

A guide to

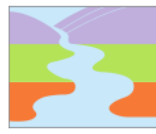
# Greater Gliders

of the Upper Burnett



**BCCA**  
BURNETT CATCHMENT CARE ASSOCIATION





# BCCA

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## Acknowledgement

This guide is part of BCCA's 'Saving the endangered Greater Glider project - a community education program that includes the enhancement of habitat and nesting sites to assist recovery in the Upper Burnett Catchment' project. It is funded by **WIRES National Grants Program** and **Evolution Mining**. It is proudly supported by:

- The Men's Shed (Monto)
- Goondicum Pastoral Co.
- Wildlife Preservation Society of Queensland (WPSQ)
- Accounting for Nature (AfN)
- Safe Haven - Australian Animal Care & Education (AACE)



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# Greater Gliders

**Greater Gliders populations have decreased by 80% over the last 20 years and the quality of remaining private forestry habitats are now more important than ever.**

As the worlds largest gliding marsupial (~1metre in length), the Greater Glider (*Petauroides volans*) is an endangered hollow dependent arboreal and eucalyptus feeding specialist, with a diet similar to that of koalas. Their rapid decline over the past 2 decades is due to land clearing, bushfires and forest fragmentation but has been exacerbated by its slow breeding characteristics and its reliance on the large hollow-bearing trees of old growth forests.

Greater gliders are solitary animals and preferentially prefer dry ironbark forests with in the Burnett Mary region, however, they do occupy eucalypt forests, open woodlands and gum topped box forests from Queensland through to Victoria. Research suggests that the greater preference for dry ironbark forests throughout the Burnett Mary catchment may be directly correlating to these forests possessing more hollow-bearing trees (HBTs) rather than being a preferred feed tree species.

Large hollows from old growth forest are required because these gliding arboreal mammals are BIG, reaching up to more than 1m in length (from tip to tail) and weighing up to 1.7kg. Greater gliders can glide up to 100m and come in a range of colours from dark grey or dusky brown through to a light grey or almost white. Some isolated populations may include only one colour morph while others will consist of several colours across the population, even amongst related individuals.


Greater gliders tend to show distinct regional preferences for feed tree specieses. In southern Queensland these are spotted gum (*Corymbia citriodora* subsp. *variegata*), pink bloodwood (*C.intermedia*), narrow-leaved red ironbark (*Eucalyptuscrebra*) and forest red gum (*E.tereticornis*), however no data currently exist to confirm whether this is true for the Upper Burnett region. Flushes of new growth are thought to provide greater nutrition and regularly occur on large old trees more so than younger less established trees. This may be because of deeper root systems that allow access to ground water and provides greater resilience to drought and bushfire events.

## WHY DO THEY NEED HOLLOWES?

Hollows are used by greater gliders as night-time dens for reproduction and protection from their greatest predator, the powerful owl. Greater gliders are known have relatively small home ranges of 1 to gha but with up to 20 dens that they use on a random rotational basis, presumably to evade powerful owls who will stake out hollows waiting for the occupier to return.





A close-up photograph of a greater glider, a white marsupial, clinging to the bark of a tree trunk. The glider's body is pressed against the bark, and its limbs are visible as it grips the tree. The background is a clear blue sky.

A greater glider from Goondicum Pastoral Co. in the Upper Burnett. They will use both living hollows & those of dead trees.

### **BUSHFIRES, FOOD AND HOUSING**

Hot burning bushfires can scorch the canopy and denude a landscape, increasing gliders vulnerability to starvation and predation from owls, other raptors and snakes.

During the bushfires of 2019-2020 almost 1/3 of greater glider habitat was affected and many populations are believed to have completely disappeared.


If bushfires are hot enough they may also destroy nesting habitat contained in old dead trees. Though they are not as thermal resistant as living hollows, hollows of dead trees may still provide housing options for gliders evading predators and a place for them to sleep during the day. Leaving old dead trees on your property can provide important nesting & den habitat.

### **HIGHGROUND AND SLOW BREEDING**

Greater gliders tend to prefer habitat on hills and ridgetops, away from riparian zones and waterways. They also obtain their water requirements from their diet of eucalypt leaves lessening the need to be near water.

