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A New Variety of Ruppia maritima (Ruppiaceae) from the Tropical Pacific

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In their monograph of the Potamogetonaceae Ascherson and Graebner (Engler, A., Pflanzenr. IV, fam. 11: 145, 1907) doubtfully referred the Polynesian material of *Ruppia maritima* to subsp. *rostellata* Koch. Later Fernald and Wiegand (Rhodora 16: 125, 1914) presented a more usable treatment with an adequate key. They considered the plant to be of varietal rank and indicated that in this category the correct name was var. *rostrata* Agardh, but they cited no specimens from the tropical Pacific.

When we have tried to identify the form of *Ruppia maritima* that occurs commonly in brackish ponds and estuaries in the Hawaiian islands, we have found that neither revision contained any variety identical with our plants. These seem, in some respects, intermediate between var. *rostrata* and var. *obliqua,* having the body of the fruit less asymmetric and the beak usually shorter than that of the former, but the fruit more asymmetric and more strongly beaked than that of the latter. Several other minor and more or less constant differences are indicated below.

A study of the specimens in the Gray Herbarium annotated by Fernald and Wiegand as var. *rostrata* shows that in the vast majority the fruits are conspicuously asymmetric, much more so than in the Pacific material, and that the beak, usually somewhat more prominent,

is generally slightly inclined toward the larger side of the base of the fruit. A few specimens, mostly from warmer waters, approach in fruit shape the variety here described.

Specimens not otherwise designated are deposited in the Bishop Museum, those marked (US) are in the U. S. National Herbarium, those marked (G) are in the Gray Herbarium, those marked (ANS) are in the herbarium of the Academy of Natural Sciences of Philadelphia, and those marked (NY) are in the New York Botanical Garden herbarium. We wish to thank the curators of these several herbaria for the privilege of examining these specimens. The abbreviations (fl. fr.) stand for flower and fruit respectively.

Ruppia maritima L. var. **pacifica** St. John and Fosberg, n. var.

Pedunculus 4-17 mm. longus arcuatus vel flexuosus, podogynae 6-31 mm. longae, fructi 1.5-2.2 mm. longi paulo asymmetrici, rostrum 0.5-1 mm. longum divergens ad latus minorem fructi.

Differing from the typical variety (fig. 1, *b*) in having short peduncles, 4-17 mm. long, strongly arcuate or reflexed when short, to flexuous when longer, podogynes 6-31 mm. long, carpel body 1.5-2.2 mm. long more asymmetric, with the beak 0.5-1 mm. long, usually divergent toward the small side of the fruit, rather than straight.

Differing from var. *obliqua* in the much shorter peduncles and in the more oblique and definitely beaked fruit.

Differing from var. *rostrata* (fig. 1, *a*) in usually shorter, usually curved peduncles, much less asymmetric fruit with the beak less prominent and usually slightly divergent toward the smaller side of the fruit.

The anther sacs are somewhat ovate in outline, much more nearly subglobose than oblong.

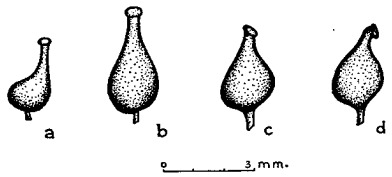

FIGURE 1.—Achenes of *Ruppia: a, Ruppia maritima* var. *rostrata,* after Fernald and Wiegand (Rhodora **16**: pl. 110, 14, 1914); *b, Ruppia maritima,* after Fernald and Wiegand (Rhodora **16**: pl. 110, 2, 1914); *c, Ruppia maritima* f. *pacifica,* from Fosberg 13181; *d, Ruppia maritima* f. *curvirostris,* from Fenix 18551.

A few collections were available from other parts of the Pacific, enough to show that the variety is not confined to Hawaii, but is widespread, and that another form of it exists in oriental waters. The species has been reported from Guam and from Samoa, but we

have not been able to see specimens to determine whether or not they belong to this new variety. Many more collections are needed to determine the total distribution. Specimens examined from Japan proper and from Australia are not of this variety.

