Australian Capital Territory

Nature Conservation (Loss of Mature Native Trees) Conservation Advice 2018

Notifiable instrument NI2018–536

made under the

Nature Conservation Act 2014, s 90C (Conservation advice)

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1 Name of instrument

This instrument is the *Nature Conservation (Loss of Mature Native Trees) Conservation Advice 2018*.

2 Commencement

This instrument commences on the day after its notification day.

3 Conservation advice for the Loss of Mature Native Trees

Schedule 1 sets out the conservation advice for the Loss of Mature Native Trees.

Note 1 Under section 90C of the *Nature Conservation Act 2014* (the ***Act***), the Minister must ensure that there is an advice about each item included in a list.

Note 2 Under section 90D of the Act, the Scientific Committee must prepare a conservation advice for an item.

Mick Gentleman MLA
Minister for the Environment and Heritage
20 September 2018

Schedule 1

(see s 3)

ACT Government
Environment, Planning and Sustainable Development

ACT Scientific Committee

CONSERVATION ADVICE

LOSS OF MATURE NATIVE TREES (INCLUDING HOLLOW BEARING TREES) AND A LACK OF RECRUITMENT

ELIGIBILITY

The Scientific Committee has determined that the threatening process *Loss of mature native trees (including hollow bearing trees) and a lack of recruitment* is eligible to be listed on the Key Threatening Processes List as it meets the following criteria.

Criterion C The threatening process adversely affects two or more listed threatened species (other than the national category of conservation dependent species and the regional category of provisional) or two or more listed threatened ecological communities.

This criterion refers to species or ecological communities which are currently listed under the *Nature Conservation Act 2014* (NC Act). In order to be adversely affecting a species or ecological community, the threatening process must currently occur where the species or ecological community occurs, and there must be evidence of a current effect.

Adverse effects can include: mortality; injury; spread of disease; disturbance to breeding; feeding or roosting habits; habitat alteration or habitat destruction. The extent of impact which can be considered to be an adverse effect depends on the attributes of the population, ecological characteristics and category in which the species/ecological community is listed. The impacts of the loss of mature native trees on threatened species are outlined below:

Superb Parrot

The Superb Parrot is listed as Vulnerable under the NC Act and the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999.* It is also listed as Vulnerable in NSW and the ACT, and is listed as threatened in Victoria.

There are a number of studies within the ACT that show a direct relationship between Superb Parrots and large scattered trees, including their use for nesting. The loss of

scattered large trees, particularly those with hollows is likely to adversely impact superb parrot populations in the ACT through the removal of breeding and foraging trees.

Superb Parrots were exclusively recorded at large trees (le Roux et al. 2017) and prefer particular kinds of hollows, especially hollow spouts of limbs which have broken off. Favoured trees in the ACT Blakely's Red Gum (*E. blakelyi*) including standing dead timber (Manning et al. 2004). Small groups of scattered mature trees are preferred rather than dense stands of *E. blakelyi* (letter from Neil Hermes President Canberra Ornithologists Group 26 May 2017)

Brown Treecreeper

The Brown Treecreeper is listed as Vulnerable under the NC Act. It is also listed as Vulnerable in NSW and the ACT, and is listed as threatened in Victoria.

Brown Treecreepers are found in woodlands dominated by eucalypts and with open grassy understorey. They are also found in semi-cleared pasture, in grasslands with scattered trees, in shelterbelts fringing cleared lands.

Habitat fragmentation is a major contributor to the decline of Brown Treecreepers. Fragmentation of habitat can disrupt the recruitment of juvenile females, resulting in some (isolated) groups in habitat fragments lacking a breeding female (Bounds 2017).

In the ACT, Brown Treecreepers have declined primarily due to continuing loss and fragmentation of habitat in woodlands and open forest. Their preferred habitat is not well represented in reserves such as Canberra Nature Park, and the rich grassy woodlands on the fertile soils of Canberra's limestone plains (primarily Yellow Box/Blakely's Red Gum woodlands) have largely been cleared for housing and urban infrastructure.

