

Approved Conservation Advice for Blue Gum High Forest of the Sydney Basin Bioregion

(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this ecological community.

Description

The **Blue Gum High Forest of the Sydney Basin Bioregion** ecological community is a type of moist, tall open forest that is endemic to Sydney's northern suburbs, where there is high rainfall. The ecological community comprises a tall canopy of dominant trees that may reach a height of over 30 metres, above a midstorey of shrubs and small trees over a diverse ground layer, commonly with ferns.

The tree canopy of the **Blue Gum High Forest of the Sydney Basin Bioregion** is dominated by *Eucalyptus pilularis* (blackbutt) and/or *E. saligna* (Sydney blue gum). Other canopy trees that may be present, but are not dominant, include: *Angophora costata* (smooth-barked apple, Sydney red gum, rusty gum) and *Eucalyptus paniculata* (grey ironbark).

A relatively diverse stratum of small trees is usually present, including *Pittosporum undulatum* (sweet pittosporum), *Elaeocarpus reticulatus* (blueberry ash), *Allocasuarina torulosa* (forest oak), *Acmena smithii* (lilly pilly) and *Ficus coronata* (sandpaper fig). Many shrub species are typically mesic, such as *Breynia oblongifolia* (coffee bush), *Pittosporum revolutum* (rough-fruited pittosporum), *Clerodendrum tomentosum* (hairy clerodendrum), *Notelaea longifolia* f. *longifolia* (mock olive), *Maytenus sylvestris* (narrow-leaved orangebark), *Polyscias sambucifolia* subsp. A (elderberry panax) and *Myrsine variabilis* (formerly *Rapanea variabilis*) (muttonwood). However, sclerophyllous shrub species, such as *Persoonia linearis* (narrow-leaved geebung) and *Leucopogon juniperinum*, become more frequent toward the drier shale/sandstone boundary.

The ground stratum is often dense and contains a mixture of herb, grass and fern species including *Adiantum aethiopicum* (maidenhair fern), *Entolasia marginata* (bordered panic), *Lomandra longifolia* (spiny-headed mat-rush), *Calochlaena dubia* (common ground fern), *Dianella caerulea* (blue flax-lily), *Pseuderanthemum variabile* (pastel flower) and *Oplismenus imbecillis* (syn. *Oplismenus hirtellus* subsp. *imbecillis*). Vine species are also frequently present, in particular *Tylophora barbata* (bearded tylophora), *Eustrephus latifolia* (wombat berry), *Clematis aristata* (Australian clematis) and *Pandorea pandorana* (wonga wonga vine) (NSW NPWS, 2002).

No comprehensive studies of the fauna of the **Blue Gum High Forest of the Sydney Basin Bioregion** have been undertaken. However, mammals commonly found include *Pseudocheirus peregrinus* (common ringtail possum), *Trichosurus vulpecula* (common brushtail possum) and *Petaurus breviceps* (sugar glider). Common bird species include *Trichoglossus haematodus moluccanus* (rainbow lorikeet), *Alisterus scapularis* (king parrot), *Platycercus elegans* (crimson rosella) and *Malurus cyaneus* (superb fairy-wren). Some animal species listed as threatened, either nationally or in NSW, have been recorded in the **Blue Gum High Forest of the Sydney Basin Bioregion**. These may be resident or transient and include *Pteropus poliocephalus* (grey-headed flying-fox), *Saccolaimus flaviventris* (yellow-bellied sheath-tail-bat), *Calyptorhynchus lathami* (glossy black-cockatoo), *Lathamus discolor* (swift parrot) and *Ninox strenua* (powerful owl).

Occurrences of the **Blue Gum High Forest of the Sydney Basin Bioregion** ecological community are considered to be part of the nationally listed ecological community if they are greater than one hectare in size and:

- have a canopy cover greater than 10%; or
- have a canopy cover less than 10% and occur in areas of native vegetation in excess of five hectares (TSSC, 2005).

Conservation Status

The **Blue Gum High Forest of the Sydney Basin Bioregion** is listed as **critically endangered** under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It was listed by the Minister after the Threatened Species Scientific Committee advised (TSSC, 2005) that this ecological community met three of the six eligibility criteria for listing as threatened under the EPBC Act. The Committee found that the ecological community had:

- undergone a very severe decline in its geographic distribution, of more than 95%;
- a very restricted geographic distribution that makes it likely that the action of a threatening process could cause it to be lost in the immediate future; and
- experienced a reduction in its ecological integrity across most of its range that is very severe, as indicated by the loss of key vegetative components, key faunal components, weed invasion, the high degree of fragmentation, and the degradation of habitat values.

