

Betula papyrifera

COMMON NAMES: Paper birch, Canoe birch, White birch

FAMILY: *Betulaceae*

SPECIES IDENTIFICATION

GENERAL ID

Tree that grows up to 30 m high with a trunk up to 60 cm in diameter, with bark that is primarily white but sometimes reddish brown. When the bark is mature it peels easily into sheets (Figure 1), and has conspicuous, dark brown lenticels (Figure 2) (5). The twigs have long hairs and may have a few glands but are primarily glandless (3).

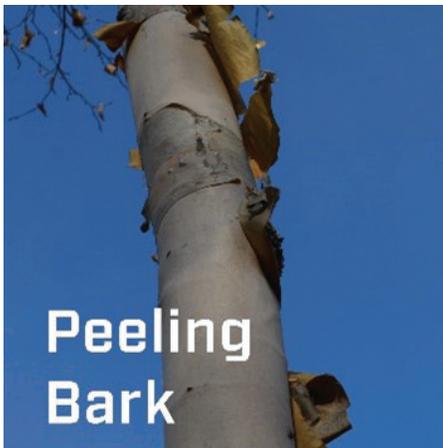


Figure 1. A defining characteristic of *Betula papyrifera* is the peeling bark.

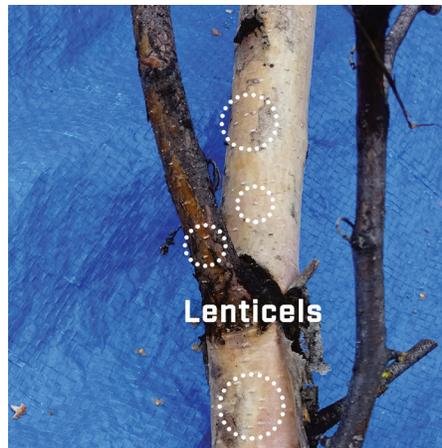


Figure 2. Lenticels are present on *Betula papyrifera*.



Figure 3. The leaf has double toothed margins, are egg-shaped, and are rounded to square at the base.

LEAVES

The leaves are egg-shaped and are rounded to square at the base with sharply double-toothed margins. The tips are broadly pointed or abruptly tapered. They have bright green coloration and are 4 to 8.5 cm long. The underside of the leaf is pubescent (fuzzy) and have tufts of hair in the vein axils (the angle between the center vein and the vein branching out of it) (4).

HABITAT

Betula papyrifera is often found in open to dense woodlands and co-dominant in mixed woods with *Populus tremuloides*, *Picea mariana*, *Picea glauca*, *Pinus banksiana*, and *Abies balsamea*. Paper birch prefers north or east facing slopes and grows in a variety of soil types, but grows best on well-drained deep, sandy or silty soils of Alberta. Paper birch can tolerate moderately acidic soils with a pH as low as 3.2 (1). *Betula papyrifera* is predominantly an upland species of *Betula*, all other species of *Betula* native to Alberta are predominantly found in wetlands.

FLOWERING

This species is monoecious (male and female catkins on one plant) (1). Paper birch starts flowering in late April. Catkin scales have side lobes that are smaller than or equal to the tip lobe. The scales protect the flower before pollination occurs.

IDENTIFYING MALE VS. FEMALE CATKINS

VEGETATIVE (MALE) CATKINS

- Smaller than reproductive catkins when immature, tightly closed and green to light brown.

REPRODUCTIVE (FEMALE) CATKINS

- Green when immature, typically medium to darker brown when ripe.

RIPE REPRODUCTIVE CATKIN



IMMATURE MALE CATKIN

LOOKS LIKE

1. *Betula neoalaskana* (Alaskan Birch). Leaves are hairless, 3-5cm long, with long, pointy tips, single saw-toothed edges, and fan-shaped bases. Twigs are hairless with yellow crystalline glands (3). This is the most similar look-alike species.
2. *Betula occidentalis* (Water Birch). Smaller multi-stemmed tree (3-6 m tall) with dark red-brown bark that does not peel easily into sheets (4). The leaf shape is less pointed, and the margins have less pointed teeth.

Note: It is common for paper birch to hybridize with almost every other native species in the genus. There are many intermediate forms on the landscape that are hard to identify.

SEEDLING

The mature seed is 2-3 mm long, golden yellow to light brown and needle-shaped.



Figure 5. Paper birch seedling.



Figure 6. Catkin with scales and seed with wings surrounding the catkins.

SEED

The seed is light brown in colour and flanked by thin membranous wings in an oval to heart shape. There are 3 seeds per bract and measure 2.5 to 3.5 mm by 1.5 to 2 mm (5). Seeds weigh on average 0.09 to 0.175 g/1000 seeds (5).

CENTRE FOR BOREAL RESEARCH

TECHNICAL NOTE #48

PLANT AND SEED TECHNOLOGIES - AUGUST 2023

SEED COLLECTION

Typically, the catkins of paper birch are ripe in late September to early October. Reproductive (female) catkins are ripe when easily striped off the branch, and/or when shaking the branch causes seed and bracts to fall. There is generally a two-year interval between high producing seed crop years (6).

In Alberta, collect from 30 individuals to ensure a seedlot with a high level of genetic diversity. Transport in brown paper bags.



Figure 7. A visual harvesting guide for *Betula papyrifera* catkins at different stages of ripeness.

SEED CLEANING AND STORAGE

At the seed processing facility use sieves to separate seed and debris/vegetative catkins. Place two stacked sieves in a sieve shaker to separate bracts attached to seed. Tree seeds in Alberta must be sent to a certified seed extraction facility, they must also be registered with and stored at the Alberta Tree Improvement and Seed Centre.

De-winging: This is not a required step but it helps in obtaining pure seed. Rub the seeds with wings in a cheese cloth to separate the wings from the seed. Then sieve to separate the de-winged seeds from the catkin scales. A column blower can be used if necessary.

Every seedlot should be accompanied with the following information: species, date of collection, number of plants, location description, GPS locations of the 4 corners of the collection area and the center of the collection area, the minimum and maximum elevation, and the names of the seed collectors.

According to the Alberta Tree Improvement and Seed Centre, seeds should be placed into cold storage when they are sufficiently dry, 4-8% moisture content or 15-25% Equilibrium Relative Humidity @ 20-30°C (2). For the greatest longevity store seeds in a -20°C freezer, if seeds are to be used right away a 4°C fridge will suffice.



Figure 8. Catkins are placed in sieves for extracting the seeds from the catkins.



Figure 9. Store seeds in an airtight container with the seedlot number and species name.



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