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Hiroshi HARA*: **Critical notes on some type specimens of
East-Asiatic plants in foreign herbaria (2)**

原 寬*: 欧米にある東亞植物基準標本の検討 (2)

7) **Aruncus sylvester** Kostel. and **A. dioicus** (Walt.) Fernald. For fixing the specific epithet of widespread Eurasian *Aruncus*, it is a crucial problem whether the plant should be considered conspecific with eastern N. American *A. dioicus* or not, as pointed out by Fernald in 1939. The differences between *A. sylvester* and *A. dioicus* were critically studied by Fernald in 1936, but the plants of eastern Asia are so variable that it is difficult to refer them to either of the two. In 1937 and 1952, I treated them under *A. sylvester*, agreeing with Fernald's and Hultén's opinion, but the Japanese plant which was formerly called var. *americanus* comes nearer to *A. dioicus* in various respects.

The common form, var. *tenuifolius*, in Honshu of Japan has thin elongate leaflets with long-caudate tip, loosely-flowered inflorescences, small petals less than 1 mm long especially tiny in female flowers, and small follicles 2-2.5 mm long with short style 0.3-0.5 mm long, and seeds 1.5-2 mm long. I carefully compared it with rich collections of *A. dioicus* studied by Fernald in the herbarium of Harvard University.

The American specimens of *A. dioicus* identified by Fernald as the typical form have smaller follicles 1.5-2 mm long with longer style 0.5-0.8 mm long, and larger petals of female flowers attaining 1-1.5 mm long, as compared with the Japanese ones. But *A. dioicus* var. *pubescens* Fernald with more slender follicles 1.7-2.5 mm long matches well the Japanese specimens in leaves, calyces, follicles and seeds, and differs from the latter only in having longer styles and tends to have larger petals of female flowers. While in eastern Asia too, some specimens have styles

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attaining 0.8 mm long. For example, var. *insularis* Hara which occurs in the Idzu islands south of middle Honshu has large petals of female flowers attaining 1.5 mm long, long styles, and firm calyx-lobes as in *A. dioicus*.

On the other hand the Japanese race, var. *tenuifolius*, differs from the typical *A. sylvester* of Europe by thin elongate leaflets, lax inflorescences, smaller follicles, and smaller petals especially of female flowers, showing somewhat intermediate characters between *A. sylvester* and *A. dioicus* var. *pubescens*. And a few specimens from Europe or California have sometimes small follicles as those of the Japanese race. In Japan, the shape, size, and pubescence of leaflets are very variable. The plant in northern Japan as well as in Saghalin and Amur has often thicker broader leaflets and densely-flowered inflorescences, but has similar flowers and follicles to those of var. *tenuifolius*, and they are completely connected by intermediate forms. Some specimens from the subalpine belt of central Honshu are dwarf with small dense inflorescences, resembling var. *kamtschaticus*. The typical var. *kamtschaticus* in the northern part of eastern Asia, has also small follicles, but has dense compact inflorescences with short branches and larger petals than var. *tenuifolius*. In Korea, Manchuria, Amur, and China too, some specimens agree well with the Japanese, while some others have larger follicles as in the European or longer styles as in the eastern N. American ones. Especially in southwestern China, the plants display a wide range of variation in the shape, serration, and pubescence of leaflets and the length of follicles and styles.

Considering variable characters above mentioned, it is difficult to draw distinct lines of demarcation within the group, and it is better to treat *Aruncus* as a very polymorphous monotypic genus widespread in Eurasia and N. America, although several geographical races briefly summarized below have differentiated during a long period.

Aruncus dioicus (Walt.) Fernald var. *dioicus* of eastern N. America, a nomenclatorial type of the species, has smaller follicles, longer styles, smaller seeds, larger petals of female flowers, and firmer calyx-lobes, and it gradually passes into var. *pubescens* (Rydb.) Fernald with more slender follicles. The western American plant which may be called as var. *acuminatus* (Dougl.), has larger follicles, shorter styles, larger seeds, slightly smaller petals of female flowers, and thinner calyx-lobes. The European var. *vulgaris* (Maxim.) (*Aruncus sylvester* Kostel.) is very near to var. *acuminatus*, and has larger follicles 2.5-3 mm long, shorter styles 0.3-0.5 mm long, larger seeds 2-2.5 mm long, and larger petals.

