

A Taxonomic Revision of *Podocarpus macrophyllus* (Thunb.) Sweet and its Related Taxa (Podocarpaceae)

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Abstract *Podocarpus macrophyllus* (Thunb.) Sweet forma *macrophyllus* (Podocarpaceae) is a cultivated form. The wild form is here named, *Podocarpus macrophyllus* f. *spontaneus* H. Ohba & S. Akiyama. *Podocarpus macrophyllus* var. *maki* Siebold & Zucc. ex Endl. is a superfluous name for *P. macrophyllus* f. *macrophyllus*.

Key words : Japanese flora, lectotypification, *Podocarpus*, Siebold collections.

Podocarpus (Podocarpaceae) consists ca. 100 species spreading in the tropical and subtropical regions worldwide and also in temperate regions in the Southern Hemisphere. In the latest revision following Buchholz and Gray (1948), Laubenfels (1985) proposed an infrageneric classification of the genus that recognized two subgenera with 18 sections. The only representative in Japan, *Podocarpus macrophyllus*, is classified in section *Polystachyus* (type: *P. polystachyus* R. Br.) in subgenus *Foliolatus*. According to Laubenfels (1985), section *Polystachyus* consists of nine species ranging from Japan and S China through Malaya to W New Guinea and NE Australia. Laubenfels distinguished *P. macrophyllus* from *P. chinensis* (Roxb.) Wall. ex J. Forbes by differences in the shape and size of the leaves; *P. macrophyllus* has leaves “with revolute margins, narrowing gradually at the base”, and those of *P. chinensis* are “narrowing gradually at the base, less than 7 mm wide” and “at least 4 cm long, and at least 10 times as long as wide.” Fu and Mill (1999) reduced *P. chinensis* to synonymy under *P. macrophyllus* and treated it as var. *maki* [sensu Siebold & Zucc.]. They distinguished the variet-

ies by the length and width of leaves: leaves of var. *macrophyllus* are 7–12 cm long, (5–)7–10 mm wide, those of var. *maki* are 1.7–7 cm long, 5–7 mm wide.

Fu and Mill (1999) considered var. *maki* to be possibly native in Japan, Taiwan and N Myanmar, and possibly also being native in Guangdong and Zhejiang, China.

In Japan there are two principal forms of *Podocarpus*, called Inu-maki (or Kusa-maki) and Rakan-maki in Japanese. Inu-maki applies to *P. macrophyllus* var. *macrophyllus*, and Rakan-maki to *P. macrophyllus* var. *maki* [sensu Siebold & Zucc.] (e.g. Yamazaki, 1995). *Podocarpus macrophyllus* var. *macrophyllus*, thought to be indigenous, is also cultivated as an ornamental tree in Japan. Although var. *maki* was reported as being wild in western Shizuoka Pref. (Kurata, 1964), it appears to be an ornamental plant cultivated in western Japan.

The differences between vars. *maki* and *macrophyllus* mentioned by Laubenfels (1985) and Fu and Mill (1999) are ambiguous. We are aware that the authors, identity and type specimens of *P. macrophyllus*, *P. chinensis*, and their infraspe-

cific taxa including var. *maki*, also are unclear.

This paper aims to provide data on the variation of size of the leaves, the identity of original material including types, and the correct authors of the various names.

1. Variations in the size of leaves

The length and width of the leaves of *Podocarpus macrophyllus*, its infraspecific taxa, *P. japonicus* Siebold ex Endl., and *P. makoyi* Blume (Fig. 1) were obtained from the longest leaves on each specimen. The samples were collected from specimens of both wild and cultivated plants of *P. macrophyllus* (including vars. *macrophyllus* and *maki*) collected in Japan, mainland China and Taiwan. Leaves of the type specimens of *P. macrophyllus* var. *macrophyllus*, var. *angustifolius* Blume, var. *maki* [sensu Siebold & Zucc.], *P. japonicus*, and *P. makoyi* were observed.

As shown in Fig. 1 the extremely wide range

of variation among these taxa in both length (6.4–19.5 cm) and width (4.5–15.8 mm) makes it difficult to divide them clearly into different species. The criteria used by both Laubenfels (1995) and Fu and Mill (1999) cannot be used to separate *P. macrophyllus* vars. *macrophyllus* and *maki* from *P. chinensis* sensu Laubenfels. Except for the differences in the size of the leaves, *P. macrophyllus* and *P. chinensis* sensu Laubenfels (1995) share almost all features and is better united as a single species, *P. macrophyllus*.

A tendency for cultivated plants to have extremely shorter and narrower leaves, less than 8 cm long and 8 mm wide, is noticeable (● in Fig. 1). Plants expressing this range of measurements (Rakan-maki) may be distinguished at the rank of forma.

