

HIRO SHIMAI: Introduced Populations of *Pinguicula primuliflora* (*Lentibulariaceae*) in Japan

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(Accepted on November 12, 2020)

Summary: *Pinguicula primuliflora* C.E.Wood & R.K.Godfrey (*Lentibulariaceae*), a North American endemic butterwort species, has been present in the wild in Japan for a few decades. Based on voucher specimen studies and field observations by the author, at least six non-native locations were found, four of which have been confirmed to exist in Aichi and Okayama Prefectures. Although it is rather rare to find the species in the native habitats in the southeastern United States, it produces clonal plants and often forms large colonies in acid wetlands. It also behaves similarly in small acid wetlands in Japan. The population size of the species at a wetland in Bizen, Okayama Prefecture increased 200 times in the 15 years from 2004 to 2019. To prevent further expansion of the species in the country, it is necessary to uncover the current situation and ecology. The most recent information concerning *P. primuliflora* in Japan is provided here.

Many non-native carnivorous plant species, such as *Dionaea muscipula* J.Ellis (*Droseraceae*), *Drosera* spp. (*Droseraceae*), *Sarracenia* spp. (*Sarraceniaceae*), or *Utricularia* spp. (*Lentibulariaceae*), have been naturalized in wetlands in Japan (Kitamura 1991, Kadono 2004, Kataoka and Nishimoto 2004, 2005, 2012, Uyemura et al. 2010, Nagoya City 2018, Kadono et al. 2019). Such species, commonly sold at garden centers in the country, escaped from home cultivation to the wild or were more likely released intentionally by amateur plant growers, and some of them have been extensively spreading. A majority of the country belongs to the temperate zone, but tropical plant species are also naturalized in warmer regions. Many

of them adapt themselves to new surroundings and reproduce their offspring vigorously during their growth or reproductive season. Introduced plants sometimes have huge negative impacts on the native ecosystem which will be out of control once they have spread.

Pinguicula primuliflora C.E.Wood & R.K.Godfrey forms a basal rosette with narrowly oblong flypaper-like adhesive carnivorous leaves. It is one of the six native *Pinguicula* (butterwort) species in the southeastern United States, all of which are endemic to the region except *P. pumila* Michx., also distributed in The Bahamas. The populations of *P. primuliflora* are likely declining in the native habitat. The distribution range of the species is highly restricted, and the conservation of the species may be needed (Crow 2014).

Little reliable information on the current status of *P. primuliflora* at the native habitat in the southeastern USA is available. Some literature (e.g., Schnell 1976, 2002, Crow 2014) has recorded the species from the states of Alabama, Florida, Georgia, and Mississippi. At least 35 locations of the species have been found in the four states, mostly restricted to low altitudes of the Gulf Coastal Plain, from southeastern Mississippi to the Florida Panhandle, based upon specimen examinations by Shimai (2017) (see Fig. 1) although many of those collection records are old. The extent of occurrence was estimated to be 42,748 km² from the specimen records (Shimai 2017), and the status was preliminarily evaluated as “Near Threatened” in accordance with the threshold of the Red

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島井弘男：日本に帰化した *Pinguicula primuliflora* (タヌキモ科) の個体群

北アメリカ固有のムシトリスミレ属植物 *Pinguicula primuliflora* C.E.Wood & R.K.Godfrey (タヌキモ科) は、二、三十年前から日本に帰化している。著者による標本と現地調査により、少なくとも6ヶ所の帰化地が判明し、そのうち、愛知県と岡山県の4ヶ所に現存することが確認された。本種はアメリカ合衆国南東部の自生地において稀にしか見られないが、しばしばクローン増殖により

酸性湿地に大きなコロニーを形成する。その習性は日本の酸性小湿地でも同様であり、岡山県備前市の湿地では2004年から2019年の15年間に個体数が200倍になっていた。国内での本種の更なる拡大を防ぐためには、現状とその生態を明らかにする必要がある。ここに、日本国内に於ける *P. primuliflora* の最新情報を提示する。

(東京都教育委員会)