Brown Treecreepers are now regarded as very rare. The population at Campbell Park, once the local hotspot for this species, is gone and the Brown Treecreeper became locally extinct at the large reserves of Mulligans Flat and Goorooyarroo in northern Canberra in 2000 and 2005 respectively. This is despite these two sites representing the largest remnant of lowland grassy woodland in the ACT reserve system. The last bird remaining in an isolated territory is often a male; this was observed locally at Goorooyarroo Nature Reserve (Bounds 2017).

In other areas, the area surrounding the Kama nature reserve (mainly grazing leaseholds with scattered or groups of trees, known generally as Central Molonglo) is a critical element of the endangered woodland community used by Brown Treecreepers due to the presence of breeding hollows and the amount of fallen timber. The area was used for breeding by one group of Brown Treecreepers and used for feeding by two other groups. Brown Treecreepers were observed using areas up to 380 metres from the Kama Nature Reserve boundary fence (Bounds 2017). The Brown Treecreeper group breeding outside Kama was an integral part of the population and acted as a source of individuals for the breeding groups within Kama. However, there was little information known about the actual dispersal of female Brown Treecreepers (Bounds 2017).

The species is dependent upon large scattered trees for dispersal between remnant patches and prefers the use of large scattered trees over more densely vegetated corridors (Doerr et

al. 2011). Habitat fragmentation can disrupt the recruitment of juvenile females, resulting in some (isolated) groups in habitat fragments lacking a breeding female (Bounds 2017).

Glossy Black Cockatoo

The Glossy Black Cockatoo is listed as vulnerable under the NC Act and is also listed as vulnerable in NSW and Queensland and listed as threatened in Victoria.

The Glossy Black Cockatoo utilises large tree hollows in woodland and open forests up to 1000 metres elevation. They utilise large, high, near vertical hollows in aging or standing dead eucalypt trees, and have been recorded nesting in Blakely's Red Gum in the ACT. They nest close proximity to each other and need a relatively high density of suitably-sized hollows in close proximity.

Loss of suitable hollow-bearing trees, hollows not being replaced, and competition for hollows of a suitable size, are all significant threats (Cameron 2007). Glossy Black-Cockatoos prefer to nest close to each other, and so areas with stands of trees containing multiple hollows (a minimum of 14 cm) are a key resource.

The main apparent threat to the Glossy Black-Cockatoo is the degradation, loss and fragmentation of foraging and breeding habitat (ACT Government, undated). In particular, the loss of canopy seed banks of feed trees by clearing or regular burning, as well as poor regeneration of these trees due to grazing, can significantly reduce available food sources. Loss of hollow bearing nesting trees within the proximity of feed tree stands is also likely to be a significant impediment to successful breeding (Garnett and Crowley 2000; Mooney and Pedler 2005).

Fragmentation of native vegetation has significantly limited connectivity across the ACT. Glossy Black-Cockatoos avoid foraging in areas of sparse canopy cover, and therefore corridors of native vegetation are important for birds to locate new sources of food when local resources deplete. Regionally, corridors can help to assist genetic diversity by allowing dispersal of populations between NSW and the ACT and boosting populations to ensure viable numbers (Cameron 2007). Breeding has been recorded at Mt Majura with a clutch being produced in early May (Lenz et al. 2004). The birds lay a single egg in a hollow that may be lined with wood chips chewed from the edge of the hollow (Forshaw 1989). The same hollow is often used again in subsequent years by the same or different females (Higgins 1999; Mooney and Pedler 2005).

Nests are often located close to water. A record of a breeding pair at Mt Majura was located about 1.5 km from its drinking site (Lenz et al. 2004) and nests on Kangaroo Island have been found within 1.5 km of water (Cameron 2007). The relationship between nest sites and water may reflect the presence of larger trees in low parts of the landscape, with large trees more likely to form suitable nest hollows.

Mount Majura and Mount Ainslie are the only known significant patches of feeding and nesting habitat within the ACT. Rob Roy Nature Reserve might provide another area of significant habitat, as suggested by the relatively large numbers of chewed cones observed in the area.

Little Eagle

The little eagle is listed as vulnerable under the NC Act. It is also listed as vulnerable in NSW.

