



Habitat Creation

By

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Brief

As a leader of environmental initiatives Mosman Council is continuing to implement programs and management strategies that aim to protect, Preserve and enhance the environment and native bush lands.

The purpose of this report is to give increased awareness of habitat decline within the urban areas of Australia, and to outline methodologies for the preservation, protection, and creation of urban habitat. This report is also to highlight considerations before undertaking habitat works by an organisation as well as give basic instruction in the techniques involved in creating habitat stags, and encourage development of habitat creation within the urban environment.



Introduction

Due to the continued fragmentation of bushland, loss of natural ecosystems and noticeable reduction of native fauna and their habitat, the retention, protection, and careful management of Mosmans unique bushland is becoming ever more important. Where possible Mosman council has continually instigated programs that not only aid to reverse the loss of bushland but also improve the diversity and enhance the local environment.

With over 300 species of native fauna dependant on tree hollows for breeding and having the local fauna in mind, in an attempt to increase the diversity of the area Mosman council has developed several purpose made "Habitat Stag Trees" and terrestrial habitat areas. By using techniques developed by our skilled and knowledgeable Arborists we have made species specific habitat in dead trees that have been retained to provide breeding and roosting sites for native fauna. It is hoped that these areas will become reusable nesting sites for birds, small mammals and reptiles, allowing the number of wildlife to steadily increase and preserving the local natural beauty that Mosman is renowned for!



Pruning Trees to preserve Habitat

When pruning deadwood from trees, simple techniques and methods can be employed to achieve hazard reduction whilst, leaving food and habitat for tree dwelling fauna. Long pieces of deadwood can be reduced in length to limit potential hazard but still retain food for the insects and microorganisms. Stubs that have been left by old pruning or previous branch failure can be retained, and with the use of a hole-saw or chainsaw they may also be bored out to create a nesting hollow for native birds or small mammals. This type of work can be done without effecting the structural integrity of the tree yet still achieve both hazard reduction and habitat preservation.



Considerations when creating habitat stag trees

There does come a time within the urban landscape that the retention of the entire tree is not viable, due to potential hazards that it may present. This is when the creation of a habitat stag tree may be an option to retain and create habitat for native fauna. This option is usually cost effective as only part of the tree is removed so the use of larger tree removal machinery is not required. Listed below are the few considerations when creating habitat stag trees.

- **Is the site suitable for habitat tree augmentation?**

When selecting a tree for habitat installation you must first determine the use of the area, in high pedestrian areas, playgrounds, and schools, pruning the tree to a stag or “Hat Rack” stage and augmenting it with habitat hollows may be contentious, with public concern for safety and distaste of the remaining stag. Fauna may also be unlikely to occupy, and most important of all, to breed in areas of high activity and noise. This has been a common mistake made by well-meaning authority’s and community groups engaged in tree habitat creation. Not every tree is suitable for tree habitat installation! Habitat stags should only be created where fauna is likely to use them and where they won’t be seen as an eye sore by the local community.

- **Types of fauna already in the area**

Encouraging the native bird and mammal species that presently occupy the local area or have been known to visit is the best method for successful occupation and use as a breeding site. Care must be taken when determining the types of hollows that will be created, so as not to encourage the introduction of a species that might compete with or displace the existing native fauna.

- **Engage suitably qualified and experienced professionals**

When it comes to the evaluation of the proposed habitat tree and determining the type and volume of native fauna in the area, the importance of using not just qualified but experienced professionals should not be overlooked. In regards to the fauna within the area, comprehensive fauna surveys will need to be conducted. An ecologist with sound knowledge and experience of native fauna should be engaged to survey the area, and assist in determining the types of habitats to be created. An independent consulting Arborist with sound knowledge and extensive experience in evaluating trees and determining a tree's structural integrity will also need to be engaged to plan and oversee the project. The engagement of companies that primarily make profit from utility Arboricultural works and the removal of trees may have conflicting interests hence there may be concern about ethical practices.

