

OUR GRACEFUL CAPE BEECH UNDER THREAT

A sinister outbreak of canker in *Rapanea melanophloeos*

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A serious new canker disease in Cape Beech or Boekenhout (*Rapanea melanophloeos*) trees has been found in the Harold Porter National Botanical Garden at Betty's Bay in the Western Cape. The disease, identified by scientists from the University of Pretoria's DST/NRF Centre of Excellence in Tree Health Biotechnology*, is caused by a fungus belonging to a previously unknown genus.

The disease, characterized by branch and stem cankers, is resulting in the death of entire branches – even whole trees. The first sign of the disease is usually the death of a single branch, or growing tip in young trees, characterized by a yellow-red discolouration of the foliage on the infected

branch. Closer investigation reveals cracking and death of the bark of affected branches. Cankers often develop around points of attachment of the branches from which they expand to eventually girdle the entire stem, thus resulting in the death of tree tops. Large numbers of Cape Beeches in Harold Porter are affected and in some sections of the garden, many of the young coppice stems and seedlings are being killed by the pathogen.

During moist conditions the fungal pathogen responsible for the cankers in the Cape Beeches produces masses of yellow to orange spores which confers an orange colour to infected stems and branches. The fungus is from an undescribed genus and species belonging to a notorious family of

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WHAT DOES THAT MEAN?

canker A type of fungal disease of woody plants that causes localized damage or death to the bark.

pathogen A disease-producing micro-organism (for example, a fungus, a virus or a bacterium).



nature of the fruiting bodies in the bark and also acknowledging the work of a leading South African plant pathologist, Prof. Peter Knox-Davies, who loved the gardens and whose ashes were scattered in the area.

Does this disease affecting the Cape Beech occur in areas other than the Harold Porter Botanical Garden? This would provide clues as to whether it might be caused by an invasive alien pathogen. The CTHB team has undertaken surveys of various areas in the Western Cape where Cape Beeches grow naturally but have not yet found any other outbreaks. This has led the team to suspect that the pathogen has been introduced into the Harold Porter National Botanical Garden from an unknown source. This is reminiscent of Chestnut Blight in the USA that is caused by the fungus *Cryphonectria parasitica*, which resides in the same family of fungi as our Cape Beech pathogen. *Cryphonectria parasitica* was first detected in the New York Botanical Gardens in 1900 on American Chestnut (*Castanea dentata*) trees. From this limited introduction the pathogen, now known to be native in Asia, spread rapidly throughout the eastern USA, causing one of the most dramatic examples of tree death known to date.

Chestnut Blight has been described by some researchers as the 'Disaster of the century'. It reduced a once dominant canopy tree to small coppice stems and has changed an entire ecosystem. This type of damage is typical of that caused by non-native pathogens and highlights the impact that they can have on hosts lacking a co-evolved natural resistance to them.



ABOVE LEFT: Cracking and death of the bark caused by *Immersiporthe knoxdavesiana*. ABOVE: The fungal pathogen responsible for the cankers on the Cape Beech produces masses of yellow to orange spores. Photos: Jolanda Roux.

This outbreak of a serious canker disease in the Cape Beeches of the Harold Porter National Botanical Garden has raised concern that this tree could become seriously threatened in South Africa. If it is discovered that the fungal pathogen has been introduced, every effort will need to be made to prevent its spread from the relatively limited area in which it currently occurs. All tree enthusiasts and the general public are encouraged to report occurrences of the disease to the CTHB in Pretoria (see email addresses below), or the SANBI staff. It is also important not to move Cape Beech trees from the affected area.

* The Centre of Excellence in Tree Health Biotechnology (CTHB) at the Forestry and Agricultural Biotechnology Institute, University of Pretoria (FABI) represents one of seven Science Centres supported by the Government Department of Science and Technology (DST) and the National Research Foundation (NRF). CTHB research concentrates on the health of indigenous trees. For more information visit www.fabinet.up.ac.za/cthb.

GET CONNECTED

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