

Koji ITO*: *Polygonum aviculare* and its allies in
Hokkaido, the Kuriles, and Sakhalin

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Since the publication of the fourth part of Flora of Hokkaido and Saghalien by Miyabe and Kudo in 1934, no further systematic study of *Polygonum aviculare* L. and its allies in the districts under consideration has been reported. The author re-examined materials deposited in the Herbaria of Hokkaido University, University of Tokyo, National Science Museum at Tokyo and Kyoto University, and also in the Makino Herbarium of Tokyo Metropolitan University.

The author wishes to express his sincere thanks to Prof. M. Tatewaki for his kind direction throughout the course of this study. He is also very grateful to Dr. J. Ohwi of National Science Museum at Tokyo, who gave him valuable advices, and Prof. H. Hara of University of Tokyo, Prof. S. Kitamura of Kyoto University, and Dr. M. Mizushima of Tokyo Metropolitan University, who gave him facilities to study in the herbaria.

Key to species and varieties

- A. Achene equilaterally trigonous with nearly equal-sized three concave faces. Perianth-lobes 2-3 times as long as perianth-foot at maturity.
- B. Plant leafy throughout; upper leaves scarcely reduced and more crowded. Achene dull, granular-striate.
- C. Cauline leaves larger than those of flowering branches, 5-10 mm wide. Achene 2.5-3 mm long.*P. aviculare* var. *aviculare*.
- C. Cauline leaves nearly equal to those of flowering branches in size, 1-3 cm wide. Achene 3-3.5 mm long.*P. aviculare* var. *vegetum*.
- B. Plant not leafy throughout; upper leaves reduced and more scattered, often deciduous and inflorescence appears to be spike-like. Achene dull, punctate, or shining, smooth.
- C. Achene dull, striately punctate. Perianth-lobes with a few prominently elevated pinnate lateral nerves. Perianth-foot broadly cuneate to roundish.*P. polyneuron*
- C. Achene shining, smooth. Perianth-lobes without prominently elevated nerves. Perianth-foot cuneate.

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- D. Plant attains to 1 m tall. Achene 3-4 mm long.
 *P. Tatewakianum* var. *Tatewakianum*.
- D. Plant 20-40 cm tall. Achene 2-3 mm long.
 *P. Tatewakianum* var. *notoroense*.
- A. Achene inequilaterally trigonous with two broad convex faces and one narrow concave face, or flat. Perianth-lobes as long as perianth-foot or nearly so. Cauline leaves are the same size as those of flowering branches or slightly larger.
- B. Perianth-lobes 1-1.5 times as long as cuneate perianth-foot at maturity. Achene inequilaterally trigonous, in disorderly punctate.
- C. Achene ovate. Leaves broadly lanceolate to elliptic, subacute at apex.
 *P. aequale* var. *aequale*.
- C. Achene broadly ovate. Leaves linearly lanceolate to lanceolate, acuminate at apex.
 *P. aequale* var. *platycarpum*.
- B. Perianth lobes as long as cup-shaped or oblong perianth foot at maturity. Achene flat, smooth.
 *P. calcatum*.

1. ***Polygonum aviculare*** L. Sp. Pl. ed. 1, 362 (1753) p.p.; Meisn. in DC. Prodr. **14**: 97 (1856) p.p.; Steward in Contr. Gray Herb. **88**: 20 (1930); Makino & Nemoto, Fl. Jap. ed. 2, 252 (1931) p. max. p.; Miyabe & Kudo, Fl. Hokkaido & Saghal. **4**: 503 (1934); Ohwi, Fl. Jap. 465 (1953).—*Polygonum heterophyllum* Lindm. in Svensk Bot. Tidsk. **6**: 690. t. 23-25 (1912); Komarov in Fl. USSR. **5**: 614, t. 41. fig. 1 & 7 (1936) p.p.; Loeve & Loeve in Canad. Journ. Bot. **34**: 519 (1956).—*P. aviculare* ssp. *heterophyllum* Aschers. & Graebn. Synop. mit.-europ. Fl. **4**: 848 (1913).—‘*P. monspeliense* Thieb.’: Scholz in Ber. Deut. Gesell. **72**: 64, Abb. D-H (1959).

var. ***aviculare*** ‘*P. aviculare* var. *buxifolium* Ledeb.’: Nakai Polygon. Korean. **3** (1908), in Bot. Mag. Tokyo **23**: 379. pl. 11. fig. b, b₁-b₂ (1909) & in Rigakukai **24**: 5 (1926); Makino & Nemoto l.c. (1931).—‘*P. aviculare* var. *erectum* Ledeb.’: Nakai l.c. (1908), l.c. 379, pl. 11. fig. d (1909) & l.c. (1926); Makino & Nemoto l.c. (1931).—‘*P. littorale* var. *buxifolium* Meisn.’: Miyabe & Kudo l.c. 504 (1934) p.p. excl. p. Sakhal.—‘*P. gymnopus* Franch. et Sav.’: Steward l.c. (1930) pro syn.

