Alliance to Save Hinchinbrook Inc.

[redacted] Townsville Q 4810
[redacted]
[redacted]

23 April 2016

Research Director
Agriculture and Environment Committee
Parliament House
BRISBANE QLD 4000
by email: vminquiry@parliament.qld.gov.au

Please accept our submission on the Vegetation Management (Reinstatement) and Other Legislation Amendment Bill 2016.

The Alliance to Save Hinchinbrook Inc. (ASH) has a long history of active participation in negotiating and commenting on planning legislation. This goes back to the first Queensland Coastal Act in 1994 and the first Queensland Coastal Plan (1995) and the statutory Regional Coastal Management and Protection Plans (2003 and 2004), the latter resulting as a condition on a Commonwealth Consent and upheld in the Federal Court in 1996/97. We have long experience in how legislation and plans should be written to be effective in carrying out their objects and purposes.

Among our members we have farming landholders present and past.

Below are excerpts from the Conclusion of our brief submission on the Vegetation Management Framework Amendment Bill 2013 (see attached):

> The Alliance to Save Hinchinbrook (ASH) is totally opposed to virtually all the amendments proposed, none of which is consistent with the purpose of the Act and most of which are clearly contrary to the purpose of the Act...
>
> The removal of any possibility of legal challenge to approvals for clearing land under this Act removes the decision maker from being held accountable for the widespread destruction of native vegetation envisaged and allowed in the detail of the other proposed amendments...
>
> The lifting of protection for all classes of native vegetation, introduction of self-assessment, removal of compliance requirements (via the defence proposed to be provided) and no legal redress for decisions made - these are what we see overseas in dictatorships in third world countries...
>
> The Bill contravenes the principle of intergenerational equity by closing off land and water use options that our descendants would otherwise have had. It is also robbing them of the richness of Queensland's biodiversity and its life-sustaining properties.

Anthropogenic climate change is upon us now. Resistance is futile. Those in control of the landscape are in charge of the future of the planet and the fate of humanity. As a species and as Queenslanders, we must radically change our traditional habit of reshaping the landscape and denuding its surfaces for our day-to-day short term purposes.

Half a century ago, United States Senator Gaylord Nelson, founder or Earth Day and today's environmental movement, expressed a fundamental understanding of the real world:

> *The economy is a wholly owned subsidiary of the environment, not the other way around.*

Science has long since caught up with the observations and perceptions of Nelson and other outspoken thinkers of the 1960s, such as Rachel Carson (*Silent Spring*). Human beings now have ample evidence as to the harm human practices have done and continue to do to the dynamic life system that is our only planet. The predicament in which humanity finds itself is precisely because predictable consequences have been ignored; the culture of land holders and users continuing in the habit of empire, pillaging the land for "resources", expecting there will always be more. It must have seemed like that when humans were very few and technology primitive. The earth system, though unimaginably large and complex, is nevertheless finite; continuing anthropogenic alterations to its interacting elements can only result in major functional change.

By 1992, our governments had signed the *Intergovernmental Agreement on the Environment (IGAE),* which incorporates the four principles of Environmentally Sustainable Development (ESD): the precautionary principle, intergenerational equity, conservation of biological diversity and ecological integrity, and improved valuation, pricing and incentive mechanisms (IGAE Sect 5).

Despite the seriousness of the threats to biodiversity, the possibility of anthropogenic climate change, the efforts of successive governments to reduce the extent and pace of land clearing, and the signing of the IGAE, land clearing in Queensland continues to be perceived largely as a landholder right.

Some of the arguments supporting continued unbridled clearing in Queensland are based on spurious claims or philosophical positions that place personal agendas ahead of the long term community interest.

Rural newspapers typically reflect the irrational and erroneous belief that there exists a simple static balance *between* environmental conservation and economic growth (including agricultural production) and that the former should not outweigh the latter; revealing as mere platitudes the accompanying statements made in support of environment protection:

> Of course the environment must be protected and conserved. But what happened to the importance of economic growth and development?
>
> Effective agricultural regulation draws a reasonable line between environmental protection and agricultural production.
>
> It is undeniable that efficient agricultural production requires the felling of trees …
> …
> Removing exceptions for high value land specifically burdens the most productive farmers and removes the possibility that economic growth outweighs environmental conservation.
>
> (http://ipa.org.au/news/3447/whytheproposedtreelawsaretheveryworstkindofredtape)

This view, so clearly expressed above, shows a failure to understand that the "balance" of the natural world is dynamic, not static. This either/or scales view is more than merely mistaken and simplistic; in the context of an audience not acquainted with the science of systems (including ecosystems), surely some of its promoters must be well aware it is also mischievous.

Much is driven by irrelevant political aspirations and unevidenced claims:

> *Labor plans would impede agriculture* Qld Farmers Fed Jan 2015
>
> *O'Sullivan "green activist inclinations" on land-clearing* Queensland Country Life April 2016

Labor ... drive up cost of food by axing sensible Newman government tree clearing Courier Mail March 2016

No evidence exists that the land clearing controls proposed would impede agriculture or increase the costs of food – especially in the context of high levels of wastage in some cropping operations; or that greenies have some magic power over governments.

Commonly expressed is a belligerent stance, as if farms are petty fiefdoms under siege, ignoring that governments are obligated and empowered to make decisions to protect the common good against the "death by a thousand cuts" otherwise inflicted by a multitude of private interests and agendas:

Lynham sidelined as Palaszczuk belts farmers ... Qld Country Life Nov 2015

Miles ramps up attacks on Qld farmers Stock & Land April 2016

New tree clearing legislation 'an attack on farmers', rural lobby ABC Rural News March 2016

Many Queensland farmers understand climate change and the significance of protecting biodiversity, but only the noisy ones give the media what it craves – conflict – resulting in emotive he-said/she-said stories building arguments on false premises; these stories fail the public interest test by not sourcing cited facts and by not questioning underlying assumptions.

Below is Noel Pearson's partisan view (that indigenous people should be able to do as they wish on native title land):

> … "It's death by a thousand cuts, the ability for the people of the Cape - including Indigenous people who now have vast areas of land back on our title - to do anything on that land is severely restricted.
>
> "Our opportunities for our future generations to develop have been cut off at the past, so I just think this is an unfortunate agenda the State Government is pursuing here."

(Noel Pearson tells land owners ABC RURAL 09 March 2016)

Although, having a bob each way, he recognised that clearing:

> … can have a negative impact on the land if not done correctly.
>
> "There has got to be proper processes and assessments and clearances in place," he said.

(ibid)

Regardless of how it is done, in the end, clearing means clearing; that is, the loss of growing trees, the loss of carbon sequestration, and the irretrievable loss of associated biodiversity.

Again, the static balance assumption of development is weighed against conservation:

> "Now that we have our land back, what are you saying to us? That we don't have a right to development? We're not going to lift ourselves out of the poverty and misery we live in unless we have balanced development."

(http://www.wattelectricalnews.com/NEWS/Toclearornottoclear:farmersinthedarkonnewlaws/30899)

Clearing affects *everyone* on the planet. No-one, however justly or unjustly arrived at their current place in life, can escaped the contributions of land clearing to climate change and biodiversity collapse.

When the ship is at risk of sinking, fights among the pump hands over perceived injustices will only jeopardise the wished-for state of safety, for everyone.

Farmers are in a prime position to take the lead in climate change litigation and adaptation and biodiversity preservation. The Zero Carbon Australia Land Use Report 2014: *Agriculture and Forestry A Discussion Paper* sets out how:

- Australia's land use sector can take a lead role in addressing climate change
- Net zero emissions agriculture can be achieved through changes to some agricultural activities and limited revegetation
- Revegetation can provide an alternative revenue stream for farmers
- Forests in SE Australia can sequester 7,500 million tonnes of carbon dioxide if left to recover

1.1 The case for change

Climate change, caused by human activities, has brought us more severe storms, floods, droughts, heat waves, interannual variability and desertification (e.g.**1 – 3**). Warming thus far of just 0.8°C has produced record lows in Arctic sea ice volumes, melting glaciers and permafrost, widespread record high temperatures and extreme droughts (p8).

1.1.1 **Climate change and Australia's rural industries** …

It is imperative that we radically reduce greenhouse emissions in the near future. There are many opportunities for doing this, but here we are concerned with change to human land use patterns, specifically in Australia. This is because humans extract their basic needs from the natural environment via their patterns of land use. We are very successful at obtaining food, fibre and water by manipulating natural systems, a capacity that has been crucial to our success as a species. However landscape-scale change has also been a vehicle for substantial damage to the systems that support life, including the stable climate on which land use activities depend (p9).

(Zero Carbon Australia *Land Use: Agriculture and Forestry Discussion Paper*)

We emphasise the last sentence quoted above:

> *landscape-scale change has also been a vehicle for substantial damage to the systems that support life, including the stable climate on which land use activities depend*.

This is why we urge that much stronger provisions be drafted and implemented; we are running out of time as well as trees.

ASH made detailed submissions on many, if not all, of the legislative amendments from 2012 on which systematically removed vital protections for vegetation in all its contexts. In 2013-2014 ASH made detailed submissions on the wretched Queensland Offsets Policy, including to the Commonwealth Inquiry into Offsets.

Since the mid-1990s, members of our predecessor Friends of Hinchinbrook Inc (FOH) and ASH had repeatedly approached the Great Barrier Reef Marine Park Authority (GBRMPA) and faced denial after denial that contaminants were reaching the corals, despite the information provided by oceanographer Bob Morris:

> Dear Senator Hill
> I refer to my letter of 25th Sept 1997. Ian McPhail replied on your behalf (4 Nov 1997) and I attach a copy of my reply to that letter. Sadly I feel that I have wasted my time trying to present my concerns about the future of the Reef to you and your advisors. The inclusion of my data and views into the debate appears to have been actively blocked, rather than encouraged, as should have been the case if a full frank, open discussion of the issues was sought. This was obviously not the case but surely it

> should have been, if a proper management and preservation of the GBR World Heritage area vra6 a priority. Instead there appears to have been a careful selection of the views and data suitable for inclusion into the decision-making process concerning the Reef …

(see attached, three letters)

Far from applying the Precautionary Principle, as one might reasonably have expected, the GBRMPA denied that harm was happening until later studies demonstrated, beyond any possibility of denial, that sediment and metal/chemical-carrying colloids were indeed reaching and being ingested by the corals of the inner and outer reefs. In 2012 the Bligh government abolished the only coastal legislation (which was in effect as interim arrangements from 1997, and enacted as Regional Coastal Management Plans (RCMPs) in 2003/2004) that protected the Great Barrier Reef World Heritage Area (GBRWHA) coast to world heritage standards, having first amended the Queensland Coastal Act to remove its crucial catchment basis; the Newman government followed up by systematically removing, from a number of Queensland acts, impediments to land clearing..

Our concerns include loss of appropriate land cover (vegetation) required for the flourishing of biodiversity (species distribution and genetic variability of species and ecosystems):

> There is a growing body of theory and empirical evidence that biodiversity loss reduces the capacity of ecosystems to capture resources, produce biomass, decompose organic matter and recycle carbon, water and nutrients, and also that biodiversity loss reduces the stability of these functions through time …

(Cardinale BJ, Duffy JE, Gonzalez A, Hooper DU, Perrings C, et al. (2012) Biodiversity loss and its impact on humanity. Nature 486: 59–67. doi: 10.1038/nature11148; in Scientific Foundations for an IUCN Red List of Ecosystems; May 2013)

Often overlooked in the bureaucratic obsession with maps are the realities of species whose future prospects are restricted by imaginary lines drawn over a living landscape. Neither the Wet Tropics World Heritage Area (WTWHA) nor the Great Barrier Reef World Heritage Area (GBRWHA) have buffer areas, as is preferred by the United Nations Educational and Scientific and Cultural Organisation (UNESCO). Combined with the shape and fragmentation of the WTWHA, land clearing outside the WTWHA poses threats to species whose habitat occurs within and without the WTWHA boundaries. Clearing of land adjacent to the WTWHA and nearby will diminish the populations of species that are important values of the WTWHA; eg Mahogany Glider, Southern Cassowary, Spectacled Flying Fox. Loss of habitat outside the boundaries of the protected areas of the WTWHA will in time lead to reduced viability of affected species and of their long term function in maintaining the vegetation of the WTWHA: a positive feedback system, a vicious cycle.

Further concerns: loss of tree cover and resulting adverse impacts on carbon sequestration, climate and rainfall, including:

- loss of concept of landscape and catchment function (the surface of the earth is all we have to live on);
- destruction of landscape function such as surface water retention and groundwater replenishment; land levelling and erosion changing the flow to the coast;
- loss of soils;
- pollution of the Great Barrier Reef (GBR) lagoon from riverine and coastal run-off;
- loss of GBRWHA corals from siltation, agricultural chemicals, sewage effluent and heavy metals arising from coastal acid sulfate soil disturbance.

Example: The Hinchinbrook Channel

As the result of efforts to protect it, including several court cases, the Hinchinbrook Channel and Missionary Bay on Hinchinbrook Island are now well-known as a special large-scale marine wetland and an area of congregation for a population of dugongs (listed as "vulnerable to extinction"). Despite the efforts of scientists who delivered management goals to the GBRMPA, this population is already in fact functionally extinct because of impacts on its habitat due to coastal clearing and related development throughout its range (there is simply not enough seagrass now for it to build up to its former numbers); as well as to the failure of the GBRMPA and the state government to prevent deaths by drowning in gill nets. Much of the seagrass loss is due to trawling, boating activities, dredging and bed levelling, activities which will not be touched by this Bill; and much is due to contaminated coastal run-off, which this Bill will address to some extent.

Protection from further coastal clearing is essential to prevent further heavy metal contamination of seagrass and dugongs due to the disturbance and draining of acid sulfate soils. Such disturbance is commonly associated with the clearing of coastal woodlands (eg for sugar cane farming). Not covered by this Act are the point discharges associated with the clearing of coastal land for development. The 2010 dredging licence for the "Port Hinchinbrook" canal estate allows a discharge of pH 6.0, way below Queensland and International standards for seawater, a level at which heavy metals are dissolved and flushed into the Hinchinbrook Channel (an appropriate pH level here would be 8.2).

Coastal woodlands are crucial to the Mahogany Glider, a lowland species listed as endangered (precisely because its habitat has been largely cleared or fragmented for sugar cane, grazing, and residential development); and to Livistona drudei palms. These palms are restricted to the coastal strip from Tully to Conway Beach, at altitudes below 300m. They grow only along stream banks and in Melaleuca swamp forest, without which context they cannot propagate. Some of these woodlands along the Hinchinbrook Channel mainland coast are protected as national park, but even this has not stopped the loss of melaleuca woodland and Livistona drudei palms within national park due to the impacts of adjacent development (eg "Port Hinchinbrook" spoil ponds).

Retention of River Bank Integrity

Queensland's river banks have suffered enormously since 2000, when the Hon. Henry Palaszczuk MLA, Minister for Primary Industries and Rural Communities, wrote to our Patron and past President, Margaret Thorsborne (now an Officer of the Order of Australia), expressing confidence in the original Vegetation Management Act 1999 to protect river banks.

ASH urges the present government to further strengthen the Act so that it carries out the 2000 expectations of the Hon. Henry Palaszczuk:

Many of the issues that you have raised are already covered by the Vegetation Management Act 1999, which may be outlined as follows:

That legislation was passed by Parliament in late 1999. It is intended to ensure that all remnant vegetation is sustainably managed and protected, while still allowing economic development.

Some relevant policy criteria within that legislation and which will address your concerns include:

- Vegetated buffers of at least fifty metres where possible around wetlands, lakes or springs;
- Placement and width of riparian buffers to enhance wildlife habitat, stream bank stability and the filtering capacity for sediments and nutrients. These buffers are to be 200 metres each side of rivers, 100m each side for creeks and fifty metres each side of waterways in most areas;
- Viable networks of habitat to be maintained. Where possible, vegetation is to maintained in twenty hectares or greater clumps and strips; and
- No clearing of areas of high conservation value.

Example: The Johnstone River.
The Johnstone River is a high-energy river in a very high rainfall area (5 metres/year) of the Wet Tropics Region of Far North Queensland, and within the Wet Tropics of Queensland World Heritage Area (WTWHA), the misuse or abuse of permits on a tangle of tenures has resulted in the total clearing of the natural riparian vegetation on public esplanade land along the high and low banks of the Johnstone River. Crops have been planted to the high bank and farm drains run through the low bank carrying sediment laden farm runoff directly into the river. The effects of horticulture such as banana farming (bare-earth, machinery) include red mud "run-off" streaming into the river; worse, the low banks, devoid of vegetation are eroding causing the high bank to slump, creating a highly visible red or brown plume right out to the offshore coral reefs of the GBRWHA. The rate of silt flow in the Johnstone has visibly increased since the development of banana farming in the Johnstone River catchment. When sugar cane was the predominant crop the river ran red only after cyclones or other severe rain events whereas today when high levels of suspended sediments are highly visible as a commonplace discharge of red and brown silt into the GBRWHA. This change has been visually evident to travellers on the Bruce Highway, especially over the last 5-7 years (personal observation).

Despite all the effort since the 1990s, the Johnstone River has continued to deteriorate. Over the last seven years or so the Johnstone has changed from running red after a cyclone to running red or brown after any wet event, even when there has been little rain.

Innisfail horticulturalist Yvonne Cunningham has supplied the recent photo (see below) she took from Coquette Point showing the plume from the Johnstone River flowing out to the outer coral reefs of the GBRWHA. During the previous two weeks moderate rain events had occurred in the Johnstone River catchment.

(above) The mouth of the Johnstone River March 2016

(above) The plume from the Johnstone River reaching the coral reefs of the GBRWHA March 2016. Photo by Martin Cunningham. The plume of suspended sediments can be seen in the photo above about to engulf the reefs off shore from the Johnstone River. In the week preceding this photo there was no large rain event, rainfall in the catchment averaged 70mm a day for a week. The sediment plume was as a result of accumulating farm runoff over the duration of the rain event.

NGOs do not have the resources to clarify and correct the long-established misuse and abuse of riverside tenures and local politics. Only governments have the authority of legislation and other means to restore the natural infrastructure essential to Queensland's health and wealth yet wasted through greed and neglect.

Please find attached the Final Report "Demonstration & Evaluation of Riparian Restoration in the Johnstone River Catchment" (*demonstration-evaluation-riparian-restoration-john)* of the Johnstone River Catchment Management Association Inc. (Program: Rehabilitation and Management of Riparian Lands), published in 2000. It illustrates the problem of landholder attitudes, tenure tangles, poor understanding of the reality of the impacts and the various generally unsuccessful attempts to make a difference to the Johnstone River input into the GBRWHA. Note the lack of leadership from the GBRMPA (two dot points, bottom of p8).

By 2012 there was much more information and public awareness of the need to protect land, yet the Bligh government abandoned coastal protection (amended the Coastal Act to remove its catchment basis; abolished the RCMPs that were a requirement of a Commonwealth Consent 1996 and of the Federal Court 1996). Next, the Newman government's removal from legislation of vegetation-protective provisions has exposed coral reefs to further pollution, far from ports with their specific dredging and shipping impacts.

An attitude to natural processes typical of our region is expressed in a letter published in the Innisfail Advocate (08052013):

letters to the editor

Tree planting frenzy

WHY does CCRC have a foreshore planting program, costing hundreds of thousands, which within a few years will virtually lock out the ocean?

Good God, we need a new strategy, and fast. This planting frenzy along Wongaling Beach will likely be proclaimed "natural" and untouchable in the future.

It borders on criminal for towns that so desperately need tourists to barricade off the very reason they come. Good landscaping practices never include: fill in the gaps with trees; the more trees the better. Not even the most inexperienced novice gardener would inflict this on their own property, what the recent foreshore planting accomplished in Wongaling i.e. plant trees so thick, that, even if only a tiny fraction of the seedlings thrive, it guarantees within a few years to block 100 per cent of stunning ocean and island views and all natural ocean breezes. The sea and beach is our competitive advantage for tourism. We should making the beach highly visible, attractive and easily accessible.

Kim Badcock, our coastal management facilitator, boasts of the high seedling survival rate to date, which makes the "plant more than you need" practice totally irrational. Trees that compete for light and space simply grow very tall very fast. This planting resembles the sort of barrier that is commonly constructed alongside motorways to insulate subdivisions to mitigate visual, noise and other nuisance factors. Kim's comment to me that "it will be years before there is no breeze" simply demonstrates shortsightedness.

The pre Yasi trees have been ripped out by a very natural, heaven sent, cyclone. Mature trees cannot be restored. Yasi demonstrated that in the event of a severe cyclone trees do not protect the foreshore, they cause more damage and more mess. On the bright side, we have been divinely blessed with absolutely the most magnificent views and delightful year round cooling sea breezes. Let's work with the positives, and start with forward thinking replanting options of what most affected (i.e. ratepayers, residents, Banfield Parade road users, businesses, tourists) people think will be a good outcome in the future. For a pleasant environment selected shade trees are desirable, not a 10m thick and 10m high impenetrable hedge planted under some "natural recovery/foreshore restoration" claptrap.

