

Masami MIZUSHIMA\*: **A conspectus of the genus  
*Stellaria* in Japan I**

(Critical studies on Japanese plants 11)\*\*

水島正美\*: 日本産ハコベ属の概要 (日本植物寸評 11)

Prior to enter into details of the genus *Stellaria*, it may not be impertinent to offer a short sketch of the species known to the Japanese flora. There are 21 species in Honda, Nomina Plantarum Japonicarum pp. 85-86 (1939) from the Ryukyus, Kiushu to Hokkaido, the Kuriles and Saghalin. 19 species are cited from Kiushu to Hokkaido in the 2nd edition of the same book pp. 70-71 (1957). 16 species are recognized in the following pages from Kiushu to Hokkaido, but their distributional areas well cover the Ryukyus, the Kuriles and Saghalin except for *S. graminea* L. of Saghalin and *S. crassifolia* Ehrh. of the Kuriles. The temperate Eurasiatic *S. graminea* looks somewhat like *S. longifolia* Muhl. among 16 species, but is easily differentiated from the latter in smooth internodes and leaf-margins (roughened by raised, hemisphaerical, epidermal cells in the latter), and in rugulose seeds (smooth in the latter). Three collections in SAPT were collected at Korssakoff (Ôtomari) and Solowiyohuka (Kaizuka) north of the former. In addition it was reported from Nowoalexandrowsk (Konuma), also north of Korssakoff. This species has been reported, in eastern Siberia, in the west of the Baikal region or doubtfully of Dauria (Popov, Fl. C. Siber. 1: 411, 1957), therefore *S. graminea* in Saghalin is most probably an alien as Schischkin has already stated (Fl. U.R.S.S. 6: 405, 1936). The fact that the floras recently, dealing with the eastern half of Siberia including Mongolia are not convinced of its native occurrence in the east of Lena-Kolyma basin, strongly supports this view. Five collections of the other exception, *S. crassifolia*, are kept in SAPT also. They are from the Isls. Onnekotan, Rashuwa, and Paramushir, and are all in flowering stage and with very young capsules. It comes near in habit to *S. humifusa* Rottb. among the Japanese species, but is distinguished therefrom in linear lobes of petals (not oblong of *S. humifusa*) and wrinkled seeds (not smooth of the latter). *S. crassifolia* also resembles *S. calycantha* Bong. with ciliate bracts, typically apetalous flowers and smooth

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seeds, from which it is easily differentiated by glabrous bracts, prominent petals, and wrinkled seeds.

The majority of the Japanese members is circumpolar and cosmopolitan, therefore abundant intermediary and polymorphism are generally observed within the species. A large amount of evidences on the Japanese populations from ecology, cytology, and genetics along with experimental-morphology would certainly be much helpful to understand interspecific and intraspecific relationships. It seems to me to be desirable that these approaches tolerate difficulties of transcontinental and/or intercontinental extension of the project needed, to which morphological-geographical studies of taxonomy are always trying hard. Data thus accumulated are taxo-biological, and are substantive to the  $\alpha$ -course of taxonomy. Seemingly conservative approach must serve and be employed until the coming of  $\omega$ -course of the same. These may especially be hoped to the Japanese botany whose background is barely a century-long accumulation of evidences. I have here attempted to do as above, and the following conspectus is opened to further confirmation from various approaches. No attempt is made to give a judgement or evaluation to the problems of subgeneric relationships, or a detailed justification for the inclusion of the genus *Myosoton* (or *Malachium*) to *Stellaria*. For them another article will be prepared.

#### Key to the species of Japan

1. Styles typically 5, alternisepalous; bifid 5 valves of capsule oppositisepalous; upper leaves sessile lower prominently petioled; pedicels and sepals glandular-pubescent; stems obsoletely 4-angled.....Subgen. 2. *Myosoton* (Moench) Pax .....16. *S. aquatica*.
1. Styles typically 3, sometimes 2, 4, or 5 when oppositisepalous; valves of capsule (4-) 6 (-10) .....Subgen. 1. *Stellaria*.....2
2. Petals 5-10-fimbriate-laciniate; stems 4-angled; seeds scrobiculate-reticulate; plant silky-villous.....Sect. 2. *Fimbripetala* Turcz. ....14. *S. radians*.
2. Petals bipartite or bifid, seldom none .....3
3. Flowers 5- or 4-merous; styles 3 or 2; ovules few to many; seeds 1-8; leaves petioled or sessile.....Sect. 3. *Schizotechium* (Fenzl) Edgew. et Hook. f. ....15. *S. monosperma*.
3. Flowers 5-merous; styles typically 3, rarely 2, 4, or 5; ovules many; seeds usually more than 10; leaves prominently petioled or sessile.....

