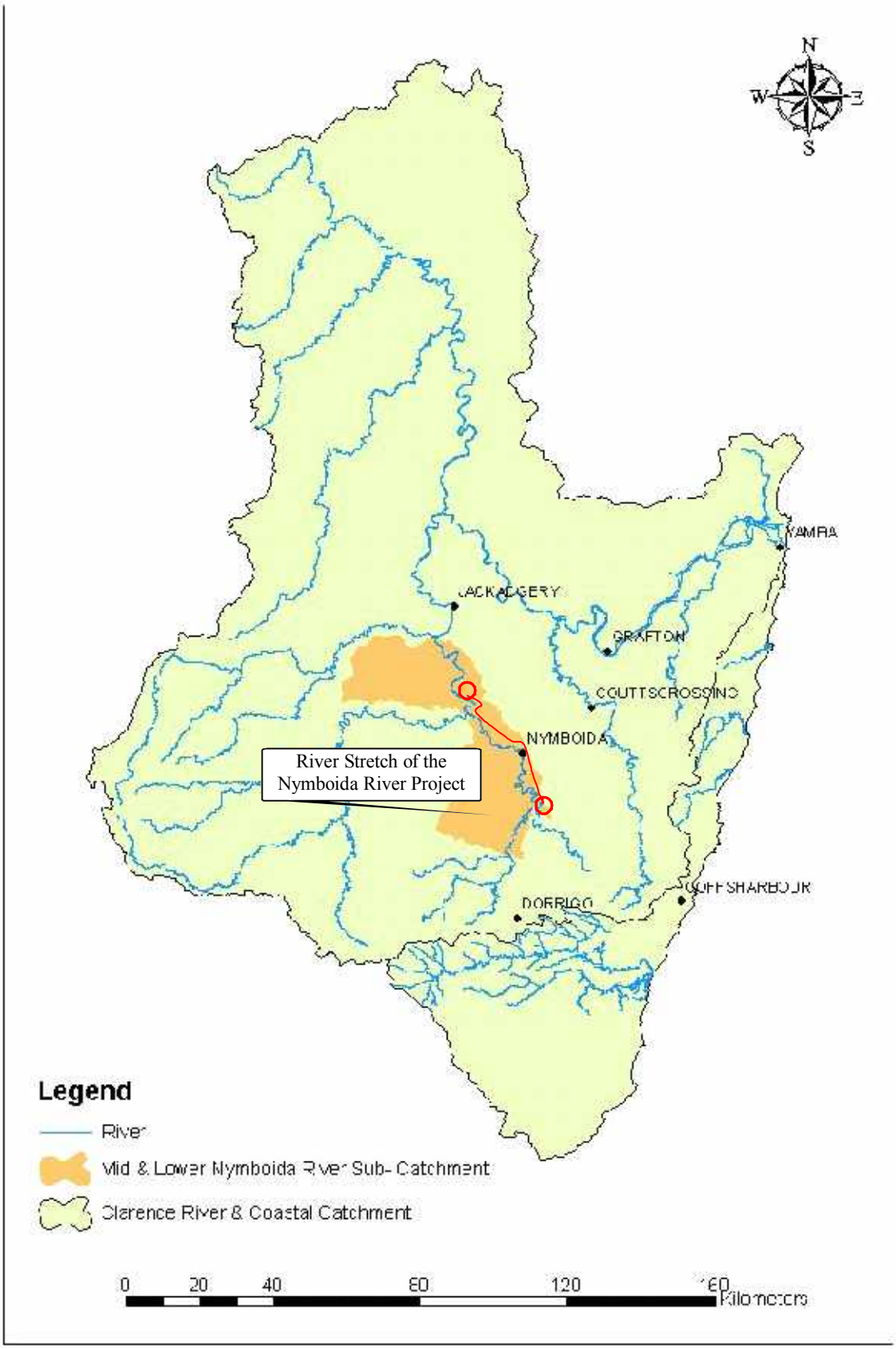
Nymboida River Project

Management Plan
River Reach Project
2005

LANDCARE

Clarence Landcare Inc.

