

December 2024

Dutch elm disease (DED) is caused by two species of the fungus *Ophiostoma*, *Ophiostoma ulmi* and *Ophiostoma novo-ulmi*. The fungus is transmitted from infected trees to healthy trees by at least three species of elm bark beetles. In June 2024, the Canadian Food Inspection Agency (CFIA) confirmed DED caused by *Ophiostoma novo-ulmi* in multiple American elm trees in British Columbia (B.C.) in the Kootenay Boundary Regional District. Introduction of this disease poses a significant threat to both the nursery industry and to landscape plantings of elm in the province.

Hosts

Elms (*Ulmus* spp.) are hosts of DED. American elms are the most susceptible. Siberian, Chinese and other elms are generally resistant but can harbour the disease. *Zelkova carpinifolia*, an ornamental tree in the elm family, is also a host.

Symptoms

Symptoms of the disease first appear in June or early July. Leaves wilt, yellow and turn brown in the summer, often on one side of the tree (Figures 1A, 1B & 2A). This is followed by dieback of branches and eventual death of the tree. Brown staining can be seen in the sapwood of affected branches by peeling back the bark (Figure 2B).



Figure 1. Flagging branches of an infected elm tree (A) and branch dieback (B). Photo credit: Dr. Gary Platford, Winnipeg, Manitoba (A), and B.C. Ministry of Agriculture and Food (B).



Figure 2. Dieback and flagging caused by Dutch elm disease (A) and vascular discoloration under bark of infected elm branch (B). Photo credit: B.C. Ministry of Agriculture and Food (A) and Saskatchewan Environment (B).

Life Cycle

DED is transmitted from infected trees to healthy trees by the European elm bark beetle, *Scolytus multistriatus*, (Figure 3A) an introduced species which is present throughout Southern B.C. It can also be spread by the native elm bark beetle (*Hylurogopinus rufipes*) which is common in Eastern and Central Canada but is not known to occur in B.C. DED may also be spread by the banded elm bark beetle (*Scolytus schevyrewi*), which was first detected in B.C. near Kelowna in 2010. The beetles breed in weakened trees in galleries constructed under the bark (Figure 3B). Galleries excavated by European elm bark beetles (*S. multistriatus*) and banded elm bark beetle (*S. schevyrewi*) are parallel with the wood grain (vertical), whereas the galleries of the native elm bark beetle (*H. rufipes*) are perpendicular (horizontal) to the grain.

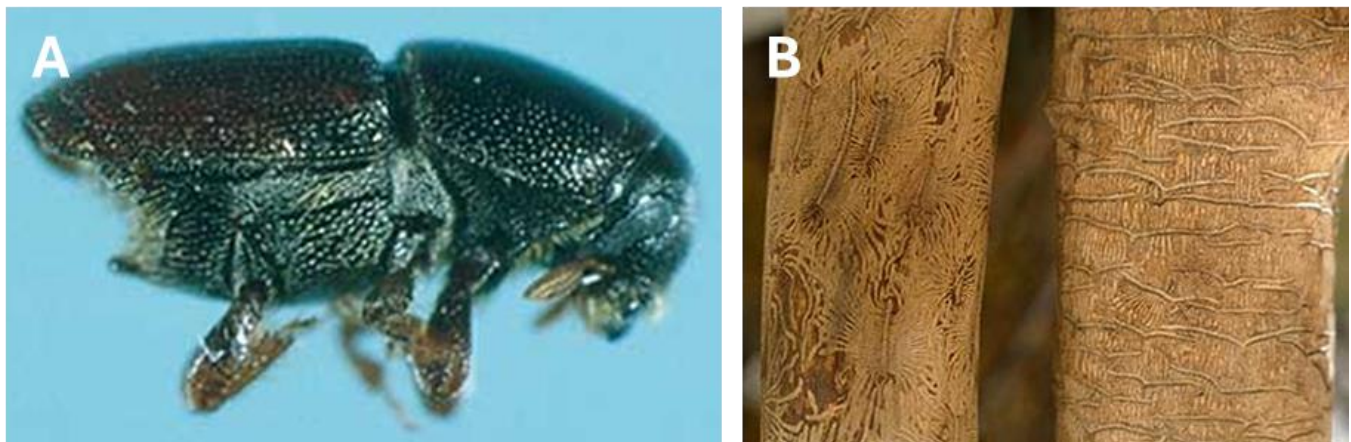


Figure 3. European elm bark beetle (A); European elm bark beetle galleries (vertical), left trunk, and native bark beetle galleries (horizontal), right trunk (B). Photo credit: Thérèse Arcand, Natural Resources Canada, Canadian Forest Service (A) and Natural Resources Canada, Canadian Forest Service (B).

In infected trees, the beetle galleries become colonized by the Dutch elm disease fungus. Larvae spend the winter in the galleries. In the spring, a new generation of beetles emerge which spread

the fungal spores to healthy elm trees as they feed on branches. Beetle feeding introduces the fungus to the vascular tissue where the fungus colonizes and clogs xylem vessels causing a vascular wilt. The disease can also spread by natural root grafting to adjacent trees. Long distance spread usually occurs through movement of infested elm firewood or logs.

Distribution

DED is widely distributed around the world, including Western Asia, Europe, Canada, United States (including Washington State), and New Zealand.

Prevention

- If planting elm trees, obtain nursery stock only from a local, reliable source.
- Controlling beetles may protect nurseries from feeding and potentially transmitting DED to nursery plantings.
- Early detection is the most important step to prevent the spread of this disease.
- Do not prune healthy elm trees from April 1st to September 30th to prevent the beetles potentially spreading disease to healthy trees.
- Many landscape and forest pests can be spread in firewood. Never transport elm wood or wood products with bark to new locations. Leave your firewood at home and pick up local wood when camping. Don't take extra firewood home with you.
- If an elm tree is confirmed in your area, there are preventative fungicides registered. Contact an arborist.

Reporting Trees

If the disease is suspected, please report to CFIA through their [pest reporting page](#) or a local office. You can also contact the B.C. Ministry of Agriculture and Food and submit suspected samples to the [Ministry of Agriculture and Food - Plant Health Laboratory](#).

Management

When DED is confirmed, proper removal of infected and neighbouring trees is important to reduce spread of DED. Removal should be done as soon as possible, contact CFIA or BCMAF for tree removal options.

Additional Information

- [Dutch elm disease \(DED\) Ophiostoma ulmi and Ophiostoma novo-ulmi - inspection.canada.ca](#)
- [D- 97-07: Phytosanitary Requirements for the Importation from the United States and Domestic Movement of Elm Material \(Ulmus spp. and Zelkova spp.\) to Prevent the Introduction and Spread of Dutch Elm Disease Ophiostoma ulmi \(Buisman\) Nannf. and Ophiostoma novo-ulmi \(Brasier\) within Canada - inspection.canada.ca](#)

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