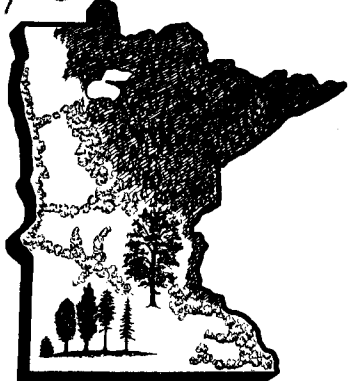
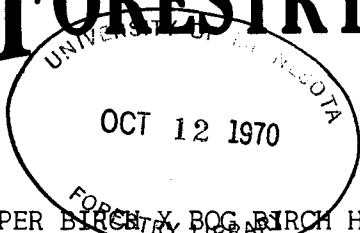


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MINNESOTA FORESTRY NOTES

COPY 2



No. 81
July 15, 1959

NEW DATA ON DISTRIBUTION OF THE PAPER BIRCH X BOG BIRCH HYBRID IN MINNESOTA^{1/}

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In 1916, Rosendahl concluded that "Betula Sandbergii Britt." ^{3/}, first collected in Hennepin County, Minnesota, by J. H. Sandberg in 1890, was a hybrid between paper birch (Betula papyrifera Marsh.) and bog birch (B. pumila var. glandulifera Regal). ^{4/}

The hybrid appears to be intermediate between its parental species in several morphological characteristics. Paper birch is a tree up to 80 feet tall and 2 feet in diameter, while bog birch is a many-stemmed shrub rarely exceeding 10 ft. in height and 1 inch in DBH. The hybrids are generally from 12 to 25 ft. tall and 1 to 7 inches in DBH. The number of stems varies from 1 to many, but 2 to 4 stems are common. Most hybrids are similar to bog birch in having reddish-brown, non-peeling bark, but occasional specimens have slightly peeling bark. Some individuals appear to be backcrosses to paper birch, but differ from that species in the much duller, grayish-white bark, which does not peel. The leaves of the hybrid (Fig. 1) are about intermediate between the leaves of the parental species in size, shape, number of lateral veins, and petiole length.

Hybrid habitats include conifer swamps, bogs, and occasionally cattail marshes and sedge meadows. In most cases the hybrids have been found in the transition zone between the very wet parts of a bog and the drier upland surrounding it. The hybrids seem to be highly intolerant of shade and hence occur mostly in bogs with scattered shrub and tree vegetation, or along roadsides and ditches in the new ecological niches created by the disturbance of the environment.

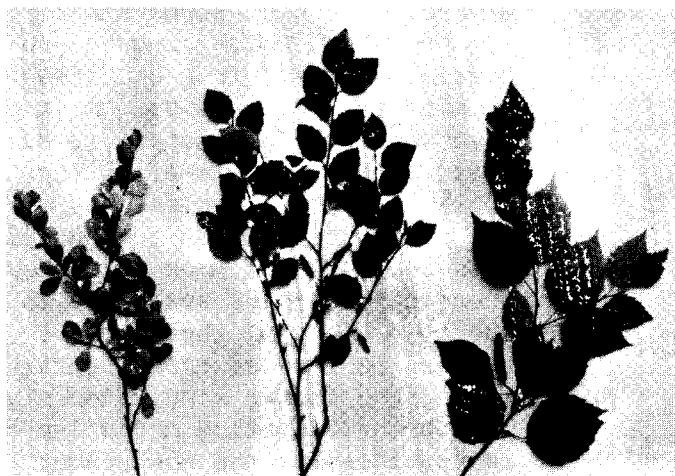


Fig. 1. Twigs of bog birch (left), hybrid (center), and paper birch (right).

Tree species commonly associated with the hybrids are tamarack, paper birch, black spruce, balsam fir, quaking aspen, and others. Of the shrubs, bog birch is probably the most common associate, followed by red-osier dogwood, speckled alder, willows, and several other species.

^{1/} This study was made possible by a grant from the Charles K. Blandin Foundation, Grand Rapids, Minnesota.

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^{3/} Britton, N. L. 1904. Four new North American Birches. Bull. Torrey Bot. Club 31: 165-166.