Northern Rivers CMA CATCHMENT MANAGEMENT AUTHORITY


Clarence River Catchment
N
W
E
S
YAMBA
GRAFTON
NYMBOIDA
River Stretch of the Nymboida River Project
DORRIGO
Legend
River
Mid & Lower Nymboida River Sub- Catchment
Clarence River & Coastal Catchment
0
20
40
80
120
160
Kilometers

Map 1.

Introduction

The Nymboida River Project is the first project of its type and scale in the lower reaches of the Nymboida River. The Project is funded by the Northern Rivers Catchment Management Authority, part of the Reach Based River Health Program. The project is being managed by Clarence Landcare Inc. a community based organization which coordinates Landcare groups and Landcare activities in the Mid-Lower Clarence Catchment.

The Project extends over 50 kilometres of river length...It involves 26 landowners with landholdings covering 65km of river bank

Clarence Landcare Inc. approached landowners of the Nymboida River to announce the idea of coordinating a project such as this and was overwhelmed by the interest and support for the project. The prerequisite for obtaining funding was for a planning process extending over one kilometre of stream. The Nymboida River Project extends over 50 kilometres of river length from the "The Junction" of the Nymboida and Little Nymboida Rivers to beyond Buccarumbi. It involves 26 landowners with landholdings covering 65km of river bank (single sided). [See map no. 2]

Photo taken from McLennan's looking downstream

The Nymboida River Project is made up of properties from 0.75Ha—2,500 Ha in size, from 20 metres of river bank to 13 km of river bank length. The land tenure of properties involved ranges from ownership for 2.5 years to the property being in the family name since selection days.

The Project

The river reach project is about identifying reaches of river to assist landowners with active management in order to achieve measurable improvement to the health of their river(bank).

Working with landowners to select project sites.

The stages of this project included:

1. Contacting Riverbank landowners my mail.
2. Public Meeting to discuss project scope and individuals riparian issues
3. Identifying interested landowners and length of riverbank.
4. Broad scale mapping of riparian (riverbank) vegetation condition. [Maps no. 3, 4 & 5]
5. Property visits to:
   - Meet land owners
   - Obtain information regarding riparian history & management issues
   - Inspect acessable riparian zone
   - Work with landowners to select project sites.
   - Map these project sites on to aerial photographs.
6. Engage consultant to assess and cost weed control work on selected sites.
7. Collate collected data, prepare draft report and property site management plans
8. Receive feedback from landowners regarding draft report and plans.
9. Finalise report

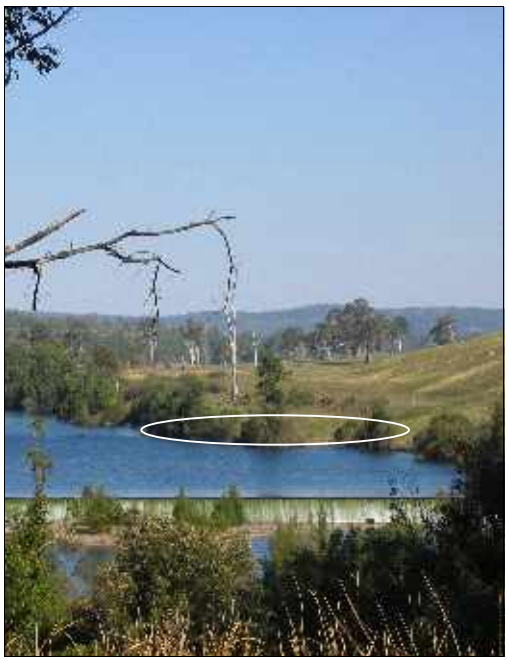
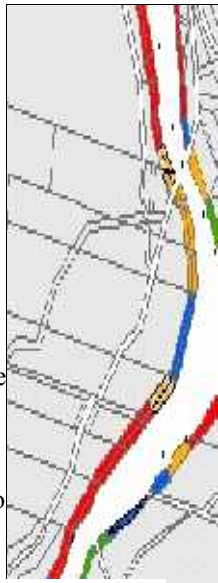


Photo taken from Pender's looking upstream, over the weir wall to Blazejowski & Sullivan's Project Site no.1

Riparian Vegetation Condition - Rapid Assessment
Color codes based on
Lower—mid storey weed density mapping