In Asia the plants with small fruits and small petals are prevailing, but they are much more variable than in Europe and N. America. The Japanese var. *tenuifolius*, the northern var. *kamtschaticus*, and the European var. *vulgaris* intergrade in continental eastern Asia, and various perplexing forms are found there.

The Himalayan race, var. *triternatus* (Wall.) has shorter leaflets which are appressed villose along nerves beneath, 3-8 carpels in a flower, and small follicles. In alpine Yunnan occurs a striking form, var. *rotundifoliolatus*, which is near to var. *triternatus*. But it has roundish leaves, and tends to have hermaphrodite flowers, and may be the same as *Aruncus gombalanus* first described as an independent genus, *Pleiosepalum* by Handel-Mazzetti.

Besides the races enumerated above, there are more local but distinct races on old mountains of eastern Asia which have often been regarded as separate species. Var. *subrotundatus* (Tatew.) endemic on grassy slopes of Mt. Apoi of south Hokkaido has small follicles, and shining broad ovate to orbicular leaflets which are thicker, glabrous, roundish at the tip and often cordate at the base, resembling var. *rotundifoliolatus* of Yunnan. Var. *laciniatus* (Hara) also on mountains in Hidaka of Hokkaido has ovate-lanceolate deeply incised leaflets and narrow oblong petals 2 mm long of male flowers. A very singular race is var. *astilboides* (Maxim.) on Mt. Hayachine of northern Honshu. It is a dwarf alpine form with small glabrous leaflets, and small inflorescences, and has always erect pedicels with upright follicles 2.5-3 mm long, whereas all the above races have deflexed pedicels with pendulous follicles. Var. *aethusifolius* (Lév.) of Quelpaert is another dwarf race with erect follicles, but its small leaflets are very deeply lacinate. The occurrence of these endemic races on isolated mountains which have rich flora of old origin seems to support Hultén's view that *Aruncus* is a very old relict of the Tertiary flora.

Aruncus dioicus (Walter) Fernald in *Rhodora* **41**: 423 (1939); *Man.* ed. 8, 756 (1950)

var. **dioicus**. *Actaea dioica* Walter, *Fl. Carol.* 152 (1788). *Aruncus sylvester* β . *americana* Maxim. in *Act. Hort. Petrop.* **6**: 170 (1879), p.p. *A. allegheniensis* Rydberg in *N. Amer. Fl.* **22** (3): 256 (1908)—Fernald in *Rhodora* **38**: 180, t. 416, f. 1, 2, 5 & 8 (1936).

Dist. Eastern N. America (southern New York to Kent., south to Alabama & Georgia).

var. **pubescens** (Rydberg) Fernald in *Rhodora* **41**: 423 (1939); *Man.* ed. 8, 756 (1950). *Aruncus pubescens* Rydberg in *N. Amer. Fl.* **23** (3): 256 (1908). *A. allegheniensis* var. *pubescens* (Rydb.) Fernald, l. c. **38**: 179, t. 416, f. 4 (1936).

Dist. Eastern N. America (western Kent. to Iowa, south to Arkansas & Okla-

homa).

Aruncus dioicus var. **acuminatus** (Rydb.) Hara, comb. nov. *A. acuminatus* (Douglas) Rydberg in N. Amer. Fl. **22** (3): 255 (1908). *A. sylvester* var. *acuminatus* (Douglas) Jepson, Fl. Calif. **2**: 168 (1936).