- Sect. 1. *Stellaria*.....4
4. Leaves mostly or at least lower long petioled; stems terete.....  
..... Subject. 1. *Stellaria*.....5
4. Leaves all sessile or nearly so; stems 4-angled or terete .....  
.....Subject. 3. *Larrea* (St. Hil.) Fenzl.....8
5. Leaves strongly ciliate throughout .....1. *S. Bungeana*.  
.....6
5. Leaves without cilia .....6
6. Leaves hispid above when young; stems 2-ridged, glabrous or quite excep-  
tionally pubescent in 1 or 2 lines; sepals scabrous-keeled, glabrous through-  
out or barbed on basal margins; bifid petals with sparingly barbed basal  
margins .....2. *S. diversiflora*.
6. Leaves glabrous above; stems terete, pubescent in 1 or 2 lines, excep-  
tionally glabrous; petals glabrous.....7
7. Sepals finely pubescent, seldom glabrous; petals shorter than sepals; anthers  
orange-red .....3. *S. media*.
7. Sepals villous on triple veins, seldom glabrous; petals usually longer than  
sepals; anthers white .....4. *S. sessiliflora*.
8. Plant stellate-tomentose when young; stems terete; petals longer than sepals  
or strongly reduced to none .....13. *S. Uchiyamana*.
8. Plant nearly glabrous, never tomentose; stems 4-angled.....9
9. Petals usually none; styles (3-) 4-5; bracts leaf-like and often ciliate; seeds  
smooth .....6. *S. calycantha*.
9. Petals prominent, surpassing sepals or a little shorter .....10
10. Leaves linear to linear-lanceolate, 8-20 times longer than width .....11
10. Leaves broader, usually 5 times as long as width or less.....13
11. Internodes roughened at least about both ends .....12
11. Internodes smooth; seeds fimbriate-cristate dorsally; anthers yellowish white  
.....9. *S. nipponica*.
12. Sepals blunt or merely acutish, 2-3 mm long; petals about as long as sepals;  
seeds smooth; anthers yellowish white; n. Japan in moist places.....  
..... 11. *S. longifolia*.
12. Sepals sharply pointed, 3-7 mm long; petals surpassing sepals; seeds strongly  
rugose; anthers purple; n. to c. Honshu in bogs .....8. *S. filicaulis*.
13. Bracts leaf-like, upper ones exceptionally scarious .....14
13. Upper bracts scarious-margined and strongly reduced in size .....15

14. Seeds fimbriate-cristate; petals 1.5-2 times as long as sepals; anthers deep purple; leaf-margins cartilaginous and glossy beneath when dry ..... 12. *S. ruscifolia*.
14. Seeds smooth; petals a little longer than sepals or as long; anthers yellowish; leaf-margins opaque.....10. *S. humifusa*.
15. Capsules about double the length of sepals; seeds smooth; anthers purple; leaves strongly crisped-ciliate, seldom glabrous .....7. *S. Fenzlii*.
15. Capsules about equalling sepals; seeds mamillate; anthers deep yellow; leaves without cilia or barbed at the junction.....5. *S. Alsine*.

Subgen. 1. *Stellaria*.

Sect. 1. *Stellaria*.

Subsect. 1. *Stellaria*.

1) ***Stellaria Bungeana*** Fenzl in Ledeb., Fl. Ross. 1: 376 (1842).

Perennial: stems obtusely 4-angled arising from creeping rhizomes, hirsute in 1 or 2 lines and glandular upwards. Leaves lower prominently petioled, becoming sessile upwards, ovate to oblong, acuminate to acute at the tip, lower rounded to shallowly cordate upper rounded to obtuse at the base, strongly ciliate on margins seldom glabrous, glabrous on both surfaces excepting thinly hirsute midribs. Bracts herbaceous, ciliate. Pedicels glandular-pubescent chiefly on one side. Flower-buds ovoid to oval, glandular-pubescent to nearly glabrous; sepals ovate, lance-ovate to lanceolate, obtuse or acutish, nearly herbaceous, 3.5-5 mm long; petals slightly longer than sepals to twice as long, cleft nearly to the base into linear-lobes; stamens 10 with whitish anthers, feebly surpassing sepals or shorter. Capsules ovoid, a little shorter than sepals. Seeds brown, covered with conical tubercles, (1.2-) 1.5-1.8 mm across.

Distr. Eastern part of European Russia eastwards through Siberia to Ochotsk and Ussuri, south to Altai, Mongolia, n. China, and n. Korea; also Saghalin and Japan (e. Hokkaido).

