Tawny Frogmouth *(Podargus strigoides)*: Habitat Requirements - Threats and Threat Mitigation Actions

Tawny Frogmouth male protecting egg/s on nest 2020 Blackburn

The viability of Tawny Frogmouths is threatened when habitat changes result in the removal of any one of their life supports.

Tawny Frogmouth population numbers appear to be in decline in some Melbourne suburbs. Urgent action is required to manage Tawny Frogmouth population recovery to avoid local extinction.

Tawny Frogmouths are a nocturnal native Australian bird species which typically inhabits Woodland ecosystems. Their habitat requirements are dictated by their physical size and shape, diet and their social structure.

They live continuously within a territory where the territory size is dictated by the availability of what they need in daily food supplies, and suitable mature Australian native trees for daily roosting branches, foraging perch branches and seasonal nest sites.

Tawny Frogmouths do not migrate.

Significant habitat loss is expected to force Tawny Frogmouth pair displacement into adjacent territories resulting in territorial disputes and potential death.

As a general rule, **mature Australian native trees** have the **horizontal or near horizontal** strong tree branches with appropriate lateral support at branch junctions which are selected by Tawny Frogmouths for their nest sites. ***[The branch structure inherent in many Exotic tree species is generally unsuitable for Tawny Frogmouth nest sites.]***

Tawny Frogmouth *(Podargus strigoides)* Habitat Requirements - Threats - Threat Mitigation Actions

