295. 1939.
- Lycopodium aristatum* var. *robustius* Hook. et Grev. in Bot. Misc. 2: 376. 1831.
- Lycopodium clavatum* var. *robustius* (Hook. et Grev.) Nakai in Bot. Mag. Tokyo 39: 197. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 58. 1930; Tagawa, Col. Ill. Jap. Pterid. 12. 1959; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 248. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 85. 1966; Shimizu, New Alpine Fl. Jap. Col. 2: 267. pl. 144. f. 482. 1983; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16-17: pl. 30. 1986; 18: 10. 1986.
- Lycopodium clavatum* var. *raddianum* Spring in Flora 21(1): 172. 1838; Nessel, Bärlappgewächse, 304. 1939.
- Lycopodium clavatum* var. *desvauxianum* Spring in Flora 21(1): 173. 1838.
- Lycopodium aristatum* var. *desvauxianum* Spring in Martius, Fl. Brasl. 1(2): 114. 1840.
- Lycopodium trichiatum* var. *desvauxianum* Spring

in Mém. Acad. Roy. Belg. 15: 92. 1842.

Lycopodium clavatum var. *wallicianum* Spring in Mém. Acad. Roy. Sci. Belg. 15: 90. 1842; Herter in Phiipp. J. Sci. 22: 68. 1923; Nakai in Bot. Mag. Tokyo 39: 198. 1925; Masamune in Sci. Rep. Kanazawa Univ. 1: 35. 1951; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 248. 1961.

Lycopodium eriostachys Fée, Crypt. Vasc. Brésil 1: 224. 1869.

Lycopodium clavatum var. *eristaachys* (Fée) Nessel in Arch. Bota. Est. S. Paulo 1: 435. 1927; Bärlappgewächse, 300. 1939.

Lycopodium tamariscispica Cesati, Rendic. Accad. Reale Sci. Fis. 16: 28. 30. 1877.

Lycopodium clavatum var. *tamariscispica* (Cesati) Nessel, Bärlappgewächse, 294. 1939.

Lycopodium clavatum var. *minarum* Christ in Schwacke, Pl. Nov. Mineriras 2: 41. 1900.

Lycopodium clavatum var. *nipponicum* Nakai in Bot. Mag. Tokyo 39: 197. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 58. 1930; Nessel, Bärlappgewächse, 298. 1939; Ohwi, Fl. Jap. Pterid. 10. 1957; Tagawa, Col. Ill. Jap. Pterid. 12. 228. pl. 2. f. 11. 1959; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 248. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 85. 1966; Lee in Bull. Seoul Nat. Univ. Forests 4: 57. 1967; Hatusima, Fl. Ryukyus 123. 1971; Shimura, Phot. Ecol. Guid. Jap. Pterid. 8. f. 7. 1972; Oh in Nature & Life 6: 20. 1976; Hatusima and Amano, Fl. Ryukyus 1. 1977; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 2: 259. pl. 384. f. 2. 1983; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pls. 28-29. 1986; 18: 10. 1986.

Lycopodium clavatum var. *equisetoides* Nessel in Arch. Bot. Est. S. Paulo 1: 438. 1927.

Lycopodium clavatum forma *strigosum* Warb. ex Nessel, Bärlappgewächse, 299. 1939, sine descr. lat.

Urostachys plutonis Herter Ind. Lycop. 75. 1949.

Lycopodium pseudoclavatum Ching in Acta Bot. Yunnanica 4: 222. 1982.

Lycopodium clavatum var. *asiaticum* Ching in Acta Bot. Yunnanica 4: 224. 1982.

Nom. Jap.: Hikage-no-kazura, ezo-no-hikage-no-kazura, nangoku-hikage-no-kazura, ippon-hikage-no-kazura, oo-hikage-no-kazura, kami-dasuki, kit-suno-no-tasuki, yamauba-no-tasuki, tengu-no-tasuki, kittsune-no-ogase, hikage-gusa, yama-kazura, shishi-no neba, kitsune-no-kesa, saru-ogase, sagari-goke, haitaro.

Distr.: Japan (Hokkaido, Honshu, Shikoku, and Kyushu), Korea, Taiwan, China, Bhutan, India, Nepal, Malaysia, New Caledonia, and the Old and New World.

Distr. Map. Circumpolar: Hultén (op. cit.). Europe: Jalas and Suominen (op. cit.). British Isles: Jermy *et al.* (op. cit.). Japan: Kurata and Nakaike, (op. cit.).