Methodology

The project area extends over 60km of river length from the Junction of the Nymboida and Little Nymboida Rivers downstream to Doboy. Much of the terrain is rugged and inaccessible. In order to gain a feel for vegetation management issues along this stretch, a rapid assessment technique was devised so that vegetation condition could be mapped and colour coded according to relative percentages of native and weed cover in the lower -mid storey. The riparian zone was taken as that within 20m of the mean waters edge, or the conceivable height of vegetation influence on the channel for steep areas. Due to the scale of the map and for visual purposes, the width of the coloured buffer is depicted as far greater than that visible in the field. Therefore it is important that persons reading the map do not interpret coloured buffer width as actual assessed width on ground. Further methodology and data limitations are stated in Appendix No. X

Classification groupings for Mid to Lower storey vegetation were as follows:

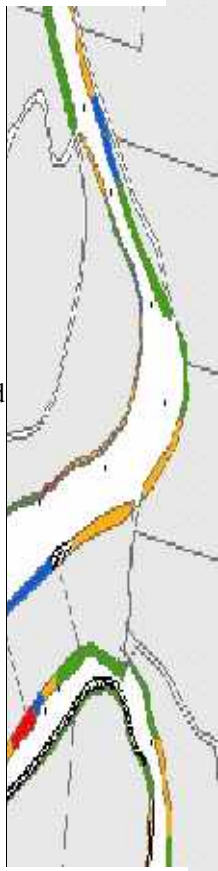
Green:	**0-25%** of the mid-lower canopy are weeds
Blue:	**25-50%** of the mid-lower canopy are weeds
Orange:	**50-75%** of the mid-lower canopy are weeds
Red:	**75-100%** of the mid-lower canopy are weeds
Cleared:	All lower, mid and upper storey vegetation removed (usually persistent as pasture or bare gravel)

"Much of the terrain is rugged and inaccessible."

General Trends Observed in Riparian Vegetation Assessment

Whilst the quality and extent of riparian vegetation along the Lower Nymboida river varies, it is generally in very good condition. In many areas the riparian overstorey vegetation extends into adjoining hillside vegetation whilst in other areas it is confined to thin strips along the water's edge. Small leaved privet and lantana are the most dominant riparian weeds and have had a greater impact upon the condition of the mid and understorey riparian vegetation.

The percentage of weeds comprising the riparian vegetation is often related to the location within the channel. There is usually good native riparian vegetation along the water's edge, however, steep banks, particularly those of flood chutes, are often infested by privet and or lantana. Many steep banks have an overstorey of eucalypt and or river oak with a privet or lantana mid and understorey. Steep, previously cleared river banks, are often too steep to manage and have become characterised as orange and red zones. High energy environments, such as, rock walls on outside bends and reaches of steeper gradient are often relatively weed free. Deposition areas, on the other hand, such as gravel bars on inside bends or where eddying currents are created at the junctions of creeks and in concaves along steep hillsides or rock walls, usually have a high percentage of weeds in the mid and understorey.



Gravel bar deposited in the 2001 colonized my river oaks.

Newly developed gravel bars and islands seem to be more readily colonised by natives than weeds with river oaks dominating this process upstream of the Oaky creek junction and river bottlebrush downstream. Privet seems to be the more dominant weed upstream of the Oaky creek junction and lantana downstream. The use of fire for weed management seems to impact on privet more than lantana and may explain this perceived pattern.

Downstream of Buccarumbi, where the Nymboida and Boyd Rivers junction, the channel is much larger with very large gravel bars. Vegetation on these bars often only exists as thin strips along gravel ridges between flood runners, which intersect the gravel bar.

"Steep, previously cleared river banks, are often too steep to manage and have become characterised as orange and red zones"

Observations

Project Area Characteristics & River Health

The river's bank and bed is in very good condition

The quality and diversity of the native riparian vegetation of the Nymboida River is on a whole generally very good. The key water's edge species within the project area consist of Lomandra, Bottlebrush, Creek Tea Tree, River Oak and Watergum with many other diverse species interwoven throughout the riparian zone.

Photo from Fricker's— a river beaten bottle brush

Weeds (plants not native to the area) in the riparian zone pose a threat to the biodiversity and health of the river. They compete with the natural regeneration of native plants and in some cases (e.g. cats claw creeper) will kill mature trees. Native riparian species are important to sustain the native mammal, bird and aquatic life associated with the Nymboida River system.