Plants with leaves longer than 8 cm long, are found in wild and occasionally in cultivation. Another tendency for comparatively narrower

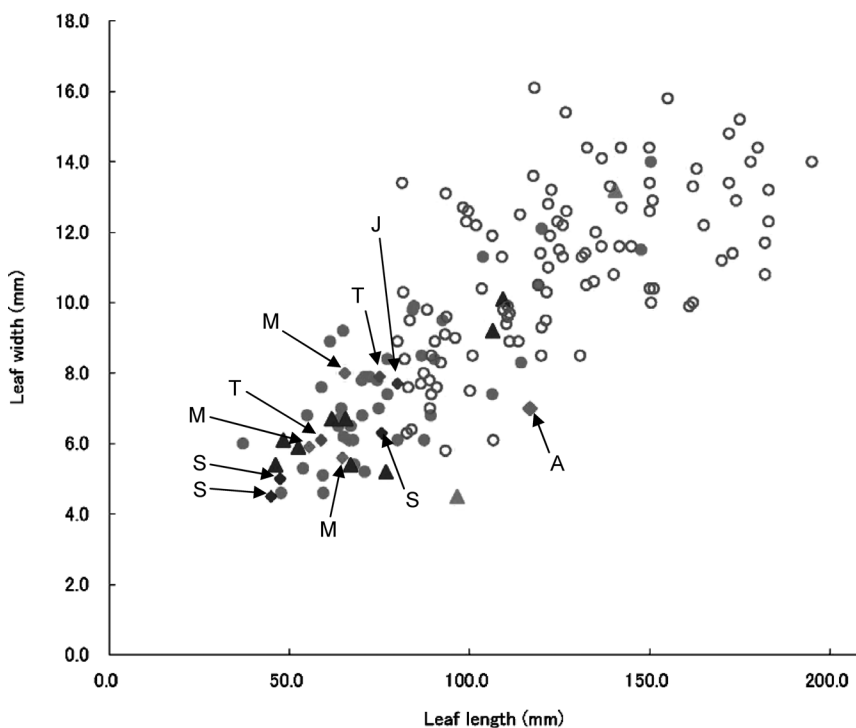


Fig. 1. Leaf variation of *Podocarpus macrophyllus*. ○ wild in Japan, ● cultivated in Japan, ▲ in Taiwan, ▲ in mainland China, ◆ original material of *P. macrophyllum* (T), ◆ original material of *P. macrophyllum* var. *maki* (S), ◆ original material of *P. japonicus* (J), ◆ original material of *P. makoyi* (M), ◆ original material of *P. macrophyllum* var. *angustifolium* (A).

leaves less than 8 mm wide and more than 8 cm long is recognized. *Podocarpus macrophyllus* var. *angustifolius* Blume falls in this range (◆ A in Fig. 1). These plants, called Hosoba-inu-maki in Japanese, is also recognized infraspecifically as forma *angustifolius* (Blume) Pilg. Plants with longer and wider leaves, i.e. more than 8 cm long and 8 mm wide, are recognized as forma *spontaneus* H. Ohba & S. Akiyama.

It is noteworthy that plants with smaller leaves (less than 8 cm long) are found in coast of Okinawa and Kagoshima prefectures (four specimens found in TI: T. Yamazaki s.n., 13 Nov. 1977; T. Yamazaki & F. Yamazaki s.n., 24 June 2001; S. Hatusima 18455; K. Shimabuku & K. Ohgami 4484). It is not uncertain that these are genetical fixed or not. Further study is needed.

2. Identity of original materials

a) *Taxus macrophylla* Thunb.

Thunberg (1784) described *Podocarpus macrophyllus* as a species of *Taxus*. It has been presumed that the original material was from wild growing plants (Ohwi, 1965; Yamazaki, 1995).

Juel (1918) listed two specimens in Thunberg herbarium, one with female branches and one with a male branch (see Kimura and Leonov, 1994, Pl. 203). Thunberg's original specimens, Microfiche nos. 23781 and 23782 (Fig. 2), have leaves 5.9–7.5 cm long, and 6.1–7.9 mm wide, and undoubtedly fall within the variation of Rakan-maki (◆ T in Fig. 1). All the original material in the University of Uppsala is Rakan-maki, or *P. macrophyllus* var. *maki* [sensu Siebold & Zucc.]. Therefore *Taxus macrophylla* Thunb. ($\equiv$ *Podocarpus macrophyllus* (Thunb.)