Chromosome number: $n=34$ (Takamiya and Kurita, op. cit. as *Lycopodium clavatum* var. *nipponicum*). $2n=68$ (Tanaka and Takamiya, op. cit.; Takamiya and Tanaka, op. cit.; Takamiya, op. cit.), $2n=102$ (Tanaka and Takamiya, op. cit.; Takamiya and Tanaka, op. cit.), $2n=136$ (Tanaka and Takamiya, op. cit.; Takamiya and Tanaka, op. cit.).

Ic. Spore: Nasu and Seto (op. cit., as *Lycopodium clavatum* var. *nipponicum*; as *L. clavatum* var. *robustus*); Kurata and Nakaike (op. cit.).

Lycopodium complanatum L. Sp. Pl. 1104. 1753; Franch. et Sav. Enum. Pl. Jap. 2: 198. 1877; Ito, Cat. Pl. Koishik. Bot. Gard. part 2, 2nd ed. 26. 1881; Bak. Handb. Fern Allies 28. 1887; Takeda in Bot. Mat. Tokyo 23: 224. 1909; 29: (288). 1915; Nakai in J. Coll. Sci. Imp. Univ. Tokyo 31: 422. 1911; in Bot. Mag. Tokyo 39: 198. 1925; v. Ald. v. Ros. Malayan Fern Allies 51. 1915; Nakai in Bot. Mag. Tokyo 39: 198. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 60. 1930; Nessel, Bärlappgewächse, 327. 1939; Herter, Ind. Lycop. 12. 1949; Ohwi, Fl. Jap. Pterid. 11. 1957; Tagawa, Col. Ill. Jap. Pterid. 14. 228. figs. 5-6. pl. 3. f. 16. 1959; Wilce in Nova Hedw. 3: 95. 1961; Beih. Nova Hedw. 19: 133. pl. 34. 1965; Hultén in Kungl. Sv. Vetensk. Handl. 8 (5): 118. map. 109. 1964; Fl. Alaska 29. 1968; DeVol in Taiwan 11: 45. 1965; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 85. 1966; Lee in Bull. Seoul Nat. Univ. Forests 4: 58. 1967; Shieh in Quart. J. Chin. Forest. 6: 34. 1972; Shimura, Phot. Ecol. Guid. Jap. Pterid. 9. f. 8. 1972; Park, Ill. Encycl. Fauna & Fl. Korea 16: 416. 1975; Oh in Nature and Life 6: 21. 1976; Nakaike, New Fl. Jap. Pterid. 18. f. 18a. 18b. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 3: 40. pl. 556. f. 5. 1984; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16·17: pls. 40-41. 1986; 18: 11. 1986; Otsuka, Pterid. Fl. Nagano 17. 1987; Øllgaard in Biol. Skr. 34: 39. 1989; Kurata and Nakaike, Ill. Pterid. Jap. 6: 52. 1990; Takamiya in Bot. Mag. Tokyo 105: 580. 1992; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 35. 1994.

Stachygnandrum complanatum (L.) Presl in Abh. Königl. Böhm. Ges. Wiss. 3: 583. 1845.

Diphasium complanatum (L.) Rothm. in Fedd. Repert. 54: 64. 1944; Jalas and Suominen, Atl. Fl. Europ. 21. map. 7. 1972; Sen and Sen in Fern Gaz. 11: 424. fig. 5. 1-j. 1978.

Diphasiastrum complanatum (L.) Holub in Preslia 47: 108. 1975; Ching in Acta Bot Yunnanica 4: 127. 1982; Dostál in Hegi, Ill. Fl. Mitteleur. 1: 30. abb. 12. 1984; Dixit, Census Indian Pterid. 10. 1984; Lyco-

pod. India 84. f. 22D–F. pl. VI. f. 22. map 7. 1988; Kubát in Hejný and Sdávík, Květena 1: 196. 1988.

Lycopodium anceps Wallr. in Linnaea 14: 676. 1841, non Presl 1825.

Lycopodium complanatum var. *anceps* (Wallr.) Aschers. Fl. Brandenb. 1: 894. 1864.

Lycopodium complanatum subsp. *anceps* (Wallr.) Aschers. in Aschers. and Graebn. Syn. 1: 155. 1896.

Diphasium complanatum subsp. *anceps* (Wallr.) Dostal, Klíč Květ. ČSR, ed. 2. 68. 1958.

Diphasium anceps (Wallr.) Löve et Löve in Nucleus 1: 7. 1958.

Diphasium wallrothii Fuchs in Acta Bot. Acad. Sci. Hung. 9: 13. 1963. based on *Lycopodium anceps* Wallr.

Lycopodium complanatum var. *anceps* Wallr. ex Milde, Sporenpl. 135. 1865; Takeda in Bot. Mag. Tokyo 23: 225. f. 12. 1909; 29: (288). 1915; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1914; Fl. Jap. 1555. 1925.