The river's bank and bed are in very good condition with only relatively minor bank erosion and slumping generally caused by past vegetation clearing, the falling of a single tree and minor point specific stock trampling.

Site characteristics and terrain vary greatly and include gentle sloping alluvial floodplains, very steep riverbanks as well as bars and benches comprised of gravel, boulders and bedrock.

All of the above have had a bearing on the access for past clearing, past and current stock access and of course on present access for weed control. The Nymboida River is a complex river system and therefore every property and project site poses its own challenges for riparian management.

…..every property and project site poses its own challenges for riparian management.

Landowner Riparian Observations and Management

Over the years landowners have observed the introduction and rapid increase in riparian weeds such as small leaf privet and camphor laurel.

Owners have experienced changes to their river banks from major flood events such as the recent 2001 floods. Whilst bank erosion has been relatively minor, destruction of vegetation, such as the snapping of river oaks, and large scale movements of sand and gravel have occurred.

Land owners down stream of the weir pool have reported noticeable improvement to water quality and fish activity since improvements in water extraction operations from the Nymboida River were implemented.

The past and current river bank management regimes of landholders include stock exclusion fencing and/or off stream watering points (dams), riparian planting and weed control. The rates of weed control vary greatly between properties ranging from none/ very little to very intensive weed management regimes. The weed control methods used include manual and mechanical control and a range of herbicide methods which include cutting & painting and spraying. The use of fire and heavy machinery are also used.

Photo Mc Alister's —snapped river oaks from 2001 flood

Owners have experienced changes to their river banks from ma-

Weeds

Many annual and perennial weeds are found in the riparian zone of the Nymboida River. See appendix X for a list of these.

The three weeds that tend to pose a serious future threat in the riparian zone of the Nymboida River are Camphor Laurel, Cats Claw Creeper and Honey Locust. With a planned and coordinated approach to the control of these weeds now (including diligent follow up work) there is potential to eradicate them from our local area. If these weeds are not addressed now they have the potential to continue to spread and multiply to a point of no return. (See appendix for examples of this in other areas)

It is very unlikely that privet will ever be eradicated from the river system

Camphor Laurel— there are quite a number of large mature trees in Nymboida with the main infestations being down stream of the Bridge. There is a large number of smaller trees that are emerging and not yet evident.

Small leaf privet

Cats Claw Creeper has been rated as the worst weed on the North Coast and it is present on the Nymboida River, the infestations are relatively small and a priority to control before they get out of control.

Honey Locust too is a major threat with one large infestation recorded, this also is a priority to control.

Small Leaf Privet is a wide spread riparian weed with heavy infestations occurring from the head waters of the Nymboida River catchment to the lower reaches. It is very unlikely that privet will ever be eradicated from the river system however we can actively control and manage the weed to reduce the impact that it has.

Lantana is a wide spread weed however its impact on the riparian zone is considered less of a long term threat than the other weeds mentioned in this section.

… weeds that pose a serious future threat ... are Camphor Laurel, Cats Claw Creeper and Honey Locust

Project Site Management—Stock & Weeds

Most landholders feel the priority was to have assistance with weed control, particularly small leaved privet, camphor laurel and cats claw creeper.

Some landowners already reduce stock access to the river with fencing, through paddock rotation and off stream watering.

Thorns of the Honey Locust

Some landholders would like assistance with stock exclusion fencing, and watering troughs whilst for many properties fencing the river would prove difficult due to flood prone sites, the need for cattle to access water and the inability to undertake the weed control required once stock were removed. Land and Marine Management Service (LAMMS), experienced contractors in weed management provided site assessments, recommendations on weed control methods and cost estimates for most of the project sites. The cost estimates are an indication of what each project site would cost to employ contract bush regenerators to undertake the work. The amount of work that will be implemented will be dependant upon future funding availability and he amount of "inkind" work the landholder can undertake.

Property Visit Observations.

Striking a balance between stock management and vegetation management.

Anecdotal evidence confirms that all of the river bank within the project area has had stock access for grazing in the past. The extent of weed infestations may relate to past clearing of native vegetation and to historical stocking rates. Present and past stocking rates vary greatly between properties.

