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Mungalla – a case study of wetland restoration on Indigenous land.

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Abstract:

North Queensland coastal wetlands have been severely degraded by the Weeds of National Significance (WoNS), *Hymenachne amplexicaulis* (Olive hymenachne) with lesser impacts by *Salvinia molesta* (Salvinia), and *Eichhornia crassipes* (Water hyacinth). Working with traditional owners, we are seeking to remediate a degraded wetland by improving the biodiversity of native plant and animal species, and improving water quality and the amenity value to the local community.

Mungalla Stud is a coastal cattle property east of Ingham in north Queensland. It incorporates coastal wetlands, grazing land and a coastal dune complex. The property abuts the Halifax Bay National Park and the Great Barrier Reef Lagoon. The property was purchased by the Nywaigi Traditional Owners in 2000. A management structure was created to run and manage the businesses associated with the property where by the land is owned by the Nywaigi Aboriginal Land Corporation and operated by the Mungalla Corporation for Business.

A concerted effort has been undertaken by the Nywaigi Traditional Owners to improve wetland habitats. They have partnered with CSIRO Ecosystem Sciences to undertake a range of activities to remediate the wetland to improve the function, hydrology and amenity value of the property. This has included aerial and ground based applications of herbicides, the strategic use of fire and revegetation of creek lines.

This paper outlines the progress of the rehabilitation work undertaken by the Nywaigi traditional owners in collaboration with CSIRO and highlights the expectation that eradication of wetland weed infestations are difficult to achieve but control over large areas of weed infestations is possible.

Key Words: rehabilitation, management, herbicide, Nywaigi.

Introduction:

The freshwater wetlands located on Mungalla Stud are severely impacted by the Weeds of National Significance (WoNS), *Hymenachne amplexicaulis* (Olive hymenachne), Salvinia *molesta* (Salvinia), and *Eichhornia crassipes* (Water hyacinth). The Nywaigi traditional owners in collaboration with CSIRO have embarked on a plan of management activities to restore the function and health of the wetlands. In undertaking the rehabilitation activities of

the wetland the community benefits will include training in natural resource management, employment and improvement in the amenity value of the property.

Mungalla Stud is an 880 hectare rural property situated approximately 12 kilometres east of Ingham in the Wet Tropics bioregion of north Queensland and is immediately adjacent to the Great Barrier Reef Lagoon. It was purchased by the Nywaigi Aboriginal Land Corporation (NALC) in 2000 following extensive negotiations between the traditional owners and the Indigenous Land Corporation. The property is managed and run by the Mungalla Aboriginal Corporation for Business (MACB), an incorporated body with a constituted board of directors who appoint a manager to operate the property. This appointment is reviewed at the Annual General Meeting and the manager reports activities to the board monthly as well as seeking approval for extraordinary activities (e.g. opportunistic government grants, training activities or tourism activities) that would fall outside normal property operations. The current manager and co-author of this poster paper is a Nywaigi traditional owner who is responsible to the board for the daily activities associated with the running of a complex multi faceted business operation which includes cattle management operations, training facilities and eco-tourism and cultural tours for tourists, local school groups and other interested groups. The manager is also responsible for liaison and oversight of rehabilitation activities on the property.

The property consists of a variety of land forms including coastal saline wetlands, freshwater wetlands, riparian zones, sand dunes and grazing land adjacent to the freshwater wetlands. The freshwater wetlands are a complex of low lying flood out areas that are inundated when Palm Creek floods seasonally. They have been modified as a result of an earth barrier (bund) designed to either halt the ingress of saline flows into natural wetlands for land reclamation or to create a freshwater wetland for ponded pastures for cattle grazing.

The freshwater wetlands have become dominated by Olive Hymenachne, Salvinia and Water Hyacinth. However it is the dominance of Hymenachne over 200 hectares of the available wetland that has compromised wetland values by reducing water quality (Wearne *et al*. 2008), impacted on cultural values and custodial responsibilities (Grice *et al*. 2012) and reduced the opportunities of the MABC to conduct their eco-tourism enterprise.

Activities:

In 2005 MACB hosted a meeting of wetland scientists, NRM bodies, local council representatives and national parks staff to discuss management options for the weed invaded wetlands. Subsequent to this initial meeting CSIRO requested permission to site an experimental research programme on Mungalla Stud. This initiated a relationship that has facilitated restoration activities and improved management of the wetlands.

CSIRO and a broad cross section of the Nywaigi people worked together to develop a wetland management strategy for Mungalla wetlands, and following the acceptance of the strategy by the board of MACB, CSIRO and MACB, jointly sought funding and opportunities to begin restoration of the wetlands.

An initial Caring for Our Country grant in 2009 allowed assessment of the effectiveness of “best bet” management techniques (aerial and ground based applications of herbicide) followed by late dry season fires intended to reduce decaying overburden of Olive hymenache that could compromise water quality. Water quality was evaluated prior to and after the aerial application of herbicides (Butler *et al.* 2009) and vegetation monitoring was also undertaken during the period of the grant.

Subsequently, two Community Action Grants grants funded by the Australian Government Department of the Environment, Water, Heritage and the Arts (DEWHA) and the Department of Agriculture, Fisheries and Forestry (DAFF) provided for repeat aerial spraying of the same wetland with the goal of restricting the flowering, seed set and seed fall of Olive hymenachne. These grants also allowed for on-ground activities to target weed populations that were not addressed during the aerial application of herbicide. These combined projects also provided opportunities for the Nywaigi traditional owners and Mungalla indigenous staff to participate in the active management of the wetland.

A further Community Action grant from DEWHA and DAFF has provided funding for significant re-vegetation of sections of the riparian zones on Mungalla, in line with the Mungalla Wetland Management Strategy. This grant has also allowed for continuing on-ground weed management and training opportunities in natural resource management for the indigenous owners of the property.

Conclusion:

Control of Olive hymenachne can be achieved on a small scale (D Sydes pers comm.). The wetlands that the Cassowary Coast Council has restored required the exclusion of seed set of Hymenachne and removal of plants for five years. It is the intention of the MACB to improve wetland condition and functionality for a variety of reasons that include the wellbeing of the Nywaigi people (Larsen *et al.* 2006) economic and amenity values (Grice *et al.* 2012) and use the process of weed control as an opportunity for capacity building of the Nywaigi people of north Queensland. However it is highly unlikely that eradication of Hymenachne from the freshwater wetlands on Mungalla is possible due to the scale of the wetland and the expense involved in eradication. A more realistic goal will be a wetland with improved water quality and greater plant and animal diversity but with a persistent population of Hymenachne that will require constant monitoring and suppression.

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