MANGROVES

AND THE

MANUKAU

A resume of "The Mudlarks"
By Ian Scobie

Mangroves and the Manukau

I have had a lifetime association with the Manukau Harbour. My parents bought our bach at Orua Bay in 1945 when I was five years old but before that we stayed in a cottage owned by the Makgill family towards the western end of the bay.

We lived in Pukekohe at the time, but nearly every weekend and other holidays were spent there especially in the summer months.

This connection with the Manukau has instilled in me a deep and binding affection for this beautiful and often neglected harbour, so was it any surprise that when we retired, we bought a house on the edge of the estuary at Waiuku.

Once settled into our small maintenance free home and with some time to spare I was able to look at what lay beyond the reserve between us and the narrow but still navigable channel some 60 metres out.

Having been a fairly recent subdivision I guess I should not have been surprised to find a sizeable array of builders' rubbish, old tyres, fallen trees and all sorts of plastic and metal objects. I realized I had no option but to get down there and clean it up. The banks sloping down to the water's edge were also a disgusting mess and having removed the rubbish I decided to plant the bank in suitable native trees, hoping this would eventually prevent erosion.

Having done all this and not being one who likes sitting around doing nothing, I decided to cut out a few unsightly and misshapen mangroves. This was my undoing and the desire to cut a narrow passage out to the channel became of paramount importance.

This was great for a while as I could now launch my kayak straight out from the house and paddle up and down the channel to my heart's content. You'd think I would be satisfied with this, but no, the bug had already bitten and with a bit of egging on from my neighbors the urge to keep taking out more mangroves to provide more scope for waterborne activities soon became the most important activity in my life.

About this time there were meetings going on between council members and townsfolk regarding the neglected state of all the estuaries within the Waiuku basin area to a narrow entrance close to the Glenbrook steel mill. This is generally called The Needles.

The coastal compartment management plan was one of the main documents circulated at the time, which outlined a lot of concern held by residents, but also pointed out the overbearing, ambiguous and draconian regulations and rules that often barred the way for well meaning and dedicated residents who were prepared to spend their time and energy to bring about some improvement to their adjacent water ways.

On attending some of these meetings and talking to some of the more supportive people I started to formulate some ideas about taking this further. A guy called Sam Shackleton was incredibly supportive and suggested many ideas which were very similar to my own.

After talking to a couple of our local board and parks members it was suggested that a survey be taken of the Sandspit peninsula to gauge the extent of support for removal or management of the quickly spreading pest – the mangrove.

A survey/petition was conducted and not really surprising, but very encouraging, was the result. We had 97% in favour of the complete removal of this invasive plant. This petition was part of a submission to council regarding the CCMP. It was rejected on the grounds of one objection, namely Forest and Bird.

I wasn't prepared to take this setback lying down so using this result as a mandate from the people came the idea of forming a dedicated group who as it turned out were all retired gentlemen with similar aspirations with a wide range of expertise.

Because a lot of mangroves are virtually inaccessible except by water it became apparent that a purpose built barge was the only option to access these areas. Taking this idea to a local body and council meeting I was surprised to receive overwhelming support for the barge. The big problem was getting funding as only a small amount from council was available.

With some trepidation I approached a local timber merchant, Terry Ryan, to see if he could donate some of the plywood and timber to do the job, thinking this would be just a start. To my joy and amazement he offered to supply all of the plywood timber and stainless fastenings to complete the project. Then Mitre 10 Waiuku came on board with offers of ropes, chains, anchors and a wonderful array of equipment.

My own boat building experience was put to good use and with the great support of Sam, Dave, Ted and Morrie, to name a few, we quickly got construction underway. A lot of local businesses provided necessary equipment to complete the task and the barge was completed at my son's shed at Otaua in less than six months.

Council offered to supply the outboard motors required to propel the barge and provided much of the remaining funding to complete the project. During this time Franklin District Council applied for consent to remove 9.1 hectares of mangroves from six separate sites in the Tamakae and Rangiwhea estuaries.

By the time the barge was finished, we had already started on Site 1, the area north on the western side of the Tamakae, the main estuary to the town. We cleared this first area by tying the cut mangroves into bundles and with long ropes, towing them across the channel to the wharf where they were mulched and applied mainly to council gardens with excellent results.

