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What's At Risk?

How to accommodate adequate sea-level rise allowance into development decision-making

Over the past year or so there has been a growing demand by councils for certainty and guidance on sea-level rise following the release of the IPCC Fourth Assessment Report (2007) coinciding with the development phase of second-generation district and regional plans and regional policy statements. In response, the Ministry for the Environment released a revised 2nd Edition of the guidance manual for local government on Coastal Hazards and Climate Change (2008) along with a recently-released summary of the guidance "Preparing for Coastal Change". Further, following increasing pressure from councils, Government has embarked on developing a draft National Environment Standard (NES) on sea-level rise with the objective of mandating the use of specific sea-level rise values in coastal planning and design.

However, this demand for more certainty around what amount of sea-level rise should be accommodated is contrary to what current science can provide. The Intergovernmental Panel on Climate Change (IPCC), which assessed the most recent and authoritative international science on sea-

level rise, in its Fourth Assessment Report (2007) stated:

"Because understanding of some important effects driving sea-level rise is too limited, this report does not assess the likelihood, nor provide a best estimate or an upper bound for sea-level rise."

The IPCC did report a model-based range of projected sea-level rise: 0.18–0.59 m by the 2090s (2090-99) relative to the average sea level over 1980–1999. This estimate is based on projections from 17 different global climate models, for six different future emission scenarios. These emission scenarios consider different combinations of socio-economic profiles, energy use and transport choices into the future. The IPCC also suggested that there could be an additional 0.1 – 0.2 m rise in the upper sea-level rise range if ice sheet contributions from Greenland and Antarctica were to grow linearly with global temperature change, and concluded by saying that an even larger contribution from these ice sheets this century could not be ruled out.

Since 2006, several papers with various



upper estimates of sea-level rise have emerged since the close-off date for inclusion of peer-reviewed literature by IPCC for the Fourth Assessment Report. The extent of possible upper-range sea-level rise by the 2090s will be determined primarily by the response of the Greenland and West Antarctic ice sheets in the coming decades. A summary of these recent sea-level rise estimates, mostly using empirical approaches, is provided in the MfE Guidance Manual. Possible upper-range sea-level rise values vary between 0.55 m to over 1.25 m and beyond. Despite this new information it is likely that it will be a number of years yet before there is more definite guidance as to potential sea-level rise contribution from these ice sheets over this century.

In the meantime, planning must continue, so what sea-level rise value should be used for coastal development, infrastructure and other long term decision-making?

With such current uncertainty over the magnitude of potential sea-level rise this century, and the range of different types of decision-making that needs to take sea-level rise into consideration, a one-size fits all approach is not practical, robust or economical. Rather this question needs to be

looked at in a different way, and can only be answered for any particular situation by considering what's at risk.

Consideration of risk requires a broader consideration of the potential impacts or consequences of sea-level rise on a specific decision or issue or project. Rather than define a specific climate change scenario or single sea-level rise, the magnitude of sea-level rise accommodated needs to be based on the acceptability of the potential risk for the particular issue under consideration. In other words what sea-level rise is accommodated is an output of the process rather than a starting point (summarised conceptually in Figure 1) and is based on a balanced consideration between:

- the possibility of particular sea levels being reached within the planning timeframe or design life;
- the associated consequences and potential adaptation costs; and
- how any residual risks would be managed for consequences over and above an accepted sea-level rise threshold, or if the accommodated sea-level rise is underestimated.

