



## Black Ash



Photo: © Sean Blaney

### Scientific name

*Fraxinus nigra*

### Taxon

Vascular Plants

### COSEWIC status

Threatened

### Canadian range

Manitoba, Ontario, Québec, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador

### Reason for designation

Approximately 51% of the global range of this tree is found in Canada. Subpopulations in the central part of the distribution have been devastated by Emerald Ash Borer, an invasive beetle. This invasive species was first detected in Canada (Windsor, Ontario) in 2002 and has since expanded its range as far west as Winnipeg, Manitoba, and east to Bedford, Nova Scotia. Although, it has caused a modest overall decline in known numbers of ash in New Brunswick, Quebec, Ontario, and Manitoba to date, projections indicate that mortality rates will be greater than 90%, and ~73% of the Canadian population is likely to be affected within one

generation (60 years) under current climate conditions. Emerald Ash Borer bio-controls have been initiated in parts of southern Ontario and Quebec, but their effectiveness is uncertain. Consequently, Emerald Ash Borer is expected to expand farther into this species' habitat with climate change.

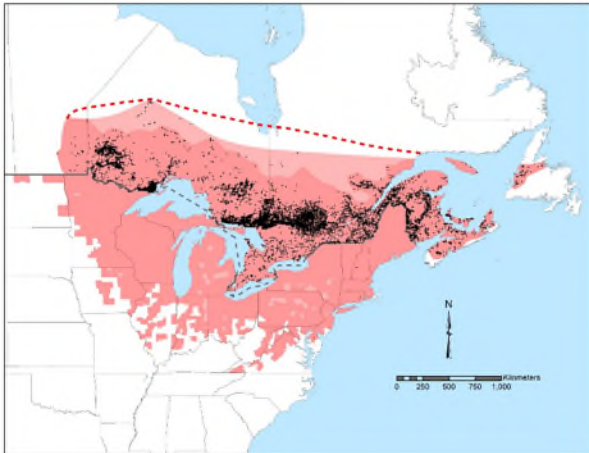
### Wildlife Species Description and Significance

Black Ash is a broad-leaved hardwood tree in the Olive family, growing to 15-20 m in height and 30-50 cm in diameter. The opposite, pinnately-compound leaves are 15-30 cm, with seven to 11 leaflets. The small flowers lack petals and sepals and appear in crowded clusters prior to leaf out. Fruit are elongated, winged samaras. Stalkless leaflets, samaras winged to the base, and a gap between the terminal and nearest lateral buds distinguish Black Ash from other ash species.

Black Ash wood is highly flexible and readily separates into thin strips, making it useful in applications requiring bending. It has been important for barrel hoops, chair seats, snowshoe frames and canoe ribs, and remains significant for use in First Nations basketry. The durable wood is valued commercially for tool handles, furniture, interior finishing and flooring. Numerous First Nations medicinal uses are reported, and it is commercially available in horticulture. Black Ash is a dominant species in many swamp forest and riparian ecosystems, in which it provides food and shelter for many species, including at least ten Canadian ash-specialist arthropods.

### Distribution

Black Ash occurs from western Newfoundland to southeastern Manitoba and North Dakota, ranging southward to Iowa, Illinois, Virginia and Delaware. Black Ash range extends farther north than any other ash and approximately 51% of the species' global range is within Canada.



Global range of Black Ash.

Source : COSEWIC. 2018. COSEWIC assessment and status report on the Black Ash *Fraxinus nigra* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 95 pp.

## Habitat

Black Ash is predominantly a wetland species of swamps, floodplains and fens. It has an intermediate light requirement and a tendency toward greater abundance in more alkaline sites. Most sites in which it is dominant are flood prone, where its high tolerance of seasonal flooding appears to offer a competitive advantage. Black Ash also occurs widely in moist upland forests, but generally at lower densities than in wet areas.

## Biology

Black Ash flowers in mid- to late spring and is windpollinated. Individuals are generally polygamous (unisexual and bisexual flowers borne on the same tree), but occasionally unisexual. Seeds ripen from late August to September and are dispersed by wind and water from October to the following spring. Good seed crops are produced irregularly at one to eight year intervals. Seeds exhibit deep physiological dormancy and germination requires exposure to moisture and both high and low temperatures. This may be significant in determining northern and southern range limits. Black Ash seeds retain viability in the soil from three to eight years. Black Ash can reproduce by seed at about 30 years old

and can live up to 200-300 years. Vegetative reproduction is not known to occur, but extensive sprouting can occur from root crowns or cut stumps. Generation time for this report is estimated at 60 years, which may be an underestimate for this relatively long-lived, slow growing species.