Diphasiastrum complanatum var. *anceps* (Wallr. ex Milde) Ching in Acta Bot. Yunnanica 4: 127. 1982.

Lycopodium complanatum forma *anceps*; Takeda in Bot. Mag. Tokyo 29: (288). 1915.

Lycopodium complanatum var. *flabellatum* Doell, Fl. Grossherz. Badens 1: 79. 1857; Hara in Bot. Mag. Tokyo 48: 705. 1934; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 248. 1961.

Lycopodium complanatum var. *dilatatum* Nakai ex Hara in Bot. Mag. Tokyo 48: 705. 1934; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns & Fern All. 248. 1961.

Lycopodium complanatum var. *chamaecyparissus* (A. Br. ex Milde) D. C. Eaton; Matsumura, Nom. Jap. Pl. 115. 1884; Cat. Pl. Herb. Coll. Sci. Imp. Univ. 240. 1886; Ind. Pl. Jap. 1: 358. 1904; Okubo, Cat. Pl. Bot. Gard. Imp. Univ. 258. 1887; Hayata in J. Coll. Scil. Imp. Univ. Tokyo 25: 241. 1908.

Lycopodium complanatum forma *moniliforme* (Lindm.) Takeda in Bot. Mag. Tokyo 29: (288). 1915.

Nom. Jap.: Asuhi-kazura, hosoba-asuhi-kazura.

Distr.: Japan (Hokkaido, Honshu, and Shikoku), Korea, Taiwan, China, Himalaya, Russia, Europe, and North America.

Distr. Map. Circumpolar: Hultén (op. cit.). Europe: Jalas and Suominen (op. cit. as *Diphasium cimplanatum*). Japan: Kurata and Nakaike (op. cit.).

Chromosome numbers: $n=23$ (Takamiya and Kurita, op. cit.), $2n=46$ (Takamiya, op. cit.).

Ic. Spore: Nasu and Seto (op. cit.); Kurata and Nakaike (op. cit.).

***Lycopodium nikoense* Franch. et Sav.** Enum. Pl. Jap. 2: 198. 1877; Nessel, Bärlappgewächse, 337.

1939; Herter, Ind. Lycop. 30. 1949; Nakaike, New Fl. Jap. Pterid. 25. f. 25a. 25b. 1982; Øllgaard in Biol. Skr. 34: 58. 1989; Kurata and Nakaike, Ill. Pterid. Jap. 6: 72. 1990; Takamiya in Bot. Mag. Tokyo 105: 580. 1992.

Lycopodium alpinum var. *nikoense* (Franch. et Sav.) Franch. et Sav. Enum. Pl. Jap. 2: 613. 1879; Matsumura, Cat. Pl. Herb. Coll. Sci. Imp. Univ. 240. 1886; Ind. Pl. Jap. 1: 357. 1904; Bak. Handb. Fern Allies 27. 1887.

Lycopodium sitchense var. *nikoense* (Franch. et Sav.) Takeda in Bot. Mag. Tokyo 23: 221. figs. 9. 10. 1909; 29: (287). 1915; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 412. 1914; Fl. Jap. 1557. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 59. 1930; Masamune in Sci. Rep. Kanazawa Univ. 1: 36. 1951; Ohwi, Fl. Jap. Pterid. 10. 1957; Tagawa, Col. Ill. Jap. Pterid. 13. 230. pl. 2. f. 14. 1959; Namekata and Kurata in Namekata, Coll. Cultiv. Our Ferns and Fern All. 250. 1961; Wilce in Beih. Nova Hedw. 19: 124. 1965; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 89. 1966; Kawano in J. Coll. Lib. Arts Toyama Univ. 5: 103. 1972; Park, Ill. Encycl. Fauna & Fl. Korea 16: 419. 1975; Otsuka and Satomi in Ann. Rep. Bot. Gard. Fac. Sci. Kanazawa Univ. 9–10: 4. map. 3. f. 3. 1977; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 2: 566. pl. 532. f. 6. 1983; Shimizu, New Alpine Fl. Jap. Col. 2: 268. pl. 144. f. 483. 1983; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16–17: pls. 37–38. 1986; 18: 11. 1986; Otsuka, Pterid. Fl. Nagano 19. 1987.

Lycopodium sabinaefolium var. *sitchense* subvar. *nikoense* (Franch. et Sav.) Koidz. in Bot. Mag. Tokyo 40: 330. 1926.

Diphasium nikoense (Franch. et Sav.) Löve et Löve in Nucleus 1: 7. 1958.