Stem erect, ascending or prostrate, internodes abbreviate to the approximate of branches, 1-3 cm long in the middle part of stem. Ochrea 5-10 mm long, hyaline with reddish brown base, early lacerate. Cauline leaves elliptic, oblong

or oblanceolate to spatulate, obtuse or acute at apex, 2–5 cm long, 5–10 mm wide; leaves of flowering branches oblong or broadly linear, obtuse or acute, rarely acuminate at apex, 3–15 mm long, 1–5 mm wide. Flowers 3 mm across, 1–5 in axillary fascicles; perianth-lobes with narrowly yellowish or white-roseate margins. Achene reddish brown, included in perianth or the tip barely exerted; faces deltoidly ovate. V-IX.

Nom. Jap. Michiyanagi, Niwayanagi.

Sepp. exam. Sakhalin: Kaibato Isl. (Kimoto et al., Jul. 1891), Korsakoff (T. Miyake, Jul. 1906), Yujino Sakhalinsk (S. Sugawara, Jul. 1922), Palokaisk (H. Otani et al., Jul. 1930). The Kuriles: Kunashiri Isl.: Nikishoro (M. Tatewaki, Jul. 1923), Etorof Isl.; Shana (S. Fujimura, Aug. 1890), Bettobu (K. Miura, Jul. 1906, B. Yoshimura, Aug. 1937), Rubetsu (T. Kawakami, Aug. 1898). Hokkaido: Prov. Oshima; Junsainuma (E. Tokubuchi, Aug. 1888), Prov. Iburi; Muroran (I. Kudo, Oct. 1937), Prov. Shiribeshi; Zenibako (G. Takee et al., Oct. 1931, Ko. Ito, Sept. 1956), Prov. Ishikari; Sapporo (Y. Takenobu, Jul. 1882, ? leg., Sept. 1927, Ko. Ito, Jul. 1959), Mt. Taisetsu (H. Koidzumi, Jul. 1911). Prov. Hidaka; Horoman (E. Tokubuchi, Aug. 1892), Prov. Kitami; Rebun Isl. Funadomari (M. Tatewaki, Jul. 1934), Rishiri Isl. Oshidomari (W. Hirose, Jul. 1896, M. Tatewaki, Jul. 1934), Abashiri (Y. Moriya, 1901, Ko. Ito, Sept. 1955), Prov. Kushiro (M. Nakamura, Aug. 1886), Ashoro (Ko. Ito, Aug. 1959), Kutcharo (A. Umezawa, Aug. 1956), Prov. Nemuro; Notsukezaki (Ko. Ito, Aug. 1961).

Distr. Common almost throughout the temperate and the subtropical regions.

The present plant is characterized by heterophyllosity in that leaves of flowering branches are smaller than those of main stem, usually less than half of the latter in size, parted perianth, and dull achenes sculptured with fine granular dots. The name of Linnean *P. aviculare* has hitherto been applied vaguely to all plants showing the so-called *aviculare*-form; accordingly Lindman (1912) and Scholz (1959) avoided retention of "*P. aviculare*" in their taxonomies of the *P. aviculare* complex. Scholz (1959) insisted that the name "*P. aviculare*" is to be given up as "nomen ambiguum" in the plant geographical, floristic and plant sociological literature according to Article 65 of the International Code of Botanical Nomenclature 1956. According to Article 53 of the International Code 1959, the specific epithet of *P. aviculare* should have been retained when Lindman (1912) divided Linnean *P. aviculare* into *P. heterophyllum* Lindm. and *P. aequale* Lindm.; accordingly one or the other of them must be an illegitimate

name (cf. Article 67). Here, the author follows British botanists (Clapham, Tutin & Warburg, 1957; Styles, 1960; Butcher, 1961) and believes that Linnean *P. aviculare* should be retained for *P. heterophyllum* Lindm., though Loeve & Loeve (1956) retained it for *P. aequale* Lindm.

var. **vegetum** Ledeb. Fl. Ross. **3**: 532 (1849); Meisn. l.c. (1856); Makino in Bot. Mag. Tokyo **4**: 173 (1890); Nakai l.c. 4 (1908), l.c. 379 (1909) & l.c. (1926); Steward l.c. 21 (1930); Makino & Nemoto l.c. (1931); Miyabe & Kudo l.c. 503 (1934); Hara in Bot. Mag. Tokyo **68**: 895 (1934); Fernald in Gray's Man. Bot. ed. 8. 580, fig. 979 (1951). — '*P. monspeliense* Thieb.': Aschers. u. Graebn. l.c. 849 (1913) p.p.; Bricknell in Bull. Torrey Bot. Club **36**: 443 (1909). — *P. Fauriei* Lév. et Vnt. sensu Miyabe & Kudo l.c. (1934) pro syn.