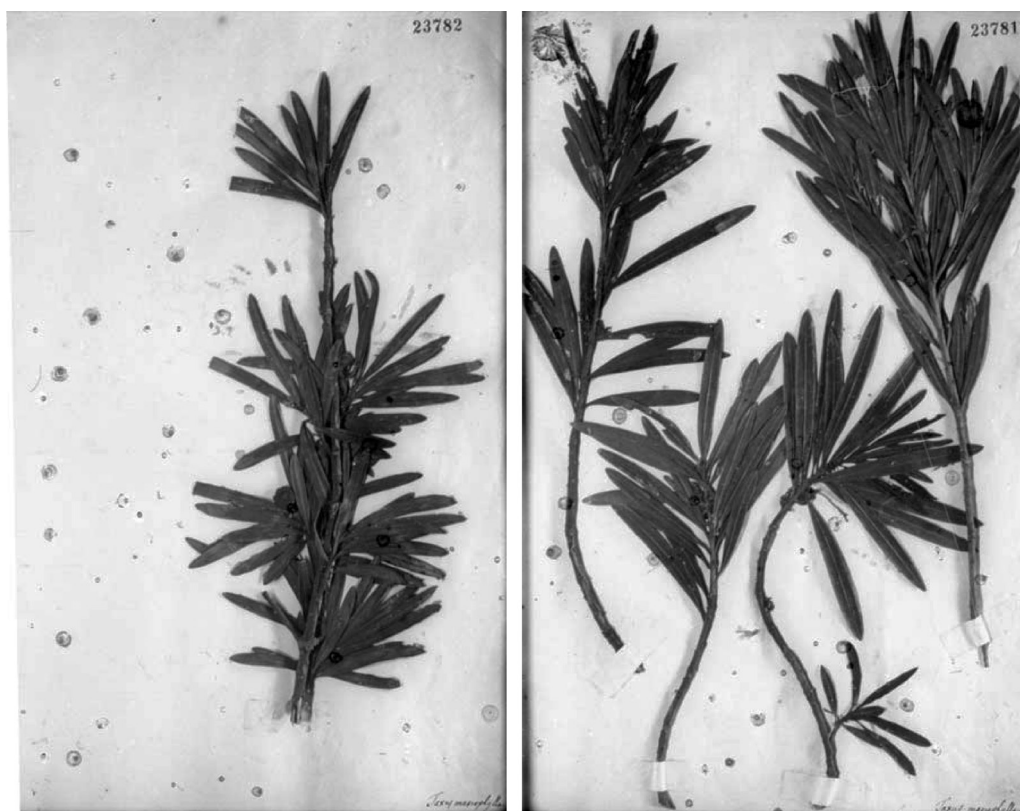


Fig. 2. Original materials of *Taxus macrophylla* Thunb. in UPS, no. 23781 (lectotype) (right) and no. 23782 (left).

Sweet) is concluded to be Rakan-maki and the specimen with female branches (no. 23781) is here designated as the lectotype.

b) *Podocarpus macrophyllus* var. *maki* Siebold & Zucc. ex Endl.

Podocarpus macrophyllus var. *maki* was not validly published by Siebold (1844) and, Siebold and Zuccarini (Siebold and Zuccarini, 1846), but by Endlicher (1847), who cited “Sieb. et Zucc. l. c. [Flor. Japon.] t. 134.” Miquel’s publication of *Podocarpus macrophyllus* var. *maki* in *Flora Japonica*, vol. 2 (1870) is later.

When Endlicher published B. [var.] *maki* he cited “*Taxus macrophylla* Thunberg Flor. Japon. 276” in synonymy. The type of B. [var.] *maki* is therefore the same as for *T. macrophylla*. Although Endlicher’s B. [var.] *maki* was a new infraspecific name under *P. macrophylla*, it is nomenclaturally equivalent to *P. macrophyllus* var. *macrophyllus*. *Podocarpus macrophyllus* var. *maki* Siebold & Zucc. ex Endl. is superfluous.

c) *Podocarpus macrophyllus* β. *Maki* [sensu Siebold et Zucc.]

Siebold (1844) published the name “*Podocarpus macrophyllus* Wall. β. *Maki*” Sieb. et Zucc. without description or illustration. The name “*P. macrophyllus* β. *Maki* Sieb. et Zucc.” was used again by Miquel in *Flora Japonica*, vol. 2 (Miquel, 1870) with a description and illustration as a variety (Tab. 134). But as mentioned above Endlicher’s (1847) use of the name is earlier (Akiyama *et al.*, 2012). The original material of *P. macrophyllus* β. *Maki* [sensu Siebold & Zucc.] are three specimens deposited in Munich (M0120942) and Makino Herbarium (MAKS1828, MAKS1829) (Fig. 3), the illustrations drawn by Keiga Kawahara for Table 134 in *Flora Japonica*, vol. 2 (Kimura and Grubov, 1994, Color pl. 206; Ohba *et al.*, 1994, Cat. no. 60) and Table 134 in *Flora Japonica*.