2) ***Stellaria diversiflora*** Maxim. in Bull. Acad. Imp. Sci. St.-Pét. 18: 379 (1873) in nota sub *S. diandra* Maxim.

*S. diandra* Maxim., l.c. (1873).

Annual: stems 4-angled and oppositely 2-keeled, glabrous or very seldom pubescent in 1 or 2 lines. Leaves all distinctly petioled, triangular-ovate to ovate-oblong, seldom lanceolate-oblong, those near the top of creeping branches often depressed-triangular to reniform, sparsely hispid above when young.

Flowers solitary in axils of leaves, with glabrous peduncles longer or shorter than leaves; calyces infundibular and obconically thickened in fruiting period, keeled sepals 3-5-7 mm long, subulate or lanceolate, strigose or scabrous on the keel; petals cuneate to oblong, cleft to about 1/3, ciliolate near the base, scarcely exceeding sepals in chasmogamous flowers diminished in cleistogamous ones. Stamens normally 10, with white anthers and pilose filaments. Capsules as long as sepals or shorter. Seeds nearly elliptical, dark brown, mamillate, 1-2 mm long.

Distr. Endemic in Japan (Honshu, Shikoku & Kiushu reaching to Isl. Yakushima).

var. **diversiflora**.

Stems usually 1-2 mm thick when dry: leaves more than 1 cm long: sepals usually 5-6 mm long.

Distr. Honshu, Shikoku & Kiushu (excl. Isl. Yakushima).

var. **yakumontana** (Masam.) Masamune in Sci. Rep. Kanazawa Univ. **2**(2): 92 (1954).

*S. diandra* Maxim. var. *yakumontana* Masam., Fl. Geobot. Yakusima 185 (1934). *S. diversiflora* var. *diversiflora* f. *yakumontana* (Masam.) Mizushima in Journ. Jap. Bot. **26**: 8 (1951).

Very slender in all parts: stems about 0.7 mm thick when dry: leaves less than 8 mm long: sepals more or less 4 mm long.

Distr. Kiushu (southernmost part of the mainland & Isl. Yakushima).

3) **Stellaria media** (L.) Villars, Hist. Pl. Dauph. **3**: 615 (1789).

Annual: stems terete, pubescent in 1 or 2 lines, seldom glabrous. Leaves ovate to oblong, lower long petioled, upper becoming sessile, glossy above when fresh, with impressed midrib. Flowers numerous in leafy dichasia: sepals 3-6.5 mm long, rounded on the back, ovate-oblong to ovate-lanceolate, obtuse and not at all recurved at the apex, and finely pubescent with uniseriate eglandular hairs, seldom glabrous, opaque when dry: petals 2-parted, seldom 0, not exceeding sepals: stamens 2-10 with usually orange-red anthers. Capsules about equalling sepals. Seeds reddish brown or darker, rounded-reniform 1-1.5 mm across, tubercled with hemisphaerical to conical processes especially on the back.

var. **media**.

*Alsine media* L., Sp. Pl. ed. 1, **1**: 272 (1753). *S. modesta* Fenzl ex Zoll.,

Syst. Verz. Ind. Archip. **2**: 142 (1854) nom. nud.; in Nat. Tijdschr. Nederl. Ind. **14**: 165 (1857). *S. media* var. *minor* Makino in Journ. Jap. Bot. **3**: 2 (1926). *S. minor* (Mak.) Honda in Bot. Mag. Tokyo **56**: 14 (1942).

Stems often tinged with brown: leaves smaller and deeper green: sepals 3-5 mm long: stamens 2-5 (-8): seeds smaller about 1 mm across, tubercled with flat-topped or hemispherical processes.

Distr. Cosmopolitan; in Japan ubiquitous in waste places and on cultivated ground or sunny wayside.

var. **procera** Klett et Richter, Fl. Leipzig 382 (1830) "β".

*S. neglecta* Weihe in Bluff et Fingerhuth, Comp. Fl. Germ. ed. 1, **1**: 560 (1825). *S. diversiflora* Maxim. var. *α. gymnandra* Franch., Pl. David. **1**: 52 (1884) e typo!

Very close to var. *media* but is distinguished in the following characters: stems and branches usually pale green, seldom suffused with brown; leaves larger and paler green; sepals 5-6.5 mm long; stamens (3-) 8-10; seeds larger, about 1.5 mm across with conical acutish tubercles.

Distr. Eurasia, n. Africa and possibly N. America: in Japan in half-shade throughout lowland; China, s. Korea, the Ryukyus, Formosa, and the Bonins.

