

Habitat Island for Migratory Birds

Callan M¹, Hobden N²

1. Central West Councils Environment & Waterways Alliance, 66 Corporation Avenue, Bathurst NSW, 2795. Email: mick.callan@lls.nsw.gov.au

2. Orange City Council, 135 Byng Street, Orange NSW, 2800. Email: nhobden@orange.nsw.gov.au

Key Points

- Floating habitat island installed to provide habitat for migratory birds
- Partnership between Central Tablelands Local Land Services, Environment & Waterways Alliance and Orange City Council
- Commercially available stormwater treatment wetland modified for habitat values

Keywords

Habitat, Island, Migratory Birds, Wetlands, Partnerships, Local Government

Introduction

The installation of a floating habitat island at Gosling Creek Reserve in Orange, NSW has been completed in order to attract additional numbers and species of migratory water fowl to the region, with the added benefit of providing a suitable roosting and nesting location that is free from introduced predators such as foxes and cats.

Background

Gosling Creek Reserve is an environmentally based recreational facility that includes the Gosling Creek Reservoir. As well as active recreational facilities such as multiple use pathways and children's play equipment, the reserve is valued for its native vegetation, wetland and associated passive recreation facilities including two bird hides.

Gosling Creek was named after Jonathon W. Gosling, a free settler who arrived in Australia by ship in 1827. The Gosling Creek Reservoir provided the first Orange town water supply and was officially turned on by Governor Charles R. B. Carrington on October 8, 1890. When the prospect of sewerage was addressed in 1917, the Director General of Public Works turned down the idea of having two reservoirs on the water shed.

Gosling Creek Reservoir was not abandoned altogether, it was later used as water supply for the nearby Bloomfield Hospital and the Agricultural Veterinary Research Station. During this time the Reservoir was subject to rapid depletion during peak usage periods, and it was necessary to top the reservoir with water pumped up from the lower catchment.

The Gosling Creek Reservoir is no longer drawn from directly for town water supply, it is the third reservoir in the Summer Hill Creek catchment behind Spring Creek Reservoir (2.4km downstream) and Suma Park Dam. (Environmental Partnership (NSW) Pty Ltd for Orange City Council, 2001)

Conceptualisation of this project was achieved during a planning meeting for a Central Tablelands Local Land Services Migratory Species project. The concept of a habitat island rather than riparian habitat enhancement was introduced due to the known threat of foxes and cats within Gosling Creek Reserve, Orange, as well as

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the difficulty of controlling these introduced species in the peri-urban area. While the initial discussion surrounded the construction of a more traditional compacted earth island, this was swiftly discarded as being too difficult to achieve within the time constraints of a grant funding cycle, as well as the financial, political and environmental consequences of draining a water body.

Subsequently, it was decided that a floating habitat island would be more cost effective and practical given the time and budgetary constraints of the project. For this reason several commercially available products were considered for this project.

Floating Wetlands

Investigations from the project team suggested that no commercially produced floating habitat islands are available in Australia, and perhaps not in the world. However, it was noted that several floating wetland products are available within Australia, based around various designs and specifications, with the detailed designs and construction of these products are generally considered to be commercial in confidence knowledge.

From preliminary investigations regarding these commercially available floating wetland products it was apparent that the common features include:

- Modular design capable of producing various size and dimension floating wetlands;
- Ability to support wetland plants with designs allowing plant roots to extend through the base into the supporting water body;
- Floating wetland panels that are anchored to the base of the supporting water body;
- Final products that are capable of supporting significant weight and are generally designed to be able to facilitate the movement of maintenance staff on top of the floating wetland; and
- Designs that have a primary function of treating stormwater or waste water in accordance with Water Sensitive Urban Design (WSUD) principles.

It was considered that these features would allow for simple modification to suit our requirements of migratory water fowl habitat and that importantly, the suppliers of these products invariably include the option of netting due to the issue of water fowl colonising platforms and causing damage to plants during the establishment phase. Obviously this indicates that our target species will readily utilise this type of artificial habitat structure.

The Habitat Island

Following a competitive quotation process, AquaBiofilter was selected as the successful supplier of the floating habitat island. The constructed island consists of modular panels to form a total surface area of approximately 30m². The product was assembled onsite at Gosling Creek Reserve by experience staff from AquaBiofilter to agreed requirements as negotiated as part of the quotation process.

The final product has approximately half of the total surface area planted with *Carex appressa* - Sword Sedge. This plant was selected primarily due to its habitat potential, but it also has extensive benefits in regards to water quality due largely to its extensive root system. It is anticipated that the roots of these plants will extend through the potting mix medium within the pontoon and grow down into the subsurface of the

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reservoir, providing further anchorage for the pontoon in addition to the existing mechanical anchoring installed.

Carex appressa grows to a height of 40-120cm (PlantNet. 2011 [Online]) and has a drooping habit that in this instance will allow for birds to take cover underneath the joining tussocks for foraging or rest. Sedges and similar vegetation are important for a range of water fowl including migratory species (Garnett et al., 2011).

Additionally, this plant species has an extensive root structure that has microbial, nitrogen and phosphorous removal properties (Deletic et al., 2014). While water quality improvements are not the focus of this project, and noting that the relatively small size of the floating island will have minimal overall impact, it was considered that demonstrating this ability of the product may have benefits to other Local Government professionals in the region who would consider this type of technology in their waste water or stormwater management portfolios.

The vegetated half of the floating island has been covered with a netting structure to allow for the plants to become established, as it was noted by the product supplier that without protection many plants are likely to be removed by birds utilising the platform. Even with this netting installed, more than 20 coots have been recorded on the island indicating that up to 50 individuals will comfortably populate the area once the netting is removed.

The remaining half of the platform was laid out with branches and hollows to provide structure, roosting opportunities and cover. It is considered that this timber will also provide a food source for birds utilising the habitat island as it will harbour an array of insect life that may otherwise not be present on the island. As native hardwood timber was utilised, it is unlikely that this will require replacement in the foreseeable future.

While the selection of only a single plant species for this island may appear as though it is limiting the habitat potential of the structure, communications from a range of floating wetland manufacturers indicates that birds utilising the platform will transport appropriate seeds and propagules of other wetland plant species that will naturally colonise the island. This is anticipated to occur within 12 months of installation as faecal matter builds up. Further, it is anticipated that the shallow nature of Gosling Creek Reservoir – approximately one metre depth – will allow for macrophytes such as *Baumea*, *Eleocharis*, *Phragmites* and *Typha spp.* to extend their roots into the subsoil of the reservoir following colonisation of the platform. Once this occurs, these tall macrophytes will be able to colonise the surrounding water via rhizomatous recruitment.



Figure 1. The Habitat Island Prepared for Launch

Conclusions

It is anticipated that the benefits of this project – providing habitat for migratory and other water fowl – will not be fully realised for several years. Once the planted *Carex appressa* becomes established, allowing the netting cover to be removed, we anticipate that there will be a large increase in the number of birds utilising the island. This is expected to increase as litter and guano builds up on the platform, providing a fertile growth media for other macrophyte species to colonise the area.

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