A stout plant. Stem erect or ascending with few branches, internodes frequently elongate. Ochrea 1–2 cm long. Leaves usually thickened, distinctly petiolate, loosely waved on margins, broadly elliptic to orbicular, obtuse or rotundate at apex, 1–6 cm long, 1–3 cm wide. Flowers 5 mm across, 1–3 in axillary fascicles. VI–IX.

Nom. Jap. Ô-michiyanagi.

Spec. exam. Sakhalin: Nimenjo-Tominai (H. Otani & Y. Imai, Aug. 1930), Kashipo (G. Takee et al., Jul. 1932). Hokkaido: Prov. Oshima; Hakodate (F.G. Greatrex, Jul. 1910), Okushiri Isl. (K. Miyabe & E. Tokubuchi, Jul. 1890), Prov. Ishikari; Sapporo (Ko. Ito, Jul. 1955, Aug. 1960), Prov. Hidaka; Fuyushima-Horoman (K. Miyabe & K. Hino, Aug. 1935), Prov. Kitami; Rishiri Isl. Oshidomari (M. Tatewaki, Jul. 1934), Prov. Kushiro; Arekinai (A. Umezawa, Aug. 1950).

Distr. Commonly found with var. *aviculare*.

The present variety is distinguished from var. *aviculare* by coarse and larger habit, homophyllosity in that leaves of flowering branches are nearly equal to those of stem in size, and later blooming time with fewer flowers. The variety is seemingly to be considered an intermediate variety between *P. aviculare* var. *aviculare* and *P. aequale* var. *aequale*, and considered perhaps *P. aequale* var. *oedocarpum* Lindm., but is different from the latter in respect to homophyllosity, parted perianth and achenes with three equal-sized concave faces.

There have been some arguments whether this variety is identical with *P. monspeliense* Thieb. or not. In fact, both the original description *P. aviculare* var. *vegetum* by Ledebour (1849) and *P. monspeliense* by Thieboud (1805) are so simple that the author could not distinguish them from each other. Var. *vegetum*

in the districts under consideration agrees well with the descriptions of var. *vegetum* by Meisner (1856) and Fernald (1951). *P. monspeliense* Thieb. sensu Aschers. & Graebn. (1913), under which the present variety was considered as a synonym, agrees with our var. *vegetum*, while *P. monspeliense* sensu Scholz (1959) was separated from the present variety by heterophyllosity. According to the observations of Loeve & Loeve (1956), var. *vegetum* was included in *P. heterophyllum* Lindm., because of its heterophyllosity, while *P. monspeliense* was included in *P. aequale* Lindm., because of its homophyllosity. Thus, it is very difficult to distinguish the present variety from *P. monspeliense* Thieb. without referring to the specimens or living materials as Hara (1934) pointed out. Consequently the author would treat the plants under consideration as var. *vegetum* Ledeb. based upon Meisner's description as before.

2. **Polygonum aequale** Lindm. l.c. 692, t. 23. fig. 10-13 & t. 26. fig. 1-3 & 5 (1912); Clapham, Tutin & Warburg, Fl. Brit. Isl. 693 (1957); Scholz ibid. 71: 443 (1959) & l.c. 70. Abb. B. (1959).—*P. aviculare* L. l.c. (1753). p.p.; Komarov l.c. 614, t. 41. fig. 2 (1936).—*P. aviculare* ssp. *aequale* Aschers. et Graebn. l.c. 848 (1913).—*P. aviculare* ssp. *aviculare* Loeve & Loeve l.c. 519 (1956).—'*P. humifusum* Boreau' & '*P. propinquum* Ledeb.' auct. jap. in sched. quoad specim.

var. **aequale**.

A slender plant. Stem decumbent or procumbent or ascending; branches 6-30 cm long; internodes usually not over 2 cm long, usually 1 cm long. Leaves oblong or oblanceolate, acute at apex, 2-10 mm long, 1-4 mm wide, revolute and cartilaginate on margins, sessile. Achene included or slightly exerted, brown or dark; faces ovate, 1.8-2 mm long, 1.3-5 mm wide. VI-IX.

Nom. Jap. Hai-michiyangi (H. Hara in litt.), Ko-michiyangi (n.n.).

Spec. exam. Hokkaido; Prov. Oshima; Nanaehama (M. Tatewaki & M. Tohyamam Sept. 1957-cult.), Prov. Teshio; at the mouth of the R. Teshio (T. Tsujii, Sept. 1958), Prov. Kitami; Kitahama (Ko. Ito, Aug. 1957), Prov. Nemuro; Hamabekkai (Ko. Ito, Sept. 1962).

Distr. Europe, Caucasus, Siberia, Asia and N. America.

