Resurrection of *Saionia* (*Thismiaceae*)

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Four species of *Oxygyne* (*Thismiaceae* or *Brumanniaceae* s.l.) are known in Cameroon in West Africa and Japan in East Asia. The first Japanese species of *Oxygyne* was attributed to a new genus *Saionia* in 1975 and 1976, but the genus was invalidly published. Together with two recently discovered species of *Oxygyne*, the three Japanese species are distinct from the type species of *Oxygyne* from Cameroon in having campanulate flowers with bluish perianth, patent perianth-lobes, deflexed stamens of which the anthers are positioned below the base of the filament, and appendages on the style. *Saionia* is adopted here as a new genus for the three Japanese species. The generic name *Saionia* Hatus. and its type *Saionia shinzatoi* Hatus. were validly published in this paper. Two new combinations are proposed: *Saionia hyodoi* (C. Abe & Akasawa) H. Ohashi and *S. yamashitae* (Yahara & Tsukaya) H. Ohashi.

**Key words**: *Brumanniaceae*, Cameroon, Japan, mycoheterotrophic plant, new combinations, *Oxygyne*, resurrection, *Saionia*, *Thismiaceae*, validated genus.

The genus *Oxygyne* was studied while preparing a revised edition of new ‘Wild Flowers of Japan’ (Ohashi et al. in press) as a member of the family *Thismiaceae*, though the family is included in *Burmanniaceae* in the APG III system. *Oxygyne* was published by Schlechter (1906) based on a single specimen of *Oxygyne triandra* collected in Cameroon in West Africa. The first species of *Oxygyne* in Japan was found in northern Okinawa Island in the Ryukyus and was named *Saionia shinzatoi* Hatus. (Hatusima 1976). However, Hatusima cited two different specimens as holotype. Therefore, the generic and specific names were invalid. *Oxygyne* was adopted first in Japan by Abe and Akasawa (1989) for their new mycoheterotrophic plant, *Oxygyne hyodoi* found in Ehime Prefecture, Shikoku. They also made a new combination, *O. shinzatoi* (Hatus.) Abe & Akasawa. The combination is invalid, because it was based on the invalid ‘*Saionia shinzatoi’*. Abe and Akasawa (1989) presented a clear illustration of the rare saprophyte, and pointed out such differences of their species from *O. triandra* as “the style with three capitate stigmas at the apex and three clavate appendices on the upper lateral side” and “the perianth-lamellae transversely rectangular and forming an annular taenia on the throat” (on page 163 in Abe and Akasawa 1989). *Oxygyne hyodoi* has not been found again. On the other hand, ‘*O. shinzatoi’* has recently been rediscovered by Yokota of the University of the Ryukyus at the original locality.

The fourth species of *Oxygyne* was reported by Yahara and Tsukaya (2008) in Yakushima Isl., southern Kyushu. This species was described and illustrated in detail and the flower structure was compared with ‘*Oxygyne shinzatoi’*.

According to the protologue of *Oxygyne* and *O. triandra* by Schlechter (1906), the flower

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is fundamentally different from the Japanese species. The flower of *O. triandra* is tubular or deep campanulate with erect perianth-lobes (Fig. 1, H in the protologue), and the filament, though it was described as “filamentis erectis brevibus” in the protologue, is erect then recurved as illustrated in Fig. 1, M, hence the anther is placed almost equal to a position at the base of the filament. The three species of *Oxygyne* known in Japan have campanulate flowers with patent perianth-lobes and descending filaments of which the anther is below the base of the filament. These species have distinct appendages on the style near the apex, but no appendages are described in *O. triandra* (Fig. 1, K in the protologue). The flowers have a dark brown tube with orange yellow lobes in *O. triandra*, whereas the Japanese species have bluish flowers basically. These characteristic differences in color, morphology and structure of flowers suggest that a different pollination syndrome exists between *Oxygyne triandra* and the Japanese *Oxygyne* species.

The chromosomes were examined in ‘*Oxygyne shinzatoi* (nom. invalid.)’ (Tsukaya et al. 2007). The species has unique numbers, 2n = 18 (x = 9), in the Burmanniaceae (including Thismiaceae) so far known. This fact indicates a distinct systematic position of the species in the family, although no other chromosomal data are known in *Oxygyne*.