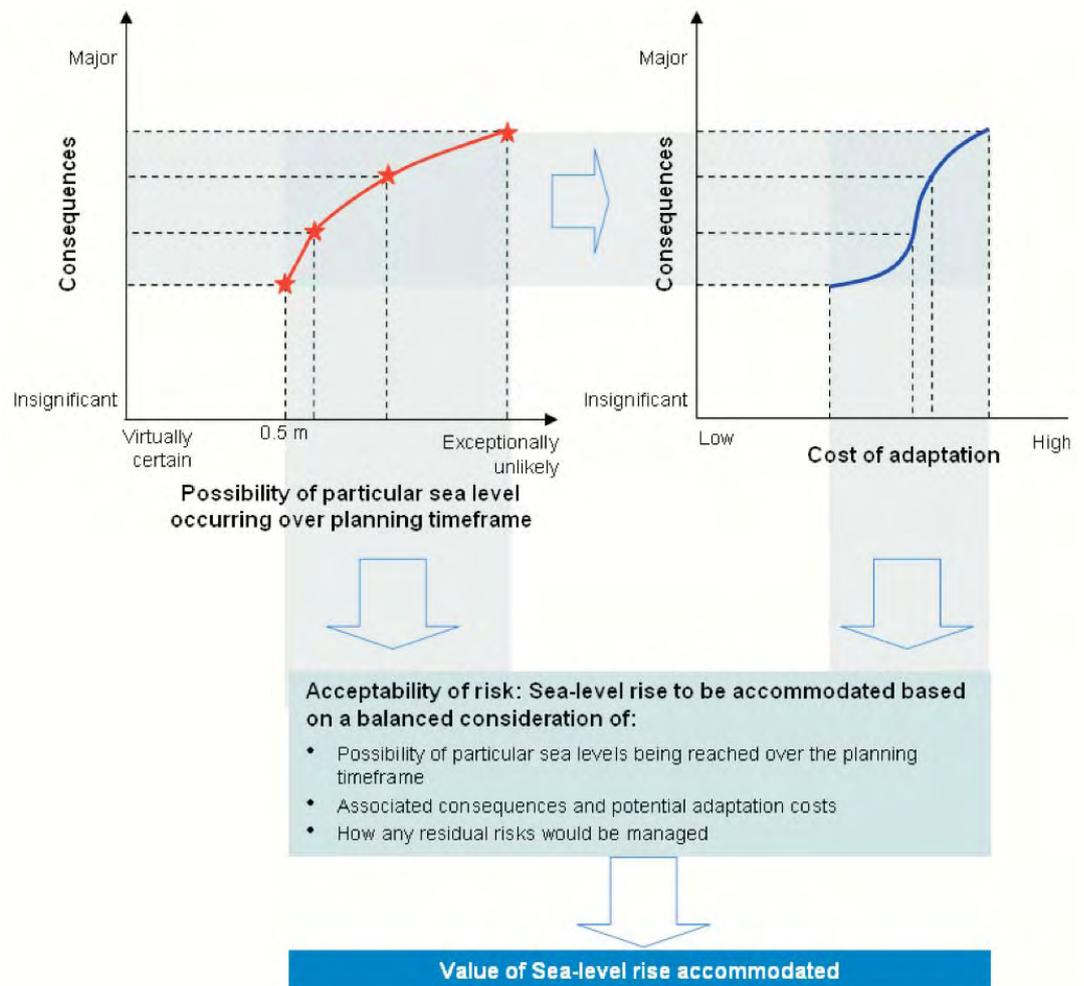


Figure 1: Conceptual representation of deciding on and accommodating sea-level rise based on an understanding and balanced consideration between the possibility of a particular sea-level rise occurring, the potential consequences and associated adaptation costs, and the potential residual risks associated with the accommodated sea-level rise being exceeded.

This is the fundamental approach underpinning the guidance provided in the MfE Guidance Manual, where for planning purposes and decision timeframes out to the 2090s:

1. A base value sea-level rise of 0.5 m relative to the 1980–1999 average should be used, along with
2. An assessment of potential consequences from a range of possible higher sea-level rise values (particularly where impacts are likely to have high consequence or where future adaptation options are limited). At the very least, all assessments should consider the consequences of a mean sea-level rise of at least 0.8 m relative to the 1980–1999 average.
3. For longer planning and decision timeframes beyond the end of this century, an allowance for sea-level rise of 10 mm per year beyond 2100 is recommended.

Essentially part one provides an absolute minimum amount of sea-level rise to be accommodated in any situation where it is a factor, with part two suggesting that the sensitivity of the potential consequences and adaptation costs to a range of potential sea-level rise values be assessed and used to inform the amount of sea-level rise to be accounted for. In adopting such an approach a much more robust incorporation of sea-level rise and associated uncertainty can

be accommodated within decision-making than can be achieved by assuming a single number. It is certainly not just a simple case of allowing for 0.8 m.

Pragmatically, there may need to be differences in applying this approach to individual infill or existing development projects in low-lying coastal margins compared with a new greenfields development. For example, applying sea-level rise values that are too high for defining minimum ground levels for infill dwellings or redevelopments can aggravate drainage issues and create aesthetic impacts on neighbouring properties, but such decisions need to be set within the strategy of an overall long-term adaptation plan for such vulnerable areas. On the other hand, higher possible sea-level rise values are pertinent to greenfield subdivisions or high-value infrastructure (e.g. airports) where the longevity of the assets, potential consequences when sea-level rise eventually exceeds the selected level and downstream adaptation costs all need to be factored into the assessment. In all cases, the economic risk of choosing a particular sea-level rise needs to be assessed hand-in-hand with the knowledge that sea level rise will continue to accelerate into the future well beyond 2100.

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News in Brief...

Future of Pest Management

The Ministry of Agriculture and Forestry (MAF) is looking at the way marine pest management operates as part of a wider project on the future of pest management in New Zealand.

Last year MAF commissioned LECG to write a think-piece on the future of pest management in New Zealand. This was to stimulate discussion on the issue, and to help develop a national strategy to guide pest management. Separately, regional councils commissioned a report from Enfocus to establish their collective view on pest management. Both reports and more information about MAF's work can be found on the MAF website www.biosecurity.govt.nz/pests/surv-mgmt/mgmt/future-project.

Currently, MAF take a lead in co-ordinating marine biosecurity through the Marine Pest Management Partnership, between MAF, Ministry of Fisheries, Department of Conservation, industry and regional councils. The Marine Pest Management Partnership's focus is primarily on building marine biosecurity capability to manage established marine pests.

MAF intend to consult with stakeholders in 2010 on what an effective future pest management system might look like.

Report Now Available on the Ecological Effects of Farming Shellfish

In August, the Ministry of Fisheries published the Review of the Ecological Effects of Farming Shellfish and Other Non-fish Species. The report was produced by Cawthron.

The report was commissioned by the Ministry of Fisheries to address concerns raised by regional councils and the marine farming industry regarding a lack of publicly available information summarising the ecological effects of farming shellfish and other non-fish species. Information provided in the review are expected to assist regional councils, communities and the marine farming sector in planning for and developing sustainable aquaculture in New Zealand.

The report looks at the ecological effects of Greenshell™ mussel farming, developing and potential non-fish species, and intertidal Pacific oyster cultivation. It also gives an evaluation of ecological risks from non-fish aquaculture, considers future developments in New Zealand aquaculture, and discusses management and mitigation of ecological effects.

To view the report visit:
www.aquaculture.govt.nz/effects_of_shellfish.php.

Shore Futures

A joint agency project was initiated as a result of concerns raised by Kawhia and Aotea harbour communities regarding the future of the shore. Issues raised included inappropriate development around the harbours, vehicles on beaches and the protection of wetlands. Some community members also felt that there were gains to be made from district plans being integrated for consistent management across territorial authority boundaries.

