

Mangroves – A Status Update 2025

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INTRODUCTION

Early in 2002 I, in conjunction with Andre² and Robin³ Labonte, produced a challenging, and deliberately provocative *Think Piece* entitled *Report on Mangroves – Thoughts Comments and Observation. The need to Manage Mangroves*⁴, which was tabled at the February 2002 council meeting of the Northland Regional Council:

In summary, the report concluded that:

1. In pre-European times, there was a limited distribution of mangroves⁵ in Northland.
2. Mangrove growth has a direct correlation with land clearing activities of man.
3. The call for conservation of New Zealand mangrove areas was formulated on the assumption that New Zealand's single mangrove species had the same productivity, near or equivalent, to that of the tropical mangal.
4. There has been a dramatic loss of habitat in estuarine/harbour ecosystems through the uncontrolled spread of mangroves. This is impacting biodiversity through the loss of diverse estuary ecosystems. Ecosystems are being 'lost' as they are covered by mangrove forests.
5. The rapid growth of mangroves is impacting on the hydrodynamic stability of Northland's estuaries, harbours and inlets.
6. The continued uncontrolled spread of mangroves in our estuaries is likely to have some major social impacts. Many of these estuaries have holiday settlements on them and people use the estuaries for water-based activities.

We noted at the time that anecdotal evidence strongly suggests that mangroves in Northland estuaries and harbours are rapidly spreading. NIWA⁶ in January 2001 news update (www.niwa.cri.nz) had noted:

“There are mounting concerns that as mangroves extend out across mud flats and sand flats, they will reduce the availability of other habitats, thus decreasing the availability of inter-tidal feeding areas to birds and fish and, in the case of shellfish beds to human, too. In popular holidays areas (such as Mangawhai and Whananaki) the spread of mangroves may also reduce the space available for such activities as sailing, windsurfing and water-skiing”.

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⁴Farnsworth, M C, LaBonté, A W and LaBonté, R R, 2001: *Report on Mangroves – Thoughts Comments and Observations. The Need to Manage Mangroves*. Northland Regional Council February 2002 Council Meeting File 930.1.

⁵ *Avicennia marina* var *australasica*

⁶ Effects of Sediments on Estuarine Ecosystems – NIWA News 3 January 2001; Update on Initiatives and Findings

We engaged in a planned programme to promote, what we hoped would be an informed debate 'on the place of mangroves' in northern estuaries and harbours by presenting our concepts at several different forums:

- The New Zealand Geographical Society's Annual Conference, Auckland July 2003⁷.
- New Zealand Geographic, Number 67 January – February 2004⁸.
- New Zealand Coastal Society's Annual Conference Tutukaka October 2005⁹.
- Northland & Auckland Service Clubs¹⁰.

There is no disagreement that the kiwi mangrove is an indigenous New Zealand plant. In my mind the unanswered issue is - do the extensive rapidly expanding mangrove forests as they now exist mirror the botanical landscape of Northland's harbours and estuaries prior to the arrival of Europeans in Northland?

It is a matter of record that our initial think piece created a storm of comment, and we were roundly criticized, ignored and even ostracized for presenting a scenario which openly questioned the conservation icon status of mangroves. Today the debate continues, and it continues to be characterized by a strong polarization in viewpoints from within the scientific community, conservation groups and the community at large. Many words have been written¹¹.

RECAPPING

The rapid expansion of mangroves northern estuaries and harbours is a matter of record. It is self-evident.

The reasons for their spread have been put down to:

- Poor catchment management resulting in increased sediment loading and nutrient runoff (A historical legacy of our poor land management practices)
- Climate change. It has been suggested by Graeme (2002) that the 1990s were the warmest decade since records began, indeed probably for many centuries. Mangrove seedlings cannot tolerate frost. In the past, the seedlings that rooted in summer, out on the open flats were withered and killed by winter frosts. Now they are surviving, and she suggests that climate warming may be a critical factor in mangrove spread.
- Mangroves have been a protected species.

One aspect is very clear, nature is vigorously responding to conditions which man has created. Graeme¹² rightly notes –

⁷ LaBonté, A W, LaBonté, R R and Farnsworth, M C, 2003b: *The New Zealand Mangrove: Monoculture vs. Mangal: Sustainable Management of the New Zealand mangrove*. Paper to the 22nd New Zealand Geographical Society Conference, 6-11 July 2003.

⁸ LaBonté, A, and LaBonté, R, 2004; Viewpoint – Mangroves – allies or invaders? *New Zealand Geographic, Number 67 January – February 2004*: 6-8.

⁹ Farnsworth, M C, LaBonté, A W and LaBonté, R R, 2005: *The New Zealand Mangrove: monoculture vs. mangal. Sustainable Management of the New Zealand Mangrove*. A paper to New Zealand Coastal Society's Annual Conference Tutukaka October 2005.