The name Mudlarks came from Dave Gribble, an idea he got from the down and out people of London who scrounged for anything of value in the mud on the Thames. Dave has been a great ideas man who came up with the idea of our cradles, to contain the cut mangroves in a tight bundle ready to be stropped for lifting onto the barge via our four davits equipped with chain blocks. Many other ideas have evolved over time which have all made our methodology more efficient and time saving.

We started in June 2010 and over the next three years we completed the nine hectares allotted to us apart from two small sites that weren't of great significance to us. Over this time we removed approximately 1000 tonnes of mangroves, roughly 200 barge loads. These bundles were hauled off the barge by Ian 'Woody' McCall's tractor and mulched.

There were many favourable comments from townsfolk and business people with the waterfront seemingly back to its glory days, boaters and kayakers enjoying the new found space and people marveling at the increased bird and fish life. Rodent trapping was done resulting in 35 large rats killed in the Rangiwhea area alone.

Very soon after areas of mangroves were cleared we noticed shoals of small fish seemingly attracted by the obvious increase in food available to them, but also they appear to prefer the open water compared to being under the mangrove canopy.

Once the fish arrived, so too did the birds, such as terns, kingfishers and white faced heron, attracted by this new source of food supply. The sight of a Kotuku (white heron) and increasing numbers of royal spoonbill are an exciting development. Pied stilts, oyster

catchers and during the spring/summer period, godwits, wrybills, banded dotterel and knots along with our common gulls are gradually frequenting our cleared areas.

Dave has a photo of six royal spoonbills feeding alongside the channel leading up to the wharf and Pauline Hamilton has taken some amazing prints of birds which support our belief that we are having a positive effect in restoring the estuaries to their original state.

We had some great open days with residents turning up to flounder in the mud to pull out seedlings, a task we have to accept needs to be kept up to prevent them taking over again.

In some larger areas we have engaged the services of PD groups who have shown that when you encourage them and work alongside them you can achieve excellent results.

We have had council staff and our local MP attend one working bee and to have the Prime Minister, the Hon John Key, come on the barge to meet and talk with the guys gave us a lot of encouragement. A while back, our MP Dr Paul Hutchison brought environment minister Hon Nick Smith to make him aware of the situation. Having come from a district that doesn't have mangroves I think he was enlightened to see the extent of our problem.

Our endeavours were often rewarded with some appreciative residents offering us scones and coffee and even the occasional beer. Little did we realise while all this was happening that things were not right with the council. We were completely ignorant of the fact that there were some areas of mangroves that were supposed to be left.

The parks officer at the time had told us that they would do the monitoring in accordance with the consent. As it turned out it was probably for the best as had we known, for instance, that a 10 metre buffer zone had be left around the shore line, I doubt we would have even started.

We were all feeling great about what we had achieved when a new parks officer came on the scene, informing us that we had committed serious breaches of the consent. This was at a time when we had almost finished building the bridge over the Owens Road creek. A huge crane was hoisting the bridge into place when we were ordered to stop all work immediately and await the outcome of an inquiry into our activities. Even though council agreed that they were responsible for the lack of monitoring, they decided that all work must stop while mitigating procedures were put in place.

Can you understand the disappointment and frustration this had on our group who had given up thousands of hours of leisure time with their wives and families to slog away in the mud only to have these unfair and we feel unjust penalties placed on us?

Our operations were stopped in April 2013 and it is now well into 2014, over 14 months and we still have not had any indication as to when any new consents will allow us to get started again.

In the meantime a whole raft of compliance requirements placed upon us have been completed. These included chainsaw courses, scrub saw courses, first aid courses and having all our lifting gear certified and the barge surveyed.

We are now in the process of planting out native rushes around the shoreline to create a continuous band of wave erosion protection. Tree planting on the banks will also help prevent erosion as well as suppressing weeds and enhancing the edges of the reserves. Seedling removal is also important and until all mangroves are removed it will be an ongoing task to control them.

A new application for resource consent to allow the removal of mangroves to The Needles is being placed before council with support from Ngati Te Ata and other groups. This, in the view of the Mudlarks, is the only way we will be able to control the never ending spread of the propegules (seeds form the mature trees) and would reduce dramatically the ongoing maintenance of the estuaries.