Discussions regarding the Shore Futures project began in September 2004 between Environment Waikato and Otorohanga, Waikato and Waitomo district councils. The Department of Conservation (DoC) was also invited to partner in the project in recognition of their statutory role in resource management. Federated Farmers joined the project in December 2006 to provide an advisory role given the significant amount of land in rural ownership within the catchments of the two harbours.

The project was overseen by a Governance Group which comprised elected representatives from each of the four councils involved and a Conservation Board representative from the Department of Conservation. A Technical Working Group made up of staff from each of the four councils, DoC and Federated Farmers advised the Governance Group. Following the first round of community consultation, a Community Reference Group was also established.

It was determined early on that the project needed to take a whole-of-catchment approach in order to recognise the connection between land-based activities and the health of the harbours.

Consultation

Following the development of a project brief and some preliminary information gathering, consultation was undertaken with key stakeholders, the local communities and iwi. This intensive information-gathering phase took place in the first half of 2007. A questionnaire was distributed to over 1,000 residents and landowners within the catchments and was also available to be completed online. Over 140 questionnaires were returned. Two open days were held in



Photo: Lens_Flare

Kawhia and Te Waitere to give the community a chance to hear more about the project and speak to council, Ministry of Fisheries and DoC staff. Nine workshops were held at various locations within the catchments which involved a combination of presentations about the project and facilitated discussions. A number of hui were held at different marae within the catchments as well as other meetings with stakeholders.

The information gathered from this consultation phase was synthesised in a consultation report, which was produced in December 2007. The consultation report provided the participating agencies with clear directions from the communities and enabled more focused and detailed information gathering to occur.

From a list of nominees gathered during the community workshops, a Community Reference Group of 14 people was established. This group met periodically, in combination with members of the Iwi Liaison Group (each iwi group within the catchments was invited to have a member on this group), to review and provide feedback on the draft material produced by the Technical Working Group. The Governance Group took this feedback into account when they met to sign off each chapter.

Shore Futures Report

The participating agencies drew together technical data on topics such as population demographics,



Kawhia Harbour (photo: Frederique in NZ)



development trends and the state of the natural environment. While this information provided a reasonable level of detail for the catchments, some gaps were also identified. A number of contracts were undertaken as part of the Shore Futures project in order to fill the information gaps, including:

- landscape and natural character assessment
- heritage assessment
- heritage management framework
- coastal development setback recommendations (for Otorohanga District only).

The draft Shore Futures 'Preferred Futures Report' was signed off by the Governance Group on 27 May 2009 and released for public feedback. The feedback period ran from 12 June until 27 July 2009. The draft report was distributed to the main stakeholders and copies were also made available at key locations within the community. It was

also available on Environment Waikato's website.

Feedback on the draft report was received from 50 people. This feedback was analysed by the Technical Working Group and a summary was presented to the Governance Group on September 2009 to assist them in finalising the report. This summary report proposed a number of changes to reflect the concerns raised by those who provided feedback.

Each participating agency will present the Shore Futures Report to their respective organisations for adoption and endorsement. The Governance Group will continue to meet annually in order to review progress made by the agencies on the recommended implementation actions.

Further information and copies of relevant reports can be found on Environment Waikato's website (<http://www.ew.govt.nz/Projects/Shore-Futures/>).

*Amanda Banks
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Profile: Amy Robinson

NZCS Waikato Regional Co-ordinator

Amy is employed at Environment Waikato as a Senior Coastal Resource Officer, a role she has filled since 2004. Her main area of work is associated with coastal processes with an emphasis on the issues associated with coastal hazard management and erosion. Amy has also recently enjoyed a stint at Beca Hamilton as a Coastal Planner.

Amy studied Earth Sciences at the University of Waikato, majoring in physical coastal processes. She completed a Masters degree in 2004 and her thesis investigated the interaction between heavy mineral placers, groundwater seepage and shoreface morphology at Muriwai Beach.

Amy enjoys the challenges of integrated coastal management and is passionate about preserving the natural character of New Zealand's coastline. She enjoys the diversity of the Waikato region's extensive and varied coast. Amy has been a member of the New Zealand Coastal Society since 2001.

Amy can be contacted at: amy.robinson@ew.govt.nz

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Port Key to Region's Future

The Port of Tauranga is a major player in INTERCOAST, a new marine research centre becoming established in Tauranga and centering on a partnership between the University of Waikato and Germany's University of Bremen.

The German Government's Science Research Foundation has approved an initial \$5 million for the INTERCOAST initiative which will focus on projects developed with input from Environment Bay of Plenty and the Port of Tauranga. There is an emphasis on preserving the local environment against development pressures and future-proofing the port as it plans to meet the needs of larger container vessels.

The projects include the impacts of harbour development on ecosystems, protection and utilisation of the harbour and coastline, management of shared and migratory fish stocks; sediment studies and habitat dynamics; and opportunities for open ocean aquaculture.

Initially, 13 PhD students studying for doctorate degrees will work on one three-year research project each.

The main driver of INTERCOAST is Professor Terry Healy from the Department of Earth and Ocean Sciences at Waikato University. "The port is applying for consent to deepen its channels to take bigger vessels," he says.

"In fact, businesses like Fonterra are telling the port that they want bigger ships because the cost per unit of export makes them more efficient. So we are working with the port to ensure it achieves what it wants but that the environmental impacts of any development are minimised."

Prof Healy says a new super port is being built

at Jade Bay in the North Sea to take the new generation of container ships, so their experiences will be drawn upon when working on Port of Tauranga development.