LANDSCAPE: The Wongaling Beach tree plantings have come in for criticism from a resident. **Picture:** Supplied

Only a short stretch of Wongaling esplanade has that "at the beach" feeling because most of the Wongaling foreshore has absolute beachfront housing. Are we really hell bent on constructing the great green wall, on that small length of foreshore (Banfield Parade) that currently remains freely accessible from the road, denying road users and motoring tourists driving by having that "by the sea" sensation? I often notice drivers stopping spontaneously to enjoy a particularly stunning sunrise, or the shimmering reflection of the moon on the water, or a pod of dolphins delightfully frolicking in the shallows, or a majestic sailboat gliding past Dunk Island, even whales breaching, or an unusual weather pattern developing on the horizon. Campervaners often stop to cook and eat breakfast while enjoying the seascape. Workers pull up to eat their lunch. Even in poor weather, people pull up to eat sandwiches while soaking up the atmosphere from the safety of their vehicle.

The "restoring the natural foreshore area" strategy needs to be abandoned, and a "landscaping in public areas" type policy needs to be adopted. Then community, stakeholders, and affected residents consultations will not be a farce. We need a rethink! We need a different approach.

Micha Creedy,
Wongaling Beach.

Standing by address

THE time has come for me to eat "humble pie", but only a very small portion.

What I said in my Anzac Day address about the "toning down" of Anzac Day was based on actual media reports.

I am not alone here; the Prime Minister herself is well aware of the "toning down" comments and rejected those remarks very decisively. Since I received a genuine complaint I went on an internet search.

I am an old man and not an electronics "whiz kid" but I have found several sources in different "media" and the truth is that some people do want to appease the new citizens. I will not name any of the media involved because there is no need for more controversy.

However I will give anyone interested the list of sources of the "toning down" comment. In addition I

And (below) a self-congratulatory internet note this year from Cr. Alister Pike, Councillor Division 3 Cassowary Coast Regional Council, expressing astounding ignorance and promoting misinformation (in the face of easily ascertained facts on which the Queensland and Commonwealth Governments have spent $millions, such as the *National Landscapes Program*) and Council wilfulness to defy their own planning instruments (note (1) the 4/3 decision – hardly a sound basis for land-use decisions - and (2) the tagged-on jargon of the last sentence below):

> Lively Local Government meeting yesterday at Tully. My Notice of Motion in relation to replacement of removed end of life coconut trees with advanced coconut saplings was successful (with some amendments), receiving majority support. Coconut trees are an intrinsic part of our beach and landscapes, tourists and the majority of locals enjoy the amenity and tropical feel they give to our beaches. Vote 4/3. We also resolved … These are the important decisions that are helping our region steadily and sustainably grow.

Community attitudes are fed by mischievous data interpretations by those who see vegetation protection only as a limitation on their own short term personal gain:

SATURDAY APRIL 2 2016 FACEBOOK.COM/INNADVOCATE

No let up in fight on clearing laws

FARMERS and graziers have vowed to keep up their fight against land clearing legislation, claiming the State Government has ignored its own data for political gain.

The Liberal National Party and Katter's Australia Party hope to block the Palaszczuk Government's vegetation management laws, but will need the vote of crossbencher Billy Gordon.

However, if the legislation is not passed, Labor MPs in marginal seats could find themselves in hot water with the Greens, who deliver preferences for key seats.

State Government figures, analysed by AgForce Queensland, reveal tree coverage increased by 437,000ha across the state over three years.

Although clearing rates rose in 2013-14, tree coverage increased in 51 of 77 council areas.

"This data, which they have made available, makes it all the more perplexing why they want to go down this track," AgForce North regional manager Paul Burke said. "It's an obvious political move and there's no evidence to back up why they're doing it.

Paul Burke, AgForce North East Queensland Regional Manager.

"The Federal Government has a focus on developing Northern Australia and this current Labor government is making it difficult for us to capitalise on that."

Mr Burke said the laws disadvantaged North Queensland farmers, pastoralists and indigenous groups.

"Farmers charged with illegal land clearing will be assumed guilty and have to prove their innocence, which goes against the way our justice system works," he said.

"They will have less control over their land and be unable to manage it properly with major implications for high value agricultural projects and the jobs that come with them."

Cattle grazier Blair Knuth said the laws would cripple the industry if they were passed.

"It would absolutely shut down the development of agriculture at a time when rural and remote communities are really suffering," he said.

"People need to clear land, grow crops and put irrigation in so that we're not degrading it (the land)."

Mr Knuth said there was evidence that tree clearing was beneficial when done correctly. "We can only assume that because this policy is not facts driven then it is agenda driven," he said.

If this story is to be believed, nearly ½ million hectares of forest was miraculously re-created over just a few years. What a boon that would be! But "tree coverage" (as identified in the data cited) starts at a height of one metre: these are mere seedlings, new regrowth. What's at risk are the more established (taller) regrowing woodlands and habitats as well as remnant woodlands. For the benefit of what the natural world provides for us and for posterity, we must not clear any more of these.

Despite the claims of those who benefit personally from land clearing, there is no shortage of cleared land in the Cassowary Coast Region or throughout Queensland generally.

It is fair to say that landholders' complaints about land clearing restrictions in Queensland are based on short-term material self-interest without acknowledging a responsibility to the common good; not taking into account science or the future-oriented Precautionary Principle or the principle of intergenerational equity, principles to which all Australian governments have signed agreement and have supposedly expressed in domestic law. The Vegetation Management Act (see its Purpose) should be a prime instrument for the expression of these principles.

Given that the vegetation management legislation has demonstrably never been strong enough to protect the land (just look at the numerous adverse outcomes), the argument that the present (weakened) legislation is excessive is just not supportable. Current legislation is demonstrably unable to maintain landscape and catchment integrity and biodiversity.

Landholders who want to clear more of their land may be motivated because their block isn't large enough, or otherwise suitable, to be economically viable for the farming they are doing. These are business decisions that have not worked out. Sometimes it is bad luck, because the bottom has dropped out of the market for their products. The answer is not to mine the block for what can be extracted from it until you can move on, not to clear more of it to keep going a bit longer, but to re-think the business model altogether. Example: Tree crops along the tropical coast may not be viable, given the time scale of tree farming (25 years for timber) and the frequency of severe cyclones, with consequent loss of trees and reduced crop value of survivors. Sometimes there is nothing to do but cut your losses and get out.

No business, including farming business, can be guaranteed not to fail. There is never a mandate for robbing the future and the common good for the sake of keeping afloat a failing business.

In the context of climate change, farming enterprises may well have an increased risk of failure or lowered production. Expected rains may have failed (see attached, *Some growers could miss out on planting their winter crops for the third or fourth year in a row*, ABC April 2016). Farms may have been overstocked or overworked for the prevailing conditions. The soils may have been depleted. Erosion may have been allowed. Clearing more land might temporarily defer economic failure, but will only lead to greater problems over a larger area. Future generations will bear the burdens of lost soil, lost carbon sink capacity, and lost biodiversity.

Landholders who complain that the legislation is excessive and who argue to minimise riparian widths and maximise clearing for fence lines and "domestic purposes" are not taking into account science-based information. They are also ignoring the many examples of good practice where farmers have extensively rehabilitated their land and reaped the reward of better production from a smaller area.

Sometimes landholders clear land solely to preserve what they see as their options. Sometimes there is lingering resentment because the block contains land that is not allowed to be cleared because of its conservation value, whether by law or by covenant, yet the landholder may get no rate relief in consideration of that fact. ASH agrees this is unfair, but not a reason to behave like a vandal. ASH has always supported that landholders should be compensated; and that local councils in the Wet Tropics region generally should have the equivalent of one staff position funded by the Commonwealth government because of the relatively large proportion of land protected as World Heritage within the tropical coast shires.

See next page for conclusion.

IN CONCLUSION:

There is an urgent need for reinstatement of strong vegetation-protective legislation.

Strong legislation is urgent to halt the damage caused by governmental and landholder neglect.

Strong legislation will open debate, to lead and change opinion.

Only strong legislation can prevent community and Council attitudes, such as those cited above, from leading to ever-increasing levels of destruction of the natural infrastructure essential to the landscape functionality and coastal processes, and the biodiversity these support, on which humanity depends for long term climate and life stability.

Non-compulsory plans can help reduce the *increase* in rates of terrestrial pollution of the GBRWHA, but only strong legislation can *check* pollution and *reverse* the present trend.

ASH STRONGLY SUPPORTS:

- **the retrospectivity measures (to March 17).**

  We have seen the horrors of past pre-emptive clearing in our region. We continue to hear the irrational authority-defying attitudes that some landholders so pettily express. Freedom to do what one wants must always be tempered with respect for the long term impacts on one's community and on the planet that has now been pressed beyond its capacity for ecosystem and climate stability. When individuals steal from future generations, only the state, on behalf of the public good, has the authority to take protective action; moreover, the state has a clear duty to do so.

- **the removal of the "oops" defence**

  ASH strenuously objected to the removal from the Act of effective land holder responsibility and liability (see attached *ASH Submission VMA amend Bill Apr 2013*).

  Land clearing is one of the circumstances where the claim of "honest mistake" is too readily abused, the perpetrator too readily obscured, and the consequences too serious, to allow this level of personal discretion.

  ASH predicted "NO COMPLIANCE EQUALS UNREGULATED CLEARING".

  The present legislation makes it virtually impossible to prosecute for illegal land clearing. First, an observer would have to be within the property and close enough to photograph/video the bulldozer and identify the driver, and even that would not be enough, because of the "oops" defence. Second, ignorance of the law and the acceptability of putative mistakes advantageous to your business are an open invitation to cheat. Imagine if car drivers could get away with such a farcical defence – "I'm sorry Officer, was I really driving on the footpath? I was sure I was on the highway". In 2012 we heard the Queensland Premier say "we will not prosecute". Perhaps we should also expect the Police Commissioner to announce "Oh, don't worry about the speed limit – we're not going to prosecute drivers any more".

- **the restoration of protection for riparian area trees.**
  This comes *after* river banks have been trashed; this amendment will however assist with the riverbank restoration that must now be pursued, and help preserve what remains.

- **the extension of protective provisions to ALL the GBR catchments.**

  This has been a long time coming – in 1994 and 1997 the Coastal Act and Coastal Plan were actually written and enacted on a catchment basis, as the Commonwealth Government intended and as was relied on when the Federal Court upheld the Commonwealth Consent (1996/97). In 2011/12 the catchment basis was removed from the Coastal Act and Plan by the Bligh Government. So this provision is a welcome return to science-based thinking about water quality for the GBRWHA.

- **the restoration of protections for 'High Value Regrowth' (ecologically important regrowing woodlands) on freehold and Aboriginal land.**

  The label "regrowth" has been used as a denigratory or dismissive term to excuse the clearing of land that had been well on its way to becoming important habitat. In our region of interest (Hinchinbrook-Cassowary Coast), coastal woodlands (melaleuca) are often also wetlands (yes, even these were often cleared, to the extent machinery did not get bogged) or seasonal wetlands. The mahogany glider is in desperate need of habitat restoration. These woodlands can recover quickly if left unworked after clearing. Recovery over 10 years provides food sources for mahogany gliders and, in a 15-20 years, gliding trees essential for them to traverse the landscape.

- **the removal of permits to clear land for so-called 'High-Value Agriculture' (reducing the possibility of large scale clearing of remnant woodlands).**

  As for the restoration of protections for "High Value Regrowth", the removal of what amounted to a legal fiction ("High Value Agriculture") will protect important coastal habitat in our region of interest (see dot point above).

  If crops were not wasted, cropping land would be more productive in terms of income. The agriculture and horticulture industries must be examined for their excessive wastage. In particular, horticultural crops not sent to market (dumped or ploughed in), more land cleared than planted, wastage in the arrangements associated with wholesale and retail marketing.

Please accept as part of our submission our support for the detailed comments of the EDO Queensland submission.

ASH has had lengthy discussions with the Environment Defender's Office (EDO QLD) in Brisbane and other Queensland conservation groups in relation to this this Bill.

The Act (1999), its purpose and underlying principles

> 3 Purpose of Act
>
> (1) The purpose of this Act is to regulate the clearing of vegetation in a way that—
> (a) conserves remnant vegetation that is—
> (i) an endangered regional ecosystem; or
> (ii) an of concern regional ecosystem; or

(iii) a least concern regional ecosystem; and
(b) conserves vegetation in declared areas; and
(c) ensures the clearing does not cause land degradation; and
(d) prevents the loss of biodiversity; and
(e) maintains ecological processes; and
(f) manages the environmental effects of the clearing to achieve the matters mentioned in paragraphs (a) to (e); and
(g) reduces greenhouse gas emissions; and
(h) **allows for sustainable land use.**

(2) The purpose is achieved mainly by providing for—
(a) codes for the Planning Act relating to the clearing of vegetation that are applicable codes for the assessment of vegetation clearing applications under IDAS; and
(b) the enforcement of vegetation clearing provisions; and
(c) declared areas; and
(d) a framework for decision making that, in achieving this Act's purpose in relation to subsection (1)(a) to (e), **applies the precautionary principle that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment if there are threats of serious or irreversible environmental damage;** and
(e) the phasing out of broadscale clearing of remnant vegetation by 31 December 2006; and
(f) the regulation of particular regrowth vegetation

In 2011, at the last formal Ministerial Environment Round Table (ERT) meeting of the Bligh Government, conservation representatives were advised formally by senior staff of the Premiers Department that the Bligh government had abandoned Ecologically Sustainable Development (ESD). At the first Ministerial ERT meeting of the Newman government (2012) we were again formally advised by a Premiers Department spokesperson that ESD and the Precautionary Principle (PP) were no longer in use.

Without ESD and the PP underpinning legislation there are no limits to disturbing and fundamentally changing the dynamic balance of the natural environment. Humankind absolutely depends on keeping this complex system within bounds that will support human life. Just as biodiversity lost is not recoverable, disturbance to the dynamic balance of the planet's systems will not be recoverable. The climate may well stabilise again, but not in a way that so readily supports human life. Our species evolved for the world we have known; when we change basic elements of the system we put future human generations and all present life forms at risk.

The Queensland Government has made a specific commitment (in the Reef 2050 Long-Term Sustainability Plan) to base all decisions affecting the Great Barrier Reef World Heritage Area on ESD and the PP.

ASH strongly urges the Government to ensure that the principles of Ecologically Sustainable Development and the Precautionary Principle are retained in the purpose of the Act, and that the provisions of the Act fully carry out its purpose.

Yours faithfully

[redacted]

Margaret Moorhouse

Authorised by the Alliance to Save Hinchinbrook Inc committee to prepare submissions.

Alliance to Save Hinchinbrook Inc

PO Box 2457, Townsville Q 4810

Mobile 0427 724 052

hinchinbrookalliance@gmail.com

10 April 2013

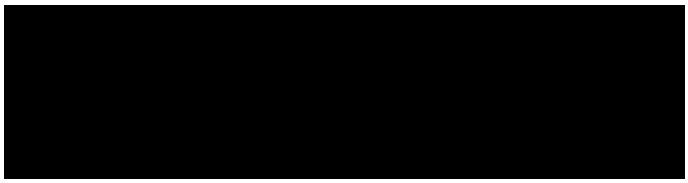
Department of Environment and Heritage Protection
GPO Box 2454
Brisbane Qld 4001

by email SDIIC@parliament.qld.gov.au

Please find below our brief comments on the Vegetation Management Framework Amendment Bill 2013.

Our members have compared the present Act and the Bill in detail. Time does not permit a fuller submission of all the defects in the amendments proposed. Our conclusions are below, followed by some more detailed remarks on some of the proposed major amendments.

Yours sincerely



Margaret Moorhouse

ASH

COMMENTS: CONCLUSION

The Alliance to Save Hinchinbrook (ASH) is totally opposed to virtually all the amendments proposed, none of which is consistent with the purpose of the Act and most of which are clearly contrary to the purpose of the Act.

The only exceptions to our opposition to the amendments are related to those few amendments which appear to have no consequences for vegetation.

The removal of any possibility of legal challenge to approvals for clearing land under this Act removes the decision maker from being held accountable for the widespread destruction of native vegetation envisaged and allowed in the detail of the other proposed amendments.

The lifting of protection for all classes of native vegetation, introduction of self-assessment, removal of compliance requirements (via the defence proposed to be provided) and no legal redress for decisions made - these are what we see overseas in dictatorships in third world countries.

The potential consequences for our area of interest (the Hinchinbrook Region) have left our members deeply shocked that the state could be catapulted back to an ancient time when the natural world seemed limitless and uneducated, unscientific human societies could take whatever they wanted.

Many earlier human societies perished as their ability to destroy their part of the earth exceeded what the earth could deliver. This tradition of unbridled social and economic aspiration has now driven the planet into dangerous climate change - in a context of human overpopulation.

The Vegetation Management Act was drafted to ensure that Queensland was not driven to third world status by economic and political greed. This Bill, however, turns the Act on its head.

The Bill contravenes the principle of intergenerational equity by closing off land and water use options that our descendants would otherwise have had. It is also robbing them of the richness of Queensland's biodiversity and its life-sustaining properties.

SOME DETAILED COMMENTS

4 Amendment of s 3 (Purpose of Act)

Section 3(1)—

insert— (h) allows for sustainable land use.

Given the purpose of the Act (below) , this proposed insertion is redundant. "Clearing" assumes that land use will occur.

Further, "sustainable" is not defined in this Bill. The term "sustainable" is widely interpretable. It could mean economically sustainable (in the relatively short term) or simply some other practice considered to be sustainable (at the time of the approval) in its own terms.

The unqualified term "sustainable" should be defined to remove any doubt as to its meaning. Its meaning should be consistent with the international and national agreements to which Queensland is signatory (ie development must be ecologically sustainable).

What is the purpose of inserting this phrase? Is the purpose to allow for a general weakening of vegetation protection by specifying easier conditions for approvals?

Purpose of Act

(1)The purpose of this Act is to regulate the clearing of vegetation in a way that—

(a)conserves remnant vegetation that is—

(i)an endangered regional ecosystem; or

(ii)an of concern regional ecosystem; or

(iii)a least concern regional ecosystem; and

(b)conserves vegetation in declared areas; and

(c)ensures the clearing does not cause land degradation; and

(d)prevents the loss of biodiversity; and

(e)maintains ecological processes; and

(f)manages the environmental effects of the clearing to achieve the matters mentioned in paragraphs (a) to (e); and[s 3] Vegetation Management Act 1999 Part 1 Preliminary Page 14 Current as at 1 February 2013

(g)reduces greenhouse gas emissions.

(2)The purpose is achieved mainly by providing for—

(a)codes for the Planning Act relating to the clearing of vegetation that are applicable codes for the assessment of vegetation clearing applications under IDAS; and

(b)the enforcement of vegetation clearing provisions; and

(c)declared areas; and

(d)a framework for decision making that, in achieving this Act's purpose in relation to subsection (1)(a) to (e), applies the precautionary principle that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment if there are threats of serious or irreversible environmental damage; and

(e)the phasing out of broadscale clearing of remnant vegetation by 31 December 2006; and

(f)the regulation of particular regrowth vegetation.

5 Amendment of s 11 (Minister must make regional vegetation management codes)

Section **11(2)(a)**, ', vulnerable or near threatened'—
omit, insert— or vulnerable

This change will result in a general widespread reduction in protection of biodiversity.

6 Amendment of s 16 (Preparing declaration)

Section **16(8)—** *omit.*

This represents a complete about-face for nature protection and its long term benefits for human beings. This contradicts the stated purpose of the Act.

7 Amendment of pt 2, div 4 hdg (Declaration of areas of high nature conservation value and areas vulnerable to land degradation)

Part 2, division 4, heading—
omit, insert— Declaration of particular areas

On the face of it this change might be seen as merely a matter of style, but it also removes from prominence the previous formal recognition of vegetation and landscapes that are of high nature conservation value.

8 Amendment of s 17 (Making declaration)

Section 17(1A), (2A) and (4)— *omit.*

AND

9 Omission of s 19D (Application of ss 19A–19C to wild rivers code)

Section 19D— *omit.*

WHY trash the one chance Australia had for keeping relatively pristine rivers into the long term?

The amendments 8 and 9 will result in a major loss of biodiversity protection and of biodiversity. In the case of the Wild Rivers, it is the irreversible trashing of a present generation's obligation and great gift to future generations, of the only remaining relatively undamaged river systems in Australia.

10 Insertion of new pt 2, div 4, sdiv 1A

After section 19C—
***insert*— Subdivision 1A Declarations by Minister**
19D Minister may make declaration

This proposed amendment is not consistent with the stated purpose of the Act.

