



Protecting and restoring the Cumberland Plain Woodland community at Campbell Hill West Reserve, Chester Hill



Department of **Environment & Climate Change** NSW



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Introduction

As Western Sydney has developed, much of the original native vegetation has been cleared or disturbed. As a result, many native plants and animals have become very rare, scattered in remnants surrounded by urban development. These fragmented areas and threatened species need to be managed carefully to ensure their survival.

The Department of Environment and Climate Change NSW and the Sydney Metropolitan Catchment Management Authority are working with local government and the community to protect Sydney's native vegetation remnants and the threatened species that live in them.

This brochure explains why Campbell Hill West Reserve is important and identifies some of the threatened species found in the Reserve. This brochure also explains how you can help preserve these endangered remnants and threatened species in your local area. For example, you could report sightings of significant species or join a bushcare group.

You can obtain other threatened species brochures at www.environment.nsw.gov.au/threatenedspecies or contact Environment Line on 131 555.

What is Cumberland Plain Woodland?

Cumberland Plain Woodland is the vegetation community that occurs at Campbell Hill West Reserve. This type of vegetation is listed as an endangered ecological community under the NSW *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), because less than 9% of the original woodland remains intact. Cumberland Plain Woodland formerly occurred on shale soils throughout Western Sydney.



Cumberland Plain
Woodland at Campbell
Hill West Reserve

Photo: L.Holme (DECC)



Section of reserve prior to regeneration works

Photo: Parramatta City Council

Of the remaining 11,000 hectares of Cumberland Plain Woodland, less than 8% is protected in formal conservation reserves. In addition to further clearing and fragmentation, Cumberland Plain Woodland remnants are vulnerable to weed invasion, increased soil nutrients, rubbish dumping and altered fire regimes.

The dominant canopy trees in Cumberland Plain Woodland include grey box (*Eucalyptus moluccana*), forest red gum (*Eucalyptus tereticornis*) and narrow-leaved ironbark (*Eucalyptus crebra*). The common shrub blackthorn (*Bursaria spinosa*) is excellent bird habitat and provides food for a wide range of insects. Other less common small tree and shrub species that may occur in Cumberland Plain Woodland remnants include: hickory wattle (*Acacia implexa*) and Parramatta wattle (*Acacia parramattensis*), hairy clerodendrum (*Clerodendrum tomentosum*), the pea family member *Dillwynia sieberi* and *Breynia oblongifolia*.

At Campbell Hill West Reserve, weeds such as blackberry (*Rubus fruticosus*), asparagus fern (*Protoasparagus aethiopicus*) and African box thorn (*Lycium ferocissimum*) are major threats. The clearing of Cumberland Plain Woodland bushland remnants for grazing and later suburban development has also reduced many of the native grasses such as kangaroo grass (*Themeda australis*) and paddock lovegrass (*Eragrostis leptostachya*), replacing them with kikuyu (*Pennisetum clandestinum*) and other introduced grasses including couches and ryegrass.

Why is Cumberland Plain Woodland so important?

- Cumberland Plain Woodland is a unique assemblage of plants – from large trees to small ground orchids, rushes and grasses.
- Its remnants contain trees that form hollows to shelter smaller native animals such as the threatened powerful owl, parrots, possums and tiny insectivorous bats.
- Its remnants are part of the distinctive landscape character of our region.
- It provides a living link with ancient Australia.

Campbell Hill West Reserve

Campbell Hill West Reserve, Chester Hill, is owned and managed by Parramatta City Council. The Council has been undertaking long-term restoration works at this site since 1998. Recent restoration works have been funded through a joint venture involving the Department of Environment and Climate Change NSW, Sydney Metropolitan Catchment Management Authority and Parramatta City Council.

Threatened plants and animals found in the Reserve

Downy wattle (*Acacia pubescens*), listed as vulnerable under the TSC Act and EPBC Act, is found in the Reserve. Downy wattle is a bushy, spreading shrub with brilliant yellow flowers, fernlike foliage and grows 1–4 m high. This acacia flowers from August to October and pollination is usually by insects and birds. The seed from acacia species is encased in a hard-coated shell and can live for long periods in the soil. Although the life span of this species is not well known, individual plants which grow from root shoots can survive for many decades.

The most appropriate fire regime for downy wattle is currently unknown, although the minimum recommended fire interval from the species profile is at least ten years. However, fire intervals that are too long have the potential to slow down the natural regeneration and to reduce the diversity of native species present.

Cumberland Plain Woodland is also habitat for threatened species such as the pink pimelea (*Pimelea spicata*), the endangered native pear *Marsdenia viridiflora* and the Cumberland land snail (*Meridolum corneovirens*).

Getting there

Campbell Hill West Reserve is located midway between Sefton and Auburn Railway Stations on the western side of Campbell Hill Road, north of the Sydney water supply pipeline. The Pioneer Reserve on the eastern side of the road has picnic facilities, barbecues, toilets and children's play equipment.



