Arisaema Species from the Group *SIKOKIANUM-SAZENSOO*

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This small group of arisaemas includes four species; *A. sikokianum* Franch. & Sav., *A. sazensoo* (Buerg.) Makino, A. kuratae Serizawa, all native to Japan, and *A. englerii* 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 Engler, sensu J. Murata, as defined in Kew Bull. 46(1): 119-128 (1991). Their main characteristic is a thick leathery spathe-limb, pedate leaves and a small number of leaflets, usually 5 or 7.

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, called Rumphia p. 106 (1835), Blume 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, Engler, in DC. Mon. Phan. p. 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.

Makino recognized the distinct difference between *A. amurense* and the var. *sazensoo*. In Tokyo

Bot. Mag. 15: 132 (1901), he changed its status and considered the latter a true species, *A. sazensoo* (Buerg.) 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 probably did not hear about Makino's work for some time, since in the Journ. Linn. Soc. 36: 176 (1903), 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 describes 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* by Pampanini.

Engler also changed his mind and followed Makino's point of view in Das Pflanzenreich, p. 204 (1920), using the names *A. sazensoo* and *A. amurense* for two different species. But unfortunately, Engler (1920) merged *A. sikokianum* into *A. sazensoo*, a mistake still alive. 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, Pampanini (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* and, to add to the confusion, Engler considered *A. sikokianum* a synonym of *A. sazensoo*, a situation still used in H. Li's book (FRPS, 1979).

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 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 variable characteristic (according to Pampanini's discussion).

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. Color photos of these two species can be found: *A. sazensoo* in Ohwi's "Wild Flowers of Japan" (plate 114, fig. 1, 1985), and *A. engleri* in R. Lancaster's "Travels in China" (p. 404, 1989).

Quite recently, a new species has been added to this group. In 1981, Serizawa described *A. kuratae*, a rare species, endemic to Izu Peninsula (Honshu), which looks like *A. sazensoo* but its spathe-blade is much shorter. A black and white illustration is found in J. Murata's paper (Aroideana 13: 39, fig. 5, 1990).

All four species have well differentiated distributions in the wild. In conclusion, the following key is proposed:

1a. Usually 1 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, club-shaped spadix-appendix not exserted from the tube. Distribution, Hubei... (China) ..... ***A. engleri***