The breeding season is often the only time they will share den space, before the females give birth to a single joey. Breeding does not always occur each year, slowing their breeding capacity and conservation/recover efforts.

**CULTURAL AND COOL BURNS  
HAVE THE BENEFIT OF REDUCING  
FUEL LOADS, REMOVING WOODY  
WEEDS AND PEST SPECIES,  
IMPROVING GRAZING PASTURE  
AND MAINTAINING THE  
INTEGRITY OF LARGE TREES AND  
CANOPY COVER.**

A photograph showing a bushfire burning in a forest. Bright orange flames are visible at the base of the trees, with smoke rising into the air. The trees are thin and appear to be eucalyptus.

Slow cool burns can reduce the risk of bushfires and improve grazing.

## FLYING HIGH - GET YOUR ELBOWS OUT! ..... 'WAIT! WHAT?'

Unlike other gliding mammals, the gliding membrane of greater gliders connects at their elbows rather than the wrists. Therefore, when gliding they tuck their front paws under their chin and extend their elbows forward. Highly maneuvering flights with **turns of up 90° are possible on glides with a distance of up to 100m.**

## SHOULD I RESTORE OR RETAIN HABITAT? .....OR BOTH?

Hollows are the greatest limiting factor in greater glider abundance. A minimum of 3 to 6 large hollows per hectare are required to maintain greater glider populations. However, as previously mentioned, they can utilise up to 20 nesting dens in their home range in an effort to evade predators.

It is far easier and cheaper to manage, protect and retain the nesting habitat that already exists from deterioration and destruction, than it is to restore or create it. Often old trees with existing hollows are not as ideal for timber harvesting as straight tall younger trees with solid cores. This allows old growth trees to exist well in grazing production & private forestry harvesting systems while also providing shade, biodiversity and fertility values and maintaining critical nesting habitat for hollow dependent arboreals, such as greater gliders.

When revegetating an area, it is often cheaper and easier to manage regrowth of naturally occurring species than it is to plant new trees. This method can also be used to connect patches of remnant vegetation, providing corridors or 'stepping stones' across a landscape and enabling safe passage between adjacent forested areas, especially along ridgetops and riparian areas. It can also be used to enlarge an existing remnant area. **Remember trees need to be within gliding distance apart.**

Supplementary planting may boost your overall restoration efforts and improve the diversity of natural regeneration results, where germination is limited to only a couple botanical species. It is also important to consider weed control and possibly fencing or tree guards to reduce grazing pressure on young plants.

### NESTING BOXES - A GOOD ALTERNATIVE?

If there is a housing shortage in your local greater glider community, strategically placed nesting boxes can provide a suitable short-term alternative (up to 10 years). Another more permanent option is having living hollows professionally carved into large trees by an arborist. While they will last the life of the tree (presumably >100 years) they are more expensive to install.



## WHAT TO PLANT (HINT.... IT'S NOT JUST EUCALYPTS!)

Biodiversity is essential to maximise benefits to all wildlife species as well as agricultural production systems. Planting what existed prior to disturbance is a great idea but not always achievable in practice. However, the Queensland government has a website that allows land managers to identify the remnant and preclearing vegetation of their properties that will assist you in identifying the potential and appropriate species for restoration and retention projects.

Visit: [www.qld.gov.au/environment/pollution/management/environmental-reports-online](http://www.qld.gov.au/environment/pollution/management/environmental-reports-online)

Greater gliders are folivores, meaning they are herbivores that specialise in eating leaves. In their case it is almost entirely eucalypts with a preference for young leaves due to their high nitrogen and low fibre levels, much like koalas. However, Greater Gliders are known to also feed on the buds and flowers of eucalypts, the young cones of the radiata pine tree, phyllodes of acacia plants and even mistletoe. Variety is key.

In the case of other gliders (such as yellow-bellied, sugar and feather-tailed gliders) the nectar and fruits of a variety of smaller trees and shrubs and/or insects make up the majority of their diets. Further necessitating the importance of flora diversity for the benefit of all species.

**Food for thought:** The more critters eating different things and pooping out little bite sized fertiliser pellets, the more fertile your soil and the more productive your land is long-term.