What is now recognised as high conservation land should be excepted from this proposed amendment. If not, it will mean that Queensland is not even pretending to be a state of rich biodiversity but one where genetically restricted groups of functionally extinct species and disintegrating species communities are kept as living museum specimens.
Our national parks are so small, the remnants of a vanishing wild world. They and their wildlife are already threatened because of the small size of each national park area, edge effects, invasive species etc. Queensland had been progressing slowly towards better enabling wildlife to flourish via corridors and other rehabilitation and conservation schemes.

11 Replacement of pt 2, divs 4B and 4C

Part 2, divisions 4B and 4C—
omit, insert—
Division 4B Self-assessable codes
19O Self-assessable vegetation clearing code

This proposed amendment is contrary to the stated purpose of the Act.

How is "reasonable" defined? if not defined to be consistent with the purpose of the Act it will be widely interpreted according to other shorter-lived values, such as expected economic returns.

Given the rest of this Bill, and the stated priority of social and economic development over biodiversity in the in the recent NCA Framework review, and the rest of the proposed points (a) to (b), *"can not reasonably be avoided or minimised"* exposes the entire state to mining, logging and any other destructive land use.

13 Amendment of s 20AC (What is the *essential habitat map*)

This proposed amendment is contrary to the stated purpose of the Act.

This amendment reduces the chance of rehabilitation and restoration of areas that with care could provide vital connectivity and habitat area for many threatened species.
Many native species are in dire need of restoration of their damaged/cleared habitat, if they are to be securely perpetuated into the future, specially given that climate change is already threatening the integrity of ecosystems world wide. One of the crucial resilience factors for any species is the variability of its gene pool. This variability is the once chance a species really has for some of its members to make it through a climate bottle neck and continue into the future. Any actions which allow the limiting of genetic variability (eg reduction in population size, removal of local populations, restriction of range, relying on captive breeding etc) are hastening extinction.

Many species are already functionally extinct, requiring expensive management to protect the remaining populations from the "ordinary" threats (eg cats, dogs, weeds, restricted range) which in effect is artificially maintaining a species as an example in a living museum, which politicians can use to give the idea that they are "saving" the species. Koalas, different populations suffering from disease or inbreeding, have no future without human care. Dugongs, another specialist feeder, have lost the habitat it needs (seagrass) mainly due to coastal development, farm run off and riparian degradation. The dugongs of the southern GBR are probably best described now as functionally extinct, because their population has shrunk below what is viable.

20AKA What is a *vegetation category area*

> A ***vegetation category area*** is a category A area, category B area, category C area, category R area or category X area.
> *Note—*
> The effect of sections 20AL to 20AO, 20BA and 20CA is that there is no overlap of the boundaries of the vegetation category areas.

This assumes that the real overlaps which occur in nature do not exist. This simplistic model of the real world makes life easier for politicians and bureaucrats but loses connection with reality.

51 Amendment of s 51 (Power to require information)

> (1) Section 51(4)— ***omit, insert—***
> (4) It is a reasonable excuse for an individual not to comply if doing so might tend to incriminate the individual or expose the individual to a penalty.

53 Amendment of s 53 (Failure to certify copy of document)

> Section 53— ***insert—***
> (2) It is a reasonable excuse for an individual not to comply if doing so might tend to incriminate the individual or expose the individual to a penalty.

54 Amendment of s 54 (Failure to produce document)

(1) Section 54(2)— ***omit, insert—***

(2) It is a reasonable excuse for an individual not to comply if doing so might tend to incriminate the individual or expose the individual to a penalty.

56 Omission of s 67A and pt 4, div 2A

Section 67A and part 4, division 2A— *omit*.

58 Replacement of s 68CB (Non-application of Judicial Review Act 1991)

Section 68CB— *omit, insert—*

68CB Limitation of review and appeal

(1) This section applies to a decision by the chief executive.

(2) Unless there is a determination by the Supreme Court that the decision is affected by jurisdictional error, the decision—

(a) is final and conclusive; and

(b) can not be challenged, appealed against, reviewed, quashed, set aside or called in

NO COMPLIANCE EQUALS UNREGULATED CLEARING

EVEN THIRD WORLD COUNTRIES DO BETTER THAN THIS

NO ACCESS TO JUSTICE EQUALS DICTATORSHIP

These proposed amendments reflect truly primitive, scientifically ignorant and morally uneducated thinking. In modern times it is no longer possible to pretend that the planet's floral biodiversity and the fauna it supports can dispensed with. The real world is overpopulated and in the grip of competition for the remaining resources - the tragedy of the commons writ large.

Our "leaders" will be seen in the future as knowingly inflicting future generations with difficult lives on a much impoverished earth.

This insertion is entirely consistent with the statement of the Premier this year that there would be no prosecutions for illegal clearing.

I wonder what his esteemed grandfather would have to say about that.

The proposed removal of this Act from the Judicial Review and all avenues of legal challenge is not merely anti democratic. It amounts to dictatorship.

It legalises nepotism.

It is socially divisive.

It is highly destructive of Queensland's natural world.

There is no way that these proposed amendments can be said to be anything but contrary to the purpose of the Act.

end

Weather News

Some growers could miss out on planting their winter crops for the third or fourth year in a row

Lara Webster, Friday April 22, 2016 - 15:44 EST


Kilcummin farmer, Peter Anderson, could miss out on planting his winter crops for the third year if it does not rain in coming weeks. - ABC

A small cropping and cattle district in central Queensland is looking to the sky, watching for rain before it is too late to plant winter crops.

Kilcummin growers, located 75 kilometres away from Clermont, could miss out on planting chickpea and wheat crops if they do not receive heavy rain in the next few weeks.

For some it would be the third or even fourth year in a row, because the region has continued to miss out on its normal wet season.

Grower Peter Anderson said he was doubtful he would get a chickpea crop in the ground when planting was due to begin in May.

The same outlook was shared for his wheat crop.

"Probably 60 per cent of my cropping area is fallow. There is not a lot of moisture in it because we have only had 170 millimetres [of rain] for the year ... normally you would expect to get another 200 millimetres on that," Mr Anderson said.

"We grow our winter crops based on our stored moisture from the summer, so we need a significant rain event, not just a few showers or one-off storm [to plant]."

Peter Anderson said only a third of the district was planted at this stage.

Normally at this time of the year, two-thirds of the district would be planted to summer crops and one-third to winter crops.

"There's only been about half of the normal summer crop planted [and] unfortunately this is shaping up to be the fourth year with below average rain, so it is a bit of a cumulative impact."

Growers watching sorghum prices closely

Mr Anderson said the growers who had managed to plant sorghum would be watching the volatile prices closely, especially if they could not get chickpeas planted.

"If they get some rain and those crops come off they will give people a good cash flow but everyone is watching that falling price," he said.

"Considering the crops do need some rain to finish them, I certainly would be hesitant to forward sell.

"[Whereas] you do not need a very high-yielding chickpea crop to actually help the bottom line and make a few dollars because it is $880 to $900 at the moment, which is a very good number.

"Some people in this area have very little sorghum planted and then the winter crop is looking doubtful so I feel for those people, I really do."

- ABC

More breaking news

ABC News
Sydney Morning Herald
National Nine News
News Limited

From The Web

This Is The Track To Walk At Least Once In A Lifetime

(Sydney.com)

25 year-old took a $500 investment and turned it into $90,000!

(Biznews247)

Have you heard of this secret natural landmark?

(Qantas on AWOL)

This Man Saw A Huge Bear Drowning And Did The Unthinkable.

(GuiltyFix)

How to make any car smarter for only £20?

(Techie Fans)

See Spectacular Animal Light Sculptures at Taronga Zoo. Vivid Sydney, 27 May-18

(Vivid Sydney)

Does your resume sound alarm bells for recruiters?

(The Naked CEO)

Moving house? Here's what you can leave behind

(EnergyAustralia)

Recommended by

../. Attention John Woodley

17/04/98

From: Dr R.J.Morris, [redacted] Broadbeach Waters
Queensland 4218, Australia.

Senator Robert Hill
Minister for the Environment
Parliament House
Canberra
ACT 2600

17th April 1998

Dear Senator Hill

I refer to my letter of 25th Sept 1997. Ian McPhail replied on your behalf (4 Nov 1997) and I attach a copy of my reply to that letter. Sadly I feel that I have wasted my time trying to present my concerns about the future of the Reef to you and your advisors. The inclusion of my data and views into the debate appears to have been actively blocked, rather than encouraged as should have been the case if a full, frank, open discussion of the issues was sought. This was obviously not the case but surely it should have been, if a proper management and preservation of the GBR World Heritage area was a priority. Instead there appears to have been a careful selection of the views and data suitable for inclusion into the decision-making process concerning the Reef.

In a letter to you on 20th July 1996 I suggested that you should take account of the data that I was collecting prior to making any decision on Oyster Point. I even offered to give you a detailed presentation. I suggested that in the light of that data you may feel application of the precautionary principle was appropriate. You chose to ignore that advice. I suggest that this is an example of how Australia is failing in a proper management of its World Heritage properties. If there is a highly selective choice of data going into the decision-making process then it is much easier to make the preferred decision of choice. In the case of our World Heritage properties those decisions are being highly slanted towards economic rather than environmental priorities. I suggest that this is being made possible by the selective use of data.

My work so far shows :
1/ a clear flux of several toxic heavy metals from the coastal soils of E. Queensland into the inshore suspended and surficial sediments. Activities which disturb the sedimentary deposits on the coastal plain (removal of vegetation, coastal development and agriculture) or the coastal marine sediments (canal development, dredging operations, marina construction) will increase the flux of these metals.
2/ a build up of these metals in the coastal seagrass, oysters and long lived resident herbivores.
3/ a movement of metal-rich suspended sediments along the coast and across the continental shelf to the outer reef.
4/ a widespread distribution of a herbicide (Irgarol 1051 - used in anti-fouling paints) in seagrass beds around and within the

boundaries of the GBR World Heritage area. In a recently submitted paper I warn of possible consequences to long lived resident herbivores and the endosymbiotic algae of corals. The major source of this compound will be large marina developments. 5/ the presence of an, as yet, unidentified organochlorine compound in coastal dolphins. This compound is accumulating to significant levels and appears to be a derivative or a metabolite of heptachlor or chlordane. The implication of this work is that the mechanisms which control the movement, stability and bioaccumulation of the host of pesticides in common use are but poorly understood.

Minister, this data should have been going into your decision-making process 2 years ago. You and your advisers have had every opportunity to take it on board. It should have resulted in some second thoughts on issues like Oyster Point and prompted some focussed research. The fact that it did not suggests that you did not want to know. Was it going to make that 'decision of choice' more difficult to make? Certainly the less you know the easier it is to make the preferred decision.

I will now present my data directly to IUCN and, using my failure to even cause you to have second thoughts on Oyster Point as an example, hope that I can convince them of the need for regular, independent assessment of World Heritage areas and the way that they are managed.

Yours sincerely

Robert Morris

From: Dr R.J.Morris, [redacted] Broadbeach Waters,
Qld 4218

Senator Robert Hill
Federal Minister for the Environment
Parliament House
Canberra
ACT

20th July 1996

Dear Senator Hill

I believe that you are about to give approval to plans for a large resort and marina at Oyster Point, Queensland - the Port Hinchinbrook development. If I am correct, I hope that you will seriously consider this letter prior to any decision. I believe that our international reputation with respect to World Heritage is on the line.

Anecdoctal and photographic evidence clearly shows a serious decline in the state of coastal marine ecosystems off the east coast of Queensland during the last 50 years. This decline can be documented in the Gold Coast Waterways and the Broadwater, Morton Bay, and Hervey Bay. It can also clearly be shown to have occurred in both inshore and some offshore areas of the Great Barrier Reef (Morris, 1995a,b,c).

I believe the coastal developments during that period which have involved dredging , clearing of coastal forests and mangroves, and the disturbance of pyrite-rich coastal sediments, are mainly to blame for the serious loss of coastal habitat and the increasing demise of the coral reef system. Unfortunately hard data to back up the conservation argument has largely been lacking with the result that the environment has nearly always lost out to development.

As a result I have spent the last 4 months working in laboratories in Canada and the UK attempting to obtain some independent, hard inorganic and organic biogeochemical data which might support my hypothesis. Whilst I am at an early stage in the interpretation of my results I can say the following:
1/ there is a clear geochemical vector in the coastal waters off Qld which can adsorb, protect and carry a wide range of inorganic and organic pollutants for hundreds of miles northwards from the source. Thus effects of a particular pollution source can be experienced far away.
2/ this vector is a clay which once in suspension will stay in suspension for long periods with any water movement. It is a major geochemical component of the suspended material in the Gold Coast Waterways, Morton Bay, Hervey Bay , Trinity Bay and the waters well to the north of Cairns. The more coastal development and dredging which occurs along these coasts the more clay is put into suspension.
3/ this clay is carrying high levels of toxic metals - the products of acid sulphate remobilisation from the disturbed pyrite-rich coastal sediments and local industrial and agricultural sources.

4/ this clay is also carrying high levels of anthropogenic organic compounds , mainly polar complex mixtures from pesticide and industrial sources
5/ in any coastal marine ecosystem, enhanced levels of this suspended clay will reduce available light for photosynthetic organisms in the water column (ie the symbiotic algae of corals) and provide a ready input for any adsorbed pollutants into the foodchain via the particle feeders (ie corals).
6/ analyses of long dead corals reefs in Morton Bay and on the islands of South Molle and Daydream in the Whitsundays clearly show the likely effects of past coastal disturbances (developments and mining) on these ecosystems.
7/ analyses of living corals and/or oysters and/or seagrasses from the Gold Coast Waterways, Morton Bay, Hervey Bay and the inshore reefs off Yule Point (Port Douglas) clearly show the strong signals of present coastal activities.

My conclusion from the results is that there now is a growing body of hard chemical evidence to support the hypothesis that past developments up the Queensland coast have caused major damage to the local marine ecosystems. Future coastal developments can only further reduce the coastal marine habitats. Of particular concern are coastal developments more to the north where the inshore and mid-shelf reefs of the GBR will be hardest hit. Past developments have already caused major losses to the reef system , future developments can only make the situation worse.

Our commitment as a nation to World Heritage is, I assume, serious. We undertook to protect the Great Barrier Reef to the fullest extent of means available. The site was to be put at the service of humanity for education, understanding, inspiration and enjoyment in type and scale appropriate to the essential qualities of the reef. Activities inappropriate to these qualities would not be allowed and where conflict between proposed activities and preservation was irreconcilable then precedence would be given to preservation.

I believe my data now clearly shows that the proposed development at Oyster Point can be expected to further increase the present adverse environmental stress being experienced by reef systems to the north - up to and beyond the Cairns area. You cannot build safeguards into such developments to take account of this type of coastal perturbation. The precautionary principle must prevail.

If you wish, I would be happy to give you a more detailed presentation of my data and arguments,

Yours sincerely

[redacted]

Robert Morris

cc Jim Thorsell - senior adviser IUCN, Gland, Switzerland
Cherryl Kernot - federal Democrat leader
Rob Borbidge - Queensland Premier

From: Dr R.J.Morris, [redacted] Broadbeach Waters
Qld 4218

Senator Robert Hill
Federal Minister for the Environment
Parliament House
Canberra
ACT

19th September 1996

Dear Senator Hill

Further to my letter of July 20th (copy attached) - I am sad that you decided to allow the proposed development at Oyster Point, Queensland to proceed without even bothering to look at the chemical/geochemical data which I offered to show you. Indeed my letter did not even warrant an acknowledgment. It would appear that you have been extremely selective in the scientific data used during your assessment of the proposal. I believe that you have made a fundamental error in making this decision, an error which is compounded by the further permission given for the proposed development at Earl Hill North to the north of Cairns. In my opinion the latter will have an even greater potential impact on inshore and mid-shelf reef systems than the Oyster Point development.

I believe that Australia is now in clear breach of its stated commitment to those principles of conservation which are fundamental to the concept of World Heritage. Yet we continue to shamelessly use World Heritage as the major marketing item for our tourist industry, particularly when it comes to attracting overseas visitors to such destinations as the Reef , Wet Tropics, and Fraser Island.

At the 19th Session of the World Heritage Committee (4-9 Dec 1995, Berlin) Australia was one of the the lead countries in preparing the text for the draft resolution on Monitoring and Reporting. This was particularly the case when it came to items 8, 9, 10, 12 & 13. These items all had a similar theme - that individual State parties be entirely responsible for monitoring and reporting on their World Heritage properties and the WH committee must respect the principles of State sovereignty. In effect the resolution underlined the lack of authority which the WH committee has over individual State parties and certainly advertised the committee's inability to require governments to change, modify or amend the management of WH properties. By denying the committee access to independent evaluation of WH properties the individual State parties have further eroded the credibility of World Heritage itself.

If governments such as Australia are not prepared to allow their management of WH sites to be subject to independent scrutiny and assessment, there is the obvious danger that some States will allow the environmental qualities of certain WH sites to deteriorate for the sake of tourism and the local economy, even

while the world community is under the impression that all is well.

State parties which play that game are just using the World Heritage badge for their own means and are being dishonest. I have read some of the reports on the Reef produced in the past by Australia for the WH committee - they are a whitewash of the true situation. This is one of the dangers (and advantages) of preventing independent assessment.

The only power which the WH committee appears to have is to remove a site from WH listing and place it on a list of endangered sites of global importance. For this to happen it must have evidence of degradation or mismanagement. At present it would appear that individual State parties are trying to make it difficult for the committee to get that evidence. Australia certainly has a lot to lose given the economic importance of international tourism to its World Heritage sites - Endangered Sites of Global Importance does not have the same appeal to international tourists.

I hate humbug. I believe Australia is guilty of risking its environmental treasures for the tourist dollar yet at the same time playing the World Heritage card for all its worth. I intend to present evidence to the WH committee of mismanagement and environmental degradation in two of Australia's WH sites - the GBR and Fraser Island. I shall ask that the whole question of independent assessment of WH sites be looked at once more with a view to strengthening the role of the WH committee in site protection.

I ask that you do at least acknowledge the receipt of this letter

Yours faithfully

[redacted]

Robert Morris

cc Jim Thorsell - senior advisor IUCN, Gland, Switzerland
Cheryl Kernot - federal leader Australian Democrats
Rob Borbidge - Queensland Premier

Land and Water Resources Research & Development Corporation

FINAL REPORT

Project Reference: JRC1

Research Organisation:
JOHNSTONE RIVER CATCHMENT MANAGEMENT ASSOCIATION INC.

Program: REHABILITATION AND MANAGEMENT OF RIPARIAN LANDS

Demonstration & Evaluation of Riparian Restoration in the Johnstone River Catchment

TABLE OF CONTENTS

A. INTRODUCTION

Integrated Catchment Management (ICM) is a concept which is based on a coordinated approach to the management of natural resources and was adopted as policy by the Queensland government in 1990. Its overall purpose is to integrate the management of land, water, and related biological resources to achieve their sustainable and balanced use.

All of us inevitably live in one river catchment or another. We gain from the benefits of the catchment and at the same time, by our very existence, we affect the catchment – its land, its water and its air.

The Johnstone River Catchment is located in the Wet Tropics region in North Queensland covering an area of 2,300km^2, and is one of the wettest catchments in Australia, sometimes receiving over 5,000mm of rainfall per year *(refer to page 4)*. Dominant land uses include beef and dairy pastures, sugarcane, bananas, pawpaws and other small crops, with the majority of the remaining area being World Heritage listed (963km^2).

The catchment includes both the Johnstone and Eacham Shires and has a population of 23,500 based around two urban centres, Innisfail and Malanda.