P. aequale is characterized by homophyllosity, clefted perianth and inequilateral achenes. According to the description of *P. aequale* by Lindman, the present species in Europe has leaves with obtuse tip, while according to the author's observation of this species in the districts under consideration *P. aequale* has acute or rather acuminate leaves. Var. *oedocarpum* Lindm., which is thought

a hybrid between *P. aviculare* and *P. aequale* has not been found in Japan. In herbaria, occasionally some specimens belonging to the present variety were labelled as *P. humifusum* Boreau or *P. propinquum* Ledeb., from which they are distinguishable by dull and included achenes. Since most of these plants are decumbent or prostrate, it is reasonable that Dr. H. Hara gave it "Haimichiyanagi" as a Japanese name.

var. **platycarpum** Ko. Ito, var. nov. '*P. aviculare* L.': Miyabe & Kudo l.c. 504 (1934) p.p.; Komarov l.c. (1936) saltem p.p. e descr.—'*P. bellardi* All.': Miyabe & Kudo l.c. 504 (1934) excl. syn.—'*P. equisetiforme* var. *trigynum* Boiss.': Nakai l.c. (1926).

Planta annua. Caulis e basi valde ramosus; ramis numerosis suberectis vel adscendentibus, sulcatis, ad 50 cm longis; internodiis mediocribus 0.5-3 cm longis. Ochreae 3-7 (-10) mm longae, superne hyalinae, infra rufescentes, 4-6-nerviae, fere ad basin lacerae. Folia caulina ramorumque magnitudine aequalia, linearia vel elliptica, lanceolata, 0.5-2.5 cm longa, 1-5 mm lata, apice acuminata raro acuta; marginibus cartilagineis, revolutis. Flores axillares 1-2, 2-4 mm diametr.; pedunculis 1-1.5 mm longis, brevioribus quam ochreis; perigonii lobis tubo cuneato aequantibus vel paulo longioribus; dorso triste viridibus, marginibus albis demum roseis. Stamina 8. Achenia coriacea, inclusa vel paulo exserta, atro-brunnea vel nigra, opaca, granulato-striata; facies maxima late ovata, 1.5-2 mm longa, 1.5-1.8 mm lata, apice acuta. VI-IX.

Nom. Jap. Oku-michiyanagi (n.n.), Ezo-michiyanagi, Kogome-michiyanagi (Hiyama in litt.).

Spec. exam. Sakhalin: Yujino Sakhalinsk (G. Koidzumi, Aug. 1930-KYO¹), N. Shirasaka, Aug. 1935), Ghibisan (G. Nakahara, Aug. 1906-TI²), Adtyini-Pupni (Y. Kudo & M. Tatewaki, Aug. 1922). Hokkaido: Prov. Ishikari; Asahigawa (H. Koidzumi, Aug. 1916-TI), Mt. Teine (I. Yamamoto, Aug. 1931), Prov. Shiribeshi; Zenibako (G. Takee et al., Aug. 1931), Prov. Iburu; Muroran (I. Kudo, Aug. 1937), Prov. Teshio (T. Tsujii, Sept. 1958), Sarobetsu (S. Kawano, Jul. 1959), Prov. Kitami; Tokoro, Horonal Sando (H. Iwamoto, Aug. 1931), Tokoro (H. Iwamoto, Aug. 1933), Saroma (T. Misumi, Oct. 1953), Prov. Tocachi; Kutari (S. Kojima, Aug. 1959, Ko. Ito, Aug. 1959), Prov. Kushiro; Akkeshi (T. Yamanaka, Aug. 1936-Typus in Herb. Fac. Agr. Hokkaido Univ.), Arekinai (A.

1) Herbarium of Faculty of Science, Kyoto University.

2) Herbarium of Faculty of Science, University of Tokyo.

Umezawa, Aug. 1956), Prov. Nemuro; Attoko (T. Tsujii, Aug. 1958).

Distr. ?Europe, Asia and N. America.

The present new variety differs from var. *aequale* by acuminate narrow leaves and broadly ovoid achenes. In Hokkaido this plant grows more commonly than *P. aviculare* on road-sides, waste lands, cultivated lands, sometimes in boggy places, etc. Although the author has not known any species which coincides with the character of achenes, he supposes that the present new variety may be distributed over the world together with the typical variety and confused with the latter. In fact, the author noted one specimen labelled as *P. aviculare* L. var. (ex Le Naturaliste Canadien, Publication de L'Universite, Laval Quebec, Canada) preserved in the KYO. In his opinion this '*P. aviculare* L. var.' is to be considered var. *platycarpum* because of its broad coriaceous achene.

3. ***Polygonum calcatum*** Lindm. in Bot. Notiser **1904**: 139. fig. a-d (1904); Aschers. & Graebn. l.c. 869 (1913); Komarov. l.c. t. 41. fig. 6 (1936); Clapham, Tutin & Warburg l.c. 693 (1957); Scholz l.c. 432 (1959) & l.c. 70. Abb. l.c. (1959). —? *Polygonum fallax* Small in Bull. Torr. Bot. Club **24**: 46. pl. 239 (1897). — *P. aviculare* ssp. *calcatum* Thellung in Ber. Schweiz. Bot. Gesell. **22**: 120 (1913); Loeve & Loeve l.c. 519 (1956). — *P. aviculare* var. *calcatum* Hyl. in Uppsala Univ. Arssk. **7**: 134 (1954). — '*P. littorale* var. *buxifolium* Meisn.': Makino & Nemoto l.c. 258 (1931); Miyabe & Kudo, Fl. Saghal. 384 (1915) & l.c. 504 (1934) quoad pl. Sakhal.