¹⁰ The Great Mangrove Debate Continued -*Avicennia marina var. resinifera* Conservation Icon or Opportunist Weed? Mark Farnsworth Rotary / Lions Clubs speech notes 2005.

¹¹ For example - A socio-ecological appraisal of perceived risks associated with mangrove (Mānawa) management in Aotearoa New Zealand – R Le Heron, C Lundquist, J Logie, P Blackett, E Le Heron, S Awatere & J Hyslop. *New Zealand Journal of Marine and Freshwater Research* Vol 56 No 3 2022

¹² Graeme, A, 2002; March of the Mangroves. *Forest & Bird. August 2002*

“The temerity of the mangroves does not please everybody. People want their harbour to be just as they remembered it in their childhood. There is a rising level of concern being voiced by the local residents in many northern North Island coastal communities over the impacts of rapidly expanding mangrove forests”.

Regional Councils have come under pressure to implement mangrove control measures, with three regional councils: Northland Regional Council (NRC), Auckland Council (AC), and Bay of Plenty Regional Council (BOPRC) have plan policies which specifically address the management of mangroves. Auckland Council’s Mangere-Otahuhu Local Board has promoted a mangrove management initiative which has resulted in Mangroves being removed from 1.5 hectares of the harbour at Kiwi Esplanade, 4.2 hectares at Mahunga Drive and 1.1 hectares at Norana Park. The Board chairwoman Lydia Sosene noted:

“We’re really big on safeguarding the quality and future of our harbour so it’s accessible and enjoyable for everyone.

These areas are significant sites for fishing, boating and waka ama activities and residents have been pretty clear the mangroves must go”¹³

Those that offer a counter viewpoint stress:

- i. Mangroves have high ecological values.
- ii. Mangroves habitats are important to fisheries, shell fisheries, wetland bird habitat, wading bird feeding.
- iii. Mangroves play an important role in sediment retention (especially heavy metals and pollutants)
- iv. Mangroves provide protection of foreshores and property from changing sea levels with climate change.
- v. Mangroves have high the intrinsic value for national landscapes to which they contribute.

MANGROVES AS A STUDY SUBJECT

Mangroves have been a particular study of mine since 1992. A number of people have had a material impact on my thoughts, the direction of the study and the questions that needed to be addressed¹⁴.

Three fundamental questions drove the first part of the study:

- What were northern estuaries and harbours like before impacts resulting from the anthropogenic land management practices (including forest burning) associated with human occupation; first Māori and then followed by Europeans?

¹³ Alexandra Nelson – *Mangrove Removal begins in Mangere* STUFF 24 July 2015

¹⁴ The late Professors Ross Cochrane and W Kuchler; Tony Seymour a planner; Ronda Sweetman biology teacher, Andre & Robin La Bonte coastal engineers; Dr Sharon De Luca; Dave Sergeant planner and the late Tom Pomare and Maurice Kena Te Uri O Hau kaumātua.

- Are mangroves now reclaiming lost ground or are they colonizing new ground?
- What the potential impacts (both positive and negative) of mangrove growth?

The place of mangroves in Northern Estuaries

Seven clues provide useful indicators:

- The early writings of Leonard Cockayne on New Zealand vegetation.
- The writings of early settlers around the Kaipara Harbour and other northern estuaries and harbours.
- The composition of the numerous Māori meddins which are a feature of estuary shorelines and near hinterlands, especially around the Kaipara Harbour.
- The summer, migratory birds that visit New Zealand's northern estuaries and harbours.
- The lack of 'old mature' mangrove forest stands.
- The lack of tangible evidence that large area of mature mangroves stands have been destroyed in the past or that mangroves historically occupied large areas of northern estuaries and harbours.
- Publications that indicate mangrove pollen is under-represented in the sedimentary record.

In summary the study to date has determined mangroves expansion is resulting in:

- Changing the morphology of northern estuaries, especially small ones. The change is rapid and profound. Channels have become incised, and mangroves occupy the intertidal area from the mean high-water mark to channel edge.
- Ecological substitution is occurring. In particular, many of diverse near-shore rush communities have been invaded or even replaced by mangroves.
- The net area of open intertidal flats is being reduced by mangrove expansion, especially in the smaller estuaries. This reduction in area is impacting on the wading birds which forage in the open intertidal areas.
- There is an encroachment of mangroves on near water, bird rooster / resting areas. Areas. Very noticeable in the Kaipara Harbour.
- There is premature, geomorphic ageing of estuaries. Mangrove growth is impacting on the tidal prism, reducing it. Water flows in and out of the estuaries where mangroves dominate have been reduced.
- Mangrove spread and growth is impacting on human recreational values by covering sandy beaches, restricting access along the foreshore and restricting access to open water areas.

vii. Mangrove spread is impacting on traditional kaimoana areas.

