Note on the taxonomic position of the *Arisaema (Araceae)* species related to *A. sikokianum Franch.* & Sav.

by

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Summary: The *Arisaema sikokianum* group contains four related species of Japanese and Chinese origin. In the old literature already, a great confusion was present between them. As their correct determination is still a topical question, we made a comparative study based on existing literature and personal field notes in order to expound further on the source of the confusion. As a result a clear distinction is proposed on systematic and geographic basis.

This small group of arisaemas includes four species: A. *sikokianum* Franch. & Sav., A. sazensoo (Blume) Makino, A. *kuratae* Serizawa, all native to Japan, and A. *engleri* Pampanini from continental China. Nevertheless, for a long time, these were often mistaken one for the other and confused with completely different species, even in scientific literature. This confusion is still a topical question and, owing to new information and a study of old literature, it seems possible now to clarify the situation and even to propose a key for these species. They all belong to the section *Pedatisecta* Schott ex *Engl.,* sensu J. Murata (The systematic position of *Arisaema nepenthoides* and A. *wattii (Araceae).* Kew Bull. 46: 119-128. 1991). The species belonging to the group we deal with are distinguishable from other *Pedatisecta* by their pedate leaves with only a small number of leaflets, usually 5 or 7, and thick leathery spathe-limbs.

The first use of the name *'sazensoo'* was made by Buerger who sent Blume fragments of a Japanese species, collected in Kyushu, under the name *Arum sazensoo.* In his work, C.L. Blume Rumphia 1:106-107, 1835) described A. *japonicum* Blume, and simultaneously related Buerger's arum to this new species as A. *japonicum var. sazensoo Blume.*

Later, the name of this plant was modified again. Indeed, A. Engler (A. DC., Monogr. Phan. 2: 550. 1879) wrongly related this Japanese species to A. *amurense* Maxim., native to China and Korea but not Japan. Possibly it was due to the small number of leaflets they have in common, but certainly not to their inflorescences which are quite different indeed. As a result, the name *A. amurense var. sazensoo* Engl. appeared in literature.

T. Makino (Tokyo Bot. Mag. 15: 132. 1901) recognized the distinct difference between *A. amurense* and the var. *sazensoo*. He changed its status and considered the latter a true species, A. *sazensoo* (Blume) Makino. But a careful review of Makino's description of A. *sazensoo* shows that, in fact, he made an excellent description, in English, of A. *sikokianum!* This is amazing but can be easily understood. Makino collected his own plants near Tosa, on Shikoku, which were A. *sikokianum*,of course, but he received plants from Kyushu. Note that an out of flower specimen of A. *sazensoo,* with two leaves which are often variegated, is very easily mistaken and wrongly identified as A. *sikokianum.*

N.E. Brown [Journ. Linn. Soc. (Bot.) 36: 176. 1903] probably did not hear about Makino's work for some time, since he considered two varieties of *A. amurense* from Hubei, namely *A. amurense var. sazensoo* and *A. amurense* var. *magnidens* N.E. Brown, a new plant he described with deeply dentate leaflets. He spoke of them as closely related varieties, only growing in China and even noted, 'I can find nothing to distinguish it (from var. *sazensoo)* except the remarkably large teeth of the leaflets'. The Japanese origin of *A. sazensoo* was omitted as Brown probably had in mind the species that would later be called *A. engleri* Engler (Pflanzenreich 73 [IV.23F]: 204. 1920) changed his mind and followed Makino's point of view, using the names *A. sazensoo* and *A. amurense* for two different species. But unfortunately, Engler also merged *A. sikokianum* into *A. sazensoo,* a mistake still alive in H. Li's work [Flora Reipublicae Popularis Sinicae 13 (2): 175. 1979]. Moreover, he attached to *A. sazensoo* Brown's var. *magnidens* as *A. sazensoo* var*. magnidens* while he created a new *A. sazensoo* var*. henryanum* Engl. for a 7 leaflets form of the former.

