

York Botanical Garden, and Dr. Harry E. Ahles, of the University of North Carolina Herbarium, for valued assistance, I express my sincere appreciation.

— MADISON HEIGHTS, VA.

THREE MISIDENTIFIED SO-CALLED CORDILLERAN SPECIES IN EASTERN NORTH AMERICA¹

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Since the work of Fernald (1925) the cordilleran species in eastern North America have attracted considerable attention. With increasing exploration, especially of the formerly little-known areas around Hudson Bay and the Canadian Arctic Archipelago, many species previously considered as cordilleran disjuncts have been shown to have a more or less continuous area across the continent (Raymond, 1950). Many of the remaining cordilleran disjuncts are serpentinicolous species, halophilous species or species with adaptations to long-distance dispersal (light wind-dispersed spores or seeds, hooks on the fruits, etc.). Only a very limited list of species with no adaptations to long-distance dispersal remains as cordilleran disjuncts and it will be shown below that the records of three of them are based upon misidentifications.

1. *Agrostis rossae* Vasey was reported from Newfoundland at Bonne Bay by Fernald (1933 p. 203) based on a specimen collected by K. P. Jansson. The specimen is kept in the Gray Herbarium and consists of two culms, 18 and 20 cm. high, and attached basal tufts of leaves, the leaves being about 1 mm. broad. Dead leaves from the previous year testify the plant to be perennial thus corresponding to the Rocky Mountain *A. variabilis* Rydb., the name *A. rossae* Vasey being reserved for an annual plant restricted to hot springs in Yellowstone Park, Wyoming (Chase 1950 p. 342 and 346). The panicle is narrow, almost spikelike, with

¹Contribution from the Herbarium of the University of Colorado Museum.

spikelets near the base of the lower branches. In these characters the Newfoundland plant compares well with Rocky Mountain *A. variabilis*.

However, in some important characters the Newfoundland plant differs from *A. variabilis*. Most important is the presence of a palea a little more than half the length of the lemma, while in true *A. variabilis* the palea is minute or absent. In the Newfoundland plant the ligule on the culm leaves is 0.3-0.4 mm. long and on the sterile shoots about 0.6 mm. and rather transversely cut. In Rocky Mountain *A. variabilis* the ligule of the culm leaves is 1.3-2.0 mm. long, somewhat acute and continuing downwards as a hyaline margin of the sheath. Thus it is evident that the Newfoundland plant neither belongs to *A. variabilis* nor to *A. rossae* s. str.

In the characters of the palea and the ligule the Newfoundland plant compares well with the European *A. tenuis* Sibth. and it was found in an area where a European element in the flora is strongly pronounced. Lindroth (1957) has shown how many of these species became introduced during the early fishing trade between Europe and Newfoundland. *A. tenuis* is a highly variable species, usually with a more spreading panicle and higher culms than the Newfoundland plant, but the Newfoundland specimen comes well within the range of variation in these respects of the European *A. tenuis*.

2. *Carex filifolia* Nutt. was recorded by Delabarre (1902 p. 192) from Nachvak in Labrador, the identification being accredited to Fernald. The specimen is kept in the herbarium of Brown University, R. I. The material consists of two culms, 10 and 13 cm. high, with no leaves or rooting parts attached, and carry spikes about 1 cm. long with an upper staminate part and a lower pistillate part. The pistillate flowers are badly infected by smut; no intact perigynia are present.

Two species come in question for identification of the scanty material, the cordilleran *C. filifolia* Nutt. and the circumpolar *C. rupestris* All.; the latter is well known to

occur in Labrador. The culms are slightly higher than average for *C. rupestris* in the area, but well within the range of variation of the species. The best character separating the two species is that the perigynia are hairy in *C. filifolia* and glabrous in *C. rupestris*. The hairs on the perigynia may sometimes be seen even in smut-infected flowers of *C. filifolia*; no such hairs were observed in the Nachvak plant, but this is not entirely reliable. There are, however, other indications that the Labrador plant belongs to *C. rupestris* rather than to *C. filifolia*.

a. In *C. filifolia* the lower pistillate bracts are gibbous at base forming a broad sac, and the bracts have a very wide hyaline margin only the central part being brownish. In *C. rupestris* and the Nachvak specimen the lower pistillate bracts are not gibbous at base and are brown over most of the area.

b. In *C. rupestris* and the Nachvak specimen the upper part of the culm is sharply triangular, often with scabrosely toothed margins and also in the middle and lower part of the culm the triangular outline can be seen. In *C. filifolia* the culms are round or very obtusely triangular and rarely scabrosely toothed.

c. The smut on the specimen has been examined by Dr. D. S. O. Savile, Department of Agriculture, Ottawa, who writes: "Smut is *Cintractia caricis* (Pers.) Magn. affin. v. *caricis* closely matching many specimens on *C. rupestris* including Ungava peninsula. Smut on *C. filifolia* is quite distinct."