Differences in privet infestations in some areas can only be explained by the fact that one side of the fence has stock and the other has not. Differences in other areas are explained by a combination of both active weed control and grazing compared to no weed control.

On many sites stock seem to control small leaf privet through the grazing of the seedlings. Stock also find new growth palatable and will continue to graze on some small privet bushes, hedging or creating "bonsai" trees therefore preventing individual plants from seeding. However stock grazing and trampling also reduce native ground cover and natural regeneration of native seedlings, cause increased nutrient loads and soil erosion on some sites.

A rocky well vegetated bank provides good protection for ground cover & understorey plants from stock.

The condition of the riparian vegetation varies greatly between sites. In some areas there is next to no privet compared to other sites the privet seems overwhelming. On the sites where mature privet dominates the canopy there is little to no natural regeneration of native species and where stock graze under this canopy in some cases there is no ground cover at all.

Native groundcovers and understorey do occur on grazed riverbanks however the amount and diversity vary between properties. Rocky banks and mature native multi-stemmed vegetation (eg. bottlebrush, tea tree and watergum) seem to provide some protection for these plants from stock trampling and grazing.

Stock also find new growth palatable and will continue to graze on small privet bushes, hedging or creating "bonsai" trees...

Left side of fence weed control and grazed. Right side of fence stock excluded and no weed control. Note Privet

Stock grazed "bonsai" privet

100% Privet canopy and ground cover, stock have access to this area

Project Site Selection

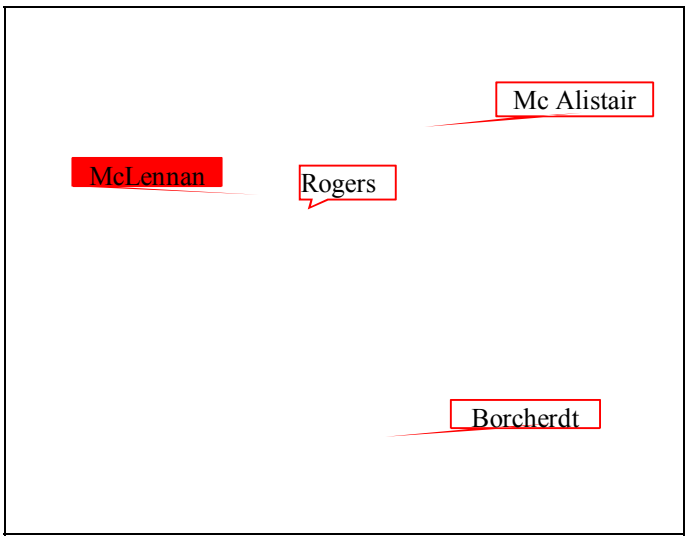
Project sites are the locations selected on individual properties to undertake planned rehabilitation work as part of the Nymboida River Project. This rehabilitation or "Landcare" work is outlined in each of the Property Site Plans to the rear of the document and may take a number of years to implement.

One factor was most frequented river access for recreation and water pumping

Site Location

The location of project sites per property were selected in consultation with the landowners considering the following factors:

- Most frequented river access (for recreation and water pumping)
- Riverbank previously worked on and current weed control work programs
- Sites of good native vegetation (using the principle of working with the best areas first.)
- Targeting specific weed infestation such as Cats Claw Creeper and Camphor Laurel Trees.
- Targeting areas of the riverbank that landholders need assistance with the initial "hit" of weed control.



Example of project site selection from map no. 6

Photo taken from McKenna's looking downstream

- **Generally the larger the sites the lower level of weed infestation**
- **only relatively small areas of heavy weed infestations can be treated at a time**

Site Size and Length

The length of riverbank selected per property for the project site varied greatly and the factors used to assist with the determination included:

- Amount of work land holders have previously undertaken on their riverbank.
- The available time and other resources the landholder has to implement follow up work (this was very important)
- The degree of weed infestation. Generally the larger the sites the lower level of weed infestation to address.
- The methods of weed control that could be used on the particular site for example if the herbicide cut & paint method is used on heavy infestations only a relatively small area can be treated at a time.

Photo of Marlin Blazejowski inspecting a Lily Pilly among the privet skeletons from a successful weed control spray.