In this description, Miquel wrote in Latin “...leaves 3–2 1/2 2 poll. longa, 2–4 lin. lata” and in its note in French “...cultivated one is not

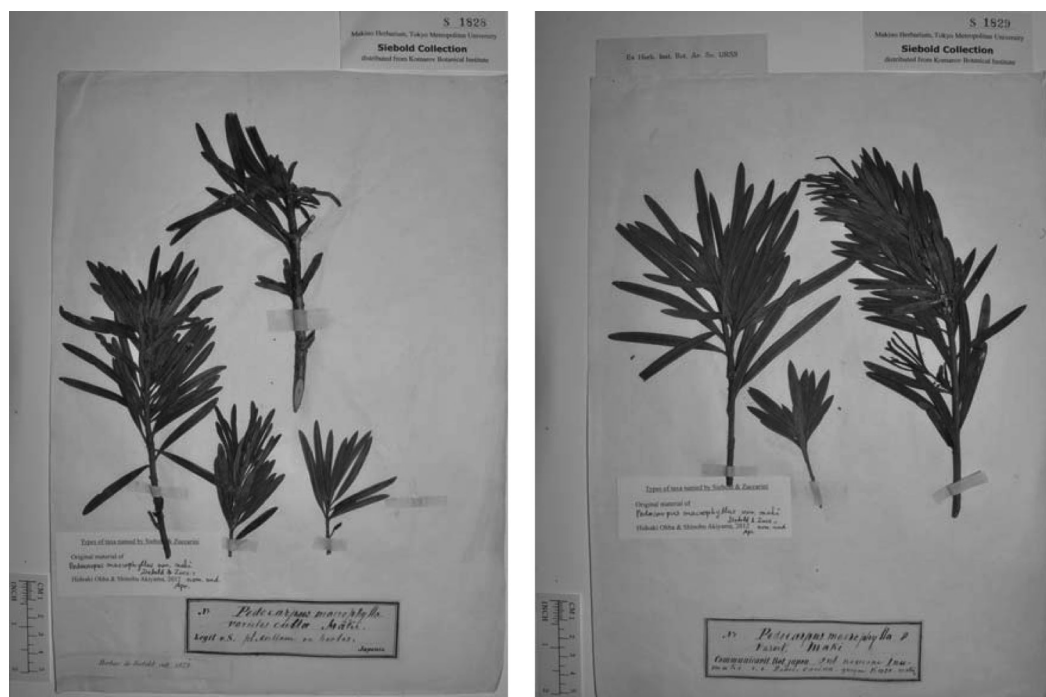


Fig. 3. Original material of *Podocarpus macrophyllus* var. *maki* [sensu Siebold & Zucc.]. Japan, Siebold s.n. (MAKS1828) (left). Japan, Siebold s.n. (MAKS1829) (right).

more than 6.5 m high... it bears flowers and fruits in its small size." Miquel's note is considered to be based on Siebold's earlier note (Ohba, 2007). Both Inu-maki and Rakan-maki have been cultivated. The *Podocarpus* described by Miquel with leaves 3–2.2 poll. long, 2–4 lin. wide (i.e. 5.5–7.5 cm long, 4.6–9.2 mm wide) belongs to Rakan-maki (◆ S in Fig. 1). Miquel, however, wrote its Japanese name as *Ken sin* vel *Sen Baku*, vulgo *Inu Maki*. There appears to be confusion with Inu-maki.

d) *Podocarpus japonicus* Siebold ex Endl. and *P. makoyi* Blume

Endlicher (1847) also published *P. japonicus* based on the Siebold collection (Akiyama *et al.*, 2012). Blume (1847) described *P. makoyi* also based on the Siebold collection in Leiden. The original material of these species have the variable leaves of Rakan-maki (◆ J and M in Fig. 1)

3) The correct authors of previously known taxa

a) The author of *Podocarpus macrophyllus*

In *Hortus suburbanus Londinensis* published in 1818, Sweet validly used a combination *Podocarpus macrophyllus* cited Willdenow (1806) as a reference, i.e. Thunberg's *Taxus macrophylla* (Fig. 4). Endlicher (1847), however, assumed D.

Don for the author of the combination name. Don (1832), who made the combination in Lambert, *A description of the genus Pinus*, was evidently unaware of Sweet's combination (1818). Wallich (1826) also published *Podocarpus macrophylla* Wall. accompanied by a description and an illustration [Tab. 43] in which he cited *Taxus macrophylla* Thunb. The name *Podocarpus macrophylla* Wall. is an unnecessary new combination based on *Taxus macrophylla* Thunb.

One of the principles of the *International Code of Botanical Nomenclature* (Vienna Code, McNeil *et al.*, 2006) states that the name of a taxonomic group is based upon priority of publication. There is no doubt (Thunb.) Sweet is the correct author of *Podocarpus macrophyllus*, as shown in Laubenfels (1985).