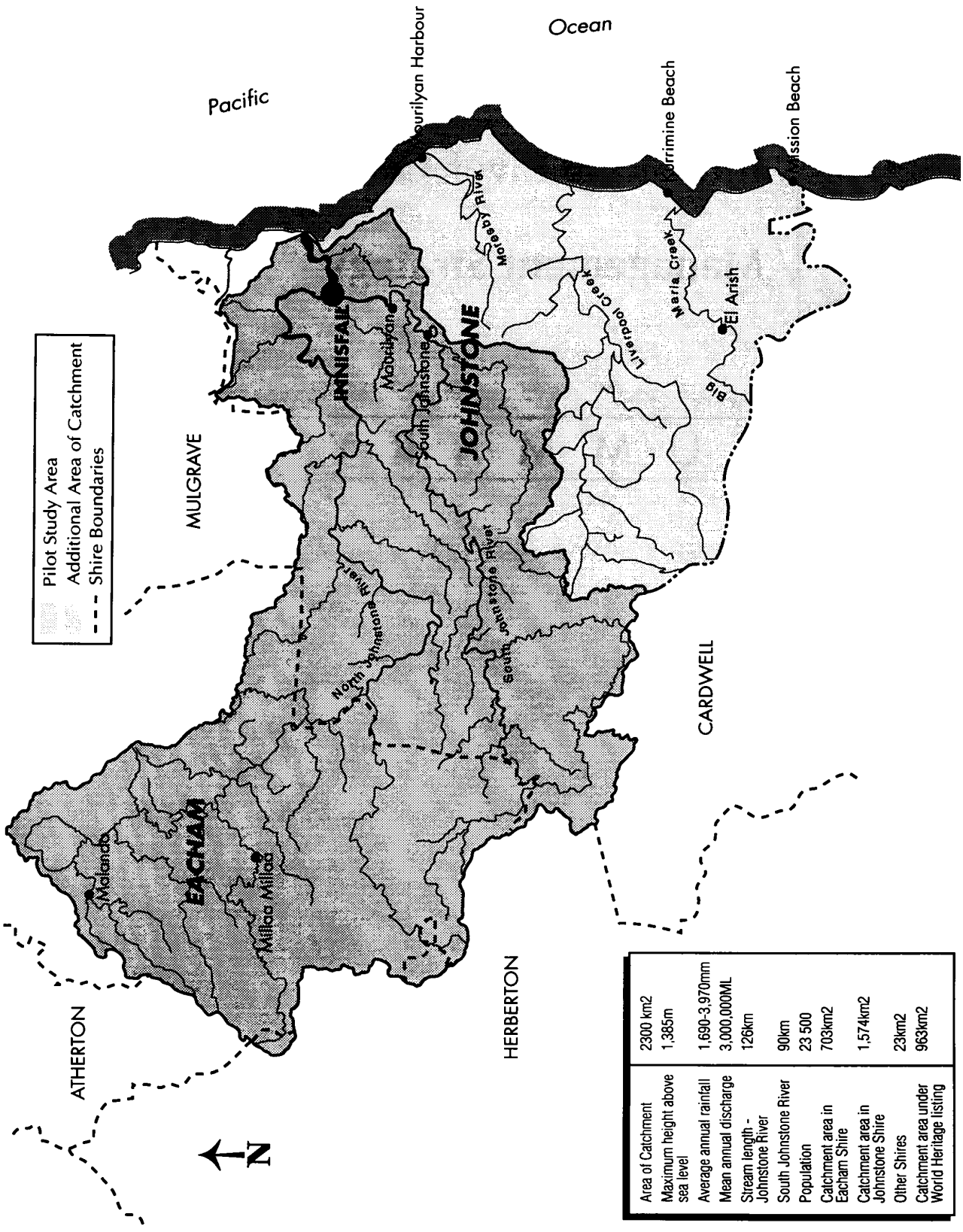
When the Johnstone River Catchment Management Association was formed in 1991, it brought together people from a wide variety of backgrounds who all in some way gained from and affected the catchment.

Pawpaws, bananas, cane, dairy, beef production were all represented, as were the councils of Eacham and Johnstone shires. Recreational and commercial fishing, conservation, industry and tourism were involved, as were various State Government departments involved in primary industries and land and water use.

The Johnstone River Catchment Pilot Study which also commenced in 1991, was the first attempt to implement the ICM concept in Queensland. It was initiated to gain practical knowledge and expertise in the approach to sustainable resource management and to develop a model for the introduction of ICM in other areas of the State.

In mid 1992 the Pilot Study began operating from a shop front Catchment Centre in the centre of Innisfail. The centre serves as the base for the coordinator and an administrative assistant who support the work of the Association. The centre also provides ready access to information about ICM for members of the community and industry organisations.

In 1994, after three years of community consultation and technical investigation and assessment, the Association released the Johnstone River Catchment Management Strategy. The Strategy addresses four key issues – land management, water management, riverine management and habitat management and describes a range of implementation strategies.



Area of Catchment	2300 km2
Maximum height above sea level	1,385m
Average annual raintall	1,690-3,970mm
Mean annual discharge	3,000,000ML
Stream length - Johnstone River	126km
South Johnstone River	90km
Population	23 500
Catchment area in Eacham Shire	703km2
Catchment area in Johnstone Shire	1,574km2
Other Shires	23km2
Catchment area under World Heritage listing	963km2

Johnstone River Catchment showing extended Catchment boundaries

A number of individual projects have been carried out both in the formulation of the Management Strategy and its implementation during the period 1991 – 1999 which have involved people from a wide variety of backgrounds. The most significant of these projects are:

- Production of a Catchment Resource Atlas
- Downstream Effects of Agricultural Practices Project – Water Quality Monitoring
- Stream Habitat and Fisheries Resource Assessment
- Acid Sulphate Soil Mapping
- Nutrient Balances and Transport Research Project (NUTBAT)
- Dairy Effluent Management
- Riparian Zone Management Research Project
- Upper Johnstone Catchment Revegetation Project
- South Johnstone Reach Stabilisation Project.

Along with these projects, a National Landcare Program (State Agency) funded project involving the monitoring of Downstream Effects of Agricultural Practices (DEAP), ran in conjunction with the work coordinated by the Johnstone River Catchment Management Association for the NUTBAT project.

Beginning in 1996 the Johnstone River Catchment Management Association received funding from the Land & Water Resources Research and Development Corporation (LWRRDC) as part of their National Research and Development Program: *Rehabilitation and Management of Riparian Lands.*

The entire project was aimed at demonstrating and evaluating riparian restoration in the Johnstone River Catchment.

The individual projects that were developed to meet the objectives of the program have been undertaken over a period of three years. A final report for each of these projects, has been included in this report. An addendum to this report will be provided to LWRRDC upon completion of the project entitled 'Measuring the effects of farm or enterprise profitability, and the overall costs and benefits of riparian restoration works'.

B. PROJECT OBJECTIVES

The objectives of the project were as follows:

1. Establish a periodic forum to promote communication and interaction between researchers and the catchment community on issues related to management of riparian lands.

2. Measure the effects of farm or enterprise profitability, and the overall costs and benefits of riparian restoration works.

3. Assess the effectiveness of different sources and types of information, and catchment coordination activities, in changing attitudes, behaviour and management in relation to riparian lands.

4. Collate and disseminate information on practical methods for riparian restoration in the Wet Tropics.

5. Increase landholder participation in riparian design, interpretation and management of streams and wetlands in the Wet Tropics.

6. Building on the Johnstone Catchment Revegetation Strategy, develop and apply methods to prepare a detailed revegetation/rehabilitation plan for a sub-catchment, with direct participation by Landcare groups; write up the methods and results as a planning case study.

7. Demonstrate and evaluate practical methods using direct seeding as a method for broad scale revegetation in the Wet Tropics.

Individual projects were developed in order to address the above objectives. A full report on each of these individual projects follows.

1 PERIODIC FORUMS

1.1 ISSUE

There are many research, demonstration and restoration projects underway within the Johnstone River catchment related to aspects of riparian management. It is often difficult for groups and individuals within the catchment to keep up to date with all this activity, let alone assess the value of the results of their own enterprise or management activities.

An important aspect of communication is therefore to find a way by which different groups can explain what they are doing and what the results are, and share their results and how they might best be used by different groups within the catchment community.

1.2 DESIGN APPROACH AND RATIONALE

The objective was to establish a periodic forum within the Johnstone River catchment to promote communication and interaction between the community, researchers and others undertaking projects related to riparian land management.

The purpose of these proposed forums was to improve the linkages between different research and restoration groups, so that each would know what the others were doing and keep up to date about results as they come to hand. The forums were open to the catchment community, as some groups wished to be involved with the technical discussions.

The forums were advertised in all the regional papers, with press releases featuring before and after the forums.

1.3 DESCRIPTION OF ACTIVITIES

Riparian Land Management Forum

The first forum hosted by the JRCMA was: 'The Management of Riparian Lands in the Wet Tropics Region: *Integrating Policy and Research with Stakeholder Needs'*.

The forum provided an opportunity for the community to influence the future management of the region's waterways and adjacent lands. The one-day forum which took place in Innisfail in June 1996, was attended by over 150 people including industry representatives, members of the community, researchers, resource managers and practitioners from the Wet Tropics region.

The one-day forum was broken into four sessions as listed below. Presentations given by a range of technical and land based people, covered these topics.

- Stakeholder perspectives
- Current policies and future policy directions
- Overview of current research and development – directions and outcomes to date
- Current approaches, projects and riparian management in the Wet Tropics

The day's formal presentations were concluded by a forum session, which discussed how the integration of policy and research with stakeholders' requirements could be improved.

Water Quality Conference and Workshop

The second forum was the 'Water Quality Conference and Workshop', held in Malanda in February 1999. The conference was attended by over 100 people representing a wide range of interest groups within the region.

The conference aimed to bring together all parties concerned with water quality and its impact on the Great Barrier Reef, and also to strengthen the lines of communication. It was expected that the conference would identify the most effective and efficient actions to improve the health and welfare of our terrestrial and marine environments.

Presentations from a range of land and marine based experts were followed by an afternoon workshop. The workshop provided an opportunity for each individual participant to ask questions of the speakers, and to put forward their concerns for discussion.

1.4 OBSERVED RESULTS

Riparian Land Management Forum

The forum provided an opportunity for the broader community to be informed on the research taking place in the region and the outcomes, and information on current trial and implementation projects undertaken by practitioners.

The forum session was dominated by landholder concerns over land tenure and resource security of riparian areas. Confusion amongst landholders over government policy for management of these areas was apparent.

There was a general consensus that riparian areas require proper management through revegetation and other appropriate means, however, several landholders expressed concerns over the possibility of government legislation which might require all watercourses to be bordered by a strip of native vegetation of a prescribed width.

The benefits of such vegetation were generally accepted, however, enforcement of riparian restoration was seen as a threat to the security of the land tenure and the associated loss of productive areas. It was evident that policy must allow for productivity, and research should take into account the costs of trials for producers and the benefits to be gained from research. There was an obvious preparedness within the communities of the Wet Tropics to face natural resource management issues and deal with them.

Water Quality Conference and Workshop

The conference was extremely well attended, which indicated that the issue of water quality is considered of high importance within the broader community.

From the presentations, the following was noted:

- Inaccurate media publications concerning the health of the Great Barrier Reef have caused a corresponding backlash from farming interest groups.
- Marine based management plans will have no effect on land based activities, and there needs to be correlation between the two.
- The Great Barrier Reef Marine Park Authority (GBRMPA) sees that the main problem with regard to water quality exists in the first 20km inshore region.
- GBRMPA are unsure as to why the reefs in this inshore region are dying.

- The Queensland CANEGROWERS are conducting research into improved farming practices, and consider that cane farmers are generally adopting best management practices.

The following issues were identified in the workshop:

Practical ways to reduce off-farm impacts included:
- identifying and prioritising sediment sources;
- reducing nutrient loss by timing future fertiliser applications;
- improving irrigation efficiency;
- continuing promotion of sustainable farm management practices;
- the importance of accurate and well presented research results.

Non-point source pollution is not currently regulated. How do we avoid such regulation?
- Agriculture is generally aiming for self-regulation.
- There was general support for a code similar to the point source regulation under the *Environmental Protection Act*, but a combination of government and self-regulation would be preferred.
- With the current state of the agriculture industry – is industry capable of self-regulation?
- Legislation is 'grey' in many areas; eg: it is not an environmental relevant activity under EPA.
- An environmental catchment levy would help raise money for general NRM management.

The need for coordinated government policy and industry involvement.
- There are too many individual organisations performing similar tasks, there is a need for a more coordinated approach amongst government departments.

Limiting expansion
- There is a need for state agencies to regulate all agricultural expansion and to work together on environmental issues to limit expansion to economic need, taking into consideration environmental assessment of all agriculture.

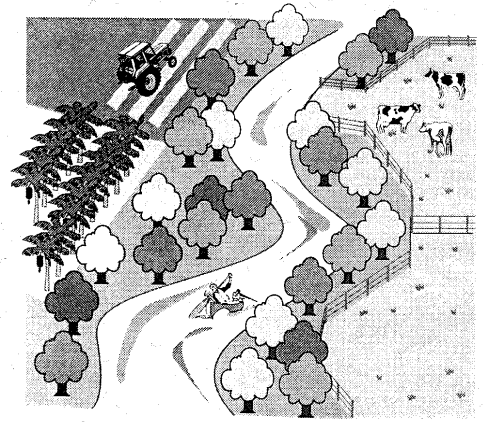
1.5 COMMUNICATION/DISSEMINATION OF RESULTS

Riparian Land Management Forum

A pamphlet advertising the conference was produced and sent to all interest groups and members of the community. Advertisements and press releases appeared in all the regional papers *(refer to pages 10-11)*. ABC national radio also advertised the forum on their breakfast show.

Natural resources of the Wet Tropics support a variety of economic and recreational activities such as agriculture, fishing, grazing and tourism.

Increasing pressures from these activities are impacting on the riparian areas which could bring about their degradation and the loss of important economic, environmental and recreational values.



It is important to protect the riparian resources of the Wet Tropics and to manage their use in a sustainable way.

FORUM DETAILS

The Johnstone River Catchment Management Association and the Land and Water Resources Research and Development Corporation (LWRRDC) are organising this forum to bring together industry, members of the community and researchers to discuss the management of riparian lands in the Wet Tropics of North Queensland.

Presentations

This forum will focus on issues relevant to the area from the Mossman/Daintree to Herbert and will cover the following discussion topics:

- ***Stakeholder perspectives***
- ***Current & future policy directions***
- ***R&D directions and outcomes***
- ***Current approaches, projects and management initiatives.***

This forum will provide an excellent opportunity for industry and other stakeholders to influence the future directions of research and policy formation for management of riparian lands in the Wet Tropics region.

REGISTRATION DETAILS

If you wish to attend this forum please complete the registration details below and return by Friday 10 May to ensure that you secure a place.

On the back of the registration form is a reply paid envelope for your convenience. Simply cut off and mail, or alternatively fax through to Karen Johnson, (070) 61 6590.

Further details will be sent in May to those who register for the forum.

Mr/Mrs/Ms/Miss/Dr (Please circle)

Name(s) _____

_____

Company/Organisation _____

_____

_____

Address _____

_____

_____

Phone: ( ) _____

Facsimile: ( ) _____

Focus on waterways

A seminar to be held in Innisfail will provide an opportunity for the community to influence the future management of the region's waterways and adjacent lands.

The one-day forum will bring together industry representatives, members of the community, researchers, resource managers and practitioners to discuss issues relevant to the Wet Tropics waterways and adjacent lands, which are referred to as riparian zones.

The forum is being hosted by the Johnstone River Catchment Management Association and the Land and Water Resources Research and Development Corporation, and will be held at the North Queensland Conservatorium of Music on June 1.

The forums discussions will focus on issues relevant to the area from the Mossman-Daintree to the Herbert, and will be aiming to integrate policy and research directions with stakeholder needs, in doing so providing goals for the corporation's national research and development project in the Johnstone.

Forum co-ordinator Mrs Karen Johnson, from the Catchment Centre in Innisfail, said the day will provide an opportunity for industry and other stakeholders, particularly those involved in agricultural industry, to influence the future management of areas vital to their enterprises.

"The natural resources of the Wet Tropics support a variety of economic and recreational activities which are impacting heavily on riparian areas," Ms Johnson said.

"Everyone whose enterprise in some way links with riparian zones understands the importance of sustainable land management practice to prevent the degradation and loss of this vital resource."

Ms Johnson said the forum would feature a variety of research, government and industry speakers to provide information on the issues to be raised in the forum.

"An industry viewpoint will be provided by representatives of primary industries of the district followed by an outline of current and future policy directions by Colin Creighton, the regional manager of the Department of Natural Resources, and Bob Devine from the Johnstone Shire Council," she said.

"Current research activities and their outcomes to date will then be outlined by members of the corporation research team and other researchers from Government agencies and James Cook University.

"There will be opportunities to hear from a number of practitioners undertaking a range of trial and implementation projects across the Wet Tropics region.

"The final session of the forum will give all attendees the opportunity to participate in a focused discussion aimed at achieving a common approach and direction to future research and management decisions."

Morning tea and lunch will be provided and the day will conclude with an informal social function.

Press Release for Riparian Land Management Forum

All conference participants received a copy of the conference proceedings which included papers by the presenters and their contact details.

Water Quality Conference and Workshop

A flyer was produced and circulated to all interest groups and members of the community. Advertisements and press releases appeared in all the regional papers *(refer to pages 13-14)*. ABC national and the local radio stations broadcasted the upcoming conference.

A conference booklet was presented to each conference participant on the day. Full conference proceedings which included papers by the presenters and their contact details, were sent to the conference participants. Follow-up press releases were featured in the regional papers *(refer to page 15)* and a news report on the conference also appeared on a local television station.

1.6 DISCUSSION

Riparian Land Management Forum

The issues involved in riparian area management are very broad, and the best way to deal with them is through the integration of all those with a stake in managing these areas, from the landholders and research organisations, through to all levels of government.

The benefits of ecologically sustainable management of riparian areas are recognised throughout the community, and the community must be prepared to help bear the costs of such management.

Water Quality Conference and Workshop

- There was a general feeling amongst landholders that they are taking the blame for soil erosion and sediment flow into waterways. They are willing to take responsibility for the management of their properties, but firstly need to understand exactly what is required of them.

- There needs to be a uniform approach to all agriculture. There should not be restrictions to one industry and not the other.

- There is a need for a coordinated approach to the management of our marine and terrestrial environments.

1.7 RECOMMENDATIONS

Riparian Land Management Forum

- There is a need for all agencies involved in riparian land management to implement public information programs to properly establish community understanding and participation.

JOHNSTONE RIVER Catchment Management Association Inc

Johnstone River Catchment Management Association Inc.

invites

Farmers, landholders, community groups, relevant government agencies and all interested persons from the Herbert River through to the Douglas River Catchments to attend a regional

WATER QUALITY CONFERENCE AND WORKSHOP

The aim of the workshop is to bring together all parties concerned with the issue of water quality and impacts on the Great Barrier Reef. It is intended that discussions will involve:

- the effects of water quality in our catchment and off-shore regions;
- and identify the most effective and efficient actions to improve health and welfare of our terrestrial and marine environments.

There are currently a significant number of bodies conducting research into these issues.

It is expected that the conference will strengthen the lines of communication between the attending parties, and identify areas where improved management will benefit both terrestrial and marine environments.

Guest speakers from the Queensland Cane Growers, the Great Barrier Reef Marine Park Authority, Queensland Dairy Farmers, James Cook University and DPI Fisheries will make brief presentations followed by workshops which will provide the opportunity to all who attend to have their say.

Venue: Malanda Hotel Conference Room
Date: Friday February 5th 1999.
Times: 9.00am to 4.00pm - Lunch will be provided.

To register or for more information Contact the: JRCMA on 4061 6477.

SPONSORED BY:

JME N.Q. Spreading Services

Land & Water Resources

SUMMIT FERTILIZERS

PIVOT Agriculture

Incitec FERTILIZERS

Flyer Produced for Water Quality Conference

Reef water quality targeted

An important conference and workshop organised by the Johnstone River Catchment Management Association (JRCMA) will be held at Malanda tomorrow.

It is aimed at bringing together all parties concerned with water quality issues and their impacts on the Great Barrier Reef.

"The present concerns about the possible effects of land and urban management practices on the reef make this conference a timely and important event," project manager Peter Gleeson said.

The conference, which is for farmers, landholders, community groups, government agencies and any other interested parties, is intended to strengthen the lines of communication between all groups.

"The objectives are to discuss the effects of water quality in this and adjacent catchments and work out what are the best and most efficient ways to improve both land and marine environments," he said.

Guest speakers will include Jennifer Marchasy from Queensland Canegrowers, Michelle Devlin of GBRMPA, and Prof Richard Pearson from James Cook University.

JRCMA chairman Sam Pagano will chair the conference.

Mr Gleeson said he hoped as many interested people as possible would attend the conference, which will be at the Malanda Hotel Conference Room between 9am and 4pm.

"There will be ample question time and work group discussions to allow participants attending an opportunity to have their say," he said.

Johnstone River Catchment Management Association Inc.

Invites

Farmers, landholders, community groups, relevant government agencies and all interested persons from the Herbert River through to the Douglas River catchments to attend a regional

WATER QUALITY CONFERENCE AND WORKSHOP

The aim of the workshop is to bring together all parties concerned with the issue of water quality and impacts on the Great Barrier Reef. It is intended that discussions will involve:

- The effects of water quality in our catchment and off-shore regions; and
- Identify the most effective and efficient actions to improve health and welfare of our terrestrial and marine environments.

There are currently a significant number of bodies conducting research into these issues.

It is expected that the conference will strengthen the lines of communication between the attending parties and identify areas where improved management will benefit both terrestrial and marine environments.

Guest speakers from the Queensland Canegrowers, the Great Barrier Reef Marine Park Authority, Queensland Dairy Farmers, James Cook University and DPI Fisheries will make brief presentations followed by workshops which will provide the opportunity to all who attend to have their say.

VENUE: Malanda Hotel Conference Room
DATE: Friday, February 5th, 1999
TIMES: 9.00 am to 4.00 pm - Lunch will be provided

To register or for more information contact the JRCMA Inc. on 4061 6477

Press Release for Water Quality Conference

TALKING water: Johnstone River Catchment Management Association president Sam Pagano in Malanda. Picture: Robyn Sherwood

Waterway plan crucial to reef

By Penny Robins

WATERWAY management was a bureaucratic nightmare but it was critical for water quality and productivity, a conference in Malanda has been told.