Photo: © Sean Blaney

## Population Sizes and Trends

The Canadian population is incompletely understood, but estimates based on forestry data suggest it is in the range of 162 million mature trees. Emerald Ash Borer (EAB) is causing substantial ash mortality in parts of southern Ontario and Quebec. Mortality of ash species is little studied in Canada, but Black Ash is the most EAB-susceptible of all ashes in the northeast United States. EAB has not yet spread widely

enough within Canada to have greatly reduced the Canadian Black Ash population, but rapid spread of EAB and extensive mortality of Black Ash are expected in less than one generation (60 years). Regional EAB-caused mortality of mature trees in the United States has reached 95-99% with similar rates in the longest affected parts of Canada. Several lines of evidence suggest, however, that effects may not reach that level throughout the Canadian range (see below).

Conversion of forest to other land uses since European settlement has produced significant declines in the Great Lakes Plains within the past three generations, but much of Black Ash's range lies north of heavily settled regions in areas where there is little evidence of substantial recent change. Declines linked to undetermined and potentially introduced disease have been suggested in Nova Scotia, Prince Edward Island and southeastern New Brunswick.

## Threats and Limiting Factors

Black Ash is threatened by the introduced Emerald Ash Borer (EAB), an Asian woodboring beetle that reached southwestern Ontario in 1992 and has since spread to Canadian sites up to 1,100 km northwest and 1,300 km northeast. EAB larvae feed on the inner bark and sapwood, eventually girdling and killing trees. Mortality of mature ash trees (all species) reached 99% within six years in parts of Michigan and Ohio, and Black Ash is the ash species most severely affected by EAB. Similar mortality of ash (all species) has been noted in the first and most heavily affected areas of southern Ontario. Based solely on observed rates of spread, all Canadian Black Ash could be affected within one generation (60 years). Analysis suggests 27% of Black Ash in Canada could be protected from EAB under current climate because of cold minimum temperatures, though most or all of this protection could be lost within about one generation under predicted levels of climate warming. The establishment of introduced biological control agents and the potential for post-EAB recovery (based on evidence from Red

Ash) also suggest ultimate EAB-caused mortality in Canada may be less than 99%. Asian parasitoid wasps introduced for biological control are now well established in various parts of Black Ash's United States range, locally reducing EAB population growth by 50%, but their effects on ash survival are not yet clear. Introduction of biological control agents began in Ontario and Quebec in 2015.

Other potential range-wide threats of lesser immediacy or magnitude are: 1) unknown and potentially introduced pathogen(s) that appear to have caused major declines in Nova Scotia since 1958; 2) the Asian fungal disease, Chalara Dieback, which is causing extreme loss of the closely related European Ash in Europe, is virulent in Black Ash, but is not yet known in North America; and 3) Climate change, which is predicted to significantly reduce the region suitable for Black Ash within one to two generations.

## Protection, Status and Ranks

Black Ash was listed under the Nova Scotia Endangered Species Act as Threatened in 2013, but it has no provincial or state level legal status in other jurisdictions. It receives some protection from provincial wetland and riparian policies through most of its Canadian range, and it is present in many protected areas. Black Ash currently has a global status rank of G5 (Secure). This rank and many other NatureServe state ranks pre-date the introduction of EAB and thus overestimate security of Black Ash. It is of conservation concern, independent of EAB, based on the following status ranks: SH (Historic) in the District of Columbia, S1S2 (Imperiled) in Nova Scotia, Delaware, North Dakota and Rhode Island, S2S3 (Imperiled to Vulnerable) in West Virginia and S3 (Vulnerable) in Manitoba, the Island of Newfoundland, Maryland and Virginia. Other Canadian provincial ranks, reviewed in 2016, are: S4 (Apparently Secure) in Ontario; S4S5 (Apparently Secure to Secure) in New Brunswick; and S5? (Questionably Secure) in Quebec.

Source: COSEWIC. 2018. COSEWIC assessment and status report on the Black Ash *Fraxinus nigra* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 95 pp.

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