In Japan D. Don was accepted as the author of the combination name *Podocarpus macrophyllus*, as used by Endlicher (1847), Parlatores (1868), and many other authors. Even in the most recent *Flora of Japan* (Iwatsuki *et al.*, 1995) Yamazaki attributed to D. Don. Yamazaki cited Lambert, *A description of the genus Pinus*, p. 143 (1824) as the source of Don's combination name, but Don made this combination in Lambert, *A description of the genus Pinus*, published in 1832.

PODOCARPUS, L'Her.	PODOCARPUS.	Coniferæ. J.	Taxi sp. IF.	
1 macrophyllus. W.	long-leaved.	—————	China.	1804. 7. 6. G. h. Kaempf. ic. t. 24.
2 verticillatus. W.	whorl-leaved.	—————	Japan.	 G. h.
3 elongatus. P. S.	African.	—————	C. B. S.	1774. 7. G. h.

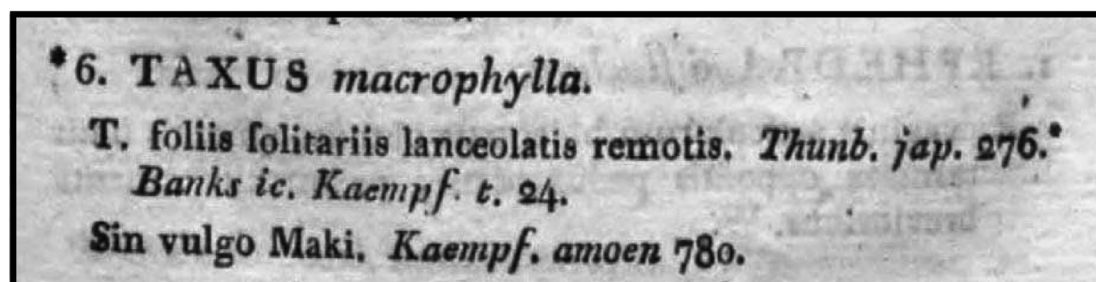


Fig. 4. Protologue of *Podocarpus macrophyllus* (Sweet 1818, *Hortus suburbanus Londinensis*, p. 211 [a part]) (upper) and the cited reference (Willdenow, 1806, *Species Plantarum*, vol. 4, part 2, p. 857 [a part]) (lower).

b) *Podocarpus chinensis*

Laubenfels (1985) and Fu and Mill (1999) are considered *P. macrophyllus* var. *maki* and *P. chinensis* to be a single taxon. According to Laubenfels the basionym of *P. chinensis* is *Juniperus chinensis* Roxb. [non L.] (Fl. Ind. Orient. 3: 840, 1832). Laubenfels believed the author of *Podocarpus chinensis* to be Wallich. But in his *Numerical List* (Wallich, 1828-1849), Wallich wrote under no. 6051 as follows:

6051 *Podocarpus chinensis* Wall.

Taxus Roxburgh Mgs.

a HBC

b *Taxus nucifera*? C. Telfair e Maouritio.

This is uncertain whether Wallich's *P. chinensis* is a combination based on *Juniperus chinensis* Roxb. or not. Laubenfels considered the author of *P. chinensis* to be (Roxb.) Wall. ex Forbes, however Forbes (1839) cited *Pinus chinensis* Wallich and *Taxus nucifera* Telfair in the synonymy under *P. chinensis* and never cited *Podocarpus chinensis* Wallich. Further studies are needed to make clear the authorship of *P. chinensis*.

Conclusion and taxonomic treatment

Based on our observations and the discussion above, we propose the following revision of *Podocarpus macrophyllus*. *Forma spontaneus* is a new name proposed here.

Podocarpus macrophyllus (Thunb.) Sweet, Hort. Sub. Lond.: 211 (1818).

Taxus macrophylla Thunb. in Murray, Syst. Veg., ed. 14: 895 (1784 May–June); Fl. Jap.: 276 (1784 Aug.); Nov. Acta Soc. Sci. Ups. 4: 38 (1784–85). Type: Japan. Thunberg s.n. (UPS, Microfiche no. 23781, lecto, designated here).

[Fig. 2, right]

f. *macrophyllus*

Taxus makoya J. Forbes, Pinet. Woburn: 128 (1839). Type: non vidi.

P. macrophyllus (Thunb.) Sweet var. *maki*

Siebold & Zucc. in Jaarb. Kon. Ned. Maatsch. Tuinb. 1844: 35 (1844), as “*β. Maki*”, nom. nud.

P. japonicus Siebold [in Jaarb. Kon. Ned. Maatsch. Tuinb. 1844: 35 (1844), nom. nud.] ex Endl., Syn. Conif.: 217 (1847), as “*japonica*.” Type: Cultivated in Hortum Bogor. Java. Siebold s.n. (MAKS1831, lecto, designated here).

[Fig. 5, upper left]

P. macrophyllus (Thunb.) Sweet var. *maki* Siebold & Zucc. ex Endl., Syn. Conif.: 216 (1847), as “*β. Maki*”, nom. superfl.