Over the time our group has been operating, much studying and monitoring of the effects of mangrove colonisation has been done with an overwhelming realisation that they have no beneficial effect on the environment at all. In fact, quite the opposite with the closing down of areas for wading birds, fish life, the ability for Maori to collect their kaimoana (shellfish) to name a few.

Sediment seems to be a controversial subject with consultants claiming that containment of sediments by the mangroves is a good thing. The fact that a mature mangrove forest can produce eight tonnes of leaf litter per year, creating a lifeless toxic waste land within their forest, is in our view the main cause of sediment build up with unacceptable land use operations coming in second.

The Mudlarks sincerely believe that given the opportunity to clear all mangroves to The Needles, this would provide an ideal area in which to monitor and record all the positive effects so as to prove once and for all that the reasons for protecting this highly invasive and relatively speaking newcomer to our shore were incorrect.

Most of the research done to bring about this protection has now proven to be highly questionable. With so little information available on Avicennia Marina, then to use exotic species of mangroves that do have beneficial results as the basis for their findings, one must wonder what it would take for councils and the so called experts to sit back and realise maybe they have made a huge mistake.

You could be excused for thinking that with all the hard work, the research, the goodwill, the saving of hundreds of thousands of dollars to council and the desire of the Mudlarks to see an improvement both visually and environmentally, that council could try to be more helpful and sympathetic to our cause.

Maybe we are just dreaming, but would it not be marvelous for them to sit down with us and try to find an amicable and agreeable solution to our problem.

Written by Ian Scobie, chairman, Waiuku Estuary Restoration Trust Inc. (Mudlarks)

Mangroves—allies or invaders?

Conventional wisdom has it that mangrove swamps are invaluable nursery areas for marine species and that they merit our respect and protection. André and Robin LaBonté, ocean engineers who specialise in harbour, dune and beach restoration, ask whether these plants are quite the ecological "good guys" we have been led to believe they are.

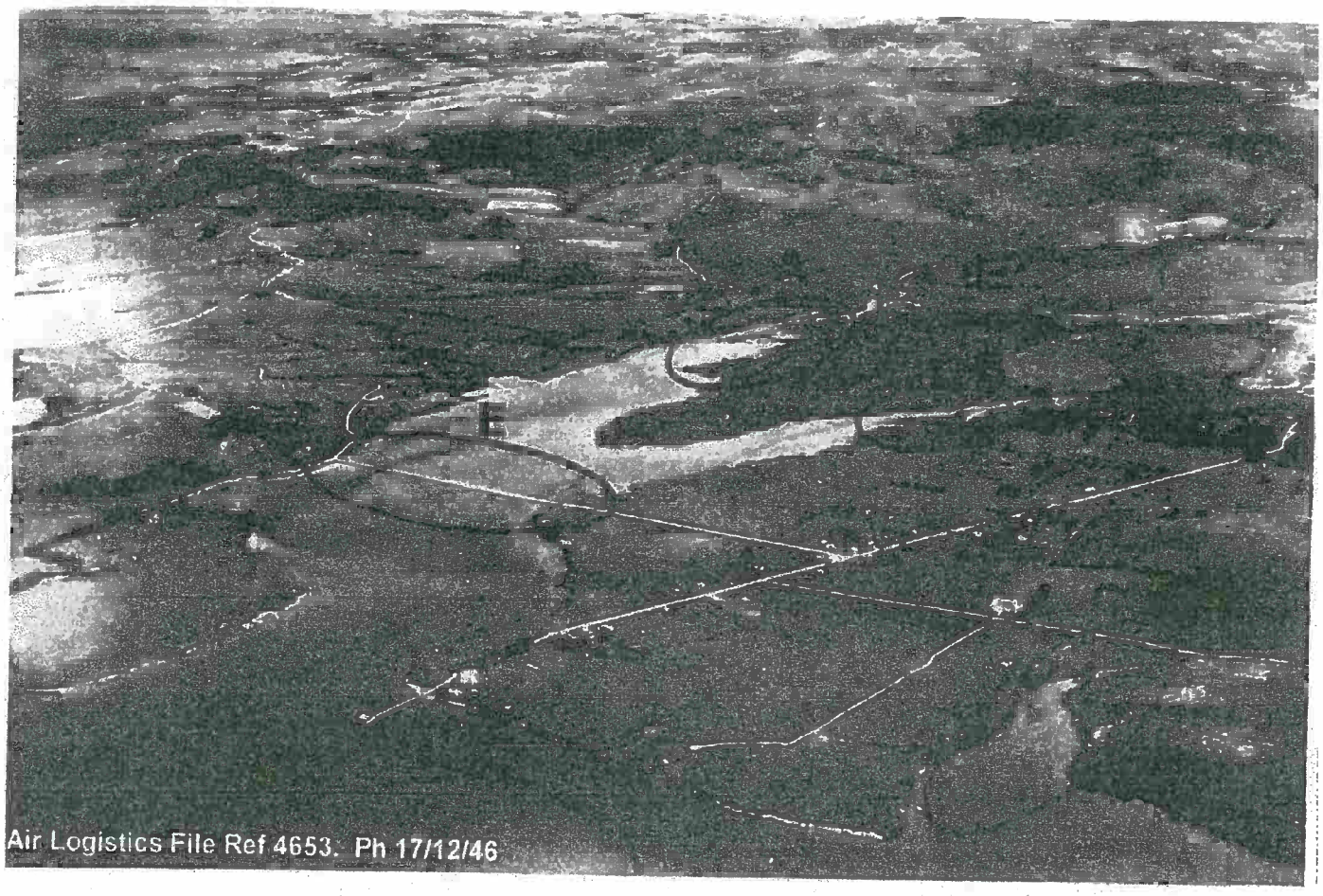
IN NEW ZEALAND, it seems almost an article of faith that mangroves are tremendously valuable plants. For the past 30 years, biology students have been taught that mangroves are a keystone species in a complex estuarine ecosystem that serves as habitat, nursery and breeding area for many terrestrial and marine organisms. In addition, these wonder plants are said to filter out sediment, nutrients and contaminants and inhibit erosion. Is all this true? Is *Avicennia marina* var. *resinifera* really a backbone species on which other species, such as snapper, depend for successful recruitment?