Loss of suitable trees for nesting may be impacting the little eagle across its range. In south-eastern Australia there has been a general and continuing decline in its abundance over the last 30 years based on indices established by national and regional censuses (ACT Government 2013).

The decline in reporting rate over the past 20 years for the south eastern highlands bioregion has been greater than 20% (NSW threatened species committee 2010). The Little Eagle has undergone a greater than 70% decline over the last 20 years leading to its listing (ACT Government 2013). The decline has also occurred across most bioregions of NSW, being greatest in the sheep-wheat belt (NSW Threatened Species Committee 2010). A continuing decline in the population is also suggested by the decrease in breeding records between atlas surveys (about 50%) (NSW Threatened Species Committee 2010).

Direct human threats to habitat are most evident around expanding provincial cities, where urbanisation and rural-residential expansion are displacing breeding pairs (NSW threatened Species Committee 2010). Loss of breeding sites may also bring the Little Eagle into increasing interspecific competition with the larger, dominant Wedge-tailed Eagle Aquila audax (NSW Threatened Species Committee 2010).

DESCRIPTION AND ECOLOGY

Definition

The Key Threatening Process, *Loss of mature native trees (including hollow bearing trees) and a lack of recruitment* is the loss of large mature trees, including 'paddock trees' - large-crowned trees on fertile soils and in small woodland patches where there is a lack of recruitment, as well as, standing dead timber and trees showing dieback.

As a guide, tree size, indicated as diameter at breast height (DBH) for Eucalypt species is considered at three sizes (small (20–50 cm DBH), medium (51–80 cm DBH), large (≥80 cm DBH)) (le Roux et al. 2017). Mature trees are considered to be those above 50 cm DBH. Mature trees of other species such as Allocasuarina (she oaks) and *Callitris* (cypress pines) are much smaller at maturity.

Importance of large mature trees

Mature trees occur extensively in the ACT's reserves and some mature native trees have been retained in urban landscapes. Mature trees persist in parks, small reserves and road corridors, although the density varies greatly.

The functions and values of native mature trees include:

- A source of natural recruitment
- a critical resource for wildlife for nesting, nesting materials, roosting, feeding and shelter;

- provision of foraging and shelter sites for ground-dwelling fauna when hollow-bearing trees collapse or shed limbs;
- “islands” or “stepping stones” across the landscape for a large variety of species (facilitating dispersion and migration, which in turn may aid species adaptation in the face of climate change);
- the last stronghold of the genetic diversity of some vegetation communities – many landscapes contain only scattered trees;
- a contribution to soil conservation and stability, water quality, air quality, nutrient cycling and carbon sequestration;
- pest management by providing shelter for insectivorous birds and bats;
- heritage landscape values (e.g. Aboriginal scar trees or trees within culturally important areas);
- landscape and aesthetic value, including substantial contribution to the surrounding landscape (Tree Protection Act 2005, Disallowable Instrument DI2018−50 Section 2);
- other socio-economic benefits in modified landscapes including provision of shade and mitigating against ‘heat island effect’ (Victorian Department of Sustainability and Environment undated; NSW NPWS 1999; Le Roux et al. 2014; Gibbons and Lindenmayer 2002).

Records of bird species in the ACT have shown that 29% of all bird species recorded at trees of varying sizes across the Canberra region were exclusively recorded in trees greater than 80cm DBH (at least 100 years old) (Le Roux et al. 2014). These bird species belonged to many different functional groups including:

- hollow-nesters like the Superb Parrot;
- insectivorous birds such and the Satin Flycatcher;
- nectivores such as the White-naped Honeyeater; and
- predatory raptors such as the Brown Falcon (Conservation Council et al. 2017).

This demonstrates the importance of large mature trees to the ACT’s bird species, but also to arboreal mammals such as possums, gliders and bats which use hollows for nesting and shelter (NSW NPWS 1999).

The importance of hollows in mature trees

Mature native trees provide a diversity of habitat structures including numerous hollows that have different physical attributes and dimensions that cater to the requirements of a multitude of different animal species (Conservation Council et al. 2017).