P. makoyi Blume, Rumphia 3: 215 (1849). Type: Japonia. Siebold s.n. (L0693132, lecto, designated here).

[Fig. 5, upper right]

P. macrophyllus (Thunb.) Sweet var. *maki* [sensu Siebold & Zucc.]: Miq., Ann. Mus. Bot. Lugduno-Batavi 3: 168 (1867); Prol.: 332 (1867); Fl. Jap. 2: 71, t. 134 (1870). [Fig. 3]

P. macrophyllus (Thunb.) Sweet var. *makoyi* (J. Forbes) Koidz. in Bot. Mag. (Tokyo) 44: 98 (1930).

Plants usually less than 5 m high, leaves 4.5–8 cm long and 4.5–8(–9.2) mm wide.

Distribution: S. Japan, Taiwan, and China (mainland); usually cultivated.

Representative specimens examined: **Japan. Honshu. Chiba Pref.**, Mobara-shi (cultivated) (H. Ito s.n., 16 June 1957, TNS). **Shizuoka Pref.**, Shizuoka-shi, Ooiwa-cho, Shizuoka University (cultivated) (F. Konta 49, 25 Oct. 1966, TNS). **Kyoto Pref.**, Kameoka-shi, Amarube-cho, Haseda, Haseda-jinja (cultivated) (S. Tsugaru & T. Takahashi 23106, 14 Nov. 1995, TNS). Kameoka-shi, Chitose-cho, Kokubu (cultivated) (S. Tsugaru *et al.* 7052, 29 Jan. 1996, TNS); Kita-machi (cultivated) (T. Tsugaru *et al.* 22058, 22 May 1995, TNS). **Osaka Pref.**, Tamate yama (cultivated) (T. Kodama s.n., Nov. 1959, TNS). Osaka-shi, Nagai Botanical Garden (cultivated) (K. Seto 24399, 8 Nov. 1987, TNS). **China. Zhangxi Prov.** Fenyi Co., Fenyizhen, alt. 280 m (Ding Xiao-Ping 046, young male fl. 30 Apr.

Fig. 5. Lectotypes of *Podocarpus japonicus* Siebold ex Endl. (Cultivated in Hortum Bogor. Java. Siebold s.n., MAKS1831) (upper left), *P. makoyi* Blume (Japonia. Siebold s.n., L0693132) (upper right), and *P. macrophyllus* var. *angustifolius* Blume (Japonia. Siebold s.n., L0050831) (lower left), and holotype of *P. macrophyllus* f. *spontaneus* H. Ohba & S. Akiyama (lower right).



2005, TNS). **Hunan Prov.** Nanyuengshan Nature Preserve, alt. 200 m (Li Ming-hong 245, 2 June 2002, TNS).

f. **angustifolius** (Blume) Pilg., in Engl., Pflanz. Heft. 18: 80 (1903).

P. macrophyllus (Thunb.) Sweet var. *angustifolius* Blume, Rumphia 3: 215 (1847). Type: Japonia. Siebold s.n. (L0050831, lecto, designated here). [Fig. 5, lower left]

Plants to 20 m high, leaves 8–20 cm long and 4.5–8 mm wide.

Distribution: S. Japan and Taiwan.

Representative specimens examined: **Japan. Honshu. Shizuoka Pref.** Shimoda-shi, Suzaki Peninsula, Suzaki Imperial Villa, alt. ca. 60 m (F. Konta 23471, fr., 16 Sept. 2003, TNS). Shizuoka-shi, Katayama, Nihondaira (M. Kawada 49, Sept. 1981, TNS). **Mie Pref.** Owase, Mikisato (T. Obata s.n., 30 Oct. 1969, TNS). **Yamaguchi Pref.** Shimonoseki-shi, Isl. Futaoi-jima (N. Fukuoka 8212, 11 June 1972, TNS). **Taiwan.** Taihoku (cultivated) (S. Sasaki s.n., 16 Sept. 1933, TNS).

f. **spontaneus** H. Ohba & S. Akiyama, f. nov.

P. maki Siebold & Zucc. in Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(3): 232 (1846), non Siebold (1845). Akiyama *et al.* in J. Jap. Bot. 87: (2012, in press).

A typo foliis 8–20 cm longis 8–16 mm latis bene differt.

Type: Japan. Shizuoka Pref., Shimoda-shi, Suzaki Peninsula, Tsumekizaki, alt. ca. 30 m (F. Konta 24403, 19 June 2005, TNS, holo).

[Fig. 5, lower right]

Plants to 20 m high, leaves 8–20 cm long and 8–16 mm wide.

Distribution: S. Japan, Taiwan, and China (mainland).