Having immigrated to New Zealand 18 years ago from Florida, we are familiar with tropical "mangals," as the plant communities associated with mangrove swamps are usually termed. However, tropical mangrove communities differ somewhat from our local New Zealand version. Tropical mangals can be thought of as rainforests growing in the marine environment, containing as many as 30 species of mangrove; the more tropical the area, the more species present. Associated with these plants are many marine, avian and terrestrial species that have evolved obligatory relationships with them, requiring that part of their life cycle be spent within the mangal.

In contrast, the New Zealand mangrove forest is a monoculture, and pollen in sediment cores indicates that the species (which is also present in south Australia) arrived here a mere 14,000 years ago—nothing compared with the 20 million years over which tropical mangrove forests have existed.

From reading, we quickl gained the impression that New Zealand's mangrove trees had been decimated by stock grazing causeway construction and reclamation. We were saddened that New Zealanc had supposedly lost so muc of an important ecosystem. However, in 1994, we had an epiphany while researching and collecting data for a restoration projec in Mangawhai Harbour. Review of a series of histori aerial photographs revealed an almost complete absence

Aerial photos of Mangawhai Harbour taken 55 years apart show that mangroves are spreading. A similar increase is visible in many estuaries in northern New Zealand.



of mangroves in the upper Mangawhai Harbour in 1946—a dramatic difference from today, where the same area is almost completely occupied by the plants. Residents who had grown up in Mangawhai in the 1930s told us that as children they had swum in the upper harbour and caught flounder and collected pipi from a sandy harbour bed. This caused us to wonder about the rate at which the harbour was being infilled by mangroves and mangrove mud.

When a species expands rapidly, it can be an indication of an environmental imbalance or a changed environment. Imbalances often lead to the displacement of some species by others and to habitat alterations that result in reduced biodiversity. One example is the internationally significant site near Miranda, in the Firth of Thames, which functions as a migratory wading-bird foraging site. Here, the expansion of mangroves has altered the habitat to the point where construction of artificial land-based foraging areas is being considered.

When we investigated further, we found that Mangawhai Harbour was not an isolated case. From 1942 to 1981, other harbours and estuaries between Auckland and Mangawhai experienced a 30 to 40 per cent infilling with mangroves. Indeed, most, if not all, of the northern North Island's harbours and estuaries have experienced, or are experiencing, similar rapid expansion of mangroves. In Tauranga Harbour mangrove coverage has increased 117 per cent over the same 40-year period, including in the Waimapu, Waikareao, Matua and Welcome Bay estuaries.