Hollows are cavities that form in the branches or trunks of living and dead trees. They are a unique characteristic of older, mature to senescent native trees (primarily Eucalyptus species), and only start to form in trees more than 120 years old (Conservation Council et al. 2017).

Hollows in tree branches form through a number of processes including wind damage, termites and other boring insect damage, lightning strikes, damage from fire or decay caused by fungal and bacterial infection (Gibbons and Lindenmayer 2002). Hollows form slowly in Australia as, in contrast to other continents, there are no vertebrate fauna that actively engineer hollows, such as woodpeckers (Gibbons and Lindenmayer 2002). Hollows with dimensions large enough to cater to the nesting requirements of larger native fauna (mammals, reptiles, owls and cockatoos) typically take more than 200 years to form (Department of Sustainability and Environment (VIC DSE) 2003; Conservation Council et al. 2017).

Because the number and size of hollows increases with tree age and size, larger trees tend to be disproportionately more valuable in the short term for wildlife, offering breeding and nesting opportunities to a range of taxa (NSW National Parks & Wildlife Service 1999).

The abundance of hollow bearing trees generally in south east Australia, including the ACT, has been reduced and fragmented by extensive clearing of native vegetation during the past two centuries, primarily for agriculture and urban development (NSW Scientific Committee 2007).

Hollow bearing trees occur throughout all treed ecosystems within the ACT: the distribution depends on tree species composition, site conditions, competition, tree health and past management activities (NSW Scientific Committee 2007). Notable species that form hollows important for species listed as threatened in the ACT include Yellow Box (*Eucalyptus melliodora*), Scribbly Gum (*E. rossii*) and Blakely's Red Gum (*E. blakelyi*), species most commonly found on the foothills and plains (Conservation Council et al. 2017).

A substantial depletion of hollows impacts on populations of hollow-using fauna and reduces the number of species that an area can support. Therefore, of particular concern in the ACT is the loss of those trees that occur on foothills and plains, where vegetation clearing has occurred at a greater intensity and there is little recruitment, resulting in a landscape characterised by mature scattered trees. In turn, these scattered trees within the landscape are under considerable on-going pressure for development and agricultural clearance on foothills and plains (Conservation Council et al. 2017). Most of the large mature native trees in the ACT region predate European settlement (Conservation Council et al. 2017).

It has been estimated that in Australia 15% of all birds, 31% of mammals, 10% of reptiles and 13% of all amphibians use hollows (Gibbons and Lindenmayer 2002). Species use of hollow bearing trees may be governed by the position of the tree in the landscape. Some species travel only short distances to forage and prefer hollows near the foraging areas. Other species are more mobile and may travel long distances to forage. (Conservation Council et al. 2017).

The numbers of hollows of the correct dimension(s) is also important. Some species nest in colonies and require large numbers of suitable hollows in a limited area or clusters across the landscape (e.g. some parrot species, wood-swallows and glider species), while others may require a local abundance of hollow bearing trees (e.g. some cockatoo species) (NSW Scientific Committee 2007 in Conservation Council et al. 2017).

In other cases, territorial species that do not tolerate other hollow-using species nearby require an even distribution of hollow bearing trees across the landscape. Many species select very specific hollows, both in the entrance diameter and internal cavity size. The hollows that may suit a certain species may only be a small percentage of the total number of hollows in any particular area. Frequently, the entrance to the hollow is most important, with species selecting hollow entrances proportionate to their body size (Conservation Council et al. 2017).

A substantial depletion of hollows impacts on populations of hollow-using fauna and reduces the number of species that an area can support. In conservation areas where trees have been removed through previous land uses or other catastrophic events, the number and density of hollow bearing trees should increase over time (Conservation Council et al. 2017).

While "natural" events such as bushfire or severe storms may still occur and impact on remaining hollow trees, the age structure and subsequent hollow formation will gradually come into a balance as these natural events also instigate hollow formation (Victorian Department of Sustainability and Environment, undated; NSW Scientific Committee 2007).

Importance of scattered native trees

In the rural landscapes of the ACT mature trees persist in cleared paddocks or in small fragmented copses (NSW Scientific Committee 2007).