Thus, it is almost certain that the collection from Nachvak in Labrador belongs to *C. rupestris* and can on no account, with confidence, be assigned to *C. filifolia*.

3. *Polygonum bistortoides* Pursh has been recorded from southwestern Newfoundland by Fernald (1950 p. 580). The specimen was collected by A. S. Pease and M. S. Edgerton on July 10th, 1939 in rills and open meadows in the Cape Anguille Mts., Millville, and is kept in the Gray Herbarium. It consists of four basal leaves with no fruiting or flowering stems and does not look very similar to material of

P. bistortoides collected in the Rocky Mountains. The leaves are long, 16-22 cm. with long stipes, 12-22 cm. Such long leaves can sometimes be found also in the Rocky Mountains. A comparison of leaves of the same length from the Rocky Mountains with the collection from Newfoundland gives a number of significant differences which can be summarized as follows:

<i>Polygonum bistortoides</i> Rocky Mountains	" <i>Polygonum bistortoides</i> " Newfoundland
Leaves (2)3-4(4.5) cm. broad.	Leaves 2-3 cm. broad.
Central nerve 0.5-2(3) mm. broad, firm.	Central nerve 2-3.5 mm. broad, showing a number of separate vascular bundles.
First order sidenerves 0.4-1.4 cm. apart.	First order sidenerves 1.5-2 cm. apart.
Epidermis even, hairy or pruinose below.	Epidermis scabrosely papillose or wrinkled, neither hairy nor pruinose.
Microscopic circular glands on the nerves.	Glands lacking.
Marginal leaf-cells longitudinally oriented, brown, with narrow lumina, margin smooth, curving downwards.	Marginal leaf-cells isodiametric, hyaline, margin finely dented or eroded, plane.

Thus it is evident that the Newfoundland collection does not belong to *P. bistortoides*. In all characters outlined above it compares better with a species of *Rumex*, particularly of the group *Axillares*. Especially the characters of the central nerve and the leaf margin serve to discriminate between the two genera. It is not easy to assign the material to any particular species of *Rumex* although *Rumex pallidus* might be a good guess.

I am indebted to the curator of the Gray Herbarium and to Professor Church, Brown University, R. I. for loan of specimens, to Dr. D. S. O. Savile, Ottawa for identification of a smut and to Dr. W. A. Weber, University of Colorado for placing herbarium facilities at my disposal and for stimulating discussions. — AGRICULTURAL COLLEGE OF NORWAY, VOLLEBEKK, NORWAY.

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ADDITIONS TO THE BRYOPHYTE FLORA OF
KEWEENAW COUNTY, MICHIGANF. J. HERMANN¹

The Keweenaw Peninsula, on Lake Superior in northernmost Michigan, became botanically renowned with the publication in 1935 of Fernald's paper, *Critical Plants of the Upper Great Lakes Region of Ontario and Michigan* (2). In this paper Professor Fernald discussed at length an impressive assemblage of species among the vascular plants, known principally from the Rocky Mountains and the Pacific coast but occurring also in isolated colonies on the Keweenaw Peninsula and a few other restricted areas, possibly unglaciated during the Pleistocene, far east of their principal range.

In 1937 and 1938 Dr. W. C. Steere published noteworthy papers on the bryophytes of the Keweenaw Peninsula (10, 11) in which he pointed out that many of the mosses and hepatics occurring on the Peninsula paralleled the disjunct distribution of the Cordilleran, Pacific coast and arctic vascular plants enumerated by Fernald. Western and arctic

¹Forest Service Herbarium, Division of Range, Wildlife Habitat and Recreation Research, U. S. Department of Agriculture, Washington, D. C.



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