

TREES AND SHRUBS

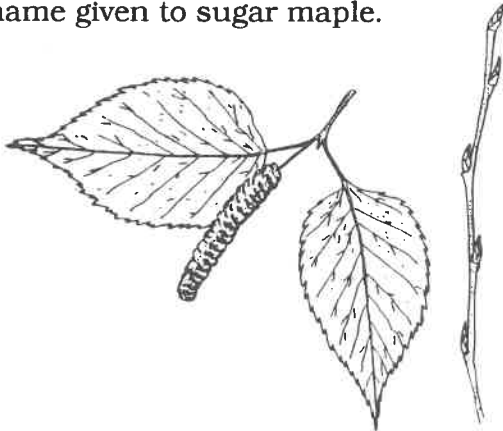
Black Hills Forest Species

PAPER BIRCH

(*Betula papyrifera*)

Description

Betula is the Latin name for birch, from the Sanskrit *bhurja*, "to shine". *Papyrifera* is from the Greek *papuros*, reed from which paper was made, and the Latin *ferre*, "to bear". Other common names are: canoe birch and white birch. The Dakota called it *taⁿpa*, and in the Lakota dialect it is referred to as *canhásan*, "white bark tree," the same name given to sugar maple.



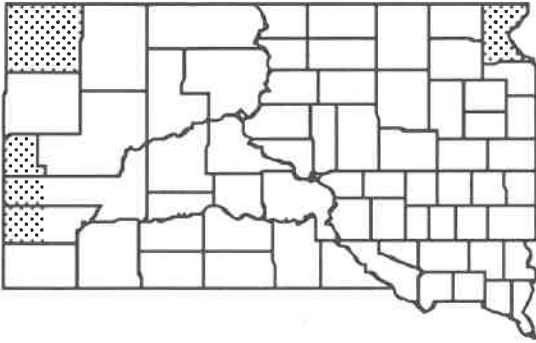
Birch is a member of Betulaceae, the birch family. Leaves are *deciduous*, *alternate*, simple, 2 to 3 inches (5 to 8 cm) long, oval and coarsely toothed. The *flower* is greenish, in *catkins* about 1 inch (2.54 cm) long, and develops in spring. The fruits are small *nutlets* on a hanging fruiting branchlet. Birch twigs are slender and dull reddish brown. Bark for the first 6 or 8 years is usually a dark brown, then becomes chalky white and separates into papery strips with age.



Related Species in South Dakota: There are two other native birch species, the dwarf birch (*B. glandulosa*) and the water birch (*B. occidentalis*). Both are large shrubs or small trees growing on north-facing slopes in the Black Hills.

Distribution

Paper birch is a transcontinental species with a continuous natural range from the Atlantic to the Pacific shore. It is a cold climate species, so it is primarily found in Canada and bordering states. Paper birch also occurs in scattered locations in Iowa, Nebraska, South Dakota, Indiana and the mountains of Virginia and North Carolina. In South Dakota, paper birch is found on the north and east-facing slopes along Big Stone Lake in Roberts County and on north and east-facing slopes in the Black Hills.



Native Distribution

Paper birch is a *pioneer species*, and as such, is a very shade intolerant tree. In most situations, birch colonizes a site that recently has been burned. Birch seeds are very small and can be carried some distance by the wind, though most fall near their parent. Birch seeds have a difficult time germinating if the ground is shaded or covered by leaf litter. A freshly exposed mineral soil is the best seed bed. Usually only one generation of birch develops on a particular site and this beginning forest is eventually replaced by more tolerant trees.

Birch develops best on well-drained sandy loams. It is found growing at all elevations up to about 8,000 to 10,000 feet (244 to 305 km). In the cooler Canadian climate, birch is found on all slopes and all aspects. In the Black Hills, a warmer environment, paper birch is found on the cooler north-facing slopes. Even this is a marginal environment for birch and the tree typically occurs as a large shrub or small tree in quaking aspen (*Populus tremuloides*) forests.

Natural History

Life Span: Birch, as with many *pioneer species*, is rather short-lived. In their natural environment, birch generally live about 80 to 100 years. In the stressful environment of a typical lawn, birch only live about 30 to 40 years.

Size: Paper birch does not become a very large tree. The national champion in Hartford, Maine is 217 inches (551 cm) in circumference, 93 feet (28 m) tall, and

has a crown spread of 65 feet (20 m). Our South Dakota champion is near Custer. It is 57 inches (145 cm) in circumference, 51 feet (16 m) tall with a crown spread of 38 feet (12 m). Planted in a South Dakota lawn, paper birch generally becomes only 30 feet (9 m) tall before dying of birch dieback.

Management Considerations

Fire, which prepares the soil for birch seeds to germinate, is birch's greatest threat as a mature tree. Birch has very thin bark and the tree is seriously injured or killed by even moderate fires.

Another serious threat to birch planted outside its natural range, is birch dieback. This disease is characterized by the slow death of twigs and branches until the entire tree is killed. It is due to the stressful conditions for birch in most planted sites. The average yard is too hot, since the soil is not covered by leaf litter. Leaf litter keeps the soil cool and moist, and without this insulating layer, the birch roots become too hot and die (Notice that the soil conditions for birch seed germination are different from those needed by mature birch. This is why birch does not usually succeed itself in a forest). As the roots die, the branches receive less water and they begin to die.

Finally, a small boring beetle, called the bronze birch borer (*Agilus anxius*) begins to lay eggs on the tree. The eggs hatch and the young larvae burrow into the tree and feed on the *phloem*, the food-conducting tissue. This combination of stress, warm soils and the boring beetle eventually kills the tree.

Significance

Paper birch has a hard, straight-grained wood and was once used for spools and spindles. Today it is used as a cabinet and furniture wood. The American Indians across North America used birch for utensils and canoes. Probably the most common use of paper birch in South Dakota is as an ornamental.

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