### PLANTING + HABITAT RESTORATION HINTS

1. Protect remnant vegetation including large, old trees (dead or alive) with hollows
2. Plant near or adjoining remnant vegetation to allow gliders access to food and hollow. Corridors between habitat passage also allows gliders safe passage
4. While eucalypts and related species are the most important for greater gliders, diversity in other species is important
5. Choose species native to your area &/or suited to your soil type, climate & rainfall
6. Prepare the ground with a hole twice the width & depth
7. Water well once planted & until established + manage weeds & provide nutrition
8. Install nesting boxes or artificial hollows where housing is in short supply





Restoration and retention of habitat trees can also assist in erosion control, stream bank stabilisation, improve water quality, provide shade for stock, and aid crop pollination. However, if you are needing to restoring nesting habitat there are some important considerations to keep in mind.

## NESTING BOX DESIGN & INSTALLATION

Nesting boxes can be a great short-term option to improving den sites for many species. You can either purchase them or make your own, however, Greater Gliders are large, mostly solitary animals and require a specially designed box suitable to their needs.

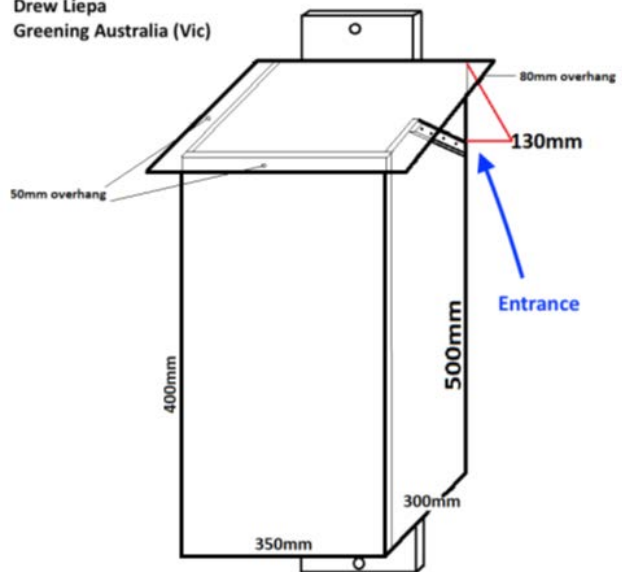
The nesting box design by Drew Leipa (right) is the most commonly used design and can be made from various wooden materials and painted or oiled to prevent deterioration. Or marine ply can be substituted to increase durability.

While making or obtaining nesting boxes may be easy enough, installation may prove a little more challenging.

A minimum height of 10 meters is recommended for Greater Glider boxes which is generally out reach of the average person. For that reason they should be installed by a licensed professional arborist and should be mounted facing south or south-east to avoid overheating by remaining in the shade of the tree and out of direct sunlight.

Greater Glider nest box design

Drew Leipa  
Greening Australia (Vic)



See Appendix 1 for a more detailed nesting box design.





Gliders are more vulnerable to entanglement along movement corridors and in forested areas. These are priority zones for glider-friendly fencing.



### **GLIDER-FRIENDLY & CATTLE PROOF FENCING**

Barbed wire is often a necessity in grazing production systems. Cows have very little respect for plain wire unless its electrified. However, barbed wire can also be a very real threat to gliders and many times, resulting in death.

Using a plain top-wire however, can dramatically improve glider fatalities without compromising the effect on cattle with the remaining 3 barbed wires. Although poly pipe or white tape on the top wire can improve visibility to gliders, it is not always practical or financially feasible. A plain top wire during construction is an easy, cost effective and glider friendly alternative.

**GLIDER-FRIENDLY FENCING  
CAN BE A COST EFFECTIVE  
WAY OF IMPROVING  
FATALITY RATES CAUSED  
BY ENTANGLEMENT -  
WITHOUT COMPROMISING  
THE FENCES FUNCTION AS A  
CATTLE PROOF BARRIER**

### **SPOTTING GREATER GLIDERS IN THE DARK**

A spotlight is very useful for seeing shining eyes in the treetops at night. Greater gliders are very quiet and have an eyeshine colour of white-yellow to bright-orange. However, spotlights can also be very intense and blinding so are best used with a dimmer or red filter once the glider is spotted.