Downy wattle
(*Acacia pubescens*)

Photo: Murray Fagg, Australian
Botanic Gardens



Parramatta City Council signage

Photo: L. Holme (DECC)

Bus route 910 runs past the reserve along Campbell Hill Road between Granville and Chester Hill railway stations every 20 minutes in peak hour, Monday to Fridays, and every 30 minutes in off-peak periods and on Saturdays. Vehicle access is restricted.

The area is gently undulating so cycling to railway stations would also be a pleasant alternative.



Location map for Campbell Hill West Reserve

Recent history

Campbell Hill West Reserve previously consisted of several private landholdings. Approximately 70% of the site's native vegetation had been cleared for pasture and farming by the late 1940s. With a change in agricultural to urban land use in the late 1970s, the area became progressively infested with blackberry before it was acquired by Parramatta Council as a reserve.

Active management over the past ten years has reduced the blackberry infestation to approximately 30% of the Reserve. Other bushland management strategies have significantly reduced bridal creeper and lantana throughout the remaining bushland remnants, and an

annual slashing program has reduced exotic annual and perennial grasses so that large areas are slowly reverting to native grassland.

Preliminary determination as a critically endangered community

In November 2008 the Scientific Committee, established by the *Threatened Species Conservation Act 1995*, made a preliminary determination to support a proposal to list the Cumberland Plain Woodland in the Threatened Species Act as a critically endangered ecological community.

For more information, including the reasons for this determination, visit the website at www.environment.nsw.gov.au or phone 131 555. Copies of the determination may also be obtained from the DECC Sydney Office and National Parks and Wildlife Service area offices, subject to availability.

Natural regeneration – the ‘best practice’ approach

‘Best practice’ techniques in bush regeneration have been used at the Campbell Hill West Reserve, and fauna habitat values have been a major consideration in the restoration program. Initial weeding, the burning of small dried piles of weeded woody vegetation and follow-up weeding have been undertaken in stages. Accumulating debris of dead shrubs and trees have been left in place to provide animal habitat and to help prevent soil erosion and suppress weeds. The aim is to restore an ecosystem rather than create a bushland garden.

The aim of the restoration program has been to establish the structure and diversity of remnant bushland from other similar areas with Cumberland Plain Woodland. Revegetation methods for creating a woodland framework were used in areas where there were few canopy trees and pasture grasses dominated. Canopy trees and fast growing nitrogen-fixing pioneer shrubs were introduced first, with



Understorey weeds
Photo: Brynley Walters



Regeneration areas with dried weed slash

Photo: L. Holme (DECC)

groundcovers, native grasses, and herbs planted in dense clumps. This helped to maintain weed control during the establishment period.



Campbell Hill West Reserve bushland management areas

Photo: Land and Property information, 2007

This technique is based on the theory that planting upper layers of trees and shrubs (using local native seeds) will, once the upper layer is established, improve soil condition and help to control weeds. This allows native grasses and herbs to thrive, which would otherwise be swamped if exotic weeds were able to encroach. The species which have been planted also have an advantage because they are adapted to local climate and soil conditions, providing a greater chance for successfully re-establishing the native plant community that would have been present before the land was cleared.

Diversity occurs over time and in stages, so long-term commitment and follow-up planting is important. Consistent weed control is essential to eliminate the

accumulated weed seed bank. The native vegetation community recovers naturally as native seeds instead of weed seeds germinate in the decomposing mulch.

Using a 'trigger' such as fire can help stimulate the native vegetation, but it can also stimulate a weed flush which must be controlled before its seed set. This ensures future germination of natives can occur without being suppressed by weed infestation.

Tip: Managing for fire

If we want to conserve Western Sydney's vegetation communities, we must manage fire regimes appropriately. Greatest species diversity is maintained by using fire regimes that encourage variations in fire intervals, fire intensity and a variable season of burn (between August and January). Land managers should consult with the NSW Rural Fire Service and the Department of Environment and Climate Change NSW.

Initial site work at the Reserve included slashing existing pasture grasses along the site's upper contours to prepare for buffer planting. Planting these upper contours to create a buffer has helped to reduce weed influx to the less disturbed soils away from the impacted boundaries. Buffer planting at regeneration sites can also help to minimise erosion in cases where intensive weed control is necessary along impacted boundaries.

The revegetation program has used local native seed and seedlings propagated from bushland remnants found on the property or adjacent to it. All plants were mixed and planted randomly, as occurs naturally, and this has also been found to provide the best results when re-establishing native vegetation.



View across remnant towards golf course

Photo: L. Holme (DECC)

Help preserve the Cumberland Plain Woodlands

Your gardening activities can help to restore Cumberland Plain Woodland vegetation. Contact Parramatta City Council for information about Cumberland Plain Woodland species and for the contact details of a nursery that can supply native plants from your local area.

- Was your backyard once Cumberland Plain Woodland?
- Are there any local native trees or plants left that you can nurture and protect?
- Can you replant some Cumberland Plain Woodland plant species in your garden? By doing so, you will attract local native birds, mammals and butterflies to your garden.

Of course you cannot fit the entire forest ecosystem into your backyard, but there might be room for a selection of grasses, shrubs or trees. A group of backyards can form an important woodland remnant. Many councils have introduced programs such as the Backyard Bushcare Program. This program focuses on regenerating native vegetation on private land to help create bushland corridors.