^{4/} Rosendahl, C. O. 1916. Observations on Betula in Minnesota, with special reference to some natural hybrids. Minn. Bot. Studies 4:443-459.

The currently known distribution of the hybrid is limited to Minnesota and Wisconsin with only one known occurrence in Michigan and a few in southeastern North Dakota. No hybrids have been reported from Canada, although the parental species are commonly associated there.

In the course of this study 200 individual hybrids were located and recorded from 50 different localities in Minnesota. Previously only about 50 individuals had been known from about 25 localities. On the map (Fig. 2) one symbol in several cases represents more than one location. Many of the first recorded hybrids could not be found. Those in the Minneapolis-St. Paul area and near Duluth appear to have been destroyed by spreading urbanization. All but three of the locations are within the forested area of the state. Of those outside the wooded region, one location was on the bank of the Buffalo River in Clay County, and the other in a wet depression of the prairie in Mahanomen County.

The number of hybrids present in each locality varied considerably. Usually one or two plants only were found in a bog, but four to five individuals per bog were not uncommon. The two largest populations occurred in Ramsey County within half a mile of each other: 18 hybrids were recorded in one bog, and 49 in the other.

Certain counties seem to have more hybrids than others. Ramsey, as indicated above, contained a large number of individual hybrids. Many of the first discovered hybrids in Hennepin County have now disappeared, but two new locations were found.

In Anoka County there are four old records of the hybrid. Five new ones were made during the study, and subsequently seven additional occurrences have been noted. Hybrids also appear to be frequent in Isanti County, where four localities were recorded in the course of the survey, and several have been found since. One reason for the high frequency of hybrids in these four counties appears to be the large number of favorable hybrid habitats found in these areas. The flowering time of the parental species must overlap for hybridization to take place. This overlap is common in Minnesota, where both species are close to the southern limit of their natural range. Failure of the parental species to flower simultaneously may be the isolating mechanism responsible for the absence of hybrids in Canada.

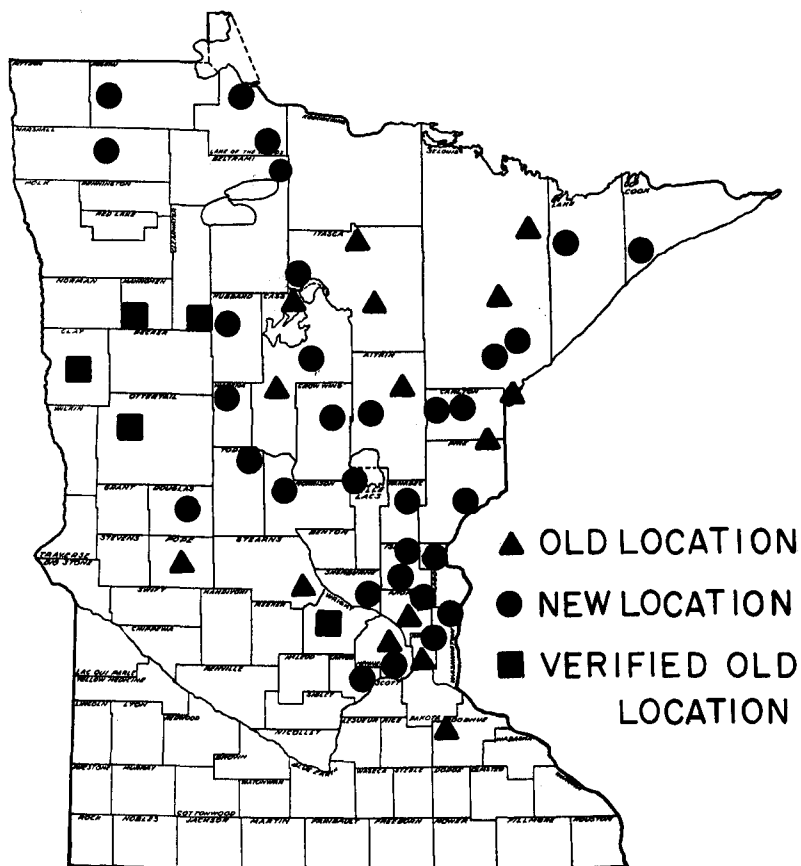


Fig. 2. Distribution of the hybrid in Minnesota.