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**BOTANY**

## The Natural Hybrid of Paper Birch and Bog Birch

### INTRODUCTION

The natural hybrid of paper birch, *Betula papyrifera* Marsh., and bog birch, *B. pumila* L. var. *glandulifera* Regel, was first collected in Minnesota in 1890 by the well-known botanist J. H. Sandberg, and was subsequently classified as a new species and named after him: *Betula X sandbergii* Britt. Later the late Dr. C. O. Rosendahl of the University of Minnesota became interested in the taxon and established its hybrid origin in published studies of it in 1916 and 1928.

### MORPHOLOGICAL CHARACTERISTICS

The most commonly observed specimens of the hybrid birch display the expected intermediacy between the two parent species. Paper birch is usually a tree, while bog birch is always a shrub, not above three to four meters tall. The hybrid occurs as a shrub or shrubby tree, generally not exceeding ten meters in height. The bark of the hybrid varies considerably. It may be grayish-white and occasionally slightly exfoliating, like that of paper birch, but more often it resembles that of bog birch in being dark brown and non-peeling. The leaves are intermediate, not only in size and shape, but also in the number of veins. Paper birch has six to eight pairs, bog birch three to four pairs, and the hybrid four or five pairs. The same intermediacy is found in the catkins. Once one is familiar with the species, it is fairly easy to recognize it in winter condition solely by the pre-formed male catkins. The bracts and seeds are also good characteristics.

It is often possible to find specimens which resemble either one of the parent species very closely. This may be due to the occurrence of

F<sub>2</sub> populations or backcrosses to the respective parents. The latter is probably more likely, since the hybrid pollen shows low viability.

#### HABITAT

Although paper birch does on occasion occur in the wetter parts of swamps, it is more common on the higher lands surrounding these, as well as on wooded slopes and along streams. Bog birch, however, grows typically in very wet meadows, swamps, and bogs. It is interesting to note that the hybrid most frequently is found in the transition zone between the drier upland and wet lowland, so even in site requirements it seems to occupy a place intermediate between its parent species.

#### DISTRIBUTION

Originally the hybrid birch was thought to have very local distribution, but apparently it is more frequent than commonly assumed. Britton, in 1907, gave the distribution as Hennepin County, Minnesota and Saskatchewan. Butler (1909) also included Rost Lake, Montana. Rosendahl (1928) extended the Minnesota distribution to include Hennepin, Ramsey, and Anoka Counties, as well as Itasca State Park (Clearwater County). In 1955 Rosendahl considered it to range from Wisconsin to eastern North Dakota and Manitoba, with reports of occurrence in Saskatchewan and Montana.

In the author's opinion, it is well distributed in most of Wisconsin and in Minnesota as well, except for the southern part of the latter state. An old report from Fillmore County in southeastern Minnesota is doubtful, more so since there have been no confirmed reports of its occurrence in Iowa. The reason for this may be that while the parent species are both present in the northern part of that state, they may not overlap in their habitats as they do in Minnesota. No recent reports indicate that the hybrid birch is found in Canada, although it certainly could be expected there. The old Montana report is questionable.

Through further studies, it is hoped to elucidate the nature of the hybridization as well as certain morphological and ecological characteristics. If possible, cytological investigation will also be undertaken.

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