

Neem – a new threat to northern rivers

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Summary Neem (*Azadirachta indica* A.Juss) has proven to be a weed capable of rapidly displacing native flora along riparian areas of many northern Australian rivers. Impacts include loss of native plants and animals, increased erosion and river siltation.

The work done recently by Ord Land and Water has demonstrated that large scale control is achievable, provided landholder participation is secured and control strategies are developed that take into account the limitations of the plant and its main vectors.

Neem was introduced into the Kununurra region of northern Western Australia initially as a trial sandalwood host plant in approximately 1990 and as a garden plant at the same time. As the trees were popular, they were stocked by nurseries for some years until their weed properties were recognised.

Within five years the tree started to spread to neighbouring bushland, predominantly by birds ingesting the fruit and seed. The fast growing trees rapidly out-competed native trees, particularly in riparian areas. By 2005 they had become a common sight around Kununurra, forming monocultures in some areas. In addition there were reports of neem becoming a pest plant in other areas of northern Australia. Two notable areas were around Katherine and the Wickham River in the Northern Territory, and the Gilbert River in Queensland.

Field observations around Kununurra indicate that neem is capable of rapidly forming monocultures within the riparian area of a water course. Once established, all lower storey plants disappear leaving the soil susceptible to erosion, especially in high rainfall events typical of the region. Active erosion gullies transecting invaded areas have been observed on both the Ord and Wickham rivers.

Aside from human activity, the main vectors for the spread of neem trees are birds. This offers some distinct advantages in terms of directing on-ground control work. In Kununurra, neem appears to be incrementally increasing its range by about 500 metres every five years.

The spread is limited to the home range of the birds that transport the seed. Within their territory they will tend to follow existing corridors such as roadways and watercourses avoiding areas of open land including

rocky escarpments where they would be susceptible to predators. The birds are selective about trees they rest in and pass the seed through. These trees may vary from region to region but in the case of Kununurra boabs, native fruit trees and eucalypts are favoured whilst stands of acacia are largely avoided.

Control of neem around the Kununurra region is currently being carried out through a work program by Ord Land and Water, a local Landcare group. The main control method is herbicides, such as triclopyr or glyphosate as a basal or foliar application. Some areas have been mulched as a trial, but results of this work will not be known until mid 2008

The work program is carried out on private and public land, with private landholders becoming an integral component of the control strategy. Over 100 landholders have assisted in removing neem from their properties. Neem on indigenous land has been controlled through a CDEP Aboriginal Employment scheme.

Observations in Kununurra indicate that seed remains viable only during the first wet season after fruit maturity. Also, whilst neem has been observed growing right to the edge of water courses, it appears not to tolerate prolonged inundation.

In the 18 months since the work started, trees and seedlings have been destroyed on 6000 ha, including 820 ha of private property in residential and rural areas and 660 ha on and around Aboriginal communities.

The total area of land affected around Kununurra is estimated to be 7100 ha, but could increase to 12,560 ha by 2012. Most of the infested area needs to be treated once more and the higher density areas a third time. This is based on progress being monitored in trial areas set up prior to and at the beginning of the current control program.

The significance of this project is twofold. In addition to controlling a major weed pest that threatens significant public assets such as the Lake Kununurra Ramsar site and bushland around the town and rural community, it has given the community the knowledge and means to take a lead in weed control on their properties and neighbouring bushland.

Keywords Neem, weeds, Kununurra.