Diphasiastrum nikoense (Franch. et Sav.) Holub in Preslia 47: 108. 1975.

Diphasiastrum sitchense ssp. *nikoense* (Franch. et Sav.) Löve and Löve in Taxon 25: 485. 1976.

Nom. Jap.: Takane-hikage-no-kazura.

Distr.: Japan (Hokkaido, Honshu, and Kyushu {Yaku isl.}), Korea, and Russia.

Distr. Map. Japan: Okuyama (op. cit. as *Lycopodium sitchense* var. *nikoense*); Otsuka and Satomi (op. cit. as *Lycopodium sitchense* var. *nikoense*); Kurata and Nakaike, op. cit.

Chromosome numbers: $n=23$ (Takamiya and Kurita, op. cit. as *Lycopodium sitchense* var. *nikoense*), $2n=46$ (Löve and Löve, op. cit. as *Diphasiastrum sitchense* ssp. *nikoense*); Takamiya (op. cit.).

Ic. Spore: Nasu and Seto (op. cit., as *Lycopodium sitchense* var. *nikoense*); Kurata and Nakaike (op. cit.).

Lycopodium obscurum L. Sp. Pl. 1102. 1753; Bak. Handb. Fern Allies 24. 1887; Matsum. Ind. Pl. Jap. 1: 358. 1904; Takeda in Bot. Mag. Tokyo 23: 211. 1909; 29: (285). 1915; Nakai in J. Coll. Sci. Imp. Univ. Tokyo 31: 423. 1911; Makino and Nemoto, Cat. Jap. Pl. Herb. Nat. Hist. Dept. Tokyo Imp. Mus. 411. 1914; Fl. Jap. 1556. 1925; Miyabe and Kudo in, J. Fac. Agr. Hokkaido Imp. Univ. 26: 55. 1930; Nessel, Bärlappgewächse, 324. 1939; Herter, Ind. Lycop. 31. 1949; Masamune in Sci. Rep. Kanazawa Univ. 1: 35. 1951; Tagawa in Acta Phytotax. Geobot. 14: 137. 1952; Col. Ill. Jap. Pterid. 13. 229. pl. 2. f. 13. 1959; Ohwi, Fl. Jap. Pterid. 10. 1957; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 249. 1961; DeVol in Taiwan 11: 44. 1965; in Li et al., Fl. Taiwan 1: 38. pl. 5. 1975; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 86. 1966; Lee in Bull. Seoul Nat. Univ. Forests 4: 58. 1967; Shieh in Quart. J. Chin. Forest. 6: 33. 1972; Shimura, Phot. Ecol. Guid. Jap. Pterid. 14. f. 12. 1972; Serizawa in Sci. Rep. Takao Mus. Nat. Hist. 7: 4. 1975; Park, Ill. Encycl. Fauna & Fl. Korea 16: 417. 1975; Oh in Nature & Life 6: 21. 1976; Ching in Acta Bot. Yunnanica 4: 216. 1982; Nakaike, New Fl. Jap. Pterid. 26. f. 26. 1982; Takamiya and Kurita in Acta Phytotax. Geobot. 34: 68. 1983; Okuyama, Wild Pl. Jap. new & enlarg. 3: 519. pl. 788. f. 1. 1984; Nasu and Seto in Spec. Pub. Osaka Mus. Nat. Hist. 16-17: pls. 35-36. 1986; 18: 10. 1986; Otsuka, Pterid. Fl. Nagano 19. 1987; Øllgaard in Biol. Skr. 34: 59. 1989; Kurata and Nakaike, Ill. Pterid. Jap. 6: 76. 1990; Takamiya in Bot. Mag. Tokyo 105: 580. 1992; Tsai and Shieh in Huang, Fl. Taiwan, 2nd ed. 1: 37. 1994.

Lycopodium dendroideum Michaux, Fl. Bor.-Amer. 2: 282. 1803.

Lycopodium obacurum var. *dendroideum* (Michx.) Eat.; Hultén, Fl. Alaska 28. 1968.

Lycopodium dendroideum var. *strictum* Milde, Fil. Europ. et Atlant. 254. 1867.

Lycopodium obscurum forma *strictum* (Milde) Eaton; Nakai et Hara in Bot. Mag. Tokyo 48: 706. 1934; Tagawa, Col. Ill. Jap. Pterid. 13. 1959; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 249. 1961; Sugimoto, Keys Herbac. Pl. Jap. Pterid. 86. 1966; Ching in Acta Bot. Yunnanica 4: 217. 1982.

Lycopodium dendroideum forma *flabellatum* Milde, Fil. Europ. et Atlant. 254. 1867.