Local residents can ask for help to protect and regenerate Cumberland Plain Woodland species in their backyards. Council Bushcare officers can visit participating residents and offer:

- free expert advice
- practical training
- realistic action plans
- help with regeneration work, and
- ongoing support.

Tip: Identifying the vegetation community on your land

For information about Cumberland Plain Woodland native vegetation consult the publications *Native Vegetation of the Cumberland Plain – Final Edition* (2002) and *Recovering bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland* (2005). These documents can be found on the Department of Environment and Climate Change NSW website at www.environment.nsw.gov.au under 'Cumberland Plain Vegetation Mapping Project'.

Protect Cumberland Plain Woodlands from weeds and other threats

Cumberland Plain Woodlands are threatened by weeds, increased stormwater run-off, fertilisers, rubbish dumping and land clearing. These are worst at the edges of the woodland where the bush meets roads, industry or backyards.

Helpful neighbours can protect Cumberland Plain Woodland remnants from weeds and other threats by:

- **Being careful when mowing lawns** – mowing underneath Cumberland Plain Woodland species in residential gardens prevents their seedlings from establishing. By not mowing lawns and by hand weeding rather than poisoning weeds, you will promote the growth of Cumberland Plain Woodland seeds that may still be in the soil.
- **Weeding the garden** – removing weeds from local gardens will prevent them spreading into bushland reserves. Birds can transport weed seeds large distances, so it is important to keep a weed-free garden even if you live a long way from a Cumberland Plain Woodland remnant.
- **Keeping stormwater out of the bush** – install a rainwater tank to minimise the impacts of stormwater, and if you use grey water for watering your garden, make sure your household uses low phosphorus detergents.



Burn piles ready for treatment

Photo: L. Holme (DECC)

- **Not dumping rubbish** – never dump garden refuse into bushland because this allows weeds to spread into the bush.

Join a bushcare group

Bushcare volunteers can provide great assistance to council staff and professional bush regenerators by volunteering a few hours a month. Anyone is welcome to join a group and lend a hand. For more information on walks and talks and potential volunteer bushcare days, visit:

- www.environment.nsw.gov.au/youcanhelp
- www.step.org.au
- www.parracity.nsw.gov.au

Conserve habitat for native animals

- Report any sightings of foxes to the Department of Environment and Climate Change NSW or to your local council. A regional fox baiting program is run by local councils.
- Be a responsible pet owner. Keep pet cats and dogs under control, never let them wander into the bush, and keep them indoors at night. Train your dog not to chase or harass native wildlife.
- Leave some scrubby tangles and dense, shrubby areas of vegetation on your land for ringtail possums and native birds.
- Leave fallen timber, leaf litter and dead trees with hollows on your land for lizards and small birds.

Build a nesting box

Many of Australia's bird and mammal species require tree hollows for nesting. Unfortunately, the natural tree hollow forming process is very slow. On average it takes over 60 years for a tree to begin forming hollows.

Installing artificial nesting boxes in your own backyard can provide a safe place for native animals to escape the elements and to raise a family. If you install a nesting box

you can potentially attract sugar gliders, parrots, kingfishers, small insect-eating bats and possums to your garden.

Always ensure cats and dogs cannot gain access to the nesting box, and place it in a tree at least three metres above the ground. If introduced birds such as Indian mynas colonise the nest box, evict them. Several websites contain information on building and placing nesting boxes, and some organisations sell them.

Help injured wildlife

Native wildlife can suffer injuries through encounters with domestic animals, motor vehicles or misadventure. If you come across injured wildlife, immediately contact the Sydney Metropolitan Wildlife Service on (02) 9413 4300 or WIRES on (02) 8977 3333.

Further information and vehicle access to the site

For information and vehicle access to this demonstration site please contact:

Parramatta City Council Natural Resources

Ph: (02) 9806 5727

For land managers undertaking restoration projects, detailed information on the most current techniques being used to restore ecosystems across the Cumberland Plain can be found in the document titled *Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland* (2005), NSW Department of Environment and Conservation, Hurstville. This document can be downloaded from the Department of Environment and Climate Change website at www.environment.nsw.gov.au or a copy can be obtained by phoning the Department of Environment and Climate Change on 131 555.



Nesting box for birds and small mammals

Photo: L. Holme (DECC)

Further reading

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Websites

Department of Environment and Climate Change NSW, www.environment.nsw.gov.au/determinations/CumberlandPlainWoodlandEndComListing.htm

Australian Government Department of the Environment, Water, Heritage and the Arts, www.environment.gov.au/biodiversity/threatened/publications/cumberland.html



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Department of Environment and Climate Change NSW
59–61 Goulburn Street, PO Box A290, Sydney South 1232
Ph: (02) 9995 5000 (switchboard)
Ph: 131 555 (environment information and publication requests)
Ph: 1300 361 967 (national parks information and publications requests)
Fax: (02) 9995 5999
TTY: (02) 9211 4723
Email: info@environment.nsw.gov.au
Web: www.environment.nsw.gov.au

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