Scattered trees (often large mature remnant trees) are keystone structures across the landscape because their contribution to the function of ecosystems is disproportionate relative to the small area occupied by any one tree (Fisher et al. 2010). Fisher et al. (2010) indicate that the marginal value of individual trees was highest when trees occurred at low densities. They indicate that "scattered trees effectively maintained moderate levels of bird and bat activity throughout largely cleared parts of the landscape" (Fisher et al. 2010).

The decline of native tree cover in agricultural landscapes is of concern because mature trees in partially cleared landscapes provide ecosystem services in quantities proportionally greater than their abundance (Manning et al. 2004). Small, young trees or exotic trees cannot provide those resources and small trees take centuries to mature into trees suitable for native fauna. With the loss of large trees, many fauna may experience population bottlenecks and even local extinction as their habitat requirements cannot be easily or

quickly replaced. The use of nest boxes is not a viable alternative for most species (Conservation Council et al. 2017).

In a local study, le Roux et al. (2017) found that bird abundance and richness were highest at trees located in modified landscapes, highlighting the value of scattered trees for birds. Bird communities also differed between non-urban and urban trees. Tree size had a significant effect on birds but did not affect trunk arthropods and bats. Large trees supported higher bird abundance, richness and more unique species compared to medium and small trees. le Roux et al. (2017) recommended that the retention and perpetuation of scattered trees in modified landscapes should be prioritised because of the crucial habitat benefits scattered trees provide to a range of species.

Standing dead trees

On a landscape basis, dead trees often account for 20–50% of the total number of hollow bearing trees but these are far more prone to collapse or incineration than live trees and are frequently selectively harvested for firewood (NSW Scientific Committee 2007) or removed for safety reasons. However, standing dead timber is of value to wildlife as standing dead trees also provide natural hollows (Gibbons and Lindenmayer 2002).

The NSW Scientific Committee (2007) found that dead standing trees in paddocks form a critical resource for threatened and non-threatened wildlife. They indicate that the presence of standing dead trees and woody debris is an important component of the structure of forest and woodland and helps determine the habitat value for a wide range of fauna (NSW Scientific Committee 2007).

THREATS

Net loss of large mature trees

In order to be adversely affecting a species or ecological community, the threatening process must currently occur where the species or ecological community occurs, and there must be evidence of a current effect.

Actions contributing to the loss of mature native trees in ACT include:

- clearing of mature native vegetation for agricultural intensification, urban development or infrastructure, asset protection and public safety (people and property);
- a continuing decline of existing large native mature trees as they age and senesce or suffer dieback;
- loss of trees (living and dead) through fire; and
- removal of dead trees and woody debris for firewood and ‘tidying-up’.

The eventual loss of mature trees will result in a large decrease in hollow availability over considerable areas in the short and long-term (NSW Scientific Committee 2007). Additional threats arise from a lack of recruitment of new trees, especially in already disturbed lands, a

possibility exacerbated through climate change and the removal of younger trees which means that there is a lack of succession (see section on 'lag effects').

An analysis of the extent of the loss of mature native trees was undertaken to provide evidence of a current effect. Diameter at breast height (DBH) is most commonly used to determine tree maturity and suitability for development of tree hollows (Manning et al. 2013). Verma et al. (2014) found a positive correlation between crown projective cover inferred from remotely sensed data and DBH across five eucalypt species and used canopy cover as a surrogate for DBH to quantify losses and informed the use of canopy cover in this analysis. SPOT-5 multispectral satellite imagery from December 2004 was used to determine a baseline for canopy cover of mature trees. LiDAR data from 2015 was used to determine post-development mature tree canopy cover.

A comparison of data between 2004 and 2015 provides evidence that the threatening process is current in some areas of the ACT. An analysis of canopy change was undertaken across areas, newly developed suburbs, older suburbs, rural areas, and reserves.

New suburbs showed a marked decrease in mature tree canopy cover between 2004 (pre-development) and 2015. In the developed suburbs sampled there was a decrease in canopy cover in some suburbs gains in others indicating that cover is reasonably stable. Tree cover on the assessed rural lands increased, particularly in the eastern study area showed an increase. In the nature reserves studied there was an overall increase in cover.