"If we make sure we are not having undue impact on our waterways then we are not having undue impact on the Great Barrier Reef," keynote speaker Jennifer Marohasy, environmental manager of Canegrowers, told the water quality conference.

Convened by the Johnstone River Catchment Management Association, the conference brought together land and marine managers in a bid to identify who or what was responsible for the water quality threat to the Great Barrier Reef.

More than [illegible] representatives from the farming sector, community groups, government agencies, various catchment management groups and landholders attended.

In his opening address, association chairman Sam Pagano said [illegible] conflict had arisen over to what degree the reef was polluted and who or what was responsible.

"In the last couple of weeks, there have been prominent television reports which exemplify the type of conflict which I have alluded to," he said.

"There has been a corresponding backlash from farming interests."

He said reports the Great Barrier Reef was the most polluted sea in Australia and even worse than the Sydney sewerage were untrue.

"The inescapable fact is that no number of marine park management plans will have any effect on what happens on land," he said.

"If the threats outlined are real and we never progress past accusations, then when the Great Barrier Reef becomes the Great Barren Reef it will be cold comfort to then be able to [illegible] told you so."

[illegible] Brodie of the Great Barrier Reef Marine Park Authority said the authority's main problems existed in the first 20km inshore which was home to coral reefs, seagrass, dugongs and fisheries.

"What's happened in the inshore areas is that reefs are dead," he said.

"But we really don't have a [illegible] idea of why the reefs are dying."

Mr Brodie said it appeared that some industries were in a denial mode about the problem of water quality on the reef.

"It may be a perception but it's one that concerns us," he said.

He said the authority was working with various government agencies and landcare, agricultural and urban groups [illegible] environmentally and economically sustainable land use activities.

Ms Marohasy told the [illegible] she believed most primary producers would recognise [illegible] alternative practices [illegible] and make the necessary changes.

"Canegrowers should be congratulated on the changes they have made in land and farming practices which have been [illegible] and positive," she said.

Follow up Press Release for Water Quality Conference

Water Quality Conference and Workshop

- The ICM philosophy needs to include the combined management of our marine and terrestrial environments.

- There needs to be more coordination between land and marine based organisations and a mechanism put in place to ensure the 'integrated' management of our marine and terrestrial environments and also to ensure community involvement.

Soon after the water quality conference, the Great Barrier Reef Marine Park Authority called for nominations for the newly formed Reef Advisory Committees (RACs). There are four proposed RACs: Tourism and Recreation, Water Quality, Biodiversity and World Heritage, and Fisheries. The JRCMA contacted the North Queensland Landcare and Catchment Management Council representative who nominated for the only Landcare and ICM position which was on the Water Quality RAC.

2 COSTS & BENEFITS OF RIPARIAN RESTORATION

2.1 ISSUE

In many catchments, individual landholders, community groups, local government, State agencies and Commonwealth programs, are spending considerable amounts of money on work to restore riparian lands. As yet, there is little quantitative information to guide these projects.

In the past there has been little attempt to:

- describe clearly the purpose and objectives of the work before commencement;
- identify objectives that were not met and why;
- measure the costs and benefits of the restoration work, and its impact on farm profitability.

Unless effort is directed to assessing costs and benefits, riparian restoration will continue to be an act of faith rather than planning, and many catchment residents will not be convinced.

In addition, landholders are concerned that riparian restoration will affect their enterprises, for example by restricting stock access to water and grazing land, and thereby reducing margins and profitability. Hard data is required to address these concerns, and to assist individuals and groups to plan restoration work so that it enhances their property or business rather than hampering.

2.2 DESIGN APPROACH AND RATIONALE

This project was designed:

- to identify the types of costs and benefits associated with riparian restoration in the Johnstone River Catchment;
- to provide some direction as to the likely values these variables would assume in practices;
- to estimate how riparian restoration work would affect farm profitability.

Cost/benefit analyses of this type are, to a large extent, site-specific; results on one farm (or even on one part of one farm) can differ considerably from results achieved at a geographically close site. In other words, conclusions from cost/benefit outcomes cannot be easily transferred. This is because, for example, the productivity of the land may vary, labour may be costed differently by different people, the extent of soil erosion may differ because of difference in slope, soil type or vegetative cover, or individuals may have different discount rates.

In order to avoid this lack of transferability, the approach taken was to develop a 'model'. This approach involved listing the costs/benefits likely to be required/achieved when riparian restoration work is undertaken, assessing their interrelationships, and determining a range of values which the variables would be likely to assume.

This approach allows individual users to select the variables and values appropriate to their situation and so calculate the likely net worth of undertaking riparian restoration at specific sites.

2.3 DESCRIPTION OF ACTIVITIES

There have been a few setbacks with this project from its inception. At the time of its inception, the JRCMA did not have a coordinator, and the project was slow in getting underway.

The JRCMA engaged a communication and analysis consultant to carry out the cost/benefit study. Discussions were held between the JRCMA, LWRRDC and the consultant in the initial stages of the project to determine the best approach. A Project Agreement between the JRCMA and the consultant was produced which set out the milestones for the project.

The original project was to include case studies of sites where riparian restoration treatments had been applied. Physical effects such as changes in bank erosion and water quality were to be monitored and recorded at these sites over a period of time.

After discussions between the three parties, it was agreed that any physical changes such as bank erosion and water quality would not be measurable in the short term that the project would run for. It was agreed that it would be beneficial to develop a model to allow landholders to determine the overall costs and benefits of undertaking riparian restoration on their properties.

The advantage of having a model, rather than a number of site-specific evaluations, was that a model:

- is flexible; it can be adapted to fit a wide range of individual situations;
- can be used to determine the likely net benefit of 'competing' projects and thereby, to prioritise them; and
- has a far longer 'shelf life'. For example the model can be fine tuned as more information becomes available from actual restoration projects.

The models were developed using data relating to dairy farms in the Malanda area and from banana farms around Innisfail. In essence the model approach:

- identifies the factors (benefits and costs) which need to be considered when undertaking riparian restoration for a range of objectives;
- estimates the interaction between these factors; and
- suggests values for them; benefits have positive values, costs have negative values.

Where possible, likely values have been determined on the basis of scientific research results and socio-economic data collected during the project. The models allow individual users to select variable relevant to them and then 'plug in' values for each of these variables according to their particular circumstances, experience and expectations.

To date, the following steps have been taken for the project:

1. A search of cost/benefit literature.

2. Workshops with dairy farmers in Malanda and banana growers in Innisfail to determine:
- what riparian problems they experienced and, therefore, what benefits they would be likely to receive from riparian restoration; and
- what cost they would be likely to face in undertaking riparian restoration.

3. A search of the scientific and marketing literature and discussions with researchers and others to develop realistic values for variables such as land prices, erosion rates, milk and banana process, the impact of clean water on milk output, taxation rates, fencing costs, wage rates etc.

4. Estimation of dollar values for benefits which do not easily enter the market system.

5. Identification of the distribution of costs and benefits between, for example, individual farmers, their neighbours and the public.

6. Assessment of how the net benefits feed back into farm profitability.

7. Identification of areas for further research.

8. Fine-tuning of model and preparation of report and associated brochure for farmers.

NOTE: Farmer feedback on the developed models and finalisation of the report and brochures is currently underway. An addendum to this project report will be provided to LWRRDC upon completion later this year.

2.4 OBSERVED RESULTS

Dairy Industry Model

The model developed and used for the dairy industry suggested that, under some circumstances, dairy farmers could derive net financial benefits from riparian restoration work.

- Whether or not they do depends largely on the amount or riparian land requiring attention.
- The major factors which contribute to the financial benefit were the increased milk production, resulting from cattle having access to clean water and access to shade, and from the likely increased capital value of the property.

Research in Canada has shown that cattle with access to clean drinking water produce more milk. No similar research appears to have been undertaken in Australia, although anecdotal evidence exists, suggesting that this is the case. On the other hand, detailed research has been done in Australia into increased milk production from cows protected from high temperatures.

Banana Industry Model

The model developed for banana growers in the Johnstone River Catchment also suggested that, under some circumstances, banana growers could derive net financial

benefits from riparian restoration work. Again, whether or not they did would depend largely on the amount of riparian land requiring attention.

The major factor that contributed to the financial benefit was the enhanced yield resulting from protection of crops from wind damage to leaves. It should be noted that no trials have yet been completed on the impact of windbreaks on banana crops in Australia. The expected benefit is extrapolated from limited research into the impact of windbreaks on yield of peanut and potato crops on the Atherton Tableland and from limited research into the impact of windbreaks on banana production in South Africa. In recognition of the limited data, the estimated increase in yield incorporated into the model has been kept low.

In the case of banana growers, the potential benefit of riparian vegetation is seen largely as that derived from reductions in wind damage. Other benefits are likely to be low in comparison with costs.

2.5 DISSEMINATION OF RESULTS

A draft of the final report is currently being reviewed by all interest groups involved with the project. A coloured brochure will be produced based on the completed final report. This will be included in the final report to LWRRDC for this project.

2.6 DISCUSSION

Based on discussions with farmers in the region, it appears that banana growers are more receptive to the idea of revegetation and can see more benefits than the dairy farmers. Attitudes in relation to riparian restoration vary considerably, with some farmers being very skeptical of the benefits.

The project also considered the distribution of benefits and costs or riparian work and, thus, who should pay for the work. It was concluded that, regardless of the reason behind riparian restoration, immediate landholders will receive some benefit. While some benefit was likely to accrue to others in the vicinity or to the public, no benefit is likely to accrue only to 'others'.

The extent of benefits accruing to the various parties could only be determined on a case-by-case basis. No formula for distributing benefits and therefore determining who should bear the cost is possible.

It is noted that landholders are increasingly arguing that it was the government which historically encouraged land-clearing in the first place. Therefore, it should be the government which should pay for revegetation, since it is now recognised how excessive clearing in the past has damaged the environment and the natural resource base. This argument was not tackled in this project.

2.7 RECOMMENDATIONS

Recommendations will be included in the final report to LWRRDC once the project has been completed.

3 EFFECTIVENESS OF CATCHMENT COORDINATING ACTIVITIES

3.1 ISSUES OR PROBLEMS

The Johnstone River Catchment Management Association has developed a strategic plan and a suite of activities aimed at improving the use and management of natural resources. The prime objectives are to increase productivity and long-term economic and environmental sustainability. The strategy requires action by all groups in the Johnstone River catchment including landholders, residents, industry groups, businesses and local and state government.

Even after the Johnstone River Strategy had been released, there had been concerns that the activities of the JRCMA involved only a small fraction of the catchment community, with the majority of residents and landholders remaining unaware of the issues or how they could contribute.

Without a clear picture of the beliefs and attitudes of groups within the catchment, it is difficult for the JRCMA to target information and demonstration activities, or determine whether goals are being achieved.

3.2 DESIGN APPROACH AND RATIONALE

The purpose of the project was to provide baseline data to help the JRCMA:

- determine its priorities for catchment management activities;
- deliver information and other outcomes effectively to key audiences;
- identify the assistance sought by the community to achieve their vision for the catchment;
- assess its progress in promoting improved management of riparian lands.

This was to be done by:

- Providing a quantitative assessment of the attitudes and beliefs about use and management of riparian lands held by different groups and in different parts of the catchment.
- Providing a general view of what people would like the Johnstone river and its environs to look like in, say, 2020.
- Obtaining data on the sources and types of information considered most useful by people within the catchment, and on the type of trial or demonstration projects that would be most valuable convincing in showing alternatives for riparian land management.
- Providing a baseline picture of attitudes, beliefs, behaviour and management in relation to riparian lands for comparison with future surveys.

There were initial concerns amongst the JRCMA about carrying out a simple survey questionnaire. It was felt the community in general had become tired of the amount of surveys of recent times. However, due to the fact that it was the most practical and cost-effective way of obtaining broad coverage, it was decided a survey questionnaire would be circulated amongst the catchment community.

3.3 DESCRIPTION OF ACTIVITIES/WORKS CARRIED OUT

The JRCMA engaged an employee from James Cook University (Cairns campus) to prepare and carry out the survey questionnaire. There were some concerns about existing legislation at the time, which delayed the project initially.

Separate survey formats were developed for rural landholders/primary producers, catchment stakeholders and elected members/Council officers.

The landholder survey was designed to determine the following:

- Level of awareness of ICM and general opinion of landholders.
- Level of awareness of the JRCMA, landholders involvement with it, and their opinion of its work.
- The role of the catchment centre.
- Awareness of the JRCMA publications and their values to landholders.
- Attitude of landholders towards specific on farm ICM practices.
- ICM practices of landholders and the influence of the JRCMA projects/activities.
- Barriers to specific ICM practices.
- Assessment of the education/information activities of the JRCMA..
- Opinions regarding future directions for JRCMA.

The final version of the survey was mailed out to over 900 landholders in the catchment and other coastal streams to the south, and elected members of both the Johnstone and Eacham Shire Councils. The survey included a covering letter and addressed reply paid envelope.

3.4 OBSERVED RESULTS

A total of 92 survey forms were returned which constituted a 10.2% return rate. While this was smaller than had been anticipated, it was a sufficiently large sample from which to draw valid conclusions.

Landholders

The survey indicated that there was only a moderate level of awareness of the concept of ICM and the work of the JRCMA amongst landholders in the catchment with less than 60% of landholders indicating that they had heard of ICM or the JRCMA.

However the JRCMA was recognised as being strongly associated with catchment management, with 87% of those familiar with ICM also being aware of the JRCMA.

The survey also showed that JRCMA sponsored activities had not reached widely into the community with only 10% of landholders being able to describe any personal involvement with the JRCMA educational activities and projects.

Although the Regional Catchment Centre had been designed to be accessible to the community, it had been visited by only 14% of those surveyed, and that landholders are not taking advantage of the services it provides. Similarly, JRCMA publications had had very limited circulation among landholders with only 14% having seen them.

Local Authorities

The Eacham and Johnstone Shire Councils were instrumental in establishing the Johnstone River ICM Pilot Study with both Councils being represented on the JRCMA.

Survey responses generally indicated a continuing high level of support for ICM with 82.5% of responses demonstrating moderate or strong support for a range of specific ICM practices appropriate for Local Government.

The respondents who expressed lack of support for particular ICM practices considered that the cost to ratepayers was too high and they were not necessary for good catchment management. There was also a firm belief expressed that State and Federal Governments were responsible for some of the ICM practices described above.

Catchment Stakeholders

The survey completed on behalf of Landcare groups provided some important information. The support for ICM was very strong with two exceptions. The first was the provision of off-stream controlled watering points, due to the lack of confidence in a fail-safe system to supply water. The second item which Landcare did not fully support was the use of VCA's, at least as applied to areas of revegetation which may be part of a future commercial timber operation. They indicated that they had no objections in the case of existing vegetation of environmental significance.

The survey from the other stakeholder group, Canegrowers, did not contain any details particular to projects in which they have been involved but indicated that their members have played significant roles through area representation in various ICM type groups.

The full report produced from this survey contains a full set of the results.

3.5 DISCUSSION

Despite six years of extensive educational activities, local research projects and the involvement of local and state government agencies, industry associations and community groups, less than 60% of landholders had heard of ICM or the JRCMA. The lack of response to the survey could possibly be attributed to the disapproving attitudes towards the JCU employee, who at the time of the survey, held quite strong and controversial political views.

Despite the lack of awareness of ICM or the JRCMA, when landholders were asked to indicate a personal level of support for specific ICM activities in relation to their own properties, then they generally indicated a moderate to strong level of support.

The ICM practices that gained most support were responsible for the use of fertilisers, use of cost effective and environmentally sound measures to control river and creek bank erosion, keeping existing areas of natural vegetation along watercourses, use of on-farm soil conservation measures, and planting trees along water courses.

The barriers that prevent positive attitudes translating into behaviour appear to be lack of time, materials and information. The activity that most landholders would carry out if support were available was tree planting along watercourses. The results therefore indicate a need for an expansion of tree planting schemes such as the Wet Tropics Tree Planting Scheme which provide the seedlings and labour for farmers wishing to plant trees.

There are some ICM practices that are unlikely to be implemented until landholders develop more positive attitudes. It is clear that some farmers have serious reservations about installing water troughs as off-stream watering points and putting in fences along sections of creek frontage to limit stock access. Costs are seen by some farmers as insurmountable barriers to implementing these practices.

Even stronger opposition exists amongst some landholders to the concept of VCA's, which they regard as an imposition or restriction on their activities that could have financial consequences as some future time.

The survey identified that the JRCMA activities that had been the most important were field days and demonstration trials which have practical implications for on-farm activities.

Suggestions for future activities for the JRCMA included issues such as chemical use, soil erosion form cultivation on steep lands, weed control and management of wetlands.

The number of responses from both the Eacham and Johnstone Shire Councils were small, but indicated that members are supportive of ICM, but differences in attitudes amongst staff members in both Councils suggest a lack of a corporate approach to the implementation of the Johnstone River Catchment Strategy. Both Councils reported that they are constrained by lack of finance and government support in their efforts to implement ICM.

3.6 RECOMMENDATIONS

3.6.1 Communication with Landholders

The JRCMA is the vehicle for community involvement in the implementation of the Johnstone River Catchment Management Strategy. The initial Johnstone River Catchment Coordinating Committee formed as part of the pilot study and had been:

- providing the government of the day with a community view of ICM and progress in strategy implementation;
- keeping the catchment community fully and promptly informed on decisions and subsequent action arising from these decisions; and
- developing and implementing a program of public information on ICM for the community.

Whilst much had been achieved, the results of the survey indicated that the two way flow of information between the JRCMA and the community needed to improve if the JRCMA was to carry out the above functions effectively.

Communication with riverine landholders could be improved by adopting the following measures:

- Compile and publish a register of farmers willing to act as models for ICM practices and provide support for other farmers with information and advice.
- Invite all riverine landholders in the extended catchment area to be included on a computer data base which would include details of current land use, river frontage and any ICM activities undertaken on their property and assistance required.
- Use targeted direct mail to landowners in the data base to provide information about ICM and associated activities.
- Produce a quarterly newsletter aimed at informing both landholders and general community about local practical examples of ICM practices and the implementation of the strategy.

- Equip a mobile facility staffed by a DPI extension officer and the Catchment Coordinator to visit all small townships on the coast and Tablelands and selected properties on a regular basis.
- Develop an annual program of regular field days and demonstration trials in conjunction with the mobile facility.
- Monitor public and industry contact with the Catchment Centre and review its cost effectiveness after 12 months.
- Convene the Biannual Catchment Conferences providing personal invitations to all catchment landowners.
- Members of the JRCMA should provide regular feedback to the industry or organisation the represent and seek their input on issues under consideration by the Association.

3.6.2 Priority for ICM Activities

The major emphasis of the Association with respect to farmers should be orientated towards the following activities:

- responsible use of fertilisers;
- use of cost effective and environmentally sound measures to control river and creek bank erosion;
- keeping existing areas of natural vegetation along watercourses;
- use of soil conservation measures;
- planting tress along watercourses.

The JRCMA should support the Tableland Landcare groups who are working with landholders to address the provision of off-stream watering points for stock and the provision of fencing to control stock access to waterways. A major community education program is needed if VCA's are to play a role in ensuring the retention of best practice management of native vegetation on private land.

Assistance to Landholders

A key finding of the survey was the existence of a pool of landholders with a positive attitude towards ICM and willing to implement best practice but needing various kinds of assistance including information, materials, labour and funding.

The agencies who have been identified as being responsible for implementing the Strategy should document the specific kind of assistance they can offer to landholders. The JRCMA should compile this information circulate it to all landholders.

3.6.3 Local Government Involvement in ICM

In light of the low response rate and differing views of personnel in Local Government, it is appropriate for all staff and elected members to participate in a professional development seminar on ICM at the invitation of the JRCMA. The topics should include the content of the Strategy, the role of the local government its implementation and priorities for action.

3.7 ACTION TO DATE

Not all of the recommendations have been addressed since the survey was completed. This is attributed to the lack of a coordinator, and resources. However, direct mailing is used in most cases to inform catchment residents of ICM activities, and a solid database of catchment stakeholders exists in the Catchment Centre.

The JRCMA supplies articles for the statewide ICM newsletter and have a regular column in the Innisfail Advocate that provides the community with ongoing ICM activities and general NRM issues *(refer to page 27)*. Upcoming events such as field days and conferences and advertised in the three papers in the catchment and on the local radio station. The catchment coordinator also attends industry group meetings on a regular basis and puts up an ICM display at the local shows every year.

The JRCMA sponsors an ICM award as part of the annual cane productivity awards, which is presented to cane farmers in the Johnstone River Catchment *(refer to page 28)*.

Johnstone catchment news

By ELAINE RIDD

A scientific look at the catchment.

An early decision of the Johnstone River Catchment Management Association was to base any subsequent actions not on rumour but on the best available scientific data.