- **Expected safe usability of the habitat tree**

Native birds and mammals will annually return to suitable breeding sites for many years and in some cases are known for several generations to utilise the same nesting hollows. It is therefore important to work out the expected safe usability of the habitat tree. When selecting habitat trees, at least 5 to 15 years of use should be aimed for. The techniques used to create the hollows should not impact the tree's stability or encourage the degradation of the wood by introducing decay or creating a hollow that can be flooded or remain exposed to excessive moisture.



- **Ongoing management of the habitat tree**

The continued evaluation of the standing habitat tree or stag will be necessary to assure the safety for person's utilising the amenity in the area. If the tree still had living tissues epicormic shoots will likely grow in response to the removal of the foliated branches, removal of these epicormic shoots might be necessary. The remaining stag tree is no longer a living tree and is exposed to the elements, so the timber will undergo seasoning and deterioration. With the seasoning or drying out of the timber it is natural for the timber to shrink, with this shrinking it is common for face plates of the made hollows to crack and may need to be replaced. Structural timber tests such as timber resistance drilling at various points of the remaining stag to monitor for decay should be conducted every two years.

- **Monitoring of Fauna using the habitats**

The success of a habitat stag can only be determined by the observation of fauna utilising and breeding in the created hollows, looking into the hollows is the best way but watching from the ground at dawn and dusk will give a good indication as well. Any habitat project should include a monitoring component to determine the types of fauna that are using the made habitat.



Terrestrial Habitat creation

With the constant removal of dead fall and complete removal of dead and dying trees for aesthetics, wood chip, and fire wood, there is a big depletion of available terrestrial habitat for ground dwelling mammals, Lizards and snakes, and insects that feed of the fallen tree.

With placement of hollowed logs, branches, and stumps of trees in designated regeneration areas and bushland, habitat for both native fauna and microorganisms can be created.



Logs as walking track Borders

Laying logs as borders for walking tracks will give microorganisms food, while also effective in reducing walkers trampling new seedlings and can help reduce introducing soil spread diseases, like phytophthora.



Aquatic Habitat creation



It was once common practice to clear fallen trees, logs, and branches collectively called “Snags” from water courses, rivers and creeks. The main reason for this during colonial times, was to allow free movement of boats and watercrafts used for transportation of cargo, passenger transport, and more recently recreational activities. Although the removal of snags gave free movement and opened up parts of rivers previously inaccessible to early Australian pioneers, these snags were used as breeding refuge for fish, Turtles, Crustaceans, and other aquatic life, as well a place to perch and nest for water dwelling birds like Cormorants, Ibis, herons, and kingfishers.

The effects changing these ecosystems was not apparent at first partly due to lack of understanding of the sensitivity of Australia’s environment, and partly due to the colonial desire to create a landscape similar to their homeland. We now know



that numerous mistakes were made in regards to how we managed the environment, and know that to prevent further decline of Australia’s native fauna and aquatic life we must recreate these ecosystems.

By utilising hollowed logs, branches and stumps on the water line in wetlands, rivers, and creeks it is possible to give a habitat for native aquatic life and potentially preserve Australia’s unique wildlife. Snags can be created giving perches for aquatic birds. Logs intended for Aquatic habitat can have cavities and channels cut into them with chainsaws to give breeding fish protection from predators. When placing logs and branches for aquatic habitat it is essential that they be weighted and secured to avoid them floating away although the log may be heavy until the log is completely water logged it will remain buoyant. The use

of branches and logs selectively placed in water causeways can help to slow the flow of water and reduce soil erosion consequently reducing the amount of silt washed into collection ponds, lakes, and rivers. In tidal and ephemeral wet lands having snags on the water line will also help retain aquatic plants again by assisting in soil retention.



Types of Habitat for Stag Tree Habitat Creation



“Micro Bat Chamber”

Micro Bats like to roost in close confines that are dark and warm they find tree cavities with small entrances that help to exclude predators.