Although in some areas there is an increase in either or both numbers of trees and canopy cover, this does not mean that the impact of the threatening process is reduced because the habitat features lost take a considerable time to develop, and much longer than the canopy (for more information see sections on 'The importance of hollows in mature trees' and 'Lag effects').

Lack of recruitment

Past and present land-use changes are inhibiting the natural regeneration of Eucalypts in remaining temperate woodlands (Wilson and Gibbons 2014) and this is leading to a decline in native tree cover in agricultural landscapes (Weinberg et al. 2011). There is growing evidence that natural regeneration of Eucalypts is inhibited in intensively managed agricultural landscapes (Weinberg et al. 2011).

Regeneration of Eucalyptus species is not occurring across large areas of woodland in south-eastern Australia (Weinberg et al. 2011). Some of this is due to the impacts of land-use change but there are also naturally occurring conditions that may limit natural regeneration in relatively unmodified landscapes (Wilson and Gibbons 2014). Natural regeneration depends on three factors:

- a nearby seed source
- a level of seed predation low enough to allow germination

- the right soil conditions (Weinberg et al. 2011).

Eucalypt regeneration from seed is likely to be episodic (Weinberg et al. 2011; Wilson and Gibbons 2014). Regeneration is triggered by high moisture availability and mild climatic conditions associated with above average rainfall (Wilson and Gibbons 2014). Other factors affecting regeneration include soil stability and soil hardness, microclimate and shelter for seedlings competition from other species such as annual weeds (Wilson and Gibbons 2014). Wilson and Gibbons (2014) identified that regeneration is likely to occur at microsites where seed and resources can accumulate after rain.

Regeneration is inhibited by cultivation, grazing by livestock and other herbivores and competition with weeds (Weinberg et al. 2011). Grazing impacts germination and, if germinations occurs, new growth is limited through grazing from domestic stock, invertebrates, rabbits, hares, deer, and some native vertebrates such as kangaroos and wallabies (Weinberg et al. 2011).

Lag effects

The time lag for recruitment of large trees and the likely impact of climate change mean that the key threatening process is likely to have an ongoing impact. The impact is likely to be exacerbated through eucalypt dieback, possibly evidenced by decline in canopy cover in reserved areas (e.g. Goorooyarroo Nature Reserve).

Scattered mature trees often have a shorter lifespan than similar aged trees occurring within a woodland setting (NSW Scientific Committee 2007). Scattered mature trees may be in poor health and showing symptoms of 'dieback' and they may be more susceptible to insect infestations (NSW Scientific Committee 2007).

In addition, through grazing pressure, compaction or other causes there may be a lack of recruitment (see section on lack of recruitment].

There is also a lag effect from historical loss of large trees (Manning et al. 2013). The lag effect is the time needed for a tree to age sufficiently to develop suitable hollows which may be greater than 120 years and result in a possible ‘extinction debt’ (Manning et al. 2013).

The lag effect is already likely to be impacting species survival as a result of historical clearing but there are likely to be further lag effects as a result of climate change and eucalypt dieback.

Lag effects can result in ‘hollow-limited population bottlenecks’ because hollows take such a long time to form (Manning et al. 2013). Manning et al. (2013) indicate that the only scenario which would avoid a significant bottleneck for hollow dependent species would be to take ‘immediate action to reduce tree mortality and enhance tree regeneration’.

Firewood Collection and 'Tidying-up'

The collection of firewood from Box-Gum Grassy Woodland remnants significantly reduces the habitat value. Box-Gum Grassy Woodlands may be threatened by dead timber removal as they contain preferred firewood species (DECCW 2010). The significance of the threat posed by this activity is recognised by the listing of the "Removal of dead wood and dead trees" as a Key Threatening Process under the *Threatened Species Act 1995* [NSW] (now *Biodiversity Conservation Act 2016* [NSW].