Dist. Western N. America (southern Alaska, south to northern California).

var. **vulgaris** (Maxim.) Hara, comb. nov. *Spiraea Aruncus* L., Sp. Pl. ed. 1, **1**: 490 (1753). *Aruncus vulgaris* Refinesque, Sylv. Tellur. 152 (1838), nom. nud. *A. silvester* Kosteletzky, Ind. Pl. Hort. Prag. 15 (1844), nom. nud.—Maxim. in Act. Hort. Petrop. **6**: 169 (1879). *A. sylvester* α. *vulgaris* Maxim., l. c. 170 (1879). ? *A. asiaticus* A. Pojarkova in Fl. URSS. **9**: 311 & 491 (1939)

Dist. Central Europe, Caucasus, Armeria, northern Persia, Amur?, China?, and Korea?

var. **kamtschaticus** (Maxim.) Hara, comb. nov. *A. sylvester* γ. *kamtschatica* Maxim. in Act. Hort. Petrop. **6**: 170 (1879). *A. kamtschaticus* (Maxim.) Rydberg in N. Amer. Fl. **22** (3): 256 (1908)—Pojarkova in Fl. URSS. **9**: 311 (1939).

Dist. Anadyr, Kamchatka, Kuriles, Yezo, Ochotsk, Lena?, Amur?, and Alaska?

f. **tomentosus** (Koidzumi) Hara, stat. nov. *A. sylvester* ε. *tomentosa* Koidzumi in Bot. Mag. Tokyo **23**: 167 (1909). *A. kamtschaticus* var. *tomentosa* (Koidz.) Miyabe et Tatew. in Trans. Sapporo Nat. Hist. Soc. **14**: 6 (1935). *A. vulgaris* var. *tomentosus* (Koidz.) Nemoto, Fl. Jap. Suppl. 305 (1936). *A. tomentosus* Koidzumi in Act. Phy. Geo. **5**: 41 (1936). *A. silvester* var. *kamtschaticus* f. *pubescens* Tatew. et Yoshimura, Rep. Veg. Is. Shikotan 37 (1940).

Dist. South Kuriles, Yezo, Saghalin, and Ussuri.

var. **tenuifolius** (Nakai) Hara, comb. nov. *A. sylvester* β. *americana* Maxim., l. c. 170 (1879), p. p.—Matsum., Ind. Pl. Jap. **2** (2): 196 (1912). *A. silvester* var. *tenuifolius* Nakai ex Hara in Journ. Jap. Bot. **13**: 387 (1937); in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**: 67 (1952). *A. kyusianus* Koidzumi in Act. Phy. Geo. **5**: 41 (1936). *A. sylvester* var. *tenera* Kitagawa in Rep. Inst. Sci. Manch. **5** (5): 155 (1941).

Dist. Yezo, Honshu, Shikoku, Kyushu, north Korea, Amur?, south Manchuria, and China.

var. **insularis** Hara, var. nov.

Foliola crassa glabra ovata—oblongo-lanceolata apice caudato-acuminata. Pedicelli basi unibracteati et saepe ad apicem bibracteolati, bracteis 3.5–4.5(5) mm longis. Flores ♀: lobi calycis lanceolati 1–2–denticulati 1.2–1.5 mm longi foliacei virides. Petala elliptica ca. 1.2–1.5 mm longa. Pistilla 3 ca. 2 mm longa, stylo ca. 0.8 mm longo. Stamina abortiva minutissima.

Typus. Honshu. Prov. Idzu: Ins. Ōshima (cult. in Tokyo) (H. Hara, Jun. 1952, ♀ fl., in Herb. TI.).

Dist. Idzu Islands of Honshu.

var. **triternatus** (Maxim.) Hara, comb. nov. *Spiraea triternata* Wallich, Cat. no. 706 (1829), nom. *Aruncus sylvester* δ. *triternata* (Wall.) Maxim. in Act. Hort. Petrop. **6**: 171 (1879).

Dist. Himalaya (Simla, Nepal, Sikkim).

Aruncus dioicus var. **rotundifoliolatus** Hara, var. nov.

Foliola late ovata vel obovata apice rotundata vel breviter acuminata subtus ad nervos appresse villosa-pilosa. Flores ♀: petala 0.8 mm longa, ovaria saepe 4-5. Folliculi ca. 2.5 mm longi, stylis ca. 0.4 mm longis.

Typus. Yunnan, Upper Kiukiang valley, Chialahnuto 3500 m (T. T. Yü, no. 19719, Aug. 7, 1938, ♀ fl. in Herb. Harvard).