Tawny Frogmouth behaviour & physical shape - capability & constraints	Tawny Frogmouth life supports The viability of Tawny Frogmouths is threatened when habitat changes result in the removal of ANY ONE of these life supports **What** they need	**When** they need it	**Where** they find it	Threats Consequence of threat: **Tawny Frogmouth death**	Threat Mitigation Actions
FEEDING Large wide beak able to snap small twigs but not tear prey, able to kill and reduce prey size for swallowing by grinding between beak rim Excellent eyesight/hearing Carnivorous diet [not vegetarian]	**Food** Live insects; (beetles, bugs, caterpillars, cockroaches, moths) and spiders, centipedes, snails, slugs and worms as well as small vertebrate food which fits into their beaks More food needed when feeding chicks and juveniles in late Spring and Summer	**Daily** Mostly at night but will sometimes feed during daylight	**Food location** Wherever the food lives on the ground or in the air In the urban environment alternative hunting locations are grassy garden lawns/roadsides [ground level], and artificial night lights visible outdoors attracting insects/moths [aerial]	**Starvation from reduced quantity of available food resulting from** • Drought • Reduction in ground available to support live insect food. Increased ground soil coverage from more housing and "hard" surfaces; driveways, paving, wider roads • Reduction in quality of ground, mid and upper storey food habitats • Presence of excessive amount and brightness of artificial night lighting causing disruption to insect life cycles	**Increase availability of live insect food** • Provide systems to retain rain water in ground soil and add water in drought periods • Reduce the effective areas of hard surfaces by adding leaf litter to hard surfaces and open soil in containers, pot plants • Retain natural leaf litter as ground storey in gardens and outdoor areas • Plant vegetation to increase available biodiversity • Use natural lawn grasses rather than artificial lawn substitutes • Reduce brightness of night lighting, spot lighting and overall ambient night lighting levels
ROOSTING AND PERCHING Foot structure adapted for sustained perching not killing or feeding	**Daytime roosting branches and other night time forage perching branches** **Daytime:** Secure, strong, daytime roosting branches long enough for adults to roost on Daytime roost branches in safe positions away from predators with good surveillance of surroundings, shielded from harassment **Night time:** Secure, strong, night time forage perching branches long enough for adults to perch on at a height which allows optimum surveillance and capture of live ground and aerial prey	**Daily**	**In mature Australian native trees** **Roosting:** Open aspect, stable, tree branches with • overhead cover, such as another larger branch and/or more tree canopy above the roost branch • Adjacent trees/tall shrubs to provide shielding **Forage perching:** Open aspect, stable, tree branches at above-ground heights which allow optimum surveillance and capture of live aerial and ground prey	**Accommodation loss** **Loss of tree branches used for day roosting and night forage perching due to** • tree removal • tree branch pruning, removal of - live branches and - 'dead wooding' • windstorm tree damage • tree death **Loss of surrounding shielding canopies** - foliage loss; drought, overgrazing by possums, insect attack - removal of adjacent trees and shrubs	**Maintain existing Accommodation** Retain existing tree branches used for day roosting and night forage perching • Retain and maintain live trees - especially rough barked species and all live trees with strong near horizontal branches - remove ivy - protect canopy, install possum exclusion - reduce windstorm damage by appropriately timed reduction in canopy weight • Retain safe dead trees • Retain safe dead wood on live trees - especially horizontal safe dead wood • Retain existing shielding canopies • Provide water for strategic trees during periods of prolonged drought • Maintain strategic Tawny Frogmouth tree records **Create future Accommodation** Create new day roosting and night forage perching tree branches - Long lead time [50+ years] Plant more trees of appropriate native species in strategic locations. *Refer Note1* • Plant appropriate shielding canopies • Avoid planting of known possum preferred foraging foliage species near strategic Tawny Frogmouth trees
REPRODUCTION - NESTING **Nest building** Nest size slightly bigger than the sitting adult bird's body Builds a new nest every year [Tawny Frogmouths do not nest in tree hollows or nest boxes] Tawny Frogmouth pairs will often attempt to raise a second brood within the same nesting season if they successfully raise chick/s early in the breeding season or if first attempt fails	**Nest branches: Open aspect horizontal or near horizontal strong tree branches** ***Refer Note 1*** Secure, strong, relatively flat, protected area big enough to hold the nest under the adult bird	**Nesting season - once per year** Typically August to January 2 months on/at nest plus some time to build it	**In mature Australian native trees [Exotic tree species generally have the wrong shape]** Open aspect horizontal or near horizontal strong tree branches with suitable lateral support at branch junctions, sometimes using main tree trunk as support	**Accommodation loss** **Loss of suitable, strong, horizontal tree branch junctions due to** • tree removal • tree branch pruning, removal of - live branches and - 'dead wooding' • windstorm tree damage • tree death	**Maintain existing Accommodation** Retain and maintain existing and potential nest branch trees • Retain and maintain live trees - especially rough barked species and all live trees with strong near horizontal branches - remove ivy - protect canopy, install possum exclusion - reduce windstorm damage by appropriately timed reduction in canopy weight • Retain safe dead wood on live trees - especially horizontal safe dead wood • Retain existing shielding canopies • Provide water for strategic nest trees during periods of prolonged drought • Retain lower level vegetation around nest branch for fledglings first flight landing site **Create future Accommodation** Create new nest tree branches – Long lead time [50+ years] Strategic location native tree planting • Plant native tree species favoured by Tawny Frogmouths *Refer Note 1* • Plant appropriate shielding canopies • Plant suitable lower level vegetation around nest branch tree for fledglings first flight landing site • Avoid planting of known possum preferred foraging foliage species near strategic Tawny Frogmouth trees
	Require several suitable nest branch trees within their territory	Will re-nest after nest failure	Will often reuse the same branch site to build a new nest on year after year		
	Safe fledgling landing sites: Suitable open access, strong branches below nest height for fledglings to land on after first flight from nest.	First flight	Adjacent vegetation below nest height	**Loss/absence of suitable off ground, fledgling first flight landing sites due to** • removal of lower vegetation surrounding nest tree	