Are mangroves now reclaiming lost ground or are they colonizing new ground?

First Guide:

The 'summer birds', those birds which migrate to New Zealand for the summer months, provide some interesting insights.

In the summer of 2002, an 83-year-old woman, living north of Johnston's Tunnel wrote to me noting that she was going out late, at night, with a torch in her small estuary, to pull out young mangroves. She was using a torch so she wouldn't get arrested. She explained that she needed to clear the mangroves because they were occupying the roosting and feeding areas of summer birds, and those birds were no longer visiting. It took me some time to fully appreciate the lead she had given me.

The importance of northern estuary and harbours, especially the Kaipara Harbour, to the migratory summer birds is well documented. The transformation of the Kaipara shoreline (and other harbours) is impacting on bird roosting areas, in some locations forcing marine birds inland on to grassland fringes (such as Kellys Bay).

Why do the summer birds come to New Zealand? Robin La Bonte sought help from a Canadian expert on migratory birds, confirming that: time stable roosting and feeding areas with open flight-lines and a safe harbour environment would be a base prerequisite. The harbours would have had to be highly productive in terms of food (shellfish) to support these birds.

The rapid transition which is occurring today is at odds with that scenario.

Second Guide

The composition of the numerous Māori middens which are a feature of estuary shorelines and near hinterlands around estuaries and harbours, especially around the Kaipara Harbour provide a tangible record shellfish (kaeo) productivity of the harbour. The middens a visible testament to the importance shellfish in the Māori diet (vital kaimoana). The extent of shellfish beds is being reduced both by mangrove expansion and the effects of sedimentation.

As the opportunity presents itself middens have been viewed and photographed. The open tidal area shellfish tend to dominate – tuangi and pipi.

Third Guide

While there is evidence that mangroves were present in northern estuaries and harbour there is no tangible evidence of the destruction of mature mangrove forests. Mangrove wood is extremely hard and durable, evidence would remain of wholesale destruction of mature mangrove forests.

Fourth Guide

The oral history provided by local kaumātua, who talked of the past shellfish productivity and the easy access to shellfish beds and who now lament the impact that spreading mangroves is causing namely: the loss of traditional kaimoana areas (flounder and shellfish); the loss

sandy beaches (the bird roosting areas); reduced access (mangroves have replaced rushes); an incised channel that is impeding their access to an old headland urupā.

Key Finding

There is clear evidence that mangroves are expanding their domain. This spread will have impacts.

Added questions – if mangroves are spreading what kept mangroves in check? Was there a vector that naturally controlled mangroves?

Given all of the information to hand a hypothesis has been advanced – *Moa, in particular northern coastal Moa kept mangroves in check.*

It is very evident from observing livestock grazing that juvenile mangroves are highly palatable. It is also well known that in pre-Māori times New Zealand had a very effective forest grazer in the form of the Moa. Tangible evidence exists that Moa grazed around the fringes of the Kaipara harbour, as gizzard stones have been found at various locations around the Harbour (such as Tapora and Waikare).

The question arises - is it possible Coastal Moa (and other Moa species) found juvenile mangroves easy grazing?

If it is accepted that Moa was an effective grazing vector, then the picture of a northern estuaries and harbours pre-Māori paints a very different picture to what is seen today. There would have been open vistas; if mangroves were present, they would be so in limited extent; at the head of inaccessible inlets and streams and as isolated mature trees. Their growth and spread would have been subjected to on-going natural control.

The initial removal of the grazing vector coupled with the anthropogenic land management practices (clearing and forest burning) associated with human occupation; first Māori and then followed by Europeans has created an environment which has allowed mangroves to progressively, slowly at first, but as the biomass has increased more rapidly to colonize new areas. Ecological substitution is occurring before our eyes. Perhaps, eventually, mangroves continued spread may lead to the summer birds no longer visiting northern estuaries and harbours.

Predictions

In an unpublished paper¹⁵ in 2006 I made the following predictions:

- *Mangroves will continue to 'invade' new areas;*
- *There will be a noticeable loss in biodiversity;*
- *Continued loss of traditional values;*
- *Loss of 'open water';*
- *Enhanced geomorphic aging; and*
- *Growing calls for action.*

¹⁵ Mark C Farnsworth July 2006 – *The Great mangrove Debate Continued 2006. Avicennia marina var. resinifera Conservation Icon or Opportunist Weed?*

These predictions remain valid. An extra one can be added:

- *Mangroves spread is a threat to the plethora of wading birds that frequent northern harbours and estuaries; especially the summer birds.*