Five years ago a major study was carried out by DPI Fisheries Officers D. J. Russell and P. Hales into the condition of the Johnstone River Catchment.

Two of the major aspects of that study were fish resources and stream habitat.

One hundred and twenty species of fish were found in the catchment.

The largest number of species was understandably in the estuary section of the river where 88 species were found.

Only nine species were found in the Tableland section of the catchment.

Of the 193 sites examined, rainbow fish were found at 71 per cent of those sites, eels at 60 per cent, freshwater catfish and empire gudgeon at 33 per cent and sooty grunter at 30 per cent of the sites

In the estuary some economically important species were found — sand whiting, large banded grunter, bream, dusky flathead, barramundi and mangrove jack. All the barramundi that were found were immature.

JOHNSTONE • RIVER •

Catchment Management Association Inc

Three exotic species were found: guppies, swordtails and tilapia. Tilapia may represent a serious problem in the long run.

Reliable long-term records of fish stock in the Johnstone did not exist before the DPI's work on behalf of the JRCMA, so it isn't possible to say to what extent matters have changed over the last 100 years or more.

However the species list is encouraging and the number of threatening exotics is low.

Moreover there is now base data to allow for the monitoring of any changes in the future.

The other aspect considered by the research was the condition of the stream habitat

Of the 193 sites altogether, 129 had at least one major disturbance

The most common by far was siltation which occurred at 101 sites; 50 on the Tableland and 51 in the lower part of the catchment.

Cattle access was identified as a problem at 64 sites and bank erosion at 21.

All the other "disturbances" occurred far less frequently.

The research used a "riparian index" to measure the degree of disturbance near rivers and streams.

Over the catchment as a whole 60 per cent of the sites were considered to be in poor or very poor condition and only 20 per cent in good, very good or excellent condition.

Understandably in the forested WHL "Range" part of the catchment all the sites were in very good or excellent condition.

The other area with a 60 per cent "good" or better rating was the estuary where mangroves are protected.

Both the Tableland — only 10 per cent good or better — and the coastal lowlands — 6 per cent very good — have a very major problem indeed.

The JRCMA, with the active co-operation of all the community, will try to meet the challenge posed by any problems in the river.

But, at least we know what the problems are. It is no longer necessary to guess; the facts are there.

The JRCMA has a column in the local newspaper every fortnight

Grower awards

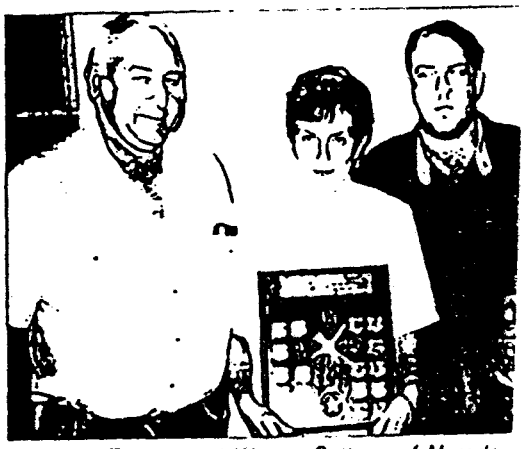
South Johnstone Mill's 1998 Cane Productivity and Awards night was held recently in the James Hing Hall.

Chairman of the South Johnstone Cane Protection and Productivity Board, Dennis Stevenson welcomed everyone and introduced guest speaker Cam Whiting, a research officer from the BSES station at Meringa.

Mr Whiting gave a presentation about harvesting research and the effects of ground speed and extractor speed on cane loss and extraneous matter.

He spoke of field trials held in the Mulgrave area, static trials studying the effects of various chopper knives, and harvesting speed on billet quality.

He spoke of gains of up to $200 per hectare simply by slowing the pour rate of harvesters and running the extractor fan speed at 1100rpm.



● *Alec, Teresa and Wayne Gattera, of Nerada, recipients of the Johnstone River Integrated Catch Management Award presented to them by preside the JRCMA, Sam Pagano.*

● *Overall Top Producer for the South Johnstone mill area were Tolga growers Carlo and Olga Castino in Zone 11 (centre). They are pictured with John Barbetti (left) and Bruce Crausaz, both of Grow Force, the sponsors of the award*

● *The Overall Most Improved Production Awa to growers Hans and Josie Binder pictured w sponsor representative Gerry ae Speville o Care*

The JRCMA sponsors an ICM award each year

4 COLLATION & DISSEMINATION OF INFORMATION ON RIPARIAN RESTORATION METHODS

4.1 ISSUES

A great deal of planting and other riparian restoration work is underway within the Johnstone River catchment and elsewhere in the Wet Tropics. Several different groups are involved, and have different approaches and methods. Some of these methods are successful, but there is concern that much of the key information about practical methods which work, and those which are less effective, is not documented in a form which can be communicated readily to others. There was a need to collate and analyse this information, and provide it in a form that can be readily accessed and used by others.

4.2 DESIGN APPROACH AND RATIONALE

The objectives of the project were:

- to collect, collate and analyse information about practical methods used for riparian restoration within the Johnstone River catchment and related areas of the Wet Tropics.
- to record this information in print and electronic means and make it widely available for use by individual and other groups.

The JRCMA engaged the project officer responsible for the production of the Johnstone River Catchment Revegetation Strategy to carry out the project. Discussions were held between the JRCMA and the project officer in the initial stages of the project to determine the best approach.

A Project Agreement between the project officer and the JRCMA was produced and set out the following milestones for the project:

- Clarify topics regarding riparian restoration through discussion with catchment coordinators, industry groups, and community groups by attending meetings and holding discussions with members.
- Review literature and agency knowledge of the topics identified and collate information into topic headings.
- Collate information to develop a final list of information topics and consult with groups involved on these topics.
- Prepare a set of information sheets with a fact sheet containing all pertinent information for each identified topic.

4.3 DESCRIPTION OF ACTIVITIES

The project officer attended meetings with various groups throughout the Wet Tropics region and held discussions with key individuals of other community and industry groups where meetings could not be arranged. From these meetings and discussions, a list of topics and summaries of important issues that needed to be considered within the topics was developed. Regular contact was maintained with the groups throughout the course of the project to ensure their continual input and the developed list was circulated back to the community and industry groups for comment and discussion.

A literature search was conducted to provide additional information on the topics developed by the community and industry groups. Draft information sheets were compiled for each of the topics and reviewed by technical staff from both the Government and private sectors.

Funding for printing the information sheets was provided by Bushcare, a program of the Natural Heritage Trust.

4.4 OBSERVED RESULTS

The resulting series of information sheets was entitled *'Practical Help for Riparian Management in the Wet Tropics' (refer to page 31)* and covered the following topics on individual sheets:

- Streambank revegetation and restoration – benefits for the landholder and the community.
- Guidelines for revegetating streambanks.
- Species for revegetating streambanks.
- Common weeds on streambanks and control methods.
- Restoration of streambanks – economic benefits and tax incentives.
- River processes and how they affect streambanks.
- Existing legislation for the protection of streambanks and rivers in Queensland.
- On-farm issues affecting streambanks and water quality in Wet Tropics catchments.
- Practical site examples of streambank restoration in the Wet Tropics.

Three articles targeted at cane, horticulture and grazing were produced on file and were featured in the industry newsletters.

4.5 DISSEMINATION OF RESULTS

Over 1000 copies of the series of information sheets were produced. Over 500 have been distributed throughout the Wet Tropics Region. Multiple copies have been sent to catchment centres, state agencies, community groups and industry groups in the Wet Tropics to ensure they have them to pass onto landholders and interested people. Individuals involved directly with the project have received a copy of the sheets and the JRCMA has been handing out the sheets at events such as the local shows, landcare conferences, industry meetings and community events.

The information sheets have been advertised in two local papers and also appeared in the March edition of RIPRAP. As a result we have also forwarded copies of the information sheets to various groups throughout Australia. The information sheets were to be placed on the Bushcare web site, but unfortunately the site has not been established, so the JRCMA approached LWRRDC, and as a result the sheets have been included on the LWRRDC Rivers web site.

The Series of Information Sheets shown above were produced

4.6 DISCUSSION, CONCLUSIONS

Riparian restoration in the Wet Tropics catchments poses specific problems due to high rainfall and floods occurring at least annually. Although the series of information sheets provides an ample supply of information, it is important that each proposed site be treated on an individual basis.

4.7 RECOMMENDATIONS

The information sheets have received very positive feedback from a range of individuals who have received copies. Comments have indicated that both people with a technical or farm background have found the information sheets well presented and easy to read, as well as containing a lot of useful information.

Due to the positive response to the information sheets and the fact that some of the information contained in the sheets will be superseded as riparian methods advance into the next century, it would be worthwhile to ensure the sheets are updated on a regular basis. Updating the information sheets, say every 5 years, will ensure that the information supplied to people intending to carry out riparian restoration is up to date.

It is also important to note that current planting techniques in the Wet Tropics are predominantly based on trying to achieve initial high biodiversity. Many species are slow growing, so maintenance is often required for up to 3-5 years. Landholders are willing to plant trees, but maintenance is often neglected. Therefore, it is important that as more appropriate tree planting techniques are developed, that future revised information sheets include this information.

5 LANDHOLDER PARTICIPATION IN RIPARIAN MANAGEMENT

The National Landcare Program application that had been submitted to employ a Rivercare Officer to conduct this project was not funded. The funding allocated for this project was redirected towards the direct seeding project that had been submitted to LWRRDC at the time.

6 BROAD SCALE DIRECT SEEDING TRIALS IN THE WET TROPICS

6.1 ISSUE

Direct Seeding is a method of revegetating large areas that has been used successfully in temperate zones of Australia for at least 10 years. It has also been used widely in mine site rehabilitation in all parts of Australia.

Direct seeding has long been rejected by environmental managers as a means of rehabilitating degraded sites in the Wet Tropics. It is unclear why this has occurred, although, one could speculate that these advisers have been locked into a paradigm which has ignored the costs and the enormity of the problem that they have to deal with.

There had been no attempts to carry out trials on a modest scale in the region which has perpetuated the conventional method of rehabilitation using tube stock. This method is expensive and time consuming and seen by some researchers, who use direct seeding methods for rehabilitation in the Southern parts of Australia, as primitive and inappropriate in dealing with the problem at hand. Many landholders simply do not have the time or finances to plant and maintain trees using traditional methods.

6.2 GENERAL DESCRIPTION OF SITES

Direct Seeding trials were established on three sites in the coastal part of the Johnstone River catchment in 1997 with varying degrees of success. Further trials were established in both coastal and tableland parts of the catchment during 1998.

Trials were initially established in 1997 in the Johnstone Shire:

- **at the Johnstone River Crocodile farm at Flying Fish Point;**
- on the South Johnstone River downstream from the Centre for Wet Tropics Agriculture; and
- at a cane farm on a tributary of Liverpool Creek, owned by Bundaberg Sugar.

Trials were again established in 1998 in the Johnstone Shire:

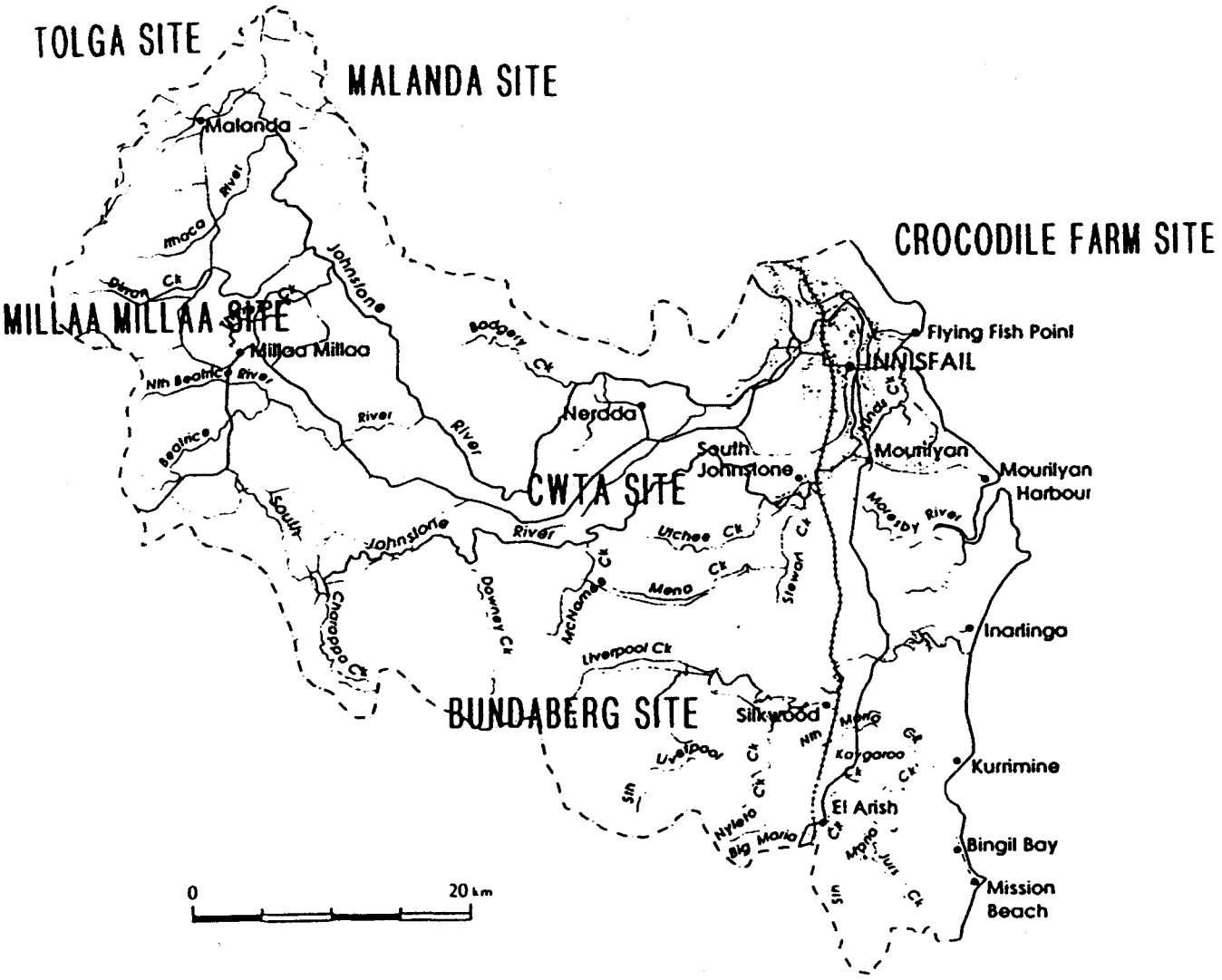
- **at the Johnstone River Crocodile farm at FFP adjacent to the previous trial;**
- **at the same site at Liverpool Creek, owned by Bundaberg Sugar.**

Trials were also established in 1998 in the Eacham Shire:

- **on a dairy farm in Malanda;**
- on a tributary of Dirran Creek in Millaa Millaa; and
- on Rankin Creek in Tolga.

The map on page 35 shows these locations in the catchment. All the sites have varying soils and rainfall regimes.

It should be noted here that only four sites out of the above trials were successful (as highlighted above). This report focuses on these sites which were monitored over the course of the project. Reasons for site failure are discussed in Section 6.4.



Map showing location of Direct Seeding Sites

6.3 DESIGN APPROACH AND RATIONALE

The purpose of these trials was to develop and document practical and cost effective techniques for broad scale revegetation in the Wet Tropics using direct seeding. The technique was initially developed by Queensland Forestry Research Institute who trialed limited species on a very small scale. The trials would attempt broad scale rehabilitation of riparian areas using fast growing 'pioneer' species to achieve quick site capture, bank stabilisation and shading of exotic grasses. In addition, a broader range of rainforest species that were considered to have potential for use in direct seeding programs were tested and evaluated.

The aim was to duplicate the methods that could be easily and cheaply used by a landholder for the re-establishment of riparian vegetation. The trials were established using:

- minimal or no cultivation;
- seed that is readily available for purchase or collection by the landholder;
- species that are guaranteed performers supplemented by local rainforest species with specific requirements;
- maintenance using a grass selective herbicide.

Included in the trial were three sub trials set up to consider:

- the benefits of using treated seed to assist in breaking dormancy;
- the affect of mulch on seedling establishment and performance;
- the benefits of fertiliser.

6.4 DESCRIPTION OF ACTIVITIES

6.4.1 1997 and 1998 Direct Seeding Trials

A Project Officer was engaged by DNR to carry out the direct seeding trials. Initial trials were set up in 1997 and supplementary trials in 1998. Assessment and maintenance of the plots was done by other DNR staff once the Project Officer's employment had ceased.

The distribution of the sites was necessary to cover rainfall, soil type, level of degradation, and to determine which sites were most amenable to re-establishment of trees using the direct seeding technique. Site selection was based on reconnaissance with Landcare groups, Forestry, local industry and the Johnstone Shire River Improvement Trust.

The majority of the 1997 trials were abandoned within six months of sowing, which resulted in further trials being carried out in 1998. The initial trial at the Johnstone Crocodile farm was very successful with good stocking rates and site capture. The South Johnstone River and Bundaberg Sugar sites were abandoned due to aggressive weed growth or poor germination. It was only planned to monitor all sites for 12 months.

Out of the five sites established in 1998, only three sites were successful and monitored and maintained for 12 months. The Tolga and Millaa Millaa sites in the Eacham Shire were abandoned due to a range of problems including accidental spraying of one site, and poor germination and aggressive weed competition at another. The Millaa Millaa site was sown too late in the year due to problems with site access, resulting in the cooler weather also affecting germination.

The site at Malanda was established using a mulch striking technique as used for rye grass pasture. The site was sprayed twice prior to the planned sowing date, then after Cyclone Justin, the site was inaccessible because of the wet conditions. The site then had to be sprayed again prior to sowing, but there was not a good enough layer of grass to kill, so an effective mulch layer could not be produced.

The site also proved to be too wet, with good germination only occurring on elevated sections of the trial. Site control of grasses was left too late, and Fusilade did not kill the Bracharia. The data for this site which had been collected over a 12 month period had been destroyed by water damage. Therefore, the results for this site can not be presented and conclusions cannot be drawn for this site, due to this loss of data.

The remaining sites at Bundaberg Sugar and the Crocodile Farm are essentially the only two sites that have been monitored and maintained through to the middle of 1999. It is the results of these two trials which are presented in this report.

6.4.2 Johnstone Crocodile Farm and Bundaberg Sugar Trials 1998

Site Preparation and Establishment

Both sites were compacted due to previous land uses. The site at the Crocodile Farm was previously under sugarcane, while the Bundaberg Sugar site is a modified drain. Previous vegetation at the Bundaberg site included many weed species. The Crocodile Farm site was disced and sprayed with Glyphosphate prior to sowing, whilst the Bundaberg Sugar site was sprayed prior to sowing *(refer to page 39-40)*.

Trails on both sites were laid out as line plots in a randomised compete block design with a number of treatments (species mixes and pre-treatments) and repetitions

Sowings were in March 1998 at the Crocodile Farm and May 1998 at Bundaberg Sugar. Smaller seed was sown directly onto the ground and larger seed buried within the plots to prevent desiccation. Soil moisture conditions were good at the time of sowing and good follow-up rain fell.

Weed Control

Weeds at both sites were controlled with Glyphosphate beside rows to allow for easy assessment and to limit weeds in plots such as vines, and large woody weeds. Grasses in all plots were sprayed with Fusilade, or spot sprayed with Glyphosphate if they began to dominate.

The broadleaf weeds eventually began to dominate the sites which resulted in the need to blanket spray both areas. The blanket spraying method involved locating all the seedlings and marking their location with paint, and then spraying, while avoiding the seedlings and paint marks. After spraying, the site was fertilised.

Fertiliser

Fertiliser was applied on the 23 September 1998 at both sites. At the Crocodile Farm 50% of the plots were fertilised to gauge fertiliser response, however at Bundaberg Sugar all the seedlings were fertilised, since germination rates at this site were lower. A following application was applied on the 3 March 1999 to all trees at both sites. This application had limited results at the Bundaberg Sugar site due to heavy rain and flooding.

Measurement

The sites were measured on a monthly basis for up to the first 6 months after sowing. The full completion report contains all this data on an “excel spreadsheet”.

Following the initial 6 month measurement, further assessments have been done at 3 monthly intervals.

Assessment consisted of counting all individuals in a plot and recording them by species. The height of all seedlings was recorded to a maximum of 5 individuals per species and the average height calculated.

Direct Seeding trials at the Johnstone River Crocodile Farm Site – the site had been disced and treated with herbicide. Different species and mixes of species were trialed in the various plots.

Same direct seeding site approximately 12 months later. Pioneer species are dominant, however other climax species are well established.

Direct Seeding trials at Bundaberg Sugar Site – the site has been treated with herbicide and a layer of bagasse laid down to achieve a mulch layer. Large seeds were sown into the mulch layer, while small seeds were sown on top.

Same direct seeding site approximately 12 months later. Pioneer species are dominant, however other climax species are well established.