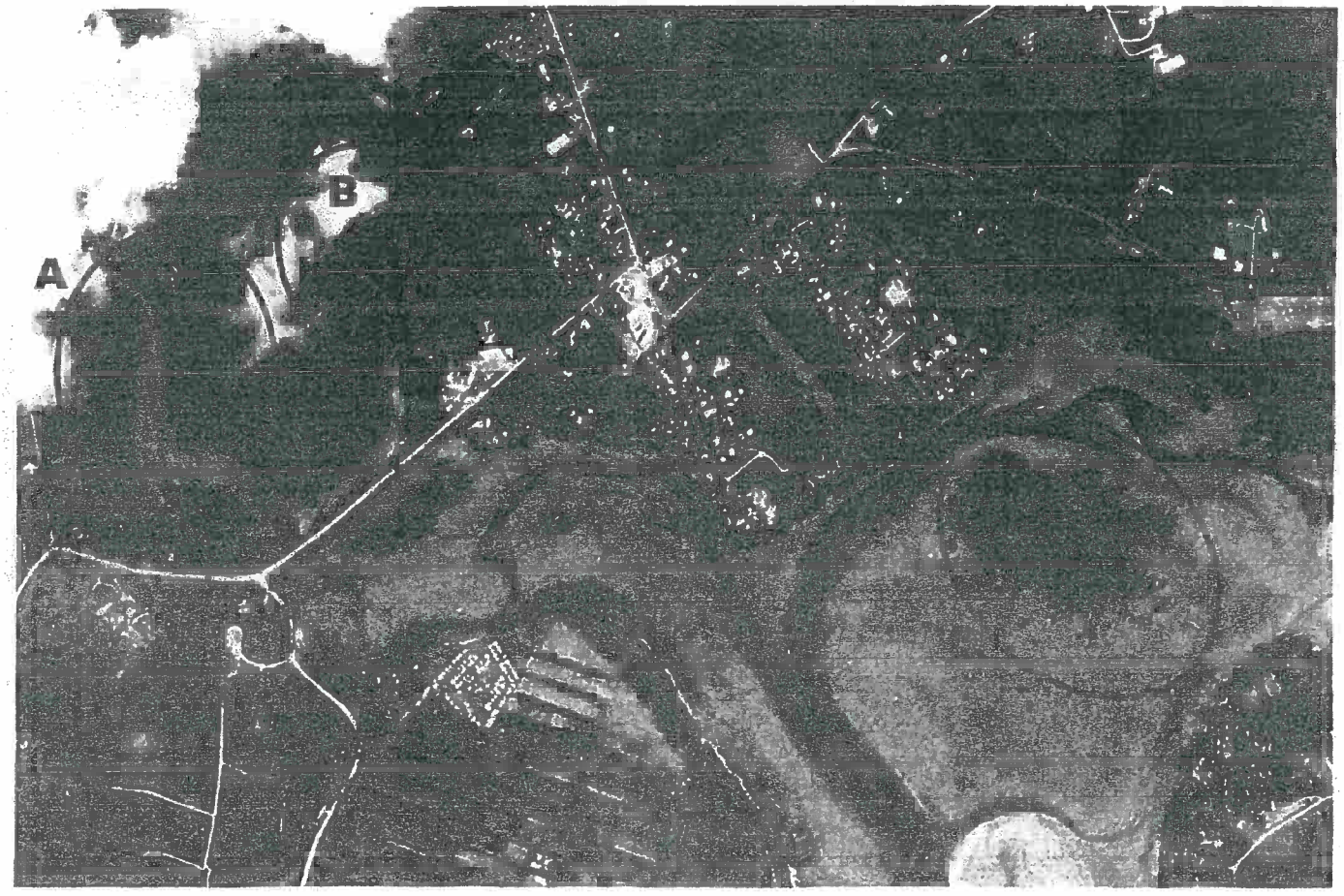
A time series of aerial photographs shows that at Welcome Bay and Waimapu new mangrove growth advances on average up to 20 m per year from an established front, and that infilling to a dense stand occurs within two years.