"Tidying-up" of rural lands involves the removal of standing dead timber, fallen logs, rock and litter from woodland areas significantly reduces habitat (nesting, shelter and foraging substrates) for many woodland fauna species (invertebrates, amphibians, reptiles, small mammals) and has been linked to the loss of woodland birds (DECCW 2010). The detrimental impact of "tidying up" on the natural ecosystems is currently recognised by the listing of the "Loss of hollow-bearing trees from Victorian native forests" and "Loss of coarse woody debris from Victorian native forests and woodlands" as Potentially Threatening Processes under the *Flora and Fauna Guarantee Act 1988* [VIC] (DECCW 2010).

CURRENT PROTECTION AND MANAGEMENT IN THE ACT

Legislative and other provisions

Nature Conservation Act 2014

Large mature native trees are protected under the provisions of the *Nature Conservation Act 2014* on unleased land (s.144) and leased land outside the built-up areas (s.145).

It is an offence to damage a native tree on leased land outside the urban area (NC Act, s.145). There are exceptions, including:

- trees planted by the leaseholder
- trees damaged by an occupier of the land with the intention of using it on the land for a purpose other than sale
- the landholder has development approval under the *Planning and Development Act 2007.*

It is also prohibited to damage or remove fallen native timber from leased land outside the built-up area (NC Act, s.146).

Rural lease conditions

Lease conditions for rural leases generally include the standard clause, "That the Lessee shall not cut down fell ringbark or otherwise injure of destroy (or suffer to permit the same) any live tree or tree-like plant on the land without the previous consent in writing of the Territory". Leaseholders therefore generally require a licence under the NC Act and authorisation under the lease to remove living trees. Land Management Agreement's signed by the Conservator of Flora and Fauna and the rural lessee may also include provisions.

Tree Protection Act 2005

Most trees on leased land in the ACT are protected under the *Tree Protection Act 2005* (TP Act). Trees covered by the TP Act are either Regulated Trees or Registered Trees. Any work which may cause damage to these trees, such as tree removal, major pruning or lopping and groundwork near a regulated or registered tree requires approval.

Regulated Trees are any tree (native and introduced) that is 12m or more in height or have a canopy 12m or more in width and/or have a trunk circumference of 1.5m or more, 1m above natural ground level and/or have two or more trunks and the total circumference of all the trunks, 1m above natural ground level, is 1.5m or more.

Registered Trees are trees across leased and unleased urban land that are assessed as having exceptional value. Exceptional trees may be included on the tree register if they are considered to be of high heritage, landscape or scientific value. The Conservator of Flora and Fauna makes the final decision in the light of advice from the Tree Advisory Panel.

'Landscape and aesthetic value' is a criteria for registration under the Tree Protection Act. The object of this value is to identify trees that are of particular importance to the community due to their substantial contribution to the surrounding landscape. A tree is considered to be of landscape and aesthetic value if it is situated in a prominent location when viewed from a public place and it contributes significantly to the surrounding landscape based on its overall form, structure, vigour and aesthetic values; or represents an outstanding example of the species, including age, size or habit; or is an exceptional example of a locally native species that reached maturity prior to urban development in its immediate vicinity. Landscape and aesthetic value is a very important factor in the ACT's tree protection and management policies.

Approval is required for any activity that is likely to cause damage to a Registered Tree. This includes killing or removing a tree, major pruning or activities that are likely to cause the death or decline of a tree or significantly and adversely affect the trees health, stability or general appearance. Any proposed groundworks within the tree protection zone of a protected tree also requires approval.

The provisions of the TP Act do not apply to trees on rural land except a tree has been placed on the Tree Register. The TP Act does not apply to unleased land, including roadsides, open space and reserves: the NC Act applies to those lands (ss 140-146).

The Heritage Act 2004

The *Heritage Act 2004* provides for registration of urban trees where an urban tree forms part of a place; and the council decides to register the place.

