

Morphology and Chromosome Number of *Lobelia loochoensis* Koidz.

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マルバハタケムシロの形態と染色体数

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Lobelia loochoensis, a rare and endangered species of the Ryukyus, Japan, is redescribed based on new observations of the morphology and chromosome number. In seed coat morphology it is considered to be closely related to *L. angulata*, while gross morphology suggests a close alliance to *Hypsera sessiliflora*. To settle this problem, a revision of *Lobelia* and allied genera is needed.

Lobelia loochoensis was first described by Koidzumi (1929) on the basis of a specimen with flowers but without fruits. The fruits and seeds, therefore, were not described. He considered this species to be close to *L. affinis* Wall. (= *L. zeylanica* L.) but different in having "all glabrous parts, pedicels shorter than the leaves, the leaves obscurely tridentate, much shorter petioles, the upper three anthers glabrous at the tip." In the infrageneric system of Wimmer (1953), this species was placed in subsection *Leiospermae* of sect. *Hemipogon* but this was done solely based on the imperfect original description by Koidzumi, which was followed also by Hatusima (1971) and Hatusima and Nackejima (1979). Walker (1976) revised the description based on the specimen in KAG, but the fruits and seeds were still unknown. In a recent Japanese Flora, this species was only

briefly mentioned (Satake et al. 1981). In June 1991, I made field observations of this species on Amami-Oshima Is. and collected living plants, which were cultivated in the Botanical Gardens, University of Tokyo, and used for chromosome observations.

For chromosome observations, root tips obtained from the cultivated material were pretreated with 0.01M 8-hydroxyquinoline at 20°C for three hours, then fixed in a 3:1 mixture of ethanol and glacial acetic acid, macerated in 1N HCl and squashed with 1% aceto orcein.

The seed morphology was observed with SEM and compared with other species (Murata 1992).

A revised description of *Lobelia loochoensis* is given below. In Amami-Oshima, this species grows on coastal slopes and is found in small bare patches surrounded by low bushes of *Pleioblastus*

linearis Nakai. This habitat is frequently exposed to strong sunshine, wind and rainfall. The prostrate and densely rooted stems, and the small, thick leaves with thick cuticles are well adapted to this kind of habitat. The laterally compressed capsular fruits, described for the first time in this study, are distinct from the symmetrical, subglobose or subcylindrical fruits of other Asiatic lobelias. In gross morphology (Figs. 1–2), including flower morphology, this species is very similar to *Hypsera sessiliflora* F.E. Wimmer described from New South Wales, Australia, and differs from the latter only in its larger size and fruit dehiscence. The fruit of *Hypsera sessiliflora* was described as appearing to be a berry. Although fruit dehiscence has been recognized as the most important character to separate *Hypsera* from *Lobelia*, it may not be a critical character. In *L. angulata*, both capsules and berries are known to occur within the species (Moelino and Tuyn 1960), which suggests that fruit dehiscence may vary also in *L. loochooensis* so that it may be conspecific or closely related to *Hypsera sessiliflora*. In seed coat morphology, *L. loochooensis* (Fig. 3) is very similar to and almost identical with *L. angulata*, which suggests a close relationship between them. The chromosome number $2n=14$ (Fig. 4) is the commonest in *Lobelia* and has been found also in *L. angulata* (summarized in Murata, in preparation). On the basis of this evidence, *L. loochooensis* is tentatively placed in the genus *Lobelia*, but further studies of *Lobelia* and allied genera are necessary to settle the systematic position of this species.

Lobelia loochooensis Koidz., Bot. Mag. Tokyo **43**: 406 (1929); F.E. Wimmer, Pflanzenr. **107** (IV-276b): 483 (1953); Hatusima, Fl. Ryukyu **595** (1971); Walker, Fl. Okinawa **1009** (1976); Hatusima and Nackejima, Flower. Ryukyu Is. **315**, pl. 483 (1979); Shimabuku, Check List Vasc. Fl.