4) **Stellaria sessiliflora** Yabe in Bot. Mag. Tokyo **17**: 194 (1903).

*S. nemorum* L. var. *japonica* Franch. et Savat., Enum. Pl. Jap. **2**(2): 295 (1877). *S. japonica* (Fr. et Sav.) Makino in Bot. Mag. Tokyo **23**: 70 (1909), non Miquel 1865. *S. japonica* Mak. var. *sessiliflora* (Yabe) Mak. ibid. 71 (1909). *S. Francheti* Honda in Bot. Mag. Tokyo **43**: 541 (1929). *S. Francheti* Honda var. *pygmaea* Honda, ibid. 542 (1929) nom. nud. *S. japonica* Mak. var. *pygmaea* Mak. in sched. ex Honda, l.c. (1929) pro syn. *S. Francheti* var. *sessiliflora* (Yabe) Honda, l.c. (1929). *S. sessiliflora* Yabe var. *japonica* (Fr. et Sav.) Ohwi in Journ. Jap. Bot. **12**: 384 (1936).

Perennial: stems terete, villous in 1 or rarely 2 lines. Leaves oblong-ovate to broad ovate, acute to obtuse and often apiculate seldom acuminate at the apex, rounded, obtuse to truncate at the base, glabrous on both surfaces, seldom villous on midrib on both surfaces as well as on margins; villous ciliate petioles prominent in all leaves. Flowers axillary: calyces rounded at the base, with dull lustre when dry; sepals 4-6 (-7) mm long, lanceolate to elliptical, acute often recurved at the apex, villous usually on veins dorsally, glabrous or villous-ciliate on basal margins: petals usually about 1.2 times as long as sepals seldom

shorter, bifid to bipartite into oblong, round-tipped lobes, with glabrous claws; stamens usually 10 reduced to 7, with milky-white anthers and glabrous filaments. Capsules shorter than sepals. Seeds brown to blackish, tubercled with dome-like processes.

Distr. Endemic in Japan and s. Korea.: Hokkaido, Honshu, Shikoku, Kiu-shu, and Isl. Quelpaert.

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ハコベ属に関する詳細を論ずるに先立ち、日本産 16 種に就いて述べよう。此の数字は琉球列島、日本列島、千島列島、樺太に分布する本属植物の大部分を示す。これにカラフトホソバハコベ (*Stellaria graminea* L.) とチシマハコベ (*S. crassifolia* Ehrh.) の 2 種を加えれば、東亜温～亜寒帯の島弧に自生又は帰化している全種類となる(台湾を除く)。カラフトホソバハコベは大陸側からの帰化品と十分考えられ、チシマハコベはカムチャッカのフローラに最も親近度の高い北千島まで南下している。両種と日本産近似種との区別に就いて言及した。

日本産の各種には周極要素や世界広布種が多い。従って甚だ多形であり、実験形態学と共に生態学、細胞学、遺伝学の面からの日本産個体群の解析を必要とする。但しこれ等は常に大陸側の個体群との対比の下に進展せらるべきであり、ヨーロッパ並みの深さ広さまで追及されたものでありたい。此の点を満足させる研究成果こそが未来の分類学を強固に建設し得るものと信ずる。特に日本の如き、僅か 1 世紀の積み上げしかない植物学界に於いては、古典的に見える形態と地理的方面からの研究基盤すら十分にはなされていぬことを知らねばなるまい。筆者は飽く迄も此の面からの学の充実を心掛けようと思う。本篇では触れないが、属内分類群の関係やウシハコベのように別属とも扱われる群を含めてしまうこと等に就いては稿を改めて論ずるつもりである。これ等が関連分野からの追証を誘うものでありたいと望みつつ、まず小文を記す。

今回はハコベ属各種の検索表と、ハコベ節ハコベ亜節内の 4 種についての大略とを述べる。

- 1) エゾノミヤマハコベ 東亜北部の森林生種。ウシハコベによく似ているが、花柱 3 本、葉に縁毛を列生する点で識別出来る。
- 2) サワハコベ 日本特産の森林生種で谷筋に多い。茎に 2 稜条があること、若い葉の表面に斜上剛毛があることは、北半球産の各種に見られない特産である。
- 3) ハコベ コハコベとミドリハコベとに分けられるが、コハコベの方が適応力が大きく、世界広分布の雑草である。両者の中間形態の個体が見られ、生態学や遺伝学からの東亜産個体群の検討を要する。
- 4) ミヤマハコベ 日本特産の森林生種で谷筋に多い。がく片の脈上に生える長い 1 例細胞毛だけで 2, 3 の種を区別出来る。