The University of Bremen is already one of the world's leading marine research institutions and has one of the world's top five oceanographic institutes. "It also has a centre for logistics and so there are possibilities for us to work in that field as well," says Prof Healy.

"In fact, INTERCOAST will be a catalyst for the establishment of other regionally-relevant research-based institutes in Tauranga, potentially including logistics, sustainability, food and ICT research. It will also attract organisations that are experts in the marine sciences and businesses working in the marine sector."

The INTERCOAST project will cost a total of \$20 million with local funding and in-kind support for the centre coming from the Port of Tauranga, Environment Bay of Plenty, Priority One (economic development organisation for Tauranga), the University of Waikato, and potentially other stakeholders such as the Regional Development Fund.

"This centre will ensure that Tauranga harbour and its port will be the most comprehensively researched harbour in Australasia," says Waikato University Deputy Vice-Chancellor Professor Doug Sutton. "The issues surrounding the area involve environmental and social sciences, law and management and the collaboration means we can draw on Northern Hemisphere research and experience when planning for the harbour's long-term sustainability."

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University of Bremen



Major Player: The Port of Tauranga is a major player in INTERCOAST, Waikato University's initiative in the area. Photo: Priority One.

Conference Review

Coasts and Ports 2009, Wellington

The Coasts and Ports conference held at Te Papa in Wellington, 15 - 18 September 2009, was a highly successful conference that was very well run and had an excellent mix of presentations, fieldtrips and networking. The conference is a biennial event, amalgamating the Australasian Coastal and Ocean Engineering Conference, the Australasian Ports and Harbours Conference and also the NZ Coastal Society annual conference (as occurs every six years when the conference is in New Zealand). The 260 delegates included over 100 Australians, as well as people from as far afield as Japan, Europe and the USA.

Particular highlights of the conference were the three keynote speakers. Gary LaGrange, the chief executive of the Port of New Orleans, gave a very interesting presentation on the lessons learnt through Hurricane Katrina, particularly in terms of the need for a recovery plan as well as a preparation plan. The port is one of the largest in the United States and serves many states further inland up the Mississippi River. The port managed to resume operations two weeks after the catastrophe, but has since made a raft of changes so that after any future disasters, port operations can be directed from a separate location and any staff who have evacuated can be quickly contacted. Measures that were adopted at the New Orleans port, such as bringing in ships for worker accommodation, have since been adopted as standard practice for future emergencies in America.

The second keynote, Associate Professor Ron Cox

of the School of Environmental Engineering, University of New South Wales, presented an overview of all the work underway in Australia regarding adaptation to climate change. Ron is the national convener for the federal government funded Australian Climate Change Adaption Research Network for Settlements and Infrastructure. Ron's paper covered the vulnerability of coastal areas to climate induced changes in temperature, rainfall, sea level and extreme weather, and then presented some of the options being considered as adaptation responses. The amounts of time and money committed to this issue in Australia were impressive.

The final keynote, Professor Tarmo Soomere of Tallinn University of Technology in Estonia, spoke on his research into the physics of wave propagation relating to ship wakes and rogue waves. Tarmo also showed how such work is relevant to environmental issues such as determining the best ship routes to minimise how much of an oil spill in the Baltic Sea would reach sensitive parts of the Estonia coastline.

The Mayor of Wellington, Kerry Prendergast, welcomed the conference to Wellington at a well-attended reception on the Tuesday evening that was held to open the conference's trade exhibition and which served as the conference "ice-breaker".

Following a mihimihi, the conference was formally opened on the Wednesday morning by the Minister for the Environment Nick Smith. The Minister gave a comprehensive summary of National's environmental policies and emphasised

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Figure 1: Conference attendees and wind turbines at Project Westwind, Makara.



Figure 2: The temporary wharf and cranes used to unload the wind turbines from barges to the land.

his commitment to preparing a National Environmental Standard on sea level rise.

The other conference sessions over the three days had three concurrent streams that covered a wide range of topics including coastal geomorphology, port development, structures and engineering, dredging, coastal management, ecology, sea-level and tsunami, coastal hazards, monitoring and modelling. The standard of the 117 papers that were presented was very high and generated a large amount of discussion. Full papers were published on a CD which all delegates received.

There were four options of fieldtrips on the Thursday afternoon and the weather was perfect – sunny and very little wind! The fieldtrips included the Project Westwind wind farm at Makara, the Porirua and Kapiti coast, CentrePort and the Wellington City waterfront, and a Wellington Harbour Cruise. Being in the midst of the 62 wind turbines at Project Westwind was impressive and it was very interesting to hear about the logistics of constructing an extensive road network, a temporary wharf and the turbines over the last two years (Figures 1 and 2).

A highlight of the social functions was the dinner in the Te Papa foyer with Eric Rush as guest speaker. Eric spoke about his experiences growing up in Northland and when travelling as an All Black. Few people expected that a rugby player could be so entertaining and funny. Many of us would recommend Eric if you ever need a dinner speaker. Eric topped the bill in an evening that featured a jazz pianist, a barbershop quartet and the continuity voice of Mr Grant Walker.

Congratulations and thanks to Andrew Laing and the rest of the organising committee for a fantastic job and to Avenues Event Management,

the professional conference organisers, who ran a very smooth operation! Also, thanks to the sponsors who made holding such an event possible.

*Kath Coombes, Auckland Regional Council,
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Editorial

Thank You and Goodbye

As this is the last issue of *Coastal News* I will be editor, I thought I would take up just a little bit of space to say thank you.

First of all, I would like to thank all the people who ever read an issue of *Coastal News*. You are the reason *Coastal News* exists. And secondly, thank you to all those who contributed an article during my six year term. Without you the editor's job would be impossible.