Representative specimens examined: **Japan. Honshu. Tokyo Pref.** Is. Kodzu-jima, Mt. Tenjōsan (Y. Jotani s.n., 20 Aug. 1932, TNS; Y. Jotani, 25 July 1936, TNS). Is. Mikura-jima, Sato (Y. Jotani 10215, 26 July 1934, TNS). Is. Nii-jima, Moto-mura (Y. Jotani 7089, 11 July 1933, TNS). Is. Shikine-jima (F. Yokouchi s.n., 19 Feb. 1981, TNS; 20 Feb. 1981, TNS). **Shizuoka Pref.**

Numazu-shi, Senbon-hama, alt. 10 m (F. Konta 18050, 26 May 1996, TNS). Ito-shi, Jyogasaki Natural Park (K. Nakayama & F. Konta 1401, 25 June 1971, TNS). Mishima-shi, Rakujuen (M. Saito & F. Konta 1880, 27 July 1976, TNS). Shimoda-shi, Tsumakizaki, alt. 30 m (F. Konta 24403, 19 June 2005, TNS); alt. 50 m (F. Konta 24399, 19 June 2005, TNS); Suzaki Imperial Villa, alt. ca. 40 m (F. Konta *et al.* 23053, 28 May 2003, TNS); Shimoda (Y. Kobayashi s.n., Mar. 1933, TNS); Iro-zaki (Y. Asai s.n., fr., 5 Nov. 1956, TNS). Shizuoka-shi, Katayama, Nihondaira (M. Kawada 49, Sept. 1981, TNS). Yaizu-shi, Sekigata, alt. 100 m (F. Konta 18351, 7 June 1997, TNS). Atami (H. Asuyama s.n., TNS). **Yamanashi Pref.** Minamikoma-gun, Nanbu-cho, Kamisano, Kozori, alt. 400 m (Y. Kadota 1469, 27 Feb. 1976, TNS). **Ishikawa Pref.** Kanazawa-shi, Kanazawa University Campus (Faculty of Science) (cultivated) (T. Terashita 8211, Oct. 1950, TNS). **Aichi Pref.** Atsumi Peninsula, Mt. Senpukuji-yama (S. Okuyama 7731, 6 Apr. 1949, TNS). **Mie Pref.** Wagu-mura, Oshima (H. Yamamoto 4079, 21 July 1938, TI; TNS). Owase, Mikisato (T. Obata s.n., 30 Oct. 1969, TNS). **Kyoto Pref.** Maidzuru-shi, Is. Kanmuri-jima, alt. 80 m (S. Tsugaru & T. Takahashi 29323, 20 June 2000, TNS); alt. 90 m (S. Tsugaru & T. Takahashi 28087 and 28088, 29 Aug. 1999, TNS); alt. 140 m (S. Tsugaru & T. Takahashi 29635, 26 Aug. 2000, TNS). Kameoka-shi, Shino-cho, Shino, Hachiman, in forest, alt. 116 m (T. Tsugaru *et al.* 673, 25 July 2004, TNS); Amarube-cho, Haseda, Haseda-jinja (cultivated) (S. Tsugaru & T. Takahashi 23106, 14 Nov. 1995, TNS). **Wakayama Pref.** Nishimuro-gun, Kushimoto-cho, Oshima (H. Ito s.n., 23 Nov. 1970, TNS); (Unknown coll. s.n., 13 July 1976, TNS). Mt. Nachi-san (Y. Satake & S. Okuyama s.n., 14 Oct. 1942, TNS). **Hyogo Pref.** Kawabe-gun, Yamamoto (M. Togashi s.n., 20 June 1949, TNS). Sumoto-shi, Kaminada, Hatada, alt. 10–150 m (N. Fukuoka & S. Miyake 5453, 21 Mar. 1993, TNS). Kobe (N. H. on 4 June 1895, TNS). **Shimane Pref.** Oikawa-gun, Izumo Shrine, in forest (K. Oka 39896, 21 Aug. 1976,