A slender plant. Stem decumbent or erect with few branches from the base; branches 20–50 cm long; internodes 1–1.5 cm long in the middle part, abbreviate to the approximate of branches. Ochrea membranaceous, 5–10 mm long, soon lacerate along the nerves. Leaves lanceolate, acute at apex, 3–15 mm long, 1–3 mm wide, revolute on margins, glaucous and obscure nerves beneath, subsessile. Flowers 1–3 in axillary fascicles, peduncles 1 mm long; perianth lobes as long as cup-shaped or oblong foot with whitish or purplish colored margins. Stamens 5. Achene flat or two-sided, included, blackish-brown, shining, smooth or scarcely punctulate; faces lanceolate or lance-ovate, 2–3 mm long, 1–1.5 mm wide. VI–VIII.

Nom. Jap. Sunaji-michiyangi (n.n.).

Spec. exam. Sakhalin: Korsakov (T. Miwa, Sept. 1906), Solowiyohuka (K. Miyabe & T. Miwa, Aug. 1906), Tominai (S. Sugawara, Sept. 1930-KYO), Sakae-

hama (S. Sugawara, Sept. 1923), Galkinovlaskoe (T. Miyake, Sept. 1960), Holu-musk (K. Miyabe & T. Miyake, Aug. 1905), Gologikoff (T. Miyabe, Aug. 1906), Alexandrovsk (S. Takeo, Aug. 1905), Astaohanskoe (Y. Kudo & B. Ishida, Aug. 1923). Hokkaido: Prov. Nemuro; Notsuke-zaki (Ko. Ito, Aug. 1961).

Distr. Europe, Central Russia, Asia and N. America.

The present species is characterized by homophyllosity, cup-shaped or oblong perianth-foot and shining smooth achenes. For a long time the present species had been neglected in spite of its clearly distinct characters. In the author's observation, *P. littorale* var. *buxifolium* Ledeb. was not recognized in the districts under consideration. The specimens hitherto designated as *P. littorale* var. *buxifolium* Ledeb. are either *P. calcatum* Lindm. or a mere maritime type of *P. aviculare*. The latter often shows reddish-colored and somewhat thickened stems and leaves and dull achenes included within the perianth, while *P. littorale* Meisn. bears shining achenes protruded from the perianth.

4. ***Polygonum polyneuron*** Franch. et Sav., Enum. Pl. Jap. 2: 471 (1877); Nakai l.c. (1926); Makino & Nemoto l.c. 261 (1931); Miyabe & Kudo l.c. 504 (1934); Nemoto, Fl. Jap. Suppl. 179 (1936); Ohwi l.c. 261 (1953) excl. pl. jap. bor. —*Polygonum maritimum* (non L.) Franch. et Sav. ibid. 1: 393 (1875). —*P. gym-nopus* Franch. et Sav. l.c. 2: 472 (1877). —‘*P. oxyspermum* Mey. et Bge.’ auct. fl. Jap.; Franch. et Sav. l.c. 473 (1877).; Nakai l.c. (1926); Steward l.c. 19 (1930) pro syn.—‘*P. aviculare* var. *laxum* Ledeb.’: Nakai l.c. 380 (1909) p.p.—‘*P. propinquum* Ledeb.’ auct. fl. jap. p.p.; Franch. & Sav. l.c. 1: 394 (1875); Nakai l.c. 378 (1909); Makino & Nemoto l.c. (1931); Kitagawa, Lin. Fl. Mansh. 185 (1939) quoad pl. jap.—‘*P. Bellardi* All.’: Steward l.c. (1930); Nakai l.c. (1926) pro var. *diffuso*.

Stem erect, simple or slightly divaricate, slender and flexible as well as branches, attains to 70 cm tall; internodes in the middle part 1.5–2.5 cm long, shorter than leaves. Ochrea 7–10 mm long, hyaline, soon lacerate along the numerous nerves. Leaves deciduous, revolute and somewhat scabrous on margins, lateral nerves prominent beneath when dry, sessile to shortly petiolate; stem leaves oblanceolate to elliptic, acute or subacute at apex, 2–6.5 cm long, 3–15 mm wide; leaves of flowering branches linear to narrowly elliptic, 1–2 cm long, 1–5 mm wide. Flowers 1–5 in axillary fascicles; peduncles about 3 mm long, included within the lacerate ochrea; perianth lobes 2–2.5 mm long, 2–3 times as long as broadly cuneate to roundish foot. Achenes included, blackish-brown, or reddish-

brown, dull, striately punctate; faces broadly ovate, 3 mm long, 2 mm wide. Abnormal achenes considerably shining, exerted from the perianth. Plants usually change to beautiful purplish-black color when dried. VII-IX.