The Blue Gum High Forest ecological community is also listed as critically endangered under the *NSW Threatened Species Conservation Act 1995*.

Distribution and Habitat

The **Blue Gum High Forest of the Sydney Basin Bioregion** ecological community is limited to the Sydney Basin Bioregion, generally at altitudes higher than 100 metres above sea level that receive high rainfall, generally more than 1100 mm per year. It is predominantly associated with deep soils derived from Wianamatta Shale though remnants may extend onto Hawkesbury Sandstone, the Mittagong formation or diatremes (localised intrusions of volcanic soils). The Blue Gum High forest ecological community intergrades with the Turpentine–Ironbark Forest in the Sydney Basin Bioregion ecological community at drier sites in its rainfall range, and some plant species may be found in both ecological communities (Benson and Howell, 1990; NSW NPWS, 2002).

The ecological community occurs within the Hawkesbury–Nepean Catchment Management Authority (merged with the former Sydney Metro Catchment Management Authority as of January 2014) and the Greater Sydney Local Land Services. The key sites for the ecological community occur in the Hornsby Plateau, North Shore and northern suburbs parts of Sydney. The ecological community was known to occur predominantly on ridge tops in the Local Government Areas of Ku-ring-gai, Hornsby and Willoughby, as well as in Baulkham Hills, Ryde, Parramatta and Lane Cove (Benson and Howell, 1990; NSW Scientific Committee, 1997). However, the nationally listed ecological community is now probably limited to the Local Government Areas of Ku-ring-gai, Hornsby and Baulkham Hills (TSSC, 2005). Most known remnants are small, typically less than 20 hectares, and severely fragmented. The largest remnant reserved for conservation is Dalrymple Hay Nature Reserve/Browns Forest at St Ives in the Ku-ring-gai Local Government Area. The total remaining mapped area is estimated to be less than 140 hectares.

Threats

A key threat to the ecological community is clearing and fragmentation. It was initially cleared extensively for timber and orchards and, subsequently, for urban expansion (Benson and Howell, 1994). Remnants continue to be impacted by clearing activities such as maintenance of overhead power lines and bushfire hazard reduction. The ecological community is now restricted to small bushland remnants surrounded by suburban developments and infrastructures. Its highly fragmented distribution is a consequence of past clearing.

Other major threats include:

- weed infestations, notably by lantana, exotic vines and scramblers, and exotic perennial grasses;
- degradation from inappropriate access and disturbance from people, domestic animals, bikes and other vehicles;
- increased nutrient load and sedimentation from urban runoff and stormwater discharge;
- inappropriate fire regimes;
- mowing or clearing of the understorey in a way that limits regeneration of native species; and
- pathogen invasion and dieback (e.g. myrtle rust).

More detail about these threats, their impacts and guidance on condition is contained in the Listing Advice (TSSC, 2005), which is available on the Internet at:

<http://www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl>

The following EPBC Act listed Key Threatening Processes are most relevant to the **Blue Gum High Forest of the Sydney Basin Bioregion** ecological community:

- land clearance;
- loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants; and
- novel biota and their impact on biodiversity.

Research and Monitoring Priorities

- Determine the dependencies of plant recruitment and establishment that operate within Blue Gum High Forest, particularly in relation to fire regimes and fauna interactions.
- Identify and map priority sites for protection of Blue Gum High Forest remnants, including habitat for threatened species.
- Investigate the impact of disturbances and experimentally evaluate alternative strategies to restore long term ecological function and biodiversity, including for listed threatened and migratory species.
- Develop and implement a threat management monitoring program.