Other areas where concern has heightened over the rapid expansion of mangroves include Whangamata, Opoutere, Waiuku, Papakura Inlet, Raglan, Thames, Coromandel, Matapouri, Pataua, Whananaki and the upper reaches of Kaipara and Hokianga Harbours.

Why are mangroves on the increase? The onset of the expansion more or less coincided with the post-Second World War introduction of topdressing and more intense farming practices, which led to increased nutrient runoff into harbours. More recently, intensification of housing subdivisions may also be causing more silt and nutrients to enter estuaries. Mangroves probably respond to higher levels of nutrients with increased seed (propagule) production.

Mangrove expansion also needs to be viewed against the great increase in potential habitat that has become available over the past 150 years. When northern New Zealand was under forest, runoff would have contained little silt, and harbours were deep. Once the trees were removed, the land started to slip and topsoil and clay sluiced into the harbours. In consequence, these have silted up, greatly increasing the area suitable for mangrove growth.

Concurrent with the expansion of New Zealand's mangrove forests has been the development of a global protectionist attitude towards tropical mangals. During the



late 1960s and early 1970s, this attitude was adopted here, too. The premise for protection was not based on any New Zealand data, but relied on imbuing New Zealand's single-species mangrove swamps with the properties of complex tropical mangals. Since then, students have been taught that the North Island's mangrove forests and tropical mangals are analogous.

But are they? Consider their role as nurseries. Tropical mangals serve as nurseries for many marine organisms, since certain mangrove species—though not New Zealand's—have prop roots which remain submerged throughout the tidal cycle. These provide juvenile organisms such as fish with hiding places to avoid predators. If New Zealand's juvenile fish depend on mangroves, where do they hide when the tide goes out and the mangroves are exposed?

Tropical mangals and New Zealand's mangrove forests both produce leaf litter which contributes organic material to the sea's food chain. The clear blue waters of tropical seas are often referred to as "deserts" because of their lack of nutrients, so mangrove leaves constitute a significant nutrient source. New Zealand's greenish waters are much richer, hence the contribution of mangrove leaf litter to the food chain is less significant. The question arises: how did our marine organisms fare in earlier times when there were few mangroves?

Furthermore, many of the marine organisms present in the mangrove-populated upper third of the North Island are also present in the waters of the lower two-thirds of the North Island, the South Island and the Chatham Islands. Since these areas are devoid of mangroves, how vital can the contribution of mangrove forests be to the persistence of these species?

Do mangroves protect estuaries and harbours from becoming filled with sediment off the land and sand from adjacent beaches? We do not believe so. Mangrove propagules establish in soft sediments away from waves and currents. Young plants accumulate mangrove mud (which is several times more resistant to erosion than unconsolidated sediment),

but well-established plants trap very little. Instead, channelling occurs, whereby suspended sediment travels past and through a forest. The effect of the trees shifts to the reduction and alteration of water flow, which can result in increased flooding in upper-harbour areas and reduced flushing. Choking of a harbour with sediment can result. This in turn reduces the sediment supply to beaches, potentially accelerating coastal erosion.

New Zealand is the only country in the world where the mangrove is expanding its area of occupation. Is this expansion good for New Zealand's marine environment? We don't believe it is, because it appears to be occurring at the expense of other habitats, such as shellfish beds, sea-grass beds, flounder habitat and wading-bird habitat, as well as recreational areas such as sandy beaches and stretches of open water.

These concerns are shared by an increasing number of northern North Island coastal communities, whose residents have documented the rapid expansion of mangrove forests and the associated loss of other valuable habitats. As a result, a community-based mangrove working party has been formed for the purpose of sharing information on mangrove research and management. Active groups are located in Whangamata, Opoutere, Waiuku, Papakura, Raglan, Welcome Bay, Matua, Waikareao, Waimapu and Mangawhai.

Why manage mangrove expansion? In some instances, if no management action is taken, the ultimate outcome could be complete closure of tidal inlets and total loss of intertidal habitats in harbours, thereby reducing biodiversity. In a few areas there may not be sufficient time to await the results of prolonged research before habitats are irrevocably altered. In these urgent cases, pilot projects which combine research and management activity could satisfy the needs of the community while expanding our knowledge of the New Zealand mangrove's niche in the ecosystem.

André and Robin LaBonté

View taken from Riverside Drive before removal.

Mudlarks bridge across Owens Rd Creek.

Tamakae Estuary, work in progress.