Nom. Jap. Akino-michiyanagi, Hamayanagi.

Spec. exam. Hokkaido: Prov. Iburi; Muroran (J. Matsumura, Aug. 1899-TI, Faurie, No. 5838, Sept. 1904-KYO).

Distr. South-western Hokkaido, Honshu, Shikoku, Kyushu and Korea.

The present species is characterized by erect habit, perianth lobes with prominently elevated lateral nerves and broadly ovoid, dull achenes. Besides it is characteristic of the present species that the plant changes to purplish-black color when dried. In the author's opinion, *P. oxyspermum* Mey. et Bge. and *P. propinquum* Ledeb. as called hitherto in our flora should be considered *P. polyneuron* Franch. et Sav., which has shining and considerable exceeding abnormal achenes. *P. oxyspermum* Mey. et Bge., distributed from the Baltic Region to N. America differs from this species by prostrate habit and considerable exceeding normal achenes. Also *P. propinquum* Ledeb., endemic to the lower stream region of the R. Volga is distinguishable from the present species in having heterophyllous leaves and longer ochrea. The author thinks that *P. gymnopus* Franch. et Sav. is the same as *P. polyneuron* and it was perhaps described from individuals in which leaves had mostly fallen and abnormal achenes exceeding from perianth.

5. **Polygonum Tatewakianum** Ko. Ito, sp. nov. '*P. aviculare* var. *laxum* Ledeb.': Nakai l.c. 380 (1909) p.p.; Makino & Nemoto l.c. 261 (1931).—'*P. polyneuron* Franch. et Sav.' acut. jap.; Nakai l.c. 380 (1909); Miyabe & Kudo l.c. 504 (1934) quoad pl. Hokkaido; Ohwi l.c. (1953) vix p.p. ex habitatione.

Planta annua. Radix basique cauli suffruticosa. Caules erecti, simplices vel paulo divaricati, saepe scoparii, striati, usuque ad 1 m alt.; internodiis elongatis, 2-5 cm longis; ramis ramulisque erectis gracilibus. Ochreae 1-2 cm longae, 5-10-nerviae, infra rufescentes, superne albo-hyalino-membranaceae, demum ad basin lacerae. Folia decidua in fructu, rami apice quasi aphylli evadunt, herbacea vel crassa, flaviviridentia, plana, venosa, marginibus cartilaginea, petiolata; foliis caulinis anguste ellipticis vel ellipticis, oblanceolato-ellipticis, apice acutis vel acuminatis, rarium obtusiusculis, 3-8 cm longis, 4-15 mm latis, 5-6-nerviis; ramorum ramulorumque lanceolatis vel oblongis, 5-20 mm longis, 2-3 mm latis. Flores axillares 1-5 in glomerulo; pedunculis inclusis 2-4

mm longis. Perigonia 5 mm diametr.; lobis 2-3 mm longis, cuneato tubo diplo vel triplo longioribus, marginibus primo albis demum roseis. Stamina 8. Achenia dimorpha; altera trigona 3-3.5 mm longa, inclusa, brunnea, raro atro-brunnea, faciebus aebuantibus ovatis vel late ovatis, acutis, basi latissime cuneatis, laevibus vel punctulatis, lucidus; altera 4-6 mm longa, compresso-trigona vel lenticularis, valde exserta, olivacea vel fusca, faciebus deltoido-ovatis, apice acuminatis, laevibus, nitidis. Planta in sicco vix nigrescens. VIII-IX.

