

Broad-leaf pepper tree

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Introduction

Broad-leaf pepper tree, *Schinus terebinthifolius*, also known as Brazilian pepper tree, is an invasive tree capable of growing to 15 m in height. A native of Brazil, Argentina and Paraguay, it was originally introduced and promoted as an ornamental shrub. It is now a serious threat to Australia's ecosystems, particularly in coastal regions, riparian zones and wetlands.

Overseas, in Hawaii and Florida this plant is an invasive weed. It is also recorded as a weed in other mainland USA states, Bahamas, South Africa, New South Wales (NSW) and Queensland. It dominates many areas of native vegetation in Florida, the Bahamas and all the islands of Hawaii.

It primarily invades disturbed sites in wetlands and riparian areas, but many also become established in less disturbed plant communities and terrestrial habitats. It is now quite widespread in south-eastern



Figure 1. Broad-leaf pepper trees were grown as ornamentals, such as this one growing in a backyard. Photo: Rod Ensbey.

Queensland and is threatening coastal areas of northern NSW. To address the potential problem, broad-leaf pepper tree is now declared a Class 3 noxious weed in north-eastern NSW (see 'Legislation').

Distribution

Current distribution in NSW extends from the Queensland border south to the mid-north Coast region. Naturalised plants are generally uncommon and most of the infestations are as yet only localised, having spread from nearby cultivated trees. In south-eastern Queensland there are large naturalised populations of broad-leaf pepper tree. In Queensland dense infestations occur on waterlogged or poorly drained soils in coastal areas. At a few locations it has formed an understorey within mature stands of swamp oak and along the edges of mangrove forest. In and around Brisbane it has become quite widespread and populations have greatly increased in the last 5 years.

In northern NSW isolated plants are found in the Tweed Council, Mullumbimby, Byron Bay, Ballina, Lismore, west of Casino, at Sapphire Beach near Coffs Harbour, Sawtell, Nambucca Heads, and Taree areas. Since declaration in 2003 many infestations have been greatly reduced and some have even been eradicated.

It has been reported as spreading in National Parks and Nature Reserves in the Tweed region and in Nature Reserves in Lismore. Isolated pockets of the tree are also suspected to be present further south in coastal NSW. Broad-leaf pepper tree occurs on council land, parks, reserves, roadsides and private property. Most infestations found can be traced back to mature cultivated trees.

Impact

Broad-leaf pepper tree is regarded as a major threat to native vegetation and agricultural industries. It has great potential to spread further in NSW.



Environmental weed

Broad-leaf pepper tree is a serious environmental weed. It rapidly colonises disturbed bushland and can form dense thickets and dominate understorey vegetation. It out-competes and replaces native grasses, ground covers and shrubs, and is shade tolerant. It spreads rapidly on waterlogged or poorly drained soils, but will grow on drier land in higher rainfall areas. Broad-leaf pepper tree has been found growing in a range of habitats from mangrove forests to coastal sand dunes. It is listed on numerous regional and council environmental weed lists as a priority tree for control and definitely not to be planted.

Poisonous plant

Broad-leaf pepper tree may be poisonous to humans and animals. It contains toxic resins and is a relative of the rhus tree and poison ivy. Some people may suffer severe itching, lesions, rashes, reddening swelling of the face, running sores and welts associated with the sap and flowering trees. The tree is rarely eaten by livestock but is reportedly toxic to some animals and birds.

In Florida, massive bird kills have been recorded from ingesting the fruit. Horses resting beneath shade trees have developed dermatitis and swollen faces with similar problems seen in some humans.

Agricultural weed

Thickets of broad-leaf pepper tree form around water holes, shading out pasture. It can also form dense woody stands that interfere with stock watering and mustering.

It is an alternate host for a mango black spot disease and a host of witches broom diseases in citrus.



Figure 2. Clusters of green berries turn red when ripe and are attractive to birds. Photo: Rod Ensbey.

Description

Broad-leaf pepper tree is a broad topped, fast growing, multi-stemmed shrub or small tree 1–6 m tall (rarely to 15 m), that reproduces by seed. Plants are either male or female.

Leaves are alternate, dark green, with 4–12 opposite leaflets and a terminal leaflet. The leaves often have a winged midrib.

Flowers are small and greenish yellow. Female flowers are followed by clusters of green berries that turn red when ripe. Berries are 4–5 mm wide and contain a single kidney-shaped seed.

The leaves and berries have a pepper smell, especially when crushed.

Life cycle

Seedlings have a high survival rate. Plants reproduce from 3 years of age and overseas they have been recorded to live for about 35 years.

Broad-leaf pepper tree has two obvious physiologically different growth phases: a reproductive growth phase in winter, with the main flowering period during autumn with a secondary smaller peak in spring, and a vegetative growth phase during summer. However, flowering may occur throughout the year. Fruiting and seed dispersal occurs predominantly over winter.

Seed viability is 30–60% for up to 2 months. This high seed viability combined with effective animal dispersal contributes to its invasive nature.



Figure 3. Broad leaf pepper tree, branch, leaf and flower structure. Drawing courtesy Rod Spicer, Greater Taree City Council.

Spread

Broad-leaf pepper tree is primarily spread through seed dispersal by birds and mammals. The tree produces bright red berries that are attractive to frugivores (animals that eat fruit). Silver eyes, figbirds, currawongs and others are thought to disperse the seed.

Broad-leaf pepper tree can also reproduce from root suckers.

Human movement through introduction of broad-leaf pepper tree as an ornamental shrub was responsible for initial spread of the weed. Observations in northern NSW suggest that most infestations have arisen from mature cultivated trees. Coordinated control programs will need to address these trees and remove them as major seed sources.

Control and management

Broad-leaf pepper tree can be a difficult woody weed to control. The seasonal growth phases may impact on control efficacy and will need to be considered when planning a control program.