Look for greater gliders in the high tops of old eucalypts. They can be completely silent, but are easily identified from other species by their yellow to orange eyeshine.

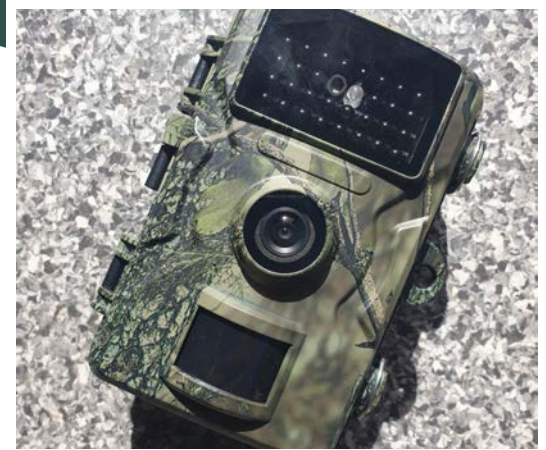




Another useful tip is to conduct your spotlighting on dark nights with minimal to no moonshine while focusing your efforts on high branches of the oldest trees such as eucalypts, including gum-topped box, river red gums, and ironbark species. Do not shine your spotlight at any animal for too long as this can be very blinding. Torches with red filtered light or dimmer switches are particularly useful to avoid this.

### **WILDLIFE CAMERAS & MONITORING STATIONS**

If you are keen to see the diversity of animals that are present across your property, unmanned wildlife cameras can really help you to identify both native and pest animals without spending hours in your paddock at night.



Wildlife cameras can be a great way to monitor both wildlife and feral animals. With so many on the market you are bound to find one that suits your needs and budget.

It is a good idea to use the same monitoring points at different times of the year to compare the animals in the same space across time. To assist making your monitoring efforts as efficient and effective as possible, you may choose to use scent lures such as fish oil, fauna balls or real Canadian maple syrup during your monitoring efforts but not as a feed station.

Wildlife cameras can also be great for monitoring your nesting box and are often more practical than 'webcams for nesting boxes', especially where internet access is limited. However, remember it can take a while for wildlife to become comfortable with a new nesting box so don't expect results overnight.

### **STAGWATCHING (IT'S NOT WHAT YOU THINK!)**

Staking out suspected dens in hollow or dead 'stag' trees on dusk like a stealth ninja and waiting for greater gliders to emerge and forage for the evening, can also be an effective technique. Do not directly spotlight the hollow and remain as silent as possible, as gliders may avoid emerging until they are satisfied you are gone. Start your watch within the first hour of sunset and continue for at least one (1) hour after dark for best results.

### **MONITORING & SCENT LURES**

While spotlighting is one of the easiest ways to monitor cryptic nocturnal wildlife such as Greater Gliders, using the occasional lure can also be helpful. Real Canadian maple syrup is an effective attractant for many arboreal marsupials. But only use occasionally to and do not make wildlife dependent on human assisted feeding.



## OTHER THAN USING NESTING BOXES, WHAT ARE YOUR OPTIONS?

While habitat retention is always far easier and cheaper than restoration, if you are going to improve nesting habitat & dens on your property, are fabricated nesting boxes your only option or are there others?

Natural tree hollows provide excellent insulation against temperature fluctuations and last for the life of the tree, which can potentially be many hundreds of years. While nesting boxes are a good temporary option they do have a limited life-span of 5-10 years and are not as thermal insulating as hollows contained within living trees.

Mounting fallen hollow logs in trees or having hollows professionally carved into established hollowless trees can provide longer-term thermal resistant nesting habitat for a variety of native animals.

Habi-tec are an Australian company pioneering this work and have installed multiple hollows in the Upper Burnett. These will be continue to be monitored as part of BCCA's activities.



Carved hollow creation by specialised arborists can significantly improve long-term hollow numbers in established trees not yet old enough to form natural hollows.



RESTORATION AND RETENTION OF HABITAT TREES CAN ALSO ASSIST IN EROSION CONTROL, STREAM BANK STABILISATION. IMPROVE WATER QUALITY, PROVIDE SHADE FOR STOCK, AND AID CROP POLLINATION.







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