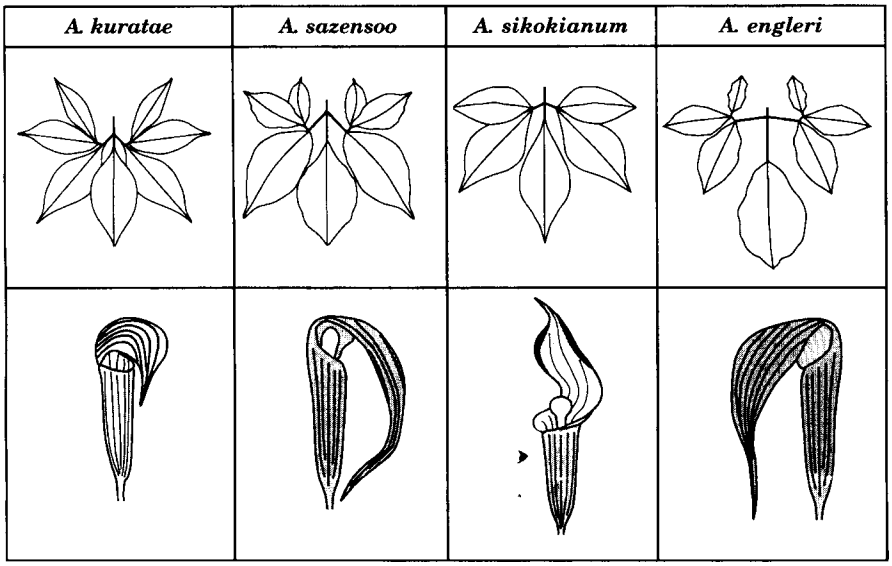
Meanwhile, R. Pampanini [Nuov. Giorn. Ital. 17(2): 236-238. 1910] described simultaneously *A. engleri, A. sprengerianum* and its var*. dentatum;* all three collected in Hubei (1907). He immediately suggested that they could be variations of a single species, *A*. *engleri.* But, he could not imagine that Engler would consider them varieties of *A. sazensoo.*

For us, the situation looks simpler. By now, it is well established that the Japanese species, *A. sikokianum* from Shikoku and *A. sazensoo* from Kyushu are quite different allopatric species, endemic to Japan. The third Chinese species *'magnidens' has* a distribution, well apart from the Japanese ones. In fact, there is an enormous gap between their habitats. The three of them are not found in Korea, in Russia (Siberia) or in Taiwan. If there is some similarity between *A. sazensoo* and *A. sazensoo* var*. magnidens,* there are also important differences. The Chinese plant has a conspicuous pseudostem, usually 2 leaves with a well-developed rachis, and the inflorescence is produced on a long peduncle. The Japanese plant *A. sazensoo,* usually has 1 leaf and an inconspicuous pseudostem. Above all, the length of the peduncle is extremely short in *A. sazensoo,* whose inflorescence is held below the foliage and just above ground level. In any event, the use of the adjective *'magnidens',* meaning dentate with large teeth, is misleading. No botanist today would create a variety on the basis of such a character, especially when dealing with arisaemas renowned for their variability.

In order to clarify the confusion, we suggest, provisionally, the use of the name *A. engleri* in place of *A. sazensoo* var*. magnidens for* the Chinese species, because the only existing detailed description of these plants has been made by Pampanini. As both species have some similarities, A. *engleri* could perhaps be better considered a subspecies of *A. sazensoo,* but further information and living material from China are needed in order to answer this question. Colour plates of these two species can be found: *A. sazensoo* in 'Wild Flowers of Japan' (Ohwi: pl 114, fig. 1. 1985), and *A. engleri* in 'Travels in China' (R. Lancaster :404. 1989).

Quite recently, a new and rare species, *A. kuratae* Serizawa, endemic to Izu Peninsula (Honshu), has been described (S. Serizawa, Journ. Jap. Bot. 56: 93. 1981). First included by Serizawa in the group of *A. nikoense* Nakai*,* J. Murata eventually related it to *A. sazenso*o (Aroideana 13: 41. 1990); a black and white illustration of *A. kuratae* (loc. cit.: 39, fig. 5) shows its short spathe-blade.

All four species are illustrated below where the characters of their leaves and inflorescences are depicted.



In conclusion, the following key is proposed, reference is also made on their well differentiated distributions in the wild:

1a. Usually I leaf, inflorescence below the foliage, club-shaped spadix-appendix slightly exserted from the tube 2
2a. Spathe-limb down-curved, shorter than the tube; distribution: Honshu (Japan) ..... ***A. kuratae***
2b. Long spathe-limb declining over the tube; distribution: Kyushu (Japan) ..... ***A. sazensoo***
1b. Usually 2 leaves, inflorescence above the foliage 3
3a. Spathe-limb erect, white tube inside, spadix-appendix distinctly capitate and pure white; distribution: Shikoku (Japan) ..... ***A. sikokianum***
3b. Spathe-limb shorter than the tube and down-curved, spadix-appendix club-shaped not exserted from the tube; distribution: Hubei (China) ..... ***A. engleri***

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