The 1997 trials at the CWTA on the South Johnstone River were both abandoned due to aggressive weed growth. This photo illustrates how difficult it is for germinants to compete with weeds such as Bluetop *(Ageratum spp.)*

The Malanda site was prepared using a mulching machine which is used for mulch striking of dairy pastures. The site is firstly sprayed to kill existing grasses and weeds, the site is then mulched using the machine, then seed is sown.

A treatment in the 1998 trials at the Bundaberg Sugar site included using baggase as a mulch layer. The seeds were sown directly onto the mulch.

As can be seen here, this black bean (*Castanospermum australe spp.)* sapling is exceeding the weed growth. This trial illustrated how a mulch layer assists in controlling weed growth.

Germination Trials

The germination trials were established to ascertain the viability of locally collected seed. It also tested whether storage had affected the viability and the possibility of some species requiring more specific environments to germinate as opposed to field situations.

Seed germination trials for 1997 were abandoned due to fungal growths in the germination cabinets. Methodology for 1998 involved sowing seed into seed raising trays kept in a glass house at the Centre for Wet Tropics Agriculture, at South Johnstone. Boiling water was poured over hard-coated seed *(Acacias and Alphitonias, or Wattle and Sarsparilla)* and allowed to sit and cool for a specified time and then sown as usual.

Germinants were counted and removed at weekly intevals. The germinants were recorded when they developed their first true leaves, and were discarded after counting.

6.5 OBSERVED RESULTS

Density of Plants on Site

Calculations for amounts of seed sown were based on stocking rates of 5000 stems/ha. A range of field germination rates was assumed for different species based on previous experience. The stocking rates are shown in Table 1. The stems per hectare at the Crocodile Farm have remained relatively constant. At Bundaberg Sugar the stems per hectare is still increasing with the germination of dormant seeds average spacing at June 1999 was 3.3 metres. The stocking at both sites has remained well below the 5000stems/ha.

Table 1: Stocking rate per hectare

Site	2 mths	3 mths	4 mths	5 mths	6 mths	7 mths	8 mths	9 mths
Crocodile Farm	972	871	1492	2022	1882	1736	1903	1788
Bundaberg Sugar*		266	313	332	541	532	1235	2033

*Calculated on 2.5m wide plot.

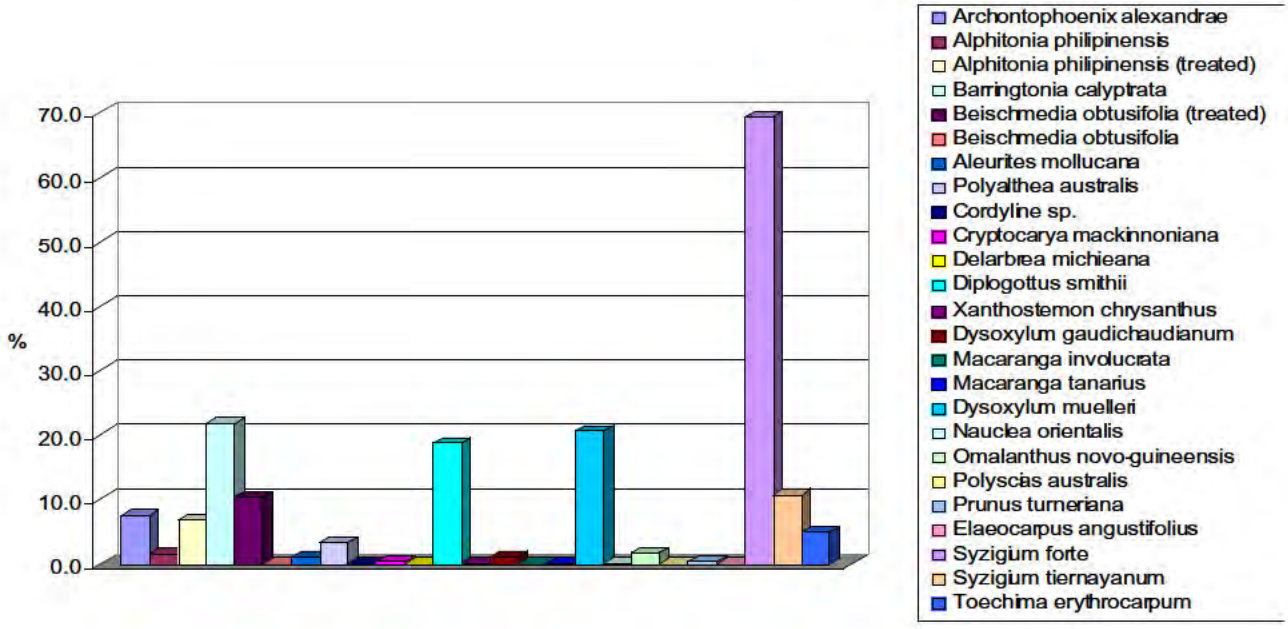
Germination at the Crocodile Farm site is shown in Table 2, based on the maximum number of germinants recorded at any one time over 15 months. Figure 1 also shows the comparison of germination rates at the site.

Table 2: Maximum germination rate at the Crocodile Farm over the first 15 months

Species	Number of seed sown	Maximum number of germinants recorded	Percentage of germination
Archontophoenix alexandrae	40	3	7.5
Alphitonia philippinensis	2400	40	1.7
Alphitonia philippinensis (treated)	2400	164	6.8
Barringtonia calyptrata	32	7	21.9
Beilschmiedia obtusifolia (treated)	48	5	10.4
Beilschmiedia obtusifolia	16	0	0.0
Aleurites moluccana	180	2	1.1
Polyalthia australis	360	12	3.3

Cordyline sp.	100	0	0.0
Cryptocarya mackinnoniana	280	1	0.4
Delarbrea michieana	40	0	0.0
Diploglottis smithii	80	15	18.8
Xanthostemon chrysanthus	2400	2	0.1
Dysoxylum gaudichaudianum	440	5	1.1
Macaranga involucrata	880	0	0.0
Macaranga tanarius	1040	1	0.1
Dysoxylum muelleri	160	33	20.6
Nauclea orientalis	880	1	0.1
Omalanthus novo-guineensis	2000	35	1.8
Polyscias australis	660	0	0.0
Prunus turneriana	260	1	0.4
Elaeocarpus angustifolius	360	0	0.0
Syzygium forte	160	111	69.4
Syzygium tierneyanum	260	28	10.8
Toechima erythrocarpum	60	3	5.0
Total seeds sown	15536		

Figure 1: Percentage of Germination at Crocodile Farm

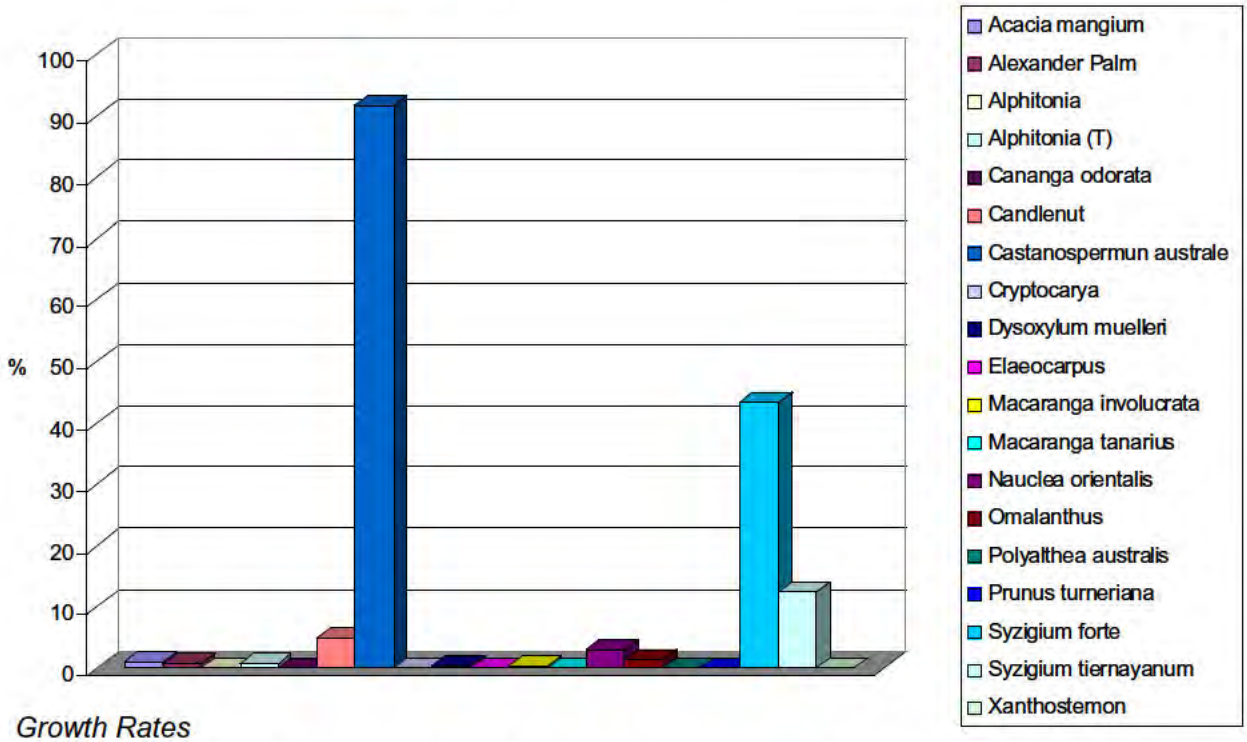


Germination at the Bundaberg Sugar is shown in Table 3, based on the maximum number of germinants recorded at one time. Figure 2 also shows the comparison of germination rates at the site.

Table 3: Maximum germination rate at Bundaberg Sugar over the first 15 months

Species	Number of seed sown	Maximum number of germinants recorded	Percentage of germination
Cryptocarya mackinnoniana	120	0	0.0
Acacia mangium (treated)	300	14	4.7
Acacia mangium	150	0	0.0
Archontophoenix alexandrae	120	1	0.8
Alphitonia philippinensis	1200	1	0.1
Alphitonia philippinensis (treated)	1200	9	0.8
Cananga odorata	360	1	0.3
Aleurites moluccana	60	3	5.0
Castanospermum australe	24	22	91.7
Dysoxylum muelleri	240	1	0.4
Elaeocarpus angustifolius	570	0	0.0
Macaranga involucrata	600	3	0.5
Macaranga tanarius	600	0	0.0
Nauclea orientalis	4200	126	3.0
Omalanthus novo-guineensis	600	8	1.3
Polyalthia australis	30	0	0.0
Prunus turneriana	42	0	0.0
Syzygium forte	60	26	43.3
Syzygium tierneyanum	48	6	12.5
Xanthostemon chrysanthus	2000	2	0.1

Figure 2: Percentage of Germination at Bundaberg Sugar



Growth Rates

The growth rates of all species have performed as would be expected. The pioneer species have had the fastest growth with *Alphitonia philppinensis* reaching a height of

2.3m in 15 months and *Acacia mangium* reaching 1.5m. Other species that have grown quickly is *Omalanthus novo-guineensis* reaching 0.9m in 15 months.

In the rainforest species a *Castanospermum australe* reached 1m with its growth rate after 15 months showing signs of slowing. Most of the other species performed poorly, being affected by exposure.

A comparison of the growth rates at the two sites, measured at 3-month intervals is shown
in figures 3 and 4.

Treated Seed

Treated seed germinated within 4 to 6 weeks and had high numbers of germinant that generally persisted. Untreated seed germinated slowly or not at all, and had lower numbers of germinants.

Some seed was soaked in a 'chilli' mixture, (chilli macerated in a blender and strained to remove chilli seed) to determine whether it would deter rodents. This showed no obvious benefit.

Mulch

The effect of mulch on the establishment of seedlings varied with differing species, seed size and time of seedling germination. The mulch benefited species that had been pre-treated, most likely by the retention of moisture around the germinating seedlings. Species that had large seeds deprived minimal benefit from the mulch, although some species in mulched plots generally do have higher growth rates. Small seed performed best in the unmulched plots. Overall, the mulch provided excellent control of weeds, making the assessment of plots easier *(refer to page 42)*. However, the mulch did not increase the number of germinants. Mulch should be used to achieve fast cover, as the seedlings present in the mulched plots all germinated soon after sowing, whereas those sown in the unmulched areas are still germinating.

Fertiliser

Only 50% of the plots were fertilised at the Crocodile Farm during the first application which resulted in an almost 100% difference in the height of the some species after one month. This trend continued over time. There was a marked benefit in the application of fertilisers to the pioneer species allowing the trees to quickly gain dominance over the grasses. However in the case of the slower growing rainforest species, only the grasses benefited from the fertiliser, resulting in thick dense clumps of grass overtopping the seedlings.

Figure 3: Growth Rates Liverpool Creek

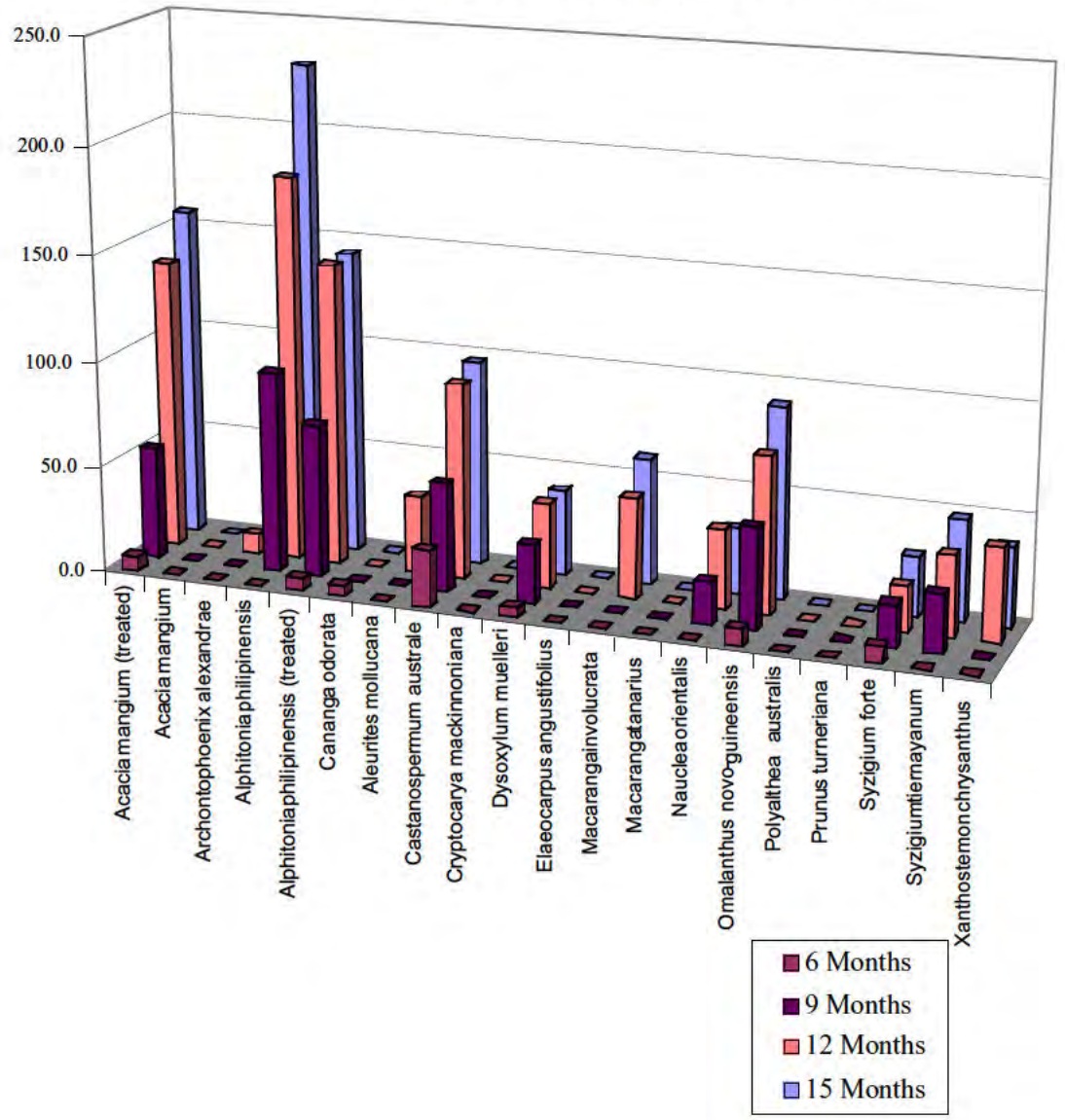
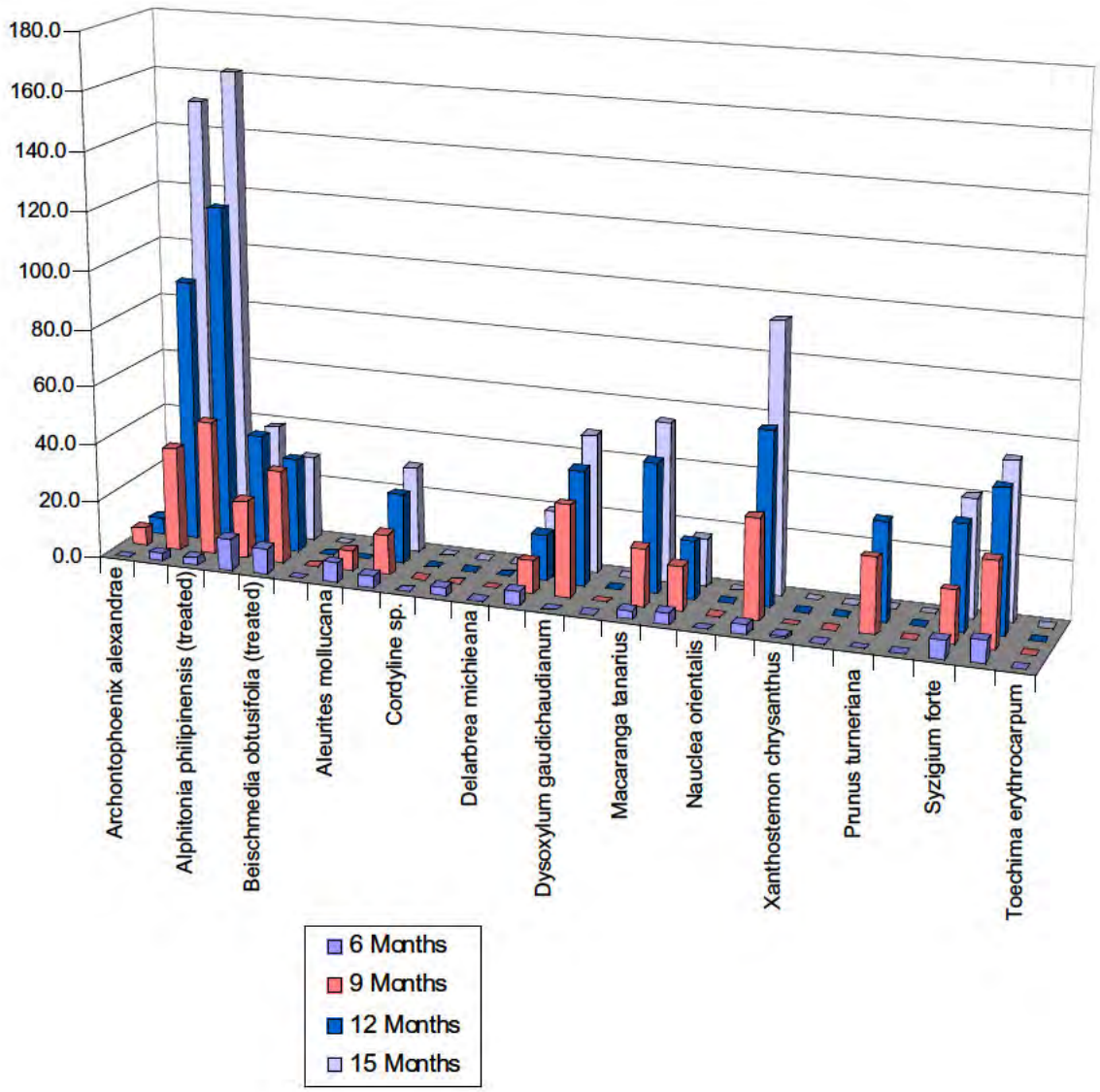


Figure 4: Growth Rates at Flying Fish Point



General Observations

There was a small amount of seed movement by animals at the Crocodile Farm, with seed being moved out of the planting rows. These seeds showed no signs of predation and could be due to the high numbers of native animals that move through the site. The burying of large seed helps to prevent this.

At Bundaberg Sugar it was noted that seedlings were germinating outside of the plots; these were the same species that were sown within the plot. This would indicate that the seeds were being moved out of the plots. Flooding is believed to have moved the seeds as the area flooded twice during the assessment period.

A few seedlings were recorded that were not sown at Bundaberg Sugar, although these species were sown on the same site during the previous years failed direct seeding (1997).