I would like to thank the lovely Lucy Brake who suggested I apply for the editor's position in the first place. Being the editor of *Coastal News* when raising a young family was perfect for the flexibility it allowed while allowing me to use my brain for things other than memorising nursery rhymes.

Thank you to all the NZCS Committee members past and present who have done a fantastic job in ensuring that *Coastal News* went ahead by sourcing and writing articles, and a big thank you to Charles Hendtlass, who is a master at jigsaw puzzles.

Finally to all those involved in looking after our coasts - keep up the good work!

Regards
Alex Eagles

Letters to the Editor

Dear Editor

Is Feeding Wild Fish to Farmed Fish Sustainable?

There are complex technical and ethical issues around the farming of carnivorous marine fish in New Zealand waters, and when I first started reading Graeme Silver's article in the June 2009 issue of *Coastal News*, I assumed that he had not read much about global aquaculture and was simply ignorant of the facts. When I realised that his primary reference was FAO Fisheries Circular No. 1018, I came to the conclusion that he was being at best disingenuous, if not wilfully misleading. Compare a few of Mr Silver's comments in the article with what he did not report from Tacon et al in Circular 1018.

Silver - Most of the world's fishmeal is currently fed to livestock

FAO - Aquaculture's share of fishmeal production has increased significantly, from 10 percent in 1988 to 46 percent of the total estimated global fishmeal usage in 2003.

Silver - Trash fish are species of small and oily fish that are generally not consumed by people

FAO - Pages 58 and 59: small pelagic fish species such as sardines and pilchards are important food for millions of people living in developing countries. Large factory trawlers from Distant Water Fishing Nations (DWFNs), including the EU, have targeted pelagic stocks to render them into fishmeal in West Africa, Peru, Chile and South-East Asia. Consequently, the availability of fish protein in the local markets has been considerably reduced, or as the FAO Circular puts it:

"Concerns regarding the long-term sustainability and ethics of using potentially food-grade fishery resources (in particular, jack mackerel, horse mackerel, hake, whiting, pilchards, sardines and capelin) for animal feeding rather than for direct human consumption have led to increased global awareness concerning resource-use efficiency in animal and aquaculture production and the consequent need to improve resource-use efficiency so as to reduce and/or minimize the negative social, environmental and/or ecological impacts of these farming systems."

Silver - "It is estimated that there is no market for the human consumption of a large proportion of this catch".

FAO - "these wild fish stocks represent a finite and valuable food source for direct human consumption, especially for the malnourished and rural poor".

FAO's policy guidelines advice to governments

specifically notes "the need for governments within major aquaculture-producing countries to prohibit the use of trash fish or low value fish species as feed for the culture of high value fish or shellfish species, and in particular within those countries where trash fish is consumed directly by the rural poor".

Silver's response to the suggestion that fish farming is wasteful, viz. "the efficiency of energy transfer between trophic levels of a natural food web is typically around 10%. That is, it would take 10 kilograms of prey fish to support 1 kilogram of carnivorous fish such as salmon or tuna", demonstrates a truly blinding level of ignorance of the complexities of marine ecosystems.

It reinforces the notion that small pelagic fish are simply trash fish whose harvest and conversion to fishmeal will have no impact on marine food webs. This is, of course, far from the truth. The small pelagic species such as sardines and anchovy are keystone species in the food web of many productive marine ecosystems. Besides affecting the availability of prey for top predators, turning one of the key elements of the ecosystem into fish meal makes the whole system far more vulnerable to collapse, especially during climatic stresses.

If there is to be a serious examination of the sustainability of caged kingfish farming in New Zealand, consideration should also be given to the carbon footprint of a process in which small pelagic fish caught by industrial trawlers off South America or West Africa are processed into fishmeal, shipped across one or more ocean basins, moved by road to fish farms, and where the end-product (which will constitute approximately one-tenth of the amount of fish used to produce it) is air-freighted to a premium market in Australia, Japan or the USA.

Silver also fails to explain that fish farming can be carried out with both carnivorous and herbivorous species, the latter being by far the most important in terms of global food security. The FAO Circular specifically notes:

"the need for governments to further encourage and promote the culture of aquatic species feeding low on the aquatic food chain that can utilize locally available nutrient and aquatic resources, including marine and freshwater aquatic plants, filter-feeding molluscs and fishes, herbivorous/omnivorous finfish and crustacean species, and aquatic species tolerant of poor water quality (such as air-breathing herbivorous/omnivorous fishes, crustaceans and amphibians; these species constituted over 87.6 percent of total aquaculture production in 2003)."

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And

“as stated in the FAO Code of Conduct for Responsible Fisheries. ‘States should encourage the use of fish for human consumption and promote consumption of fish whenever appropriate’ (FAO, 1995), and discourage the use of foodfish fit for human consumption for animal feeding.”

As an official who has had the responsibility for facilitating the public debate on behalf of a regional council regarding zoning of the Firth of Thames for aquaculture, Graeme Silver might have been expected not to give such a one-eyed account of the sustainability of feeding wild fish to farmed fish. His article does little to promote public confidence in the consultation process conducted by Environment Waikato.

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*MSc Oceanography and ex-commercial fisher,
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Graeme Silver replies

Dear Editor

As Mr Donoghue states, and I noted in my article, the sustainability questions around the use of fish meal are complex. The brief article I wrote was a synthesis of over 20 reports and papers that have considered this issue and it was not possible to provide a comprehensive discussion. For example, while Mr Donoghue promotes the virtues of farming herbivorous

species, he has failed to note that carp farming uses almost 60% of all fish feed. As carp farming makes up 44% of global aquaculture production, at over 20 million tonnes per year and growing, the increasing use of fishmeal to boost production of a largely herbivorous fish may be the biggest user of fish meal in the future.