Dist. Alpine region of Yunnan.

var. **subrotundatus** (Tatew.) Hara, comb. nov. *A. subrotundata* Tatewaki in Res. Bull. Exper. For. Hokkaido Univ. 5: 129 (1928). *A. sylvester* var. *subrotundus* (Tatew.) Ohwi, Fl. Jap. 627 (1953); in Bull. Sci. Mus. Tokyo 33: 75 (1953).

Dist. Yezo (Mt. Apoi in prov. Hidaka).

var. **laciniatus** (Hara) Hara, comb. nov. *A. vulgaris* var. *laciniatus* Hara in Journ. Jap. Bot. 9: 513, fig. 2 (1933). *A. sylvester* var. *laciniatus* (Hara) Hara, l. c. 13: 387 (1937).

Dist. Yezo (mountains of southern Hidaka).

var. **astilboides** (Maxim.) Hara, comb. nov. *Spiraea Aruncus* α. *astilboides* Maxim. ex Franch et Sav., Enum. Pl. Jap. 1: 121 (1875), nom. nud. *Aruncus astilboides* Maxim. in Act. Hort. Petrop. 6: 171 (1879). *A. sylvester* var. *astilboides* (Maxim.) Makino in Bot. Mag. Tokyo 17: 209 (1903). *A. vulgaris* var. *astilboides* (Makino) Nemoto, Fl. Jap. Suppl. 305 (1936).

Dist. Northern Honshu (Mt. Hayachine).

var. **aethusifolius** (Lév.) Hara, comb. nov. *Astilbe Thunbergii* Miq. var. *aethusifolia* Léveillé in Fedde, Rep. 8: 283 (1910). *Aruncus aethusifolius* (Lév.) Nakai in Bot. Mag. Tokyo 26: 325 (1912).

Dist. Quelpaert.

8) **Oplopanax horridus**. The Devil's Club is growing in three separated areas, western N. America, Japan, and Korea, and it is often treated as three species, i. e. *Oplopanax horridus*, *O. japonicus*, and *O. elatus* respectively by Nakai (1924 & 27), Rehder (1940 & 49), Pojarkova (1950), Hara (1952 & 54), Li (1952), and Ohwi (1953). On examining ample material from N. America and eastern Asia, I think that the distinguishing characters between them, especially those between N. American and Japanese plants are too weak to separate them specifically. There seems to be no distinct morphological differences among them in the shape and hairiness of inflorescences, bracts, flowers, and fruits, and geographical variations are observed only in the shape and serrature of leaves.

The N. American plant is rather uniform, but the Japanese plant is pretty variable especially in the shape of leaves. The plant of central Honshu has more deeply lacinate and long-caudate leaf-lobes (Fig. 1, A), whereas those of northern

Japan are shorter and shortly acuminate at the apex (Fig. 1, B), and agree with



Fig. 1. *Oplopanax horridus* Miquel
A. var. *japonicus* Hara (Mt. Hakusan), B. var. *brevilobus* Hara (Mt. Hakkoda), C. subsp. *elatus* Hara (N. Korea).

those of N. America in the shape. There are also intermediate forms in the northern part of Kwantō and the southern part of Tōhoku districts. Some Japanese specimens have peltate leaves with thicker prickles on main veins, and longer pedicels, while some are almost inseparable from those of N. America.

Among three geographical races, the plant of Korea is most characteristic in having petioles more thickly beset with prickles and villose-hairs, and shorter and more roundish lobes of leaves which are

not lobed or have only one small lobule on each side, shortly acuminate at the apex, and more minutely and closely serrate on the margin (Fig. 1, C). Also in N. American material, calyx-lobes sometimes develop into a needle-shape.

Oplopanax horridus (J. E. Smith) Miquel, Ann. Mus. Bot. Lugd.-Bat. **1**: 16 (1863)—Rehder, Bibl. Cult. Tr. 491 (1949).

Panax horridum J. E. Smith in Rees, Cyclop. **26**: P. no. 10 (1813).

var. ***brevilobus*** Hara, var. nov. (Fig. 1, B).