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Tawny Frogmouth behaviour & physical shape - capability & constraints	**Tawny Frogmouth life supports** The viability of Tawny Frogmouths is threatened when habitat changes result in the removal of ANY ONE of these life supports			**Threats** Consequence of threat: **Tawny Frogmouth death**	**Threat Mitigation Actions**
	What they need	**When** they need it	**Where** they find it		
REPRODUCTION – SOCIAL BEHAVIOUR/ GENETICS Live together as the same adult pair sometimes with additional adults close by [mature juveniles from last season's nesting]	Another partner when one partner dies or is killed	**After death of partner**	Within neighbouring territories	**Lack of adjoining territories**	**Retain, maintain and extend suitable wildlife habitat in adjoining areas, links and corridors**
FLIGHT – AIRBORNE Medium sized bird capable of level flight and manoeuvring if sufficient wing space available, excellent targeted food location in open areas	Wide enough gaps to fly through Enough secure ground /branch space to land on and take off from	**Daily** Mostly at night but will fly during daylight	Clear airspace	**Presence of Obstacles** • Permanent; Constructions built in space used by Tawny Frogmouths for flight access to branches for roosting, perching and nesting • Moving obstacles; moving vehicles	**Remove and/or reduce obstacles** **Building Planning** • Ensure open access to tree branches used by Tawny Frogmouths for perching, roosting and nesting **Moving vehicles/ traffic control** • Educate drivers to be watchful for and avoid nocturnal wildlife • Install appropriate speed restriction signage
FLIGHT - TAKE OFF, LANDING Slow to fly off the ground and gain altitude	Enough secure ground /branch space to land and take off	**Daily** Mostly at night but will fly during daylight Every take off and landing	Open aspect, stable, tree branches Stable ground surfaces	**Presence of Moving obstacles** • Obstacles in take off /landing flight space	**Remove and/or reduce moving obstacles** **Moving vehicles/ traffic control** • Educate drivers to be watchful for and avoid nocturnal wildlife • Install appropriate speed restriction signage
PREDATOR EVASION Excellent camouflage; posture and colouring mimic tree branches Slow escape ground take off flight speed; slow to fly off the ground and gain altitude	**Protection from predators / Time to evade predators. Safe day roosting and nesting tree branches, safe night foraging perches**: **Daytime:** Secure, strong, roost branches in safe positions away from predators which provide good surveillance of surroundings, shielded from harassment **Night time:** Secure, strong, night time foraging perch branches big enough for adults to perch on which provide good surveillance of surroundings	**Daily**	**Mature Australian native trees** Open aspect, stable, tree branches • with overhead shielding cover, such as another larger branch and/or more tree canopy above the roost branch • adjacent trees/tall shrubs to provide shielding	**Presence of active and passive predators** **Active predators; direct killers** • Moving vehicles • Cats, domestic and feral • Red fox • Possums; brushtail possum, sugar glider • Predatory birds; Pied Currawongs, Little Ravens, Owls **Passive predators; indirect killers** • Poisons ingested from food sources; pesticides [eg rat bait, snail killer] • Parasites present in black rats ingested as food source [*Angiostrongylus cantonensis*]	**Reduce/eliminate presence of active and passive predators** • Educate vehicle drivers to be watchful for and avoid nocturnal wildlife • Keep cats indoors at night; block cat door and provide indoor cat litter tray. Add a cat collar bell to cat's collars • Reduce Red fox populations; discourage active and opportunistic feeding of Red fox • Avoid overpopulation of possums - Limit numbers of artificial possum nestboxes - Plant species which are not possum preferred foraging foliage - Plant diversity of tree species rather than large areas of same species • Discourage active/opportunistic feeding of predatory birds • Avoid use of insecticides, fertilisers and/or other chemicals known to persist in the food chain and be toxic to birdlife • Reduce/eliminate black rats harbouring parasite

Note 1. Nest Branches: Significantly, nearly all Tawny Frogmouth nests sites are found in mature Australian native trees. The advanced age Australian native trees provide the **strong horizontal** or **near horizontal** tree branches with appropriate lateral support at branch junctions which are suitable for Tawny Frogmouth nest sites. In Melbourne, Victoria, some suitable Australian native tree species are Silver-leaved Stringybark, Yellow box, Ironbark, Peppermint, River Red Gum and Manna Gum Eucalypts [*E. cephalocarpa, E. melliodora, E. sideroxylon, E. radiata, E. nicholii*, *E. camaldulensis, E. viminalis*]. Exotic tree species generally have unsuitable branch structure. Even in an established urbanised mature treed environment it is extremely unusual to find Tawny Frogmouth nest sites in exotic trees.

Note 2. References: "Tawny Frogmouth (*Podargus strigoides*) Habitat Requirements – Threats - Threat Mitigation Actions" Table_Version 8.1, prepared by R. Ault 29 Jan 2022 with reference to "Tawny Frogmouth" Gisela Kaplan 2018 CSIRO Publishing and further personal communication from Gisela Kaplan. Also personal discussions with Melbourne based bird observers.
For further information about rat poisons affecting Tawny Frogmouths refer Birdlife Australia website https://www.actforbirds.org/ratpoison