Mr Donoghue has confused an interest piece I wrote for the *Coastal News* with a statutory process that Environment Waikato is currently undertaking. Environment Waikato is preparing a plan change that would allow new types of aquaculture such as fish farming. There is no connection between my article and the plan change process as the sustainability of fishmeal is not a relevant issue under the Resource Management Act. The sustainability of global fisheries that provide raw materials for fish meal are beyond the control of a regional council.

I will not respond to Mr Donoghue’s personal attacks and claims of bias as that would be a fruitless exercise. I invite readers to form their own opinions on those matters.

*Graeme Silver
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Environment Waikato*



We welcome your feedback!

If you would like to comment on a story published in *Coastal News*, please contact NZCS Editor Shelly Biswell (shelly@biswell.net)

NZCS Regional Coordinators

Every region in the country has a NZCS Regional Coordinator who is available to help you with any queries about NZCS activities or coastal issues in your local area.

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News from the Regions

Hawke's Bay Regional News

Neil Daykin, Hawke's Bay Regional Coordinator

Swell Events

This winter, Hawke's Bay received quite a battering from the sea, especially May through to July with roughly an event a week. A summary of the significant events is detailed in Table 1.

Figure 1 summarises swell event seasonality and frequency based on reported storm events dating

back to 1810. Although the historical data is quite detailed, it is unknown how accurate the data is or how many events are omitted. Thus the seasonality should be used with caution; however Figure 2, based on when the author has been with council and recording swell events, does show correlation.

Dredging of the lower Clive River

The 12 week contract for cutter suction dredging of silt from the lower Clive River where it shares

Event	Max Wave Height (m)	Max Significant Wave Height (m)	Max Significant Wave Period (s)	Swell Direction at Wave Buoy	Swell Direction in Open Ocean
4 - 5 May 2009	5.56	3.89	12.5	E	NE
24 - 26 May 2009	6.02	3.30	12.2	ESE	SE
12 - 17 June 2009	5.09	2.56	7.5	ENE	NE
20 - 23 June 2009	4.94	2.95	12.6	E	SW
29 June - 2 July 09	6.76	4.07	11.8	E	E-SE
13 - 14 July 2009	4.68	2.92	12.1	ENE-E	ENE-E

Table 1: Recent swell event wave buoy data for Hawke's Bay

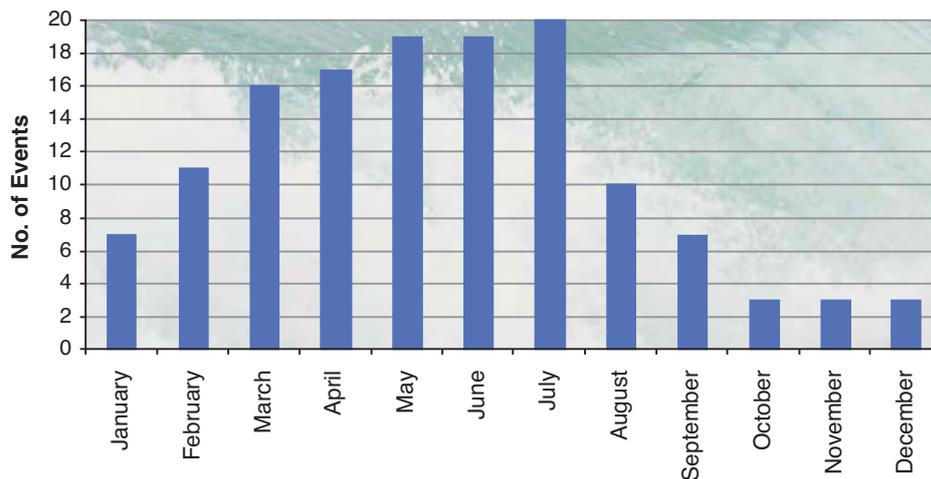


Figure 1: Reported swell event seasonality and frequency, 1810 - July 2009

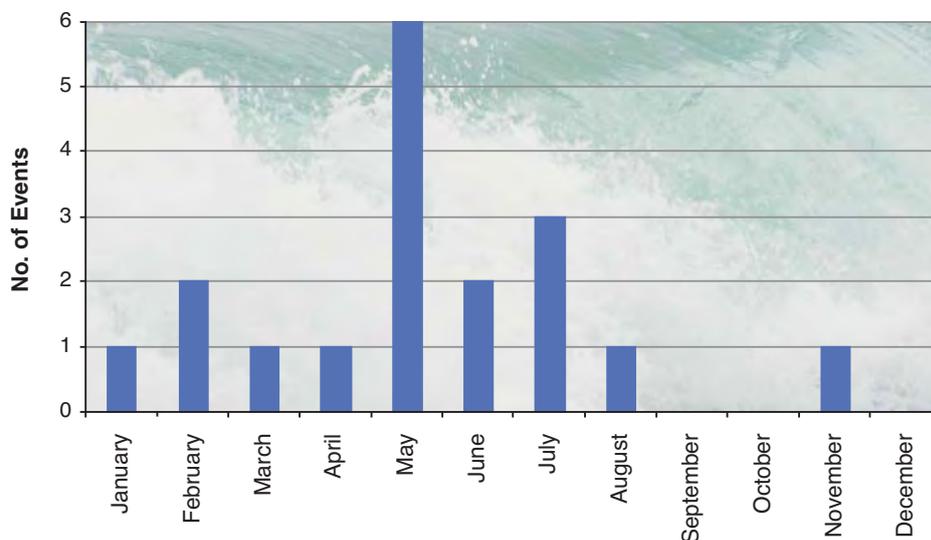


Figure 2: Reported swell event seasonality and frequency, 2005 - 2009





a common mouth with the Ngaruroro River is now complete, with approximately 56,000 m³ removed. Rowers, boaties and other river users are reportedly happy with the outcome of the dredging.