Planning and Development Act 2007

The *Planning and Development Act 2007* (PD Act) requires development approval be given if a proposal impacts on existing vegetation and regulated or registered trees. A development approval for a development in the merit or impact tracks needs cannot be inconsistent with the advice of the Conservator of Flora and Fauna in relation to registered trees. The PD Act also requires an impact assessment for any proposals that involve the clearing of more than 0.5 ha of native vegetation outside of areas designated as a future urban area and 5 ha inside designated future urban areas unless the Conservator of Flora and Fauna produces an environmental significance opinion that the clearing is not likely to have a significant adverse environmental impact. Impact assessment requirements also apply to any development proposals that will have significant adverse environmental impacts on threatened and protected species.

Management of Urban Trees

Transport Canberra and City Services (TCCS) is responsible for managing and maintaining trees on public land within the urban area. This includes trees on suburban streets, in parks, at local shopping centres, on major road nature strips and medians and in other open spaces in Canberra. The key objectives of urban tree management are to enhance the landscape setting for the city, to maintain a safe and sustainable urban forest and to conserve the natural environment. TCCS achieves these objectives through regular:

- inspection
- pruning
- watering
- removal of dead, damaged or hazardous trees and
- replacement of dead or ageing trees.

Trees are removed when/if:

- they are dead, damaged or in irreversible decline
- they constitute a traffic hazard/other identifiable hazard to public safety which cannot be corrected by pruning or
- they are interfering with above or below-ground services such as power lines or water pipes and the problem is likely to require repeated remedial action.

Tree replacement (both native and non-native species) is an important part of the maintenance of Canberra's public landscape. Ageing trees in parks and streets are subject to strategic tree replacement programs. Parks and streets where aging trees need to be removed and replaced are identified and, subject to funding, these sites are included on the annual tree replacement program.

CONSERVATION ISSUES AND PROPOSED MANAGEMENT ACTIONS

The priority management objective is to reduce the loss of mature native trees and its impact on threatened native species and to improve recruitment of native woodland tree species across the ACT.

Protection

Actions to mitigate against the loss of mature native trees include:

- Restrict, as far as possible, clearing of:
    - mature eucalypts over 50 cm diameter at breast height
    - mature native trees that contain nest hollows
    - native trees (other than eucalypts) that have reached approximately 67% of their maximum diameter.
- Promote retention of standing dead trees wherever possible.
- Encourage retention of non-mature native trees across urban and rural landscapes to ensure a future supply of mature trees and avoid lag times.

Conservation and management

Actions to promote improved health of mature native trees across the landscapes:

- Provide funding and support to encourage rural landholders to manage stock and control grazing to reduce compaction and accumulations of nutrients under trees to enhance recruitment and health of isolated trees.
- Maintain connectivity of woodland tree species at a range of temporal and spatial scales.

Actions to promote improved recruitment:

- Provide buffer plantings around isolated trees
- Fence off isolated remnants and trees to reduce grazing pressure
- Continue to fund:
    - tree replacement programs in urban areas
    - revegetation programs across the ACT.

Survey, Monitoring and Research

- Continue to specifically monitor loss of mature trees across the ACT's landscapes.
- Continue research on
    - Eucalypt dieback in the ACT
    - Appropriate provenance for revegetation programs under climate change.

OTHER RELEVANT ADVICES, PLANS OR PRESCRIPTIONS

Similar listings and advice in other jurisdictions relate to the loss of hollow bearing tress and the removal of dead wood and dead trees. Links provided below.

New South Wales

- Loss of Hollow-bearing Trees - key threatening process listing - final determination (2007)
- Removal of dead wood and dead trees - key threatening process listing - final determination (2003)

Victoria

- Loss of coarse woody debris from Victorian native forests and woodlands
- Loss of hollow bearing trees from Victorian native forests

LISTING BACKGROUND

A nomination of the threatening process *Loss of hollow bearing trees* was made by a group led by the Conservation Council (ACT) and was assessed against the eligibility criteria outlined in the Nature Conservation (Key Threatening Processes Eligibility) Criteria 2016 (DI2016-256).

The Committee considered the nomination and supplementary information provided by the nominators, and other research on large mature native trees within the ACT and region. The Committee agreed to broaden the threatening process from the loss of hollow bearing trees to the key threatening process of *Loss of mature native trees (including hollow bearing trees) and a lack of recruitment.*

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FURTHER INFORMATION

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