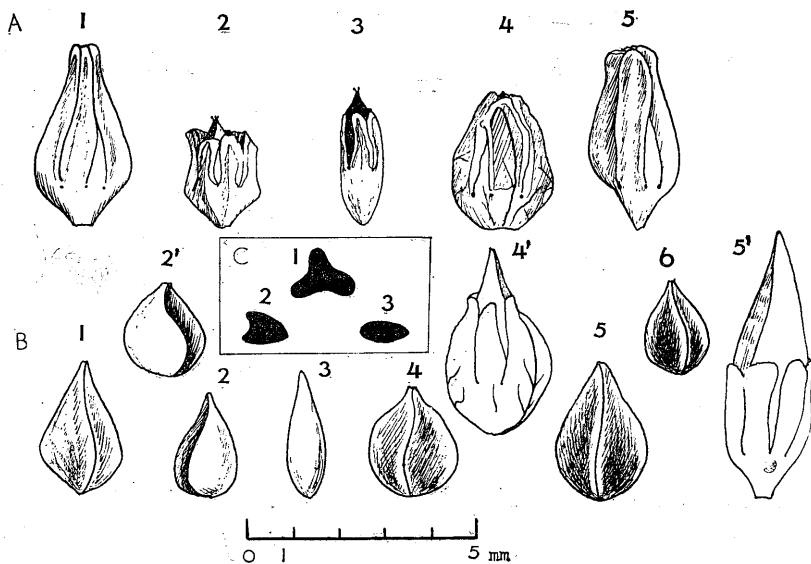


Fig. 1. A: Flower: 1. *P. aviculare* var. *aviculare*. 2. *P. aequale* var. *aequale*. 3. *P. calcatum*. 4. *P. polyneuron*. 5. *P. Tatewakianum* var. *Tatewakianum*. B: Achene: 1. *P. aviculare* var. *aviculare*. 2. *P. aequale* var. *aequale*. 2'. *P. aeq.* var. *platycarpum*. 3. *P. calcatum*. 4. *P. polyneuron*. 4'. ditto (abnormal achene). 5. *P. Tatewakianum* var. *Tatewakianum*. 5'. ditto (abnormal achene). 6. *P. Tatew.* var. *notoroense*. C: Cross section of achene (schematic): 1. The heterophyllum type (*P. aviculare*, *P. polyneuron*, *P. Tatewakianum*). 2. The aequale type (*P. aequale*). 3. The calcatum type (*P. calcatum*).

Nom. Jap. Nagaba-hamamichiyangi (Miyabe).

The present new species is closely related to *P. polyneuron* Franch. et Sav., but is distinguishable from the latter by longer perianth lobes with less elevated lateral nerves and shining achenes. The specific name is dedicated to Prof. M. Tatewaki. The present species is considered to be divided into the following two varieties.

var. **Tatewakianum**.

Planta major. Caules 50-100 cm alti. Folia caulina 3-8 cm longa, 4-15 mm lata. Achenia 3-4 mm longa.

Nom. Jap. Nagaba-hamamichiyangi.

Spec. exam. Hokkaido: Prov. Kitami; Abashiri (K. Miyabe, Aug. 1884, Ko. Ito, Jul. 1955—Typus in Herb. Fac. Agr. Hokkaido Univ.), Kitahama (M. Tatewaki, Aug. 1955), Tokoro (H. Iwamoto, Aug. 1937), Prov. Nemuro; Notsuke-zaki (Ko. Ito, Aug. 1961), Onneto (M. Tatewaki, Aug. 1955), Nishiwada (J. Ohwi, Sept. 1931-KYO), Prov. Kushiro: Akkeshi (T. Yamanaka, Aug. 1936), Mochirippu-Hamanaka (M. Tatewaki & T. Tsujii, Jul. 1952).

var. **notoroense** Ko. Ito, var. nov.

Affinis var. *Tatewakianum* sed planta fructusque minoribus, foliis crassis recedit. Folia caulina oblanceolata vel elliptica, obtusa vel subacuta, 3-20 mm longa, 1-5 mm lata. Achenia 2-3 mm longa, atro-brunnea.

Nom. Jap. Ushio-michiyangi (n.n.).

Spec. exam. Hokkaido: Prov. Kitami; Notoro (M. Tatewaki & Ko. Ito, Oct. 1957—Typus in Herb. Fac. Agr. Hokkaido Univ.), Lake Shibunaito (Ko. Ito, Sept. 1962), Soya (S. Hori, 1887).

The present variety is distinguished from var. *Tatewakianum* by smaller habit and thickened leaves. The variety is mostly found on salt marshes and sandy beaches along the shores of the Ochotsk in Hokkaido.

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種および変種への検索表

A. 瘦果は 3 稜形, 各面は大きさ等しく内凹する。熟時花被片の長さは癒合せる花被脚部の 2-3 倍。

- B. 葉は枝頂部迄密に生ずる。果は光沢なく、表面に顆粒状縞条の小突起を生ず。
- C. 茎葉は苞葉(花枝につく葉)より一層大きく、葉巾は 5—10 mm. 果は長さ 2.5—3 mm. ミチヤナギ
- C. 茎葉は苞葉と大きさ略等しく、または著しく大ならず、葉巾は 1—3 cm. 果は長さ 3—3.5 mm. オオミチヤナギ
- B. 葉は枝頂部密生しない、上葉は脱落しやすく、枝頂では花序は往々疎なる穂状を呈する。果は光沢なく表面に細点を有するかまたは光沢ありて表面平滑。
- C. 果は光沢なし、表面線状、細点あり。花被片背面側脈は著しく隆起。花被脚部は広楔形〜円形。..... アキノミチヤナギ
- C. 果は光沢ありて表面平滑。花被片側脈は隆起せず。花被脚部は楔形。
- D. 植物体は大形、高さ 1 m に達す。果は長さ 3—4 mm. ナガバハマミチヤナギ
- D. 植物体は高さ 20—40 cm. 果は長さ 2—3 mm. ウシオミチヤナギ
- A. 瘦果は扁 3 稜形。広い凸出する 2 面と狭く内凹する 1 面を有するが扁平。花被片は長さ花被脚部の 1—1.5 倍。茎葉は苞葉と大きさ略同じ。
- B. 熟時花被片は長さ楔形の花被脚部の 1—1.5 倍。果は扁三稜形、表面不規則な細点あり。
- C. 果は卵形。葉は広披針形〜楕円形、やや鋭頭。..... ハイミチヤナギ
- C. 果は広卵形。葉は線状披針形〜披針形、漸鋭頭。..... オクミチヤナギ
- B. 熟時花被片は楕形または楕円形の花被脚部と同長。果は扁平、表面平滑..... スナジミチヤナギ