Clifton Motor Camp

The irony in the road sign in Figure 3 showing the access road into Clifton Motor Camp says it all; Narrow Road, Give Way, to the sea. The winter storms finally undermined the ad hoc defences protecting the road, resulting in their collapse, taking part of the road with it and further loss of the road to wave action.



Figure 3: Clifton Motor Camp's only access road, July 2009

This was the camp's only access, so with the loss of the road, the camp was temporarily cut off to vehicles. Negotiations with the adjacent land owner have resulted in a lease agreement being signed allowing a new metalled road across the paddock.

The ad hoc defences are to be removed with the costs covered in a three way split between the Camp, Hastings District Council and Hawke's Bay Regional Council, with an estimated bill of approx \$200,000 to remove and dump to landfill.

The new road is likely to be temporary as the result of removing the structures/rubble off the beach at Clifton as the beach will recede landward (time taken to do this uncertain) to form a more natural (flatter beach slope) and will orientate itself to the dominant wave direction (coastline will go back to a more natural curved bay shape complementing the adjacent existing unprotected shoreline curvature). This is likely to result in a loss of land, such that the new beach crest will move closer to the new road in the future.

Haumoana-Te Awanga Coastal Erosion

As per the rest of the HB coastline, the communities of Haumoana and Te Awanga haven't escaped the wrath of the sea. Following on from the June issue and the photo montage, Figure 4 below shows the sad and continued decline of 9 Clifton Road, Haumoana.

A new working party has been set up between



Figure 4: 9 Clifton Road, Haumoana

Hastings District Council, Hawke's Bay Regional Council and the local community/representation group "Walking on Water" (WOW) with the aim of finding a workable solution for the community especially on the issue of how they want their community and environment to look in the future.

HBRC has undertaken some maintenance work of a coastal groyne to the south of the Tukituki River, placing 34 8-tonne concrete akmon blocks as shown in Figure 5.



Figure 5: Maintenance work to the Haumoana groyne with 8-tonne blocks

Whakarire Ave Breakwater

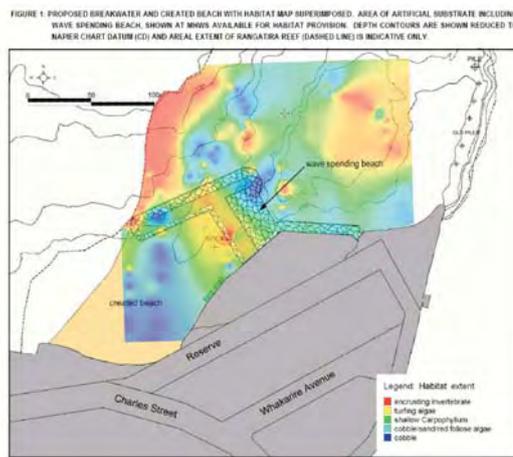
Following some public consultation, Napier City Council has revised their design for the proposed breakwater opposite Whakarire Ave and will soon be lodging resource consent applications. The new "H" shaped layout has been designed to minimise effects (wave reflection) to the left and right surfing breaks on the adjacent Rangatira Reef. The proposed breakwater is to be approximately 155 m long constructed from rock or concrete, with the leeward side being infilled with sand to create an artificial beach. Its purpose is to protect Whakarire Ave and the southern end of Westshore Beach from erosion. The footprint of the breakwater and artificial beach will result in the loss of approximately 26% of the Rangatira Reef. The breakwater structure itself is expected to create a new yet different habitat equivalent to 4% of the existing reef area. Figure 6 is an illustration of the current proposal.

Westshore Renourishment

Napier's annual Westshore beach renourishment scheme will be starting in September, a month earlier than usual due to the amount of erosion that has occurred this year. 16,100 m³ of beach material is to be carted from Marine Parade to Westshore Beach (average is 11,000 m³).

The photo from Westshore Beach (Figure 7) shows the sort of erosion and damage that has occurred, some of it in a relatively short time period. If you look closely at the 6th July photo, what appears to be a small escarpment is in fact undermining of an old road, tar seal in all, with the large cobbles in the foreground sitting atop of the road seal.

▼ Figure 7: Westshore beach following successive winter storms



▲ Figure 6: Addendum to Rangatira Reef benthic survey and assessment of environmental effects, Whakarire Aoe, breakwater (project no. eam102c)

Waikato Regional News

Amy Robinson, Waikato Regional Coordinator

Waikato Regional Estuarine Monitoring Programme

In April 2001 Environment Waikato (EW) commenced a long term monitoring programme in the Firth of Thames and Raglan (Whaingaroa) Harbour, evaluating estuarine health. The programme monitors intertidal benthic communities and sediment characteristics.

Overall, the results from sampling indicate that the Firth of Thames and Raglan Harbour are relatively healthy, with mostly high values in terms of animal abundance, biomass and diversity at the sampling sites. Differences in faunal communities found between the two estuaries are mainly the result of differences in sediment characteristics, in particular the amount of shell material and proportion of mud in the sediment. Overall, the sediments monitored in the Firth of Thames are sandy with low mud content, and the quantity of mud in Raglan Harbour is 2 – 4 times greater than that found in the Firth.