Priority Actions

The following priority recovery and threat abatement actions can be undertaken to support the recovery of the **Blue Gum High Forest of the Sydney Basin Bioregion**:

Habitat Loss, Disturbance and Modification

- Prevent any further clearing or fragmentation of the ecological community, through the protection of remnants and surrounding vegetation, including through appropriate local council zoning.
- Restore and enhance remaining areas of Blue Gum High Forest to create buffer zones and to link fragments with remnants of other native vegetation.
- Avoid removal of isolated canopy trees characteristic of the ecological community or isolated patches of remnant vegetation <1 hectare in the local government areas where it occurs, as these provide important connectivity and habitat refugia functions.
- Control and regulate impacts from people, bikes and other vehicles via fencing, signage and determining which existing tracks should be closed or remain open.
- Develop and implement appropriate management regimes to prevent further loss or decline of functionally important species and reduction in community integrity.
- Control run-off entering sites where it would cause erosion or detrimental change in nutrient or sediment levels, and undertake restoration works to restore natural hydrology.
- Liaise with planning authorities to ensure that planning and nearby development takes the protection of remnants into account, with due regard to principles for long-term conservation.

Invasive Species

- Eradicate or manage weed infestation through appropriate weeding and bush regeneration methods.
- Ensure chemicals, or other mechanisms used to manage weeds, do not have significant adverse, non-target impacts on the ecological community, e.g. undertake manual removal of weeds or spot application of herbicides.
- Manage introduced pest animals to allow natural regeneration and recovery of habitats and any threatened species, at known sites through coordinated landscape-scale control programs.

Trampling, Browsing or Grazing

- Avoid unnecessary mowing of understorey to promote regeneration of native species.
- Assess and manage the impacts of mountain bike and other damaging recreational activities within bushland remnants.

Fire

- Implement appropriate fire regimes necessary to maintain floristic and structural diversity, if patches require fire for biodiversity conservation. Fire management should take into account results from any research and the requirements of both flora and fauna in the ecological community.
- Remove weeds from the ecological community and manage fuel loads in surrounding areas, to minimise the risk of inappropriate fire regimes affecting the ecological community.

- Provide maps of known occurrences and negotiate appropriate procedures with local fire brigades, including in relation to establishing fire control lines in native vegetation areas, to avoid unnecessary destruction of the ecological community.

Conservation Information

- Ensure land managers are aware of, and follow, any best practice adaptive management guidelines and other technical material developed for the Blue Gum High Forest ecological community.
- Support landholders to prepare site-specific management plans and secure protection and management of priority sites.
- In consultation with land managers, develop or support existing education programs, information products and signage to help the public recognise the presence and importance of the Blue Gum High Forest ecological community, and their responsibilities under state and local regulations and the EPBC Act.
- Raise awareness about the benefits of native biodiversity, and programs and funding opportunities to support landholders with environmental protection.

Other Recovery Actions

- Ensure local flora species are planted for any revegetation and recovery actions.
- Retain trees, logs and leaf litter and re-introduce habitat features (e.g. rocks, logs) at disturbed sites.
- Investigate options to maintain and improve connectivity, including the protection of adjoining vegetation and the replanting of key local flora species.
- Support seed harvesting and propagation techniques (having acquired the necessary permits and land access permission required) for native species not already available from nurseries, to facilitate restoration/maintenance of species diversity in revegetation sites.
- Ensure that any revegetation is undertaken in an appropriate manner (e.g. with no significant detrimental impacts on local hydrology or threatened species).

This list does not necessarily encompass all actions that may be of benefit to **Blue Gum High Forest of the Sydney Basin Bioregion**, but highlights those that are considered to be of highest priority at the time of preparing the Conservation Advice.

Existing Plans/Management Prescriptions that are Relevant to the Ecological Community

New South Wales Department of Environment and Climate Change (2008). *Best practice guidelines for Blue Gum High Forest*. Department of Environment and Climate Change, Sydney.

Available on the Internet at:

<http://www.environment.nsw.gov.au/resources/threatenedspecies/08186bghfbpg.pdf>

New South Wales National Parks and Wildlife Service (2004). *Dalrymple-Hay Nature Reserve Plan of Management*. NSW National Parks and Wildlife Service, Department of Environment and Conservation (NSW).

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<http://www.environment.nsw.gov.au/firemanagement/BVRPFms.htm>
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<http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=47&status=Critically+Endangered>
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Available on the Internet at:
<http://www.environment.gov.au/resource/blue-gum-high-forest-sydney-basin-bioregion>
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<http://www.environment.nsw.gov.au/resources/threatenedspecies/08185tsdsbluegum.pdf>
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