1. ミチヤナギ いわゆるリンネの *P. aviculare* は Lindman (1912) によって、少なくとも 2 種類、すなわち *P. heterophyllum* Lindm. と *P. aequale* Lindm. に分割され得ることは今日大部分の分類学者の認める所となっている。Lindman は結局 Linne の *P. aviculare* の typlification を諦めて *P. aviculare* の名を彼の上述の 2 種品の何れにも残さなかったし、最近 Scholz (1959) は *P. aviculare* L. の名を “nomen ambiguum” として廃棄すべきことを主張した。彼の主張は実用的には有用な面を一部は含んでいるが、しかし 1959 年モントリオール命名規約 53 条によって、*P. aviculare* L. の名を保留しなければならぬ。Loeve & Loeve (1956) は *P. aviculare* L. の名を *P. aequale* Lindm. に残したが、*P. aviculare* の typlification が確定していない今日では、先に発表された、*P. heterophyllum* Lindm. に残されるべきであろう。

オオミチヤナギはミチヤナギより全体一層粗剛となり、葉は一層巾広く 3 cm に達し、茎葉、苞葉共に略大きさ等しく、また花の少い点を特徴とする。

オオミチヤナギと *P. monspeliense* Thieb. との関係は問題が多いが、本邦産のものは Meisner (1856) の記述に最も良く一致するので、一応両者は相互に別系統のものと考えらる。

2. ハイミチヤナギはミチヤナギに比べ一層せんさいであり、茎葉と苞葉の大きさは略等しく、花被片は花被脚部と略同長なる点を特徴とする。

オクミチヤナギは前者より一層巾広い果をもつ点で区別される。なお従来、北海道から報告されている *P. Bellardi* All. は、オクミチヤナギである。

3. スナジミチヤナギ 本種は楕形又は橢円形の花被脚部と扁平、光沢を有する瘦果とによって容易に区別される種類で、従来樺太から知られていたハイミチヤナギはほとんど本種に相当する。

4. アキノミチヤナギ 本州海岸生の *P. polyneuron* Franch. et Savat. は、北海道東部海岸性のもとは異なり、花被片側脈の隆起は著しく、花脚部は広楔形～円形を呈し、果は光沢がない。そして通例植物体は乾燥すると美しい紫黒色を呈する。北海道では南西部に見出されるが本種の分布についてはなお研究を要する。

5. ナガバハマミチヤナギ 前種に比し、花被側脈の隆起は少なく、花脚部は楔形、果は光沢を有する。植物体は黒変することが少ない。アキノミチヤナギ、ナガバハマミチヤナギ共晩秋に生ずる異常果は他の種類に比して著しく花被より突出し、通常倍以上に達する。*P. oxyspermum* Mey. et Bge. や *P. propinquum* Ledeb. の名で呼ばれていたものは、このような異常果を有するものに対してであって、正常果は兩種共花被片より抽出しない。

ウシオミチヤナギは前者より茎高、果共小形である。オホーツク海岸沿いの塩湿地、海岸砂丘地に生ずる。

○ツバキ属の葉序 (木村陽二郎) Yojiro KIMURA: Phyllotaxis of *Camellia*

ツバキ属 *Camellia* は葉序が $\frac{1}{2}$ であることは冬芽をみるとよくわかる(本誌 31 巻, 105 頁)。しかしまた同じ個体で $\frac{2}{5}$ の葉序も見られることがある。本誌、本号の表紙に記したサザンカの葉序の模式図は、 $\frac{2}{5}$ から側芽のでたところで $\frac{1}{2}$ となり、それがまた $\frac{2}{5}$ にもどるところを示している。Eichler (1875) の花式図(図 1)は $\frac{1}{2}$ の配列の小苞(1-6)が次第にずれて $\frac{2}{5}$ の萼片(7-12)となり、さらに花卉にうつところが示されていて、表紙の模式図とくらべると、Arber 女史の shoot 説など思い出して興味をおぼえる。Eichler の花式図は栽培したツバキによったものと思われる。萼片、花卉の数が基本的的

5 数より多く、また子房も一般野生のものでは少い 5 数性を示している。

(東京大学教養学部)

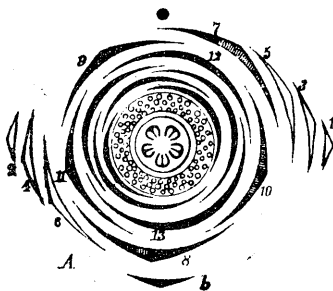


図 1. ツバキ *Camellia japonica* の花式図 (Eichler による)。