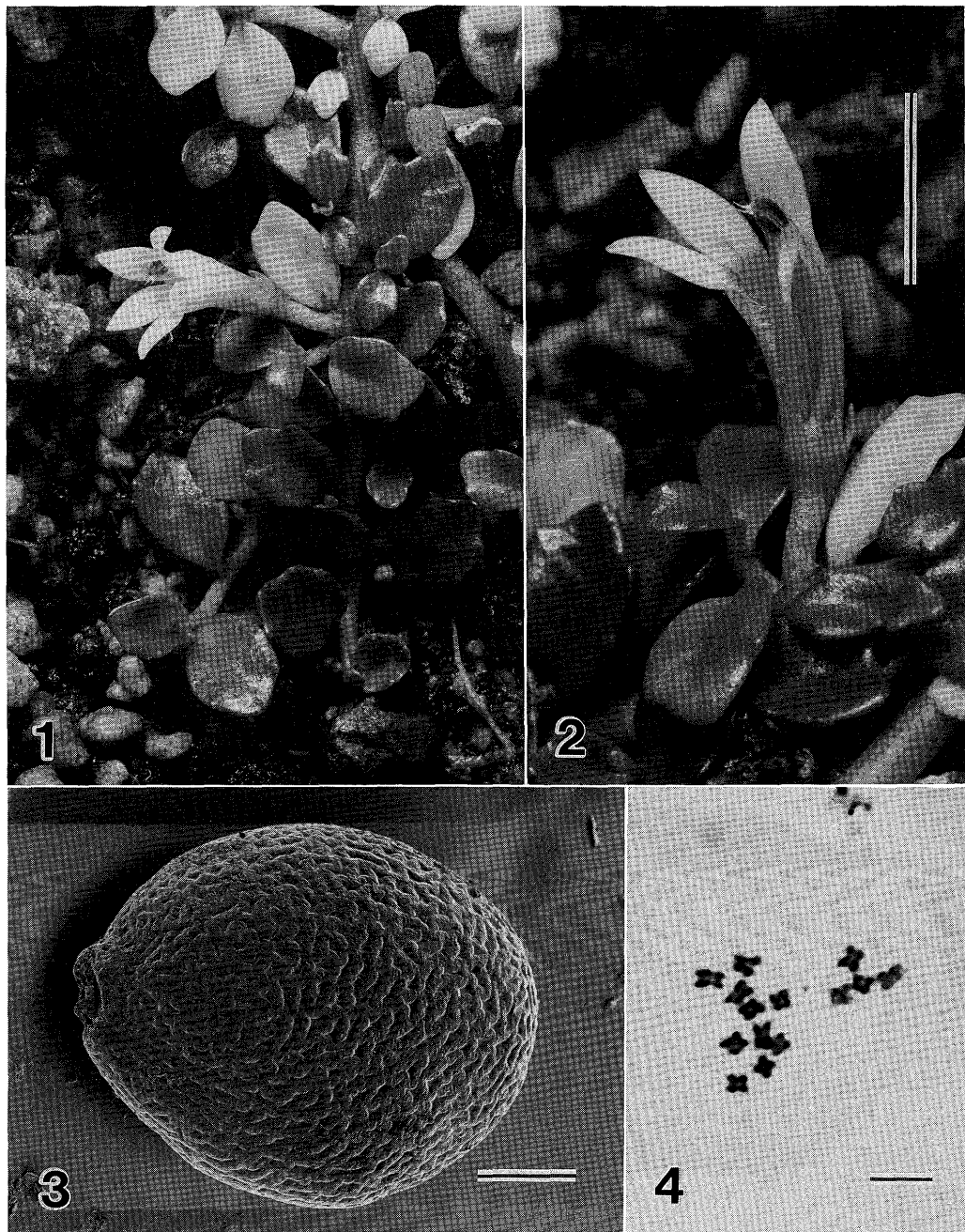
Ryukyu Is. **458** (1990). Type. JAPAN: Kumeshima Is. (The Ryukyus), Sakaguchi s.n. (holotype KYO).

Small perennial herb, almost glabrous. Stems prostrate, radican, with branches to 9 cm long, closely leafy. Leaves alternate, almost sessile; blade orbicular to broadly obovate to subobtriangular, 5–7 mm long and nearly as wide, rounded at apex, usually with a low tooth on each side, broadly obtuse to rounded at base. Flowers white to pale violet, solitary, axillary on pedicel about 1 mm long or less (up to 2.5 mm when cultivated); calyx-tube 1 mm long, the lobes narrowly triangular, 1.5 mm long; corolla 8–9 mm long, sparsely hairy inside, the tube subcylindric, 4 mm long, the limb bilabiate, spreading, the lobes tinged with purple inside, oblong lanceolate, slightly longer than the tube; lower part of the filaments united to the corolla, free part sparsely hairy, staminal column slightly shorter than the corolla, the anthers violet, 1 mm long, the upper (posterior) 3 glabrous, the two lower (anterior) ones with papillae and a seta at the top. Fruit a capsule, apically 2-valvate, subglobose, laterally compressed, 4 mm long. Seeds ellipsoid, reticulate.

Chromosome number: $2n=14$.

Specimens examined: J. Murata, H. Murata and M. Tabata. s.n., Japan, Isl. Amami-Oshima, Miyakozaki, June 22, 1991.

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Figs. 1-4. *Lobelia lochooensis* Koidz. 1. *L. lochooensis*, cultivated in the Botanical Gardens, University of Tokyo. 2. Flower, vertical section. Scale=5 mm. 3. SEM photograph of seed. Scale=100 μ m. (from Murata 1992). 4. Somatic chromosomes ($2n=14$). Scale=4 μ m.

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要 旨

マルバハタケムシロは琉球列島の久米島および奄美大島にだけ分布する小型の草本であるが、従来不明な点が多かった。絶滅危惧種として取り上げられていることもあり、現地調査を通じて形態および染色体数を調べ、ここに再記載した。マルバハタケムシロはオーストラリア産の *Hypsera sessiliflora* に非常によく似ており、全体が大型であることと果実が蒴果である点で異なるに過ぎない。サクラダソウ *Lobelia angulata* には蒴果を持つものも液果を持つものもあることを考慮すれば、これらが同種である可能性もあり、今後検討が必要である。マルバハタケムシロは奄美大島では、海岸に面するリュウキュウチクに被われた斜面の間に点在する裸地に生えるが、このような場所は年々狭められており、まさに絶滅に瀕していると考えられる。