Differt a var. *japonico* lobis foliorum latioribus breviter lobulatis et apice breviter acuminatis.

Typus: Honshu. Prov. Ugo, in monte Taiheizan (H. Hara et S. Kurosawa, Aug. 16, 1952 in Herb. TI.).

Dist. On mountains of south-east Hokkaido and northern Honshu.

var. ***japonicus*** (Nakai) Hara, stat. nov. *Echinopanax japonicum* Nakai in Journ. Arnold Arb. **5**: 15 (1924). *Oplopanax japonicum* (Nakai) Nakai, Fl. Sylv. Korea. **16**: 38 (1927)—Hara in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6** (2): 90 (1952); Enum. Sperm. Jap. **3**: 288 (1954).

Lectotypus: Honshu. Prov. Kaga, in monte Hakusan (J. Nikai, no. 1981, Aug. 14, 1909 in Herb. TI.).

Dist. In subalpine coniferous forests of central Honshu and Shikoku.

subsp. **elatus** (Nakai) Hara, stat. nov. *Echinopanax elatus* Nakai, Fl. Korea. **1**: 276, t. 15 (1909); in Journ. Arnold Arb. **5**: 15 (1924). *Oplopanax elatum* (Nakai) Nakai, Fl. Sylv. Korea. **16**: 38, t. 11 (1927).

9) **Patrinia triloba** Miquel. The type specimen (Siebold) of *Valeriana triloba* Miquel is still in bud, but its largest bud just before anthesis has a thick short spur about 0.7 mm long, and is identical with var. *gibbosa* described by Makino. *Patrinia palmata* Maxim. belongs to another race with slender spurs attaining 2-3 mm long, and should be called *P. triloba* var. *palmata* (Maxim.) Hara. These two races generally occupy their own separate geographical areas.

Patrinia triloba (Miq.) Miquel in Arch. Néerl. Sci. Nat. **5**: 95 (1870)—Hara, Enum. Sperm. Jap. **2**: 70 (1952).

var. **triloba**. *Valeriana triloba* Miquel, Ann. Mus. Lugd.-Bat. **3**: 115 (1867). *Patrinia palmata* Maxim. β. *gibbosa* Makino in Bot. Mag. Tokyo **21**: 157 (1907). *P. triloba* var. *gibbosa* (Mak.) Matsum., Ind. Pl. Jap. **2** (2): 606 (1912)—Hara, l. c. 71 (1952).

var. **palmata** (Maxim.) Hara, stat. nov. *P. palmata* Maxim. in Bull. Acad. Sci. St.-Pét. **12**: 66 (1867).

7) ヤマブキショウマ類 ヤマブキショウマは Maxim. 以来北米東部産 (現在の *Aruncus dioicus*) と同一とされていたが、近年は歐洲産 (*A. sylvester*) と合一される事が多い。これらの関係を明らかにしようと思ひ歐米の標本を多数みたが結局何れとも別種とするのは無理であると考えに至つた。ヤマブキショウマの普通形は北米東部の *A. dioicus* var. *pubescens* に近く、花柱が短い外は区別なく、一方歐洲産とも蒴果が小形で雌花の花鱗が小さい点のみである。しかも東亜の本類は極めて多形でこれらの性質は変り易くいずれも例外があつてはつきり区別できない。本類は古くから地方的に分化しつつあると思われるが未だ種として分かつには充分でなく、すべてを同一種とみなし古い種名 *Aruncus dioicus* の下に著しい地方型を変種と認めることにする。日本では南からウスバヤマブキショウマ、ヤマブキショウマ、エゾヤマブキショウマ、チシマヤマブキショウマと順次うつり変るがその境ははつきりしない。伊豆七島産のものは苞、萼片、花瓣、花柱が長く葉はやや厚く無毛でシマヤマブキショウマ (新称) と呼ぶ。小葉が円頭滑沢なアポイヤマブキショウマ、果梗が直立し蒴果が上向する高山型のミヤマヤマブキショウマやタンナシヨウマは産地も限られ最も特徴のある型である。

