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

(Critical studies on Japanese plants 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 Eurasian 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 (Otomari) 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, issued, 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 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. Leaves mostly or at least lower long petioled; stems terete.

Subsect. 1. Stellaria

4. Leaves all sessile or nearly so; stems 4-angled or terete

Subsect. 3. Larbrea (St. Hil.) Fenzl

5. Leaves strongly ciliate throughout

1. S. Bungeana.

5. Leaves without cilia

6. Leaves hispid above when young; stems 2-ridged, glabrous or quite exceptionally pubescent in 1 or 2 lines; sepals scabrous-keeled, glabrous throughout 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, exceptionally glabrous; petals glabrous

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


8. Plant nearly glabrous, never tomentose; stems 4-angled

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. Leaves linear to linear-lanceolate, 8-20 times longer than width

11. Leaves broader, usually 5 times as long as width or less

12. Internodes roughened at least about both ends

13. 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. S. calycantha.

13. Upper bracts scarious-marginated and strongly reduced in size
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.


var. *diversiflora*.

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


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).


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*.


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 hemisphaerical 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".


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.


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.