At the Crocodile Farm some introduced species were also recorded. The high numbers of birds and animals visiting the site are most likely the source of these seeds, as this area before sowing was fallow, but had previously been cane.

6.6 DISCUSSION, CONCLUSIONS

A mix of 'best bet', locally occurring fast growing pioneer species are the most appropriate to use for direct seeding. Hard-coated seed should be pretreated to increase field germination. These species can best be determined by reconnaissance of a site and adjacent areas as to which is the best mix to use. Therefore, at least one species will probably be successful. The full direct seeding completion report details what species are best suited to particular areas.

Following on from the trials, the best method to establish rainforest species in the Johnstone River Catchment would be as follows:

1. Sow the seed into a mulch layer, remembering that the time of sowing is extremely important for reduced temperature extremes and follow-up rain to assist in germination and early establishment.
2. Leave the area for approximately 6 to 12 months, then locate any seedlings,
3. Control weeds and fertilise as necessary.

This technique follows the processes of natural regeneration and assists by helping to control some of the factors that can restrict natural revegetation such as numbers of seed in the soil, competition from weeds, and changed nutrient levels in cleared areas. It also requires minimal landholder inputs compared to planting out seedlings, although locating the germinated seeds can be time consuming.

Factors that need to be taken into consideration when selecting species and establishing direct seeding plots are:

1. The area should be sprayed with herbicide prior to sowing.
2. Site disturbance should be minimal to prevent germination of weeds.
3. Freshness of seed - The few species that were sown fresh had far better germination than when sown after storage.

The application of fertiliser needs to be at a time when the seedlings are able to compete with the surrounding weeds, or after the weeds have been sprayed. Fertilising without spraying the weeds first may be difficult with small seedlings, as the trials revealed that the fertiliser mostly benefited the grasses around them.

The trials have also indicated that direct seeding has extreme limitations on alluvial river banks and is best suited to more degraded sites where weed competition is less aggressive. The site at South Johnstone had excellent early germination for most species (70 to 90%), and was an alluvial riverbank with the germination of many locally occurring species (eg. River Cherry) was observed. However, competition from broad-leafed weeds was extremely aggressive causing mortality to the young germinants *(refer to page 41)*. A 'wick-wiper' proved to be time consuming and ineffective at controlling these weeds.

As a last resort a non-selective herbicide was sprayed over the top of the weeds which had formed a continuous canopy. Unfortunately, it rained within 2 hours of the treatment & the majority of germinants (including the weeds) were killed. Alluvial riverbanks have a massive seed bank (weeds & local species). Guinea grass is extremely aggressive on these fertile sites and without maintenance tends to dominate. The Fusilade controlled the guinea grass but tending was required every month. The chemical is too expensive (& nasty to use) for tending this often. Also, once the guinea grass is controlled every other weed (broadleaf) germinates and maintenance is a nightmare, as they can only be controlled using chemicals that will also kill the germinating seedlings. It was therefore concluded that the technique is inappropriate on these fertile, alluvial sites as maintenance is basically a nightmare.

6.7 RECOMMENDATIONS

A minimum mulch striking technique was used to establish the Malanda site in 1998. This involved spraying the existing grass, sowing the seed, then mulching it with a mechanical mulcher *(refer to page 41)*. Although unforeseen events affected the success of these trials, this mulch-striking method employed on the Malanda site has significant potential since the trials at the Bundaberg Sugar site indicated that a mulch layer such as the baggase (a byproduct of sugar crushing that is in plentiful supply), assists in weed control and germination on difficult sites.

The trials carried out in this project have given a significant amount of baseline information for future direct seeding trials. There is not only a need for more research to be carried out to further the direct seeding technique for the Wet Tropics, but there also needs to be research/field trials into other revegetation techniques that are more economic and less time consuming. There is also a need for further trialing of grass selective herbicides, as Fusilade is expensive and requires precaution in its application.

Generally speaking, traditional revegetation techniques employed in the Wet Tropics region are the most expensive throughout Australia as they aim at high initial biodiversity. As many of these sites are extremely modified it is arguable whether trying to restore an environment to pre-settlement conditions is actually possible. In a practical sense, for the average landholder who wishes to re-establish vegetation, low cost, site capture and limited maintenance are the primary objectives. The growth of the rainforest species has been to slow and should aim for site capture first with the pioneer species.

7 REHABILITATION OF A SUB-CATCHMENT

7.1 ISSUE

Community groups and government agencies involved in revegetation are very active within the Johnstone River catchment. Contributions from government sources alone to revegetate projects in previous years have exceeded $3 million dollars annually. The development of the Johnstone Revegetation Strategy was recommended as an implementation component of the Johnstone River Catchment Management Strategy to focus and coordinate the efforts of these groups, and to increase the benefits from their activities.

Riparian areas were considered a high priority for revegetation in all parts of the catchment. The strategy also identified low order streams (sub-catchments) as priority areas in that they are significant in providing corridors for wildlife and would have a cumulative benefit for improved catchment condition, landscape and increased stability of stream banks where erosion threatens infrastructure.

Given that the revegetation strategy identified sub-catchments in the Johnstone River catchment as a high priority for revegetation, it was considered worthwhile to develop and apply methods to prepare a detailed rehabilitation plan for a particular sub-catchment which could be used for rehabilitation of this and other sub-catchments in the future.

7.2 DESIGN APPROACH AND RATIONALE

The projects overall objective was based on the following question: 'If given the financial resources, how would the Landcare groups define the sub-catchment in most need of attention, and what strategies, techniques and likely budget would be needed for its rehabilitation.'

The individual objectives of the project were as follows:

- Develop an acceptable methodology for sub-catchment assessment and prioritisation.
- Involve Landcare group members in data collection and assessment of a target sub-catchment.
- Develop a staged plan for the rehabilitation and future management of the sub-catchment.
- Develop a budget for the implementation of the plan.

It was envisaged that not only would this project help implement the Revegetation Strategy, but it would also provide Landcare members with an opportunity to gain a better understanding of the processes involved in the development of an action plan for the rehabilitation of a sub-catchment in the Upper Johnstone.

The JRCMA engaged the Technical Supervisor from the Wet Tropics Tree Planting Scheme (WTTPS) in Malanda to undertake the project with cooperation from the Malanda and Upper Johnstone and the North Johnstone and Lake Eacham Landcare Associations (MUJCLA and NJLELG). The project team was composed mostly of dairy farmers and primary producers with an invaluable wealth of local knowledge.

The project focussed on the uppermost sub-catchments of the North Johnstone River system within the greatly transformed landscape of the Atherton Tableland.

7.3 DESCRIPTION OF ACTIVITIES

The two Landcare groups undertook the task of identifying priority areas for rehabilitation works in the Upper North Johnstone catchment. This task involved both the development of a methodology to identify and prioritise project sites, and the application of this to develop a future works program aimed at addressing the highest priority problems within the landscape.

Seven sub-catchments, comprising the uppermost sections of the North Johnstone River were investigated in order to provide a firm foundation for the future on-ground works program, four of these were identified in the revegetation strategy.

The method chosen involved the collation of existing information (reports, maps, aerial photographs), collection of additional site information through site visits, aerial surveillance and recording of aerial still and video images. Despite the time committed to the on-ground inspections, the project team felt that there were large 'gaps' in the information gathered due to the inability to access all areas of the study area. To fill these 'gaps', a helicopter was hired to cover the source of each stream to its confluence with the North Johnstone River.

The aerial assessment proved worthwhile, and allowed the changes to each sub-catchment to be observed. Over two hundred photos were taken and these were used to piece together information on each sub-catchment along with the video footage of the sub-catchments *(refer to page 53)*. It was agreed that the digital recording could be used as an educational tool for future rehabilitation projects.

The decisions of the group were reached through discussions at a series of workshops where the methodology was gradually developed through the life of the project. The final step was the employment of an ecologist to collate the data into a useable format for the group.

In order to determine which of the seven sub-catchments was in most need of rehabilitation, the consultant compared the sub-catchments in relation to their physical characteristics and land use, tabulating their biophysical attributes in the following categories: terrain, soil type, and land cover. The factors used to determine priorities for addressing rehabilitation needs within the sub-catchments was consistent with the criteria used in the Johnstone Catchment Revegetation Strategy. The criteria against which landscape problems were assessed included slope, existing vegetation, habitat proximity, adjacent land use, riverbank condition and position and erosion. A scoring matrix was then used to determine a ranking of degradation for each sub-area. This allowed the sub-catchment in greatest need of rehabilitation to be determined.

Each sub-catchment was then further compared with regard to landscape condition and the intensity of problems, tabulating the condition of the landscape components including relief, vegetation cover, waterways and erosion.

The Aerial Photos will be used for further on-ground Rehabilitation Work

A budget was prepared to carry out the rehabilitation of the highest priority sub-catchment, which was broken down into in-kind contributions, and operating and capital costs.

7.4 GENERAL DESCRIPTION OF SITE

The North Johnstone River rises at an elevation of 900m on the slopes of several volcanic craters to the west of Malanda. The South Johnstone River flows from headwaters on the Walter Hill Range from approximately 1200m altitude. The rivers join at the township of Innisfail and flow a further 5km downstream before meeting the Coral Sea. *(refer to page 55)*

The seven sub-catchments identified occur on the predominantly fractures basaltic terrain of the south-eastern Atherton Tableland, centered around Malanda. The dominant land use of this study area is pastoralism, including dairy and beef cattle grazing.

7.5 OBSERVED RESULTS

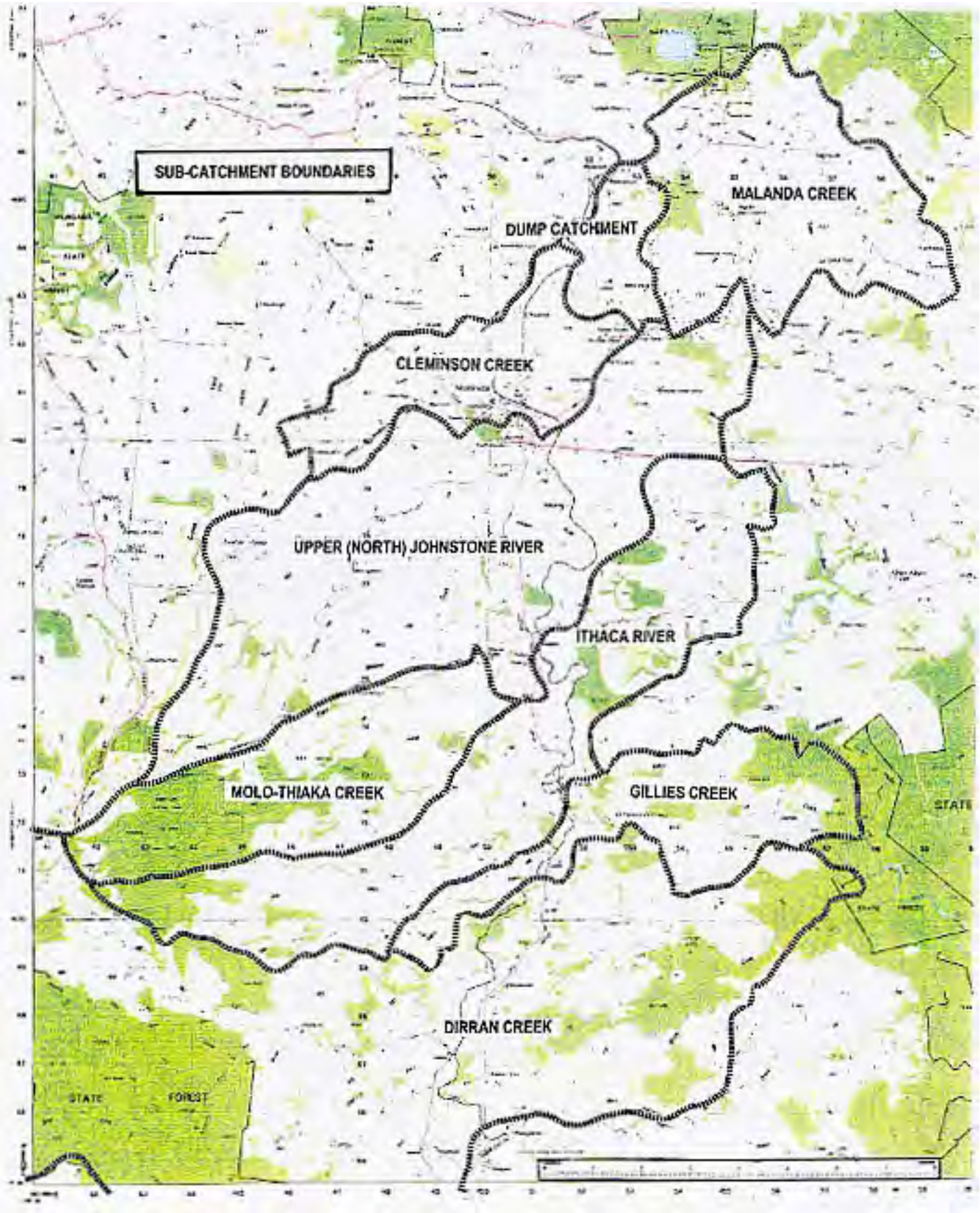
An examination of biophysical characteristics revealed relative differences between the seven sub-catchments in terms of predisposition of problems relating to parent materials and soils, slope, extent of clearing of native forest, and the extent and type of development.

Land degradation associated with vegetation removal prompting soil erosion was identified as the major problem on the intensively grazed basaltic soils. This had also resulted in in-filling and diversion of stream channels which had promoted weed invasion to compound choking of the channel. Land slips and slumping were relatively widespread throughout the study areas, although some sub-catchments were more greatly impacted than others.

The sub-catchment identified as being in most need of rehabilitation was the ‘Dump’ catchment. Riparian vegetation had been removed along the entire system, with only minor areas of poor regrowth along some headwater reaches. A landholder had made considerable efforts to revegetate and stabilise gully flanks. Bank slumping was prominent, with sediment being deposited within channels resulting in heavy in-stream weed growth, lateral stream movement, prompting further bank failure, and generally impeded flow. Throughout most of the system, the watercourse had been reduced to a highly sinuous stream flowing within a wide choked-up channel.

This system contains a major point source of contamination at the headwaters in the form of a major landfill waste dump serving the township of Malanda. Leachates appeared to be emanating from the site with prolific growth of aquatic weeds and ponded pasture within an impoundment below the gully head.

The budget prepared was broken into both in-kind contributions, and operating and capital costs. In-kind contributions included loss of grazing land, use of equipment, volunteer labour and fencing. This amounted to $72,400. Capital and operating costs included tree supply, equipment hire, supply of materials for bank stabilisation works and materials for tree establishment and maintenance. This amounted to $76,790. Therefore the total cost for the rehabilitation of the ’Dump’ sub-catchment was estimated to be $149,190.



Map showing Sub-catchments identified from the Project

7.6 COMMUNICATION/DISSEMINATION OF RESULTS

The series of workshops enabled participating landholders to have direct input into the project and provided an opportunity for the team members to report on the project's progress and relevant information back to their interest groups.

Both Landcare groups were supplied with copies of the final report, with copies also provided to landholders who participated in the project.

7.7 DISCUSSION

The 'Dump' Creek system was identified among the seven sub-catchments investigated as the highest priority for rehabilitation works. Such works will compliment restoration efforts proposed by Eacham Shire Council with decommissioning of the landfill waste disposal site in 1999. In order to assist in the further sequencing of works to reflect priority problems, seven sites have been delineated within the 'Dump' sub-catchment. These are all associated with riparian reestablishment. Benefits include streambank stabilisation and erosion reduction, increased water quality through enhanced uptake of nutrients, improvements in water flow and aquatic habitat by stream shading.

This project will greatly assist the Local Government-based WTTPS team operating alongside the MUJCLA and the NJLELG to operate a works program that specifically targets those problem sites deserving of the highest priority rehabilitation efforts. The resulting rehabilitation plan will maximise the efficiency and cost-effectiveness of public expenditure aimed at landscape repair and restoration.

The exercise was not only successful in terms of the physical outcomes of identifying and prioritising future on-ground work programs for the Landcare groups and Shire, but was also found to be particularly useful by the participants. The education and improvement in understanding of team members in the areas of landscape processes and condition and developing processes to strategically tackle local and management issues was invaluable. The landholders of the Landcare groups were also able to inject valuable knowledge of the local landscape during the course of the project.

The central role of community and Local Government participants in the process has also provided a strong sense of local ownership and commitment to the on-going adoption of the recommendations through future on-ground projects.

7.8 RECOMMENDATIONS

Recommendations stemming from this project comprise those associated with the successful functioning of the project team, with the development of methods for documenting and prioritising landscape problems for the purposes of catchment and specific recommendations regarding work priorities.

1. To facilitate successful rehabilitation planning at the local level, projects should:

    - Include local knowledge in landscape analysis for local level rehabilitation planning.
    - Ensure local participation and control of the project which is critical to the successful outcome of the project.
    - When working with community groups, follow a time schedule to allow team members to develop their understanding of the project, and to allow for their work commitments.

- A team leader is necessary for projects similar to this to provide continuity and keep the project progressing.

2. To achieve useful and practical outcomes for local level rehabilitation planning, the following methods are recommended:

   - Aerial survey, aerial photos and the aerial video are the most useful sources of information in the analysis process. Local mapping facilities should be used to collate and present the data collated.
   - A technical consultant should be employed to collate the data and observation by the team members as a cost-effective method for synthesising the outcomes into a cohesive planning document.

3. The works program devised for rehabilitation projects should be broken down into achievable work sites. This was done for the highest priority 'Dump' sub-catchment.

8 SUMMARY

8.1 GENERAL

The Riparian Management Demonstration and Evaluation project funded by LWRRDC has formed a significant part of the JRCMA's activities over the last three years. The project has helped to contribute to increased awareness amongst the community of the importance of properly managing our riparian zones, and there has certainly been an increase in the willingness to take on board information and research findings with regards to riparian projects.

Although there has been a wider acceptance that the role of the riparian zone affects on-farm activities, the financial aspects of restoring and maintaining these riparian areas is still an issue which needs to be addressed. There is a general feeling that landholders should not be the solely responsible for financing riparian projects on their properties and that there should be incentives to carry out riparian restoration projects. This attitude of 'why should we have to pay', is not helped by the current status of the primary industries in this region, and a chain of events which is causing financial hardship for many landholders. Although farmers are willing to accept that there may be some benefits to carrying out riparian restoration on their properties, it is still considered by some as a 'feel good' exercise.

The deregulation of the dairy industry is currently in progress and will affect all dairy farmers in Queensland. In particular, dairy farmers on the Atherton Tablelands will be faced with considerable reductions in milk prices in the near future, which in some cases will result in some small and large scale dairy farmers going bankrupt.

Likewise, the declining Commercial Cane Sugar (CCS) content over the past few years is a serious concern to all cane farmers in the region, with considerable amounts of money being poured into research projects to determine the cause of this reduction in CCS. Combined with low sugar prices and the millions of dollars worth of damage caused by Cyclones Rona (1999), Justin (1998) Joy (1991) and other flood events, the cane industry is also currently faced with financial hardship.

The banana industry has also suffered considerably from these natural disasters, with millions of dollars of damage occurring to crops in the region. The threat of the papaya fruit fly (1995 - 1998) resulted in infrastructure changes to many industries including the banana and pawpaw industries, with alterations to packing sheds for quarantine procedures, resulting in hundreds of thousands of dollars being spent across the region.

The banana industry is also currently faced with food safety issues which require farmers to alter their current operations, and also provide training for staff in order to meet the requirements imposed by the wholesalers and merchants. As part of this approved supplier program, these changes must be implemented by April 2000.

Another issue that also affects most of the horticulture industries in the area, is that of securing good employees. A recent survey carried out by the Johnstone Shire Council had indicated that around 1200 people left the region after Cyclone Justin in 1998, most of these having being formerly employed on banana farms. Trying to secure good employees after a cyclone proves difficult for the farmers due to the decrease in workload brought about from the destruction of crops.

There is also concern among landholders particularly in the horticulture industries that there is a possibility that riparian vegetation may host diseases that may threaten their crops.

8.2 WORK FOR THE FUTURE

Essentially the largest hurdle we are currently faced with is the problem of financing riparian restoration projects or providing some form of financial incentive. Conventional riparian restoration methods used in the Wet Tropics are expensive, and require maintenance for considerable amounts of time. The shear cost and time associated with these existing techniques, is the primary reason why so many farmers are not willing to privately invest in riparian restoration projects. This needs to be addressed if there is to be success in broad-scale riparian restoration works. This could be achieved by firstly encouraging more research/field trials into more economic and less time consuming revegetation techniques.

In conjunction with exploring alternative restoration techniques, the overall approach to stream rehabilitation needs to be addressed. Following on from Ian Rutherford's work, prioritisation of sites for rehabilitation work and where money is best spent, are issues which need to be adopted by groups carrying out stream rehabilitation works, including community groups and River Improvement Trusts.