TNS). Masuda-machi (Z. Tashiro 7089, 23 Oct. 1937, TNS). Yasugi-shi Koyoi-cho, Unju-ji temple (cultivated) (S. Akiyama 21009, 6 May 2011, TNS). **Yamaguchi Pref.** Shimonoseki-shi, Isl. Futaoi-jima (Z. Tashiro s.n., 7 Aug. 1932, TNS); (N. Fukuoka 23158, 11 June 1972, TNS); (A. Minami 38605, 4 Apr. 1983, TNS). Hagi, Mt. Kasasa-yama (J. Nikai s.n., 24 Oct. 1925, TNS). Shimonoseki-shi, Is. Manju-jima (A. Minami 38386, 29 Mar. 1983, TNS). Kumage-gun, Kamiseki-cho, Nagashima, Gamai, Gamai Shrine (A. Minami 34831, 24 Oct. 1982, TNS). Abugun, Susa-cho (K. Oka 1499, 25 Apr. 1948, TNS). **Shikoku. Ehime Pref.** Matsuyama (cultivated) (T. Nagasawa s.n., 16 June 1891, TNS). **Kyushu. Nagasaki Pref.** Is. Fukue-jima, Mt. Nanatsu-dake (J. Nakajima s.n., 23 Oct. 1926, TI; S. Toyama s.n. in 1953, TNS). Hatsuyama-mura (Z. Tashiro s.n. on 4 Oct. 1931, TNS). **Miyazaki Pref.** Inotani, alt. ca. 300m (Z. Iwatsuki & M. Mizutani s.n., 5 Oct. 1966, TNS). **Kagoshima Pref.** Is. Kuchinoshima NE side (H. Ohba & S. Akiyama 9103070, 1 Mar. 1991, TI). Isl. Amami, Nase-shi, Aira (A. Yamamoto *et al.* 493, 23 Nov. 1977, TNS). Is. Tokunoshima, Mt. Amagi-dake (J. Murata 10316, 15 July 1981, TI). **Ryukyus. Okinawa Pref.** (M. Namie s.n. on Mar. 1886, TNS). Is. Ishigaki-jima, mountain ridge above Yoshihara village (F. R. Fosberg 37349, 7 June 1956, TI); ridge n.e. of Yarabu Dake (F. R. Fosberg 38051, 21 July 1956, TI). Is. Iriomote-jima, Yaeyama-gun, Taketomi-cho, Funaura, alt. 100m (S. Fujii 6710, young fr., 10 May 1999, TNS); Urauchi-gawa River, Ohtomi side (G. Kokubugata 11147, 24 Oct. 2008, TNS). Is. Yonaguni-jima, Hinai (E. H. Walker & S. Tawada 6852, 28 Aug. 1951, TI). **Taiwan. Taichung.** Hoping Hsiang, Yuanzuei-shan mountain trail, alt. 1787m (G. Kokubugata 11527, 27 Nov. 2008, TNS). **China. Anhui.** (F. Maekawa s.n., TI). **Hongkong.** (B. Hayata s.n., 25 May 1917).

Cultivars

'Albovariegata'

P. macrophyllus (Thunb.) Sweet var. *albovariegata* Pilg., in Engl., Pflanzenr. Heft. 18: 80

(1903). Type: non vidi.

Japanese name: uncertain.

'**Appressa**': Sugim., New Keys Woody Pl. Jap.: 35 (1978).

P. appressus Maxim. in Bull. Acad. Imp. Sci. Saint-Petersbourg 15: 379 (1871), as "*appressa*." Type: non vidi.

P. chinensis Wall. var. *appressus* (Maxim.) Matsum., Shokubutsu Mei-i: 223 (1895); Ind. Pl. Jap. 2(1): 16 (1905), as "*appressa*."

Japanese name: Sekka-maki.

'**Argenteus**': Sugim., New Keys Woody Pl. Jap.: 35 (1978).

P. chinensis var. *argentea* Gord., Pinet., ed. 2 (Suppl.): 88 (1875). Type: non vidi.

Japanese name: Okina-maki.

'**Condensatus**': Sugim., New Keys Woody Pl. Jap.: 35 (1978).

Japanese name: Hariha-maki.

'Luteovariegata'

P. macrophyllus (Thunb.) Sweet var. *luteovariegata* Pilg., in Engl., Pflanzenr. Heft. 18: 80 (1903). Type: non vidi.

P. maki Siebold & Zucc. in Jaarb. Kon. Ned. Maatsch. Tuinb. 1845: 67 (1845). Akiyama *et al.* in J. Jap. Bot. 87: (2012, in press).

P. chinensis var. *aurea* Gord., Pinetum, ed. 2 (Suppl.): 88 (1875). Type: non vidi.

Japanese name: ?Takamuro-kifu-nanban-maki.

'**Tetragonus**': Sugim., New Keys Woody Pl. Jap.: 35 (1978).

Japanese name: Kakuha-maki.

Uncertain taxa

Podocarpus chinensis Wall. [Numer. List: no. 6051 (1831–32)] ex Blume, Rumphia 3: 216 (1847). Carr., Conif.: 658 (1867).

Podocarpus chinensis Hortus Bengalensis ex Sweet, Hort. Brit.: 371 (1826), nom. nud.

Podocarpus macrophyllus (Thunb.) Sweet var. *chinensis* Maxim. in Mel. Biol. 7: 562 (1870). Type: non vidi.

Podocarpus macrophyllus (Thunb.) Sweet f. *grandifolia* Pilg., in Engl., Pflanzenr. Heft. 18: 80 (1903), this is a new name for *P. macrophyllus* var. *liukiensis* Warb.

P. macrophyllus (Thunb.) Sweet var. *liukiensis* Warb., *Monsunia* 1: 192 (1900). Type: non vidi.

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