It is of concern that in both estuaries the proportion of mud increased between 2001 and 2006, with a greater rate of increase in Raglan Harbour. Fewer organisms were found at the muddiest sites in Raglan than at sandier sites, which suggests that the mud negatively effects these communities.

However, even though mud content increased, there was no evidence of declining trends of sensitive animals.

Continued monitoring is required to determine whether the increase in mud content is part of a natural cycle or a trend caused by catchment activities; and to determine how it's affecting the benthic organisms that form the bottom of the food web. If the current trend in increasing mud content in the Firth of Thames and Raglan Harbour continues, long term monitoring will detect any adverse effects on the intertidal benthic animal communities, which may have knock-on effects for fish and bird populations. Continued monitoring will allow for better management of these important ecosystems. In the future EW intends to extend the monitoring programme to include other estuaries in the region.

Talk by Professor Ying

NZCS Waikato Branch in conjunction with the University of Waikato Coastal Marine Group hosted a talk by Professor Wang Ying, Academician of the Chinese Academy of Sciences and Professor at Nanjing University. Professor Ying gave an interesting talk about large scale offshore geomorphic features associated with the southward migration of the Yangtze River over geological time.

Professor Ying is arguably the leading Coastal





Scientist from China. She has recently been honoured by the Chinese Central Government for her concept of a new port development in the ancient abandoned delta of the Yangtze River, which she originally advocated in the 1970s, and over the past few years the new Yantong Port has been constructed and is now operational. Professor Ying is renowned for her work on muddy coasts of China, including especially the coasts of the Yellow Sea and of North China, and for her advisory work on the development of the coasts in the "New Era" of China's development. We were privileged to hear Professor Ying speak.

Thanks to those who braved the cold to attend.

Bay of Plenty Regional News

Reuben Fraser, Bay of Plenty Regional Coordinator

Planning

Environment Bay of Plenty is working on releasing a draft second generation Regional Policy Statement in January next year, which will contain provisions on the coastal environment. The need to give direction to the Regional Coastal Environment Plan and four district plans in the region on coastal issues will primarily focus on occupation of coastal space and integration of activities across the MHWS boundary. Coastal hazard issues are dealt with in the Natural Hazards chapter, and other Part II section 6 matters (access, landscapes, vegetation, flora and fauna, historic heritage) are covered in the chapter currently called "Matters of National Importance". Coastal water quality will be addressed in the Integrated Water and Land Management chapter – the source of many water quality issues.

The delayed release of the revised New Zealand Coastal Policy Statement 2008 means that the management of mangroves continues to be a hot topic in the Bay of Plenty. We will have to address this in the RPS somehow.

Two draft plan changes to the Regional Coastal Environment Plan are underway. The first deals with coastal occupation charges and intends to advise that Environment Bay of Plenty will not be introducing a charging regime at present. This change is to allow for progress on other plan changes. We are still hopeful that amendments to RMA s64A will make it more feasible to introduce charges at a later date. This draft change is open for comment by interested parties now. The second plan change deals with updating the planning maps with the most recent coastal river mouth boundaries, ecological sites and outstanding landscape areas, and general improvements in accuracy by GIS over the last 15 years.

Coastcare

Coast Care identified eight sites in the Bay of Plenty region requiring rabbit control during 2009. Five of these were treated with Pindone pellets and good kill rates resulted. However, in the three eastern-most sites (Opape, Wauau and Snell's Beach) weka have recently returned to the dunes



after a long absence. After consultation with DOC we decided that Pindone pellets posed too much of a risk to the weka and so began consulting with local landowners/hapu about using Rabbit Calicivirus Disease (RCD). Permission and support were obtained so the virus was purchased and plans made. Non-toxic carrot was laid down on sand spits twice (one week apart) to get the rabbits feeding on the bait. Three days after the second pre-feed we mixed the virus solution into the carrot and a joint DOC/ODC/EBOP/hapu operations team applied the bait to the dunes. Uneaten remains were removed the following day to minimise sub-lethal exposure (the virus breaks down in UV light). Subsequent inspections have shown almost no sign of surviving adult rabbits. Unfortunately there were a few juvenile rabbits at the time of the virus application (late July, supposedly the time of year with the least juveniles). Juvenile rabbits are not susceptible to the disease and so these animals survived. The RCD control is considerably more costly than using Pindone, but has the advantage of being species-specific. However, if rabbits breed all year round on the Bay of Plenty dunes as appears to be the case then the technique is unlikely to be used again. More detail will be available in Coast Care's end of season report in late November.

Estuary Care and Land Management

The past twelve months have seen plans for mechanical mangrove removal in the Tauranga Harbour come to fruition. A consent application was lodged on the 30 March 2009 and final approval received from the Associate Minister of Conservation, Hon Kate Wilkinson, on the 6 August 2009. A total of 70 submissions were received, 66 in support and four in opposition. This achievement signals Council's strong support for Estuary Care groups.

The consent allows the removal of up to 92 ha of mangroves from a total of eleven sites the Tauranga Harbour utilising a wide tracked bulldozer with a mulching unit mounted to the front. All of the removal areas have existing consents for manual removal by the community based Estuary Care Groups.

The consent conditions principally require a precautionary approach to be taken. Sites need to be undertaken one at a time with a short period of observation before moving to the next. The

main aspects that need to be monitored are bird life (pre and post control), impact on the estuary bed (through photo point monitoring) and mulch accumulation.

A contract for the works has been offered to and accepted by Waiotahi Contractors Ltd who are preparing the machinery now to commence in January 2010. The consent does not permit an earlier start because of the bird breeding season.

The first three sites to be cleared are expected to be Matua estuