CoCT develops methods to combat invasive tree beetle infestation

In March 2019, a possible Polyphagous Shot Hole Borer beetle (PSHB) infestation was discovered in Oldenland Road, Somerset West in an ailing London plane tree. In April 2019, DNA tests conducted by scientists confirmed it was a positive PSHB identification.

In response to this, the City of Cape Town has developed best practice methods for the removal and disposal of trees infested with the invasive PSHB. Horticulturists, landscapers, arborists or contractors assisting residents with the removal of dying, or dead trees are urged to follow this protocol.

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An experienced invasive species removal team from the City has since then removed 46 trees from the Somerset West area in an attempt to contain and limit the spread of this invasive Asian borer beetle. The wood, from trees cut down in Somerset West, was chipped on site and carefully removed under cover of heavy duty plastic and incinerated at appropriate sites.

Best practice

The City of Cape Town's Invasive Species Unit, in cooperation with the City's Recreation and Parks Department, local arborists and the country's top entomologists, released a PSHB Protocol which prescribes the best practice for how to remove and dispose of trees infested with PSHB.

The 18-page Polyphagous Shot Hole Borer Protocol is useful for identifying, pruning, cutting down, removing and disposing of infected PSHB wood.

Experiences in California, Israel, and closer to home – in Gauteng, have shown that the PSHB beetle can easily spread across suburbs if extra precaution is not taken. Apart from infected wood, the 2 mm big borer beetle can also spread through clothing, vehicle crevices, or unclean horticultural equipment.

The authors of the protocol advise that the use of pesticides and fungicides have a limited effect. These may reduce the rate of recolonisation in lightly infected trees, but have not proven effective at eradicating PSHB from infected trees.

The movement of infested wood is an important pathway for the spread of the beetle. Appropriate disposal of infested trees – by chipping and then incineration, solarisation, or composting – is therefore essential for reducing the spread of the pest.

The PSHB Protocol is available to anyone who needs a scientific and realistic set of best practice advice for dealing with a PSHB infestation.

The City also encourages residents to report suspected sightings of a PSHB invasion or fusarium dieback online by visiting the Invasive Species Unit's Shot Hole Borer Reporting Tool.

More about the PSHB beetle

• The beetle is the size of a sesame seed, approximately 2 mm in length, and its symbiont fungal partner has threatened trees across South Africa

• It is an ambrosia beetle native to Southeast Asia.

• It was first discovered in South Africa in 2017 on London plane trees in KwaZulu-Natal's National Botanical Gardens in Pietermaritzburg.

• The beetle is invasive and poses a threat to exotic and indigenous trees across South Africa.

• The beetle's most likely pathway or vector is through the movement of infested wood, originating from dead or dying PSHB infested trees, including wood intended to be used for cooking or heating.

Lifecycle of the PSHB beetle

• The female beetle carries with her three species of fungi, including the pathogen, Fusarium euwallaceae.

• The adult females burrow into trees to establish brood galleries where they lay their eggs. They introduce the fungus which colonises gallery walls.

becoming a food source for developing larvae and adult beetles. The fungus kills the water conducting tissues of the tree and can lead to branch dieback and eventually causes the tree to die.

The following trees are invaded

• Alien trees infested to date include London plane trees, Liquid amber, Japanese maples, Chinese maples, pin oaks, and English oaks.

• Indigenous trees invaded to date include the Coast Coral tree, Forest Bushwillow, and the Cape willow.

What you can do

• Burning of the infected wood is the preferred method.

• Chipping of the wood into small pieces for compost is also recommended as the heat build-up in the composting process will kill the beetle.

• Once the tree has been felled the debris should be cleared as soon as possible and if required, the area should be sanitised.

• Infested plant material can be placed in refuse bags and sealed. The bags must be put in direct sunlight for solarisation as the heat from the sun helps to kill the beetle and its larvae.