Several forms of control, including fire, give unreliable results. During the vegetative growth phase in summer, plants have been observed to quickly regrow from the base as coppice or root suckers.

The first step in a control program is to assess the weed problem and situation. You may need to consider, depending on the situation; revegetation with native species, control of other weed species that may be present (e.g. privet, camphor laurel) and follow-up maintenance and treatment of the site.



Figure 4. Large broad-leaf pepper trees invading a riparian zone. Photo: Rod Ensbey.

Manual control

Isolated seedlings can be removed by hand pulling or digging. This is only practical for small infestations. Cultivated large trees may be cut down and the stump dug up and removed. Care should be taken to avoid moving fruit when manually controlling mature trees.

When cutting down broad-leaf pepper trees avoid contact with the sap as allergic reactions or a rash may occur.

Herbicide control

Herbicide control is effective using the cut stump technique, basal bark, stem injection and foliar application methods. The method used depends on the situation, tree size, access and personal preferences.

Results from research work undertaken in Queensland have shown that foliar applications are far more effective during the early fruiting stage.

Currently in NSW there are no herbicides registered for broad-leaf pepper tree control. However, there are a number of pesticide permits registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA) that allow for herbicide control. Information on current permits can be found at www.apvma.gov.au

Read the relevant permits before treatment, and for further information on application techniques consult NSW DPI publication *Noxious and Environmental Weed Control Handbook* available from www.dpi.nsw.gov.au/weeds

Legislation

Figure 5 shows the area of NSW where the broad-leaf pepper tree is declared a class 3 noxious weed under the *NSW Noxious Weeds Act 1993*.

Class 3 control requirements are that 'the plant must be fully and continuously suppressed and destroyed'.

The responsibility for the control of noxious weeds on private land rests with the land owner or occupier of the land. This responsibility extends to the middle line of any adjacent watercourse, river or inland water (tidal or non-tidal).

A full list of noxious weeds and requirements under the Noxious Weeds Act can be found at www.dpi.nsw.gov.au/weeds

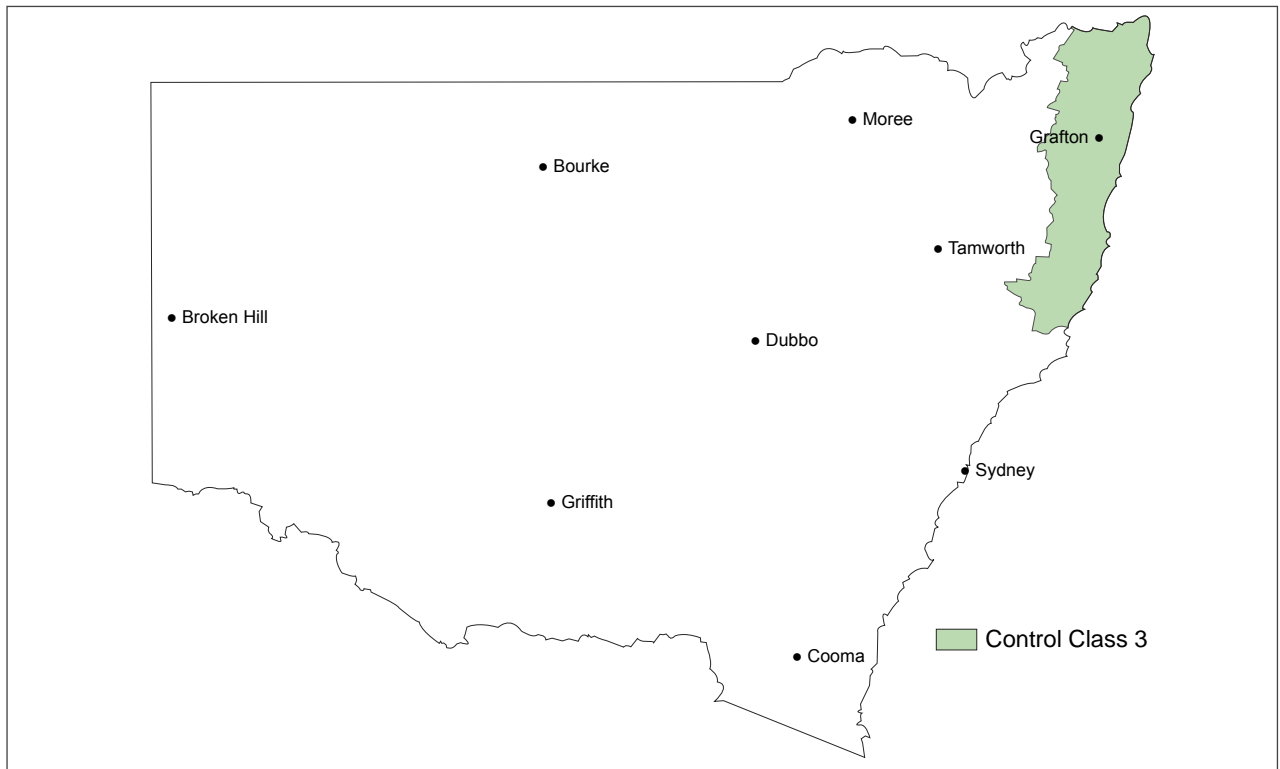


Figure 5. Areas of NSW where broad-leaf pepper tree is declared a noxious weed. Map by Alan Maguire.

Acknowledgments

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Pacific Island Ecosystems at Risk (PIER) website. www.hear.org/pier

Publications available

A complete list of NSW DPI weed publications can be found at www.dpi.nsw.gov.au/weeds. Printed copies are available by contacting the NSW DPI Bookshop on 1800 028 374 or visit www.dpi.nsw.gov.au/bookshop

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