8) ハリブキ 北米の *Oplopanax horridus* に比べて葉が往々楯状となり裂片は欠刻深く長尾状に尖るので区別されてきたが、これは本州中部、四国産のものについてあてはまる。しかし我国北部のものでは葉形は全く北米産と一致し、この北方型をヒロハハリブキ (var. *brevilobus* Hara) と呼ぶことにするが、磐梯山、日光、谷川岳などには

ハリブキとの中間形も見られる。

9) キンレイカ *Valeriana triloba* Miq. の基準標本は Siebold の採品とされているが、'ハクサンヨミナメシ、キンダクハ' と和紙に書かれていて恐らく日本の友人から貰った標本と思う。また蕾ではあるがかなり大きくなったものでも距は太く短かくコキンレイカの形と見られる。そこで距の細長いキンレイカの方はその変種 var. *palmata* (Maxim.) Hara となる。この2型は奥山氏が指摘された様に本州中部では分布も異りかなりはつきり区別できるが、近畿へ入ると距の長さの中間の形がでて分り難くなり別種とするのは無理と思う。

○トンボソウ属 (原 寛) Hiroshi HARA: On Asiatic species of *Tulotis* Rafin.

Perularia Lindl. (トンボソウ属) を保留属名とする日本からの提案は昨年高等植物関係の特別委員会 で否決された。トンボソウ属は *Platanthera* 又は *Habenaria* と合一されることも多いが、その独立性を認めた場合には東亜の種類は次の様になる。

Tulotis Rafinesque, Herb. Rafin. 70 (1833); Fl. Tellur. 2: 37 (1837).

Perularia Lindley, Bot. Reg. t. 1701 (1834), nom. nud.; Gen. et Sp. Orchid. 281 (1835).

Tulotis asiatica Hara, nom. nov.

Orchis fuscescens L., Sp. Pl. ed. 1, 2: 943 (1753) (non *Tulotis fuscescens* Rafin. ex Jackson 1895, fide Merrill). *Perularia fuscescens* (L.) Lindley, Gen. et Sp. Orchid. 281 (1835). *Platanthera fuscescens* (L.) Kränzlin, Orchid. Gen. et Sp. 1: 637 (1899), 943 (1901).

Tulotis ussuriensis (Reg. et Maack) Hara, comb. nov.

Platanthera tipuloides γ. *ussuriensis* Regel et Maack, Tent. Fl. Ussur. 142, t. 10, f. 7-9 (1861). *Platanthera ussuriensis* (Reg.) Maxim. in Bull. Acad. Sci. St.-Pét. 31: 107 (1886). *Habenaria ussuriensis* (Max.) Miyabe in Mem. Boston Soc. Nat. Hist. 4 (7): 263 (1890). *Perularia ussuriensis* (Max.) Schlechter, Orchid. Sino-Jap. Prodr. 99 (1919).

Tulotis linumae (Makino) Hara, comb. nov.

Habenaria linumae Makino, Ill. Fl. Jap. 1: 1, t. 53 (1891). *Platanthera linumae* (Makino) Makino in Bot. Mag. Tokyo 16: 89 (1902). *Perularia linumae* (Mak.) Ohwi in Act. Phy. Geo. 1: 142 (1932).

Tulotis shensiana (Kränzl.) Hara, comb. nov.

Habenaria shensiana Kränzlin in Engl., Bot. Jahrb. 36, Beibl. 82, 24 (1905). *Perularia shensiana* (Kränzl.) Schlechter, Orchid. Sino-Jap. Prodr. 99 (1919).

Tulotis Souliei (Kränzl.) Hara, comb. nov.

Platanthera Souliei Kränzlin in Fedde, Rep. 5: 199 (1908). *Perularia Souliei* (Kränzl.) Schlechter, Orchid. Sino-Jap. Prodr. 99 (1919).

Tulotis whangshanensis (Chien) Hara, comb. nov.

Perularia whangshanensis Chien in Contr. Biol. Lab. Sci. Soc. Chin. Bot. 6: 75 (1931)