Based on the differences in floral morphology and probable pollination syndromes together with the disjunct distribution between West African and Japanese *Oxygyne*, the Japanese species should be treated as a different genus. They are listed below with their bibliographies:


The generic name first appeared invalidly in Hatusima’s ‘Flora of the Ryukyus (Added and Corrected)’ in 1975 as ‘Saionia Shinzatoi’ Hatusima, gen. et sp. nov.-pl. 2’, with a description of the species in Japanese. Hatusima (1976) provided the description of the genus and species in Latin. This fulfilled the condition for Art. 39.1 in ICN Melbourne Code, but the name was typified by the invalidly published *Saionia shinzatoi* Hatus., which was based on two holotypes. The generic name is validated here by valid publication of the type, *Saionia shinzatoi* Hatus. in this paper.

According to Hatusima (1976), “the generic name was dedicated to SAI-ON (1682–1762) who [was a politician of the Ryukyu Kingdom] firstly established the forestry regulations in Okinawa and published the famous book ‘The Eight Volumes of Forestry Administration’ about two hundred years ago.”

Hatusima (1976) considered *Saionia* as representing a new subtribe *Saioniinae* (as *Saioneae* Hatus. in J. Geobot. 24(1): 2. 1976, nom. invalid.) within the tribe *Thismieae* in the family *Burmanniaceae* (Jonker 1938). He characterized the subtribe by lacking an annular band at the throat of the perianth and by having declined stamens from the geniculate portion of the inner perianth lobe (Fig. 2, F in the protologue of ‘*Saionia shinzatoi*’) in comparison with *Oxygyninae* Jonker, a monotypic subtribe based on *Oxygyne*. These characteristics of *Saionia* are insufficient to separate it from *Oxygyne* even at generic rank as pointed out by Abe and Akasawa (1989). Tsukaya et al. (2007) treated ‘*Oxygyne shinzatoi*’ as belonging to the subtribe *Oxygyninae*, but did not mention ‘*Saioniinae*’. On the basis of the new characterization of *Saionia* adopted in the present study, *Saionia* and *Oxygyne* should be included within the subtribe *Oxygyninae* in the tribe *Thismieae*.

**Saionia shinzatoi** Hatusima. [in J. Geobot. 24(1): 2, fig. 1, 2 (1976), cum descr. Latin. et 2 holotypis, nom. invalid.], sp. nov. Holotype: JAPAN. Okinawa Pref., Isl. Okinawa, Yona,
in the forest of *Pinus lutchuensis* and *Schima wallichii* subsp. *liukiensis* (T. Shinzato s.n., 18 Sep. 1974, RYU).


*Saionia shinzatoi* Hatus. was invalidly published by Hatusima (1975) first in Japanese in his ‘Flora of the Ryukyus (Added and Corrected)’ in 1975 with citation of a single specimen, “T. Shinzato s.n., 18 Sept. 1974”. He (1976) published the name again with Latin description for valid publication, but the name is invalid by designation of two holotypes “T. Shinzato s.n., 20 Sept. 1972 and 18 Sep. 1974, RYU”. These specimens were collected by Shinzato at the same locality in 1972 and 1974, respectively. They were shown in his paper (1976) as “1972 specimen in Fig. 1 C and 1974 in Fig. 1 A, B, and D” (Hatusima 1976, on page 8 in Japanese). One of the specimens was cited by Shimabuku (1990) in his “Check List” as “Okinawa: Yona, leg. Shinzato s.n. 1974, RYU” without any indication of the type of the name. The citation is not regarded to be the typification of *Saionia shinzatoi* (Art. 40.6 in Melbourne Code). The description of *Saionia shinzatoi* by Hatusima is clearly based on the 1974 specimen. Hatusima (1976) recorded that he examined the flower in the 1974 specimen. Therefore, the 1974 specimen is recognized here for the holotype of *S. shinzatoi* Hatus.

**Saionia hyodoi** (C. Abe & Akasawa) H. Ohashi, **comb. nov.**


Japanese name: Hina-no-bonbori (Abe and Akasawa 1989).

**Saionia yamashitae** (Yahara & Tsukaya) H. Ohashi, **comb. nov.**


Japanese name: Yaku-no-hinahoshi (Yahara and Tsukaya 2008).

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**References**


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