This design of bat habitat allows for more than one species of micro bat to occupy the same habitat stag. The chambers are

approximately 40mm wide x 40mm deep x 200mm long.

Care must be taken to insure no sharp edges or splitters remain as these can tear the membranous wings of the micro bat.

A piece of damp proof coursing (DPC) is fixed to the front of the chamber, this is to keep the chambers warm, dry and dark in the event of the face plate cracking.



The entrance to the chambers is by a diagonal hole to the side of the chamber to allow the Bat to crawl up into the chamber.

Hollow within Branch Stub for Birds

This design utilises the branch stub and has an entrance opening bored from the stub end into a hollowed out chamber close to the branch and trunk union.

The stub end is first cut on a downward angle to limit rain water entering the cavity. Then the entrance hole is cut into the stub end by making the entrance hole angled slightly upward in will also act to prevent water filling the chamber making it unusable for birds.

A face plate is removed, and then the centre of the stub is bored out using a chainsaw and chisel, creating a cavernous hollow and meeting up with the previously made entrance hole. The face plate is then fixed in place with stainless steel screws and the hollow is ready for occupation

“Pole-top Hollow”.

This design uses the top of the stag pole ends and is simple to create. Firstly the top of the pole is cut on an angle away from the intended location of the entrance to prevent rain water running into the cavity.

Approximately 150mm from the angled cut the top piece is removed with a level cut. The top plate need to be at least this thick or it will split and make the hollow unusable.

The top plate is put aside and using a chainsaw several bore cuts are made in the centre of the remaining pole top in order to remove a square block.

An entrance hole is created with three cuts into the face of the pole, the lowest horizontal cut goes as deep as the back wall of the cavity so as to remove the centre block taking care not to cut deeper than the intended hollow. A small hole at the bottom of the hollow should be drilled for drainage. The top plate is then glued in place using water resistant construction adhesive.



Bird or possum “Box-hollow”.

This Box-hollow is simple and can be used to target birds and possums depending on the size of the entrance hole. The width and depth of the cavity created is limited by the diameter of the



trunk however the length of the cavity can be any size from 200mm to 1000mm.



Vertical Trench Cavity



This design is created with long vertical bore cuts approximately 100mm into the trunk in an inverted V shape as an entrance, at the bottom of the vertical slit a chamber is fashioned with

numerous chainsaw cuts and a chisel to create a circular cavity deeper into the trunk than the vertical entrance slit. This hollow need to be created on a vertical part of the stag, and is best if it can be positioned on the underside of a limb that is on a slight angle to help prevent rain water filling the cavity. The bottom internal cut should be at a slight angle and a small drainage hole cut at the lowest point to drain any water that does trickle in, the base of the hollow can be lined with a few leaves to create a soft roost.

Glossary

Augmenting/ Augmentation; the action or process of making or becoming greater in size or amount.

Bore cut; a deep incision into timber made by using the tip of a chainsaw bar.

Branch-stub; a section of a branch remaining beyond the branch collar.

Cavity; a smaller void often localised initiated by a wound.

Consulting Arborist; a professional trained in the science of tree management and the detection of ailments and structural defects in trees.

Deadwood; dead branches with a trees crown.

Deadwooding; removing dead branches by pruning.

Face plate; a flat normally rectangular piece of trunk or branch cut out during the creation of an artificial hollow.

Fauna; the animals of a particular region.

Habitat; the home or environment of an animal, or other organism.

Hat Rack; see Stag Tree.

Hollow; a large void initiated by a wound forming a cavity in the trunk or branches.

Stag Tree; a tree with all live branches removed leaving branch stubs and trunk only.

Snags; tree branches caught up and tangled on river or wetland edges.

Utility Arborist; a professional trained in chainsaw operation, the use of tree care equipment and machinery, the pruning of trees, and tree removal.

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