The two forms are as follows.

forma **pacifica** St. John and Fosberg, n. f. (fig. 1, *c*).

Rostrum rectum.

The typical form, as described above, with the beak straight, usually slightly divergent toward the smaller side of the base of the fruit, stigma oblique toward the smaller side of the fruit.

Hawaiian islands, Oahu: Kailua Beach, Kailua, brackish estuary, June 13, 1937, *F. R. Fosberg 14038* (type), (fl. fr.); same locality, July 10, 1936, *Fosberg 13181*; Laie, Feb. 1, 1919, *C. M. Cooke, Jr.* (fl. fr.); Honolulu, Fort Shafter, June 23, 1916, *A. S. Hitchcock 13853* (fl. fr.) (US); vicinity of Honolulu, from fish and taro ponds, *U. S. Expl. Exped.* (fr.) (US); Hauula, June 1916, *C. N. Forbes 2365.O* (fl. fr.); Maunalua Fish Pond, April 27, 1931, *E. P. Hume 191* (fl. fr.); Heeia, fresh water stream near sea level, April 22, 1934, *A. Suehiro* (fl. fr.); Koko Head, in salt water pond, Feb. 28, 1930, *E. Y. Hosaka 162* (fl. fr.); Ewa Coral Plain, about 2 km. south of U. S. Coast Guard and Geodetic Survey Magnetic Station, Honouliuli, submerged in brackish pond, Jan. 12, 1936, *F. R. Fosberg 12813* (fl. fr.); Salt Lake, near Honolulu, Aug. 21, 1930, *E. Christophersen 1394* (fl. fr.); Kuapa Pond, Maunalua, *H. St. John 10398* (fl. fr.); mouth of Waimea River, July 5, 1931, *H. St. John 11113* (fl. fr.).

Hawaiian islands, Kauai: Ka Lae Paoo, Mahaulepu, growing in 1 ft. of water, brackish pond back of sand beach, sea level, Feb. 14, 1939, *H. St. John 20003* (fl. fr.).

Hawaiian islands, Molokai: Pukoo Fish Pond, Sept. 1912, *C. N. Forbes 587.Mo* (sterile); Niuapala Fishpond, Kaluaha, submerged in shallow salt pond, Jan. 2, 1939, *H. St. John, R. W. Baxter, and L. G. Williams 19946* (sterile).

Hawaiian islands, Maui: without data, *C. N. Forbes* (fl.).

Hawaiian islands, "Sandwich Islands", without data, *U. S. Expl. Exped.* (G).

Niuafou Island: Crater Lake, Vai Lahi, eastern shore, 2-4 ft. under water, Oct. 24, 1930, *H. C. Kellers* (fl. fr) (US).

Hainan Island: without locality, Nov. 1, 1933, *C. Wang 34976* (fl. fr.) (G, NY). This specimen must be referred here, though another specimen available from Hainan is nearer to the following form and is cited below.

Philippine Islands, Luzon: Malabon, Prov. of Rizal, Jan. 1911, *E. D. Merrill 799* (fl. fr.) (ANS).

forma **curvirostris** St. John and Fosberg, n. f. (fig. 1, *d*).

Rostrum fructus curvatum, 0.8-0.9 mm. longum.

Differs from f. *pacifica* only in the strongly curved beak of the fruit.

Philippine Islands, Luzon: Pangasinan Province, Alamiños, Oct. 1928, *E. Fenix 18551* (type) (fl. fr.) (NY); Panay, Iloilo, Jan. 1913, *V. Serviñas 20660* (fl. fr.) (NY).

Hainan Island: Ngai District, Paai Poon Ts'uen and vicinity, April-May 1932, *H. Fung 20252* (fl. fr.) (NY). This specimen has the fruit more oblique, approaching var. *rostrata*.

The Philippine plants have hitherto been referred to *Ruppia maritima* L. subsp. *rostellata* Koch, which is a synonym of var. *rostrata* Agardh.