tributaries of the Ohio River or an introduction.

DISTRIBUTION: Map 17.

20k. RORIPPA PALUSTRIS (Linnaeus) Besscr subsp. HISPIDA (Desvaux) Jonsell var. elongata Stuckey, var. nov. (Holotype: MONTANA: Deer Lodge Co.: Locally common in wet field adjacent to creek bank and railroad track along U. S. highway 10, ca. 9 mi s of Deer Lodge, ca. 4700 ft [ca. 1410 m], 13 Jul 1963, R. L. Stuckey 1HH2. MICH! Fig. 7. Isotypes to be distributed.)

Herba annua erecta; siliquis elongato-cylindricis (3)5.2-7.8(8.5) mm. longis, (1.4)2.1-3.1 mm. latis; replis elongato-oblongis; petalis 1.5-2(2.8) mm. longis; pedicellis (3.8)4.2-7.8(12) mm. longis diversis vel recurvatis; caulisibus infra vulgo sparse hirsutis.

ILLUSTRATION: Fig. 7.

Previous authors (Busch, 1915; Hultén, 1945) treated these plants under a combination of the name hispida based on Desvaux’s type. It is evident from characters and measurements given by Rydberg (1922) and from his annotations on specimens at NY that he was using the name Radicula pacifica (Howell) Greene for these plants. Howell (1897) proposed the epithet pacifica to replace occidentalis, a name based on a type representing a different segregate in R. palustris, when he wanted to raise occidentalis to specific rank—thus avoiding creation of a later homonym of Roripa [sic] occidentalis (Greene) Greene.

Variety elongata is characterized by those plants from the Pacific coastal United States, across to Montana, North Dakota, and along the Gulf of the St. Lawrence. These have siliques over 6 mm. long, mostly equal to the length of the divergent to recurved pedicels. Included also are plants very similar in fruit size from northwestern Canada. In this area there also occur a few plants with siliques much shorter (down to 3 mm.). These short-fruited plants differ in several ways from var. hispida: the siliques are cylindrical rather than globose and are on much longer pedicels (ca. 6-12 mm. long, ca. 2-4 times as long as the siliques); and the petals are extremely long (ca. 1.7-2.5 mm.). They perhaps represent another segregate in R. palustris radiating from a center of diversity in Alaska or Asia. Until we know more about limits and total range of these variations in Alaska and eastern Asia, I have temporarily identified these short-fruit ed plants as var. elongata. Their localities are designated by “half-solid circles” on map 17.

Variety hispida occurs sparingly north to Alaska; var. elongata, sparingly south into the Rocky Mountains. These rare occurrences of one variety deep in the range of the other may be the result of unusual genetic combinations in the population, producing a plant with characteristics of the geographically distant variety.

Another problem is that several specimens, particularly those from areas where var. williamsii occurs in Alaska, have an expanded stigma. Throughout subsp. hispida, the stigma is unexpanded, except where influenced by hybridization and apparent introgression with var. fernaldiana. In Alaska,
then, there may be hybridization or introgression between var. elongata and var. williamsii. Hultén (1945) cited three specimens he thought to be hybrids. I have not seen them. Based on evidence of hybridization in the eastern North American segregates of R. palustris, we might expect a hybrid plant to combine fruit characters of var. williamsii with trichome characters of var. elongata. Thus hirsute plants with an expanded stigma may very well be hybrids between these Alaskan inland segregates. That var. williamsii and var. elongata have similar-shaped fruits makes detection of hybrids more difficult than between taxa of different fruit types (e.g., var. hispida × var. fernaldiana or var. hispida × var. palustris). Some Alaskan plants I identified and mapped as var. elongata may represent hybrids. The following are examples of plants with expanded stigmas: ALASKA: Hultén, 20-22 Aug 1960, US; Layden 24, US; Muller 1137, 1138, US; Raup 545, US. YUKON: Malte 35, US. Only with many more specimens from areas where the two grow together and do not grow together, field work, and experimental crosses can this problem be attacked. Porsild (1951) wrote that “totally glabrous and moderately hispid plants may be seen growing side by side.” We need population samples from these situations.

The occurrence of var. elongata in eastern North America requires discussion. Fernald (1940) reported, under the name R. barbareaeefolia, two specimens from the Gulf of St. Lawrence that properly are var. elongata. He stated that this taxon was another one common to the florals of the Gulf of St. Lawrence and of the northern Pacific. I have seen duplicates of one of the collections he cited (Marie-Victorin & Rolland-Germain 21439, PH, US); Fernald correctly interpreted the plant as being like one of the R. palustris segregates of the Pacific Northwest. A collection of this variety from Labrador (Waghrone 19, US) matches perfectly a specimen from Washington, (Sandberg & Leiberg 509, US).

I grew plants of var. hispida from Michigan (including Stuckey 1068) and var. elongata from Montana (Stuckey 1882) under similar greenhouse conditions; characters distinguishing the two were maintained.

DISTRIBUTION: Map 17.

HYBRIDIZATION IN RORIPPA PALUSTRIS

From observation and experimentation on R. palustris var. hispida and var. fernaldiana grown at The University of Michigan Biological Station and at The University of Michigan Botanical Gardens in 1962, I determined that these varieties of R. palustris are self-pollinating and self-fertile. Seeds of var. hispida from Burt Lake, Cheboygan County, Michigan (Stuckey 1068) and seeds of var. fernaldiana from 4 miles north of Pellston, Emmet County, Michigan (Stuckey 1099) were planted in February 1963. By August the plants were in flower. I removed the anthers from several flower buds about to open on a plant of var. hispida, took off all other young buds and opened flowers, transferred pollen from var. fernaldiana to the stigmas of the emasculated flowers, and covered the inflorescence with a 4 × 10 cm. fine muslin bag fitted with a draw thread to keep out insects and foreign pollen. The