Lycopodium obscurum forma *flabellatum* (Milde) Takeda in Bot. Mag. Tokyo 23: 212. 1909; 29: (286). 1915; Makino and Nemoto, Fl. Jap. 1556. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 55. 1930; Namegata and Kurata in Namegata, Coll. Cultiv. Our Ferns & Fern All. 249. 1961.

Lycopodium juniperoideum Sw. Syn. Fil. 178. 401. 1806; Kuo in Taiwania 30: 12. 1985.

Lycopodium obscurum forma *juniperoideum* (Sw.) Takeda in Bot. Mag. Tokyo 23: 213. 1909; 29: (286). 1915; Makino and Nemoto, Fl. Jap. 1556. 1925; Miyabe and Kudo in J. Fac. Agr. Hokkaido Imp. Univ. 26: 55. 1930.

Lycopodium obscurum var. *juniperoideum* (Sw.) Nessel, Bärlappgewächse, 326. 1939.

Lycopodium juniperinum Sprengel, Syst. Veg. 4: 15. 1827.

Lycopodium japonicum auct.; Franch. et Sav. Enum. Pl. Jap. 2: 197. 1877; Ito, Cat. Pl. Koishik. Bot. Gard. part 2, 2nd ed. 26. 1881; Matsumura, Nom. Jap. Pl. 115. 1884; Cat. Pl. Herb. Coll. Sci. Imp. Univ. 240. 1886; Okubo, Cat. Pl. Bot. Gard. Imp. Univ. 258. 1887.

Lycopodium obscurum var. *japonicum* auct.; Nessel, Bärlappgewächse, 325. abb. 75. 1939.

Nom. Jap.: Mannen-sugi, tachi-mannen-sugi, uchi-wa-mannen-sugi, chihaya-mannen-sugi.

Distr.: Japan (Hokkaido, Honshu, Shikoku, and Kyushu), Korea, Taiwan(?), China, Russia, and North America.

Distr. Map. Japan.: Kurata and Nakaike (op. cit.).

Chromosome numbers: $n=34$ (Takamiya and Kurita, op. cit.), $2n=68$ (Takamiya, op. cit.).

Ic. Spore: Nasu and Seto (op. cit.); Kurata and Nakaike (op. cit.).

Literature Cited

- Nakaike, T. 1975. Enumeratio Pteridophytorum Japonicorum. Filicales. 375 pp. University of Tokyo Press, Tokyo.
- Øllgaard, B. 1987. A revised classification of the Lycopodiaceae s. lat. Opera Botanica 92: 153-178.
- Otsuka, K. 1977. Miscellaneous notes on the pteridophytes of Japan (2). J. Geobot. 24: 78-81.
- Wilce, J. H. 1965. Section Complanaata of the genus *Lycopodium*. Beih. Nova Hedwigia 19: I-IX, 1-233, pls. 1-40.

(Accepted on 17 October 1995)

日本羊歯植物総覧 II, ヒカゲノカズラ科

中 池 敏 之

千葉県立中央博物館

〒260 千葉市中央区青葉町 955-2

日本に生育するヒカゲノカズラ科に属する全ての種類について、正名、異名、それぞれの種類の分布、分布図、染色体、胞子の図の関係する文献についてまとめた。取り扱われた種類は次のとおりである。コスギ

ラン属 (*Huperzia*) ではボウカズラ (*Huperizia carinata*), スギラン (*H. cryptomerina*), コウヨウザンカズラ (*H. cunninghamioides*), ヒモスギラン (*H. fargesii*), ナンカクラン (*H. fordii*), ヒメスギラン (*H. miyoshiana*), ヨウラクヒバ (*H. phlegmaria*), ヒメヨウラクヒバ (*H. salvinoides*), コスギラン (*H. selago*), トウゲシバ (*H. serrata*), ヒモラン (*H. sieboldii*), リュウキュウヒモラン (*H. sieboldii* var. *christenseniana*), コスギトウゲシバ (*H. somae*), ヤチギラン属 (*Lycopodiella*)

では, イヌヤチスギラン (*Lycopodeilla caroliniana*), ミズスギ (*L. cernua*), ヤチスギラン (*L. inundata*). ヒカゲノカズラ属 (*Lycopodium*) では, チシマヒカゲノカズラ (*Lycopodium alpinum*), スギカズラ (*L. annotinum*), ヒモヅル (*L. casuarinoides*), ヒカゲノカズラ (*L. clavatum*), アスヒカズラ (*L. complanatum*), タカネヒカゲノカズラ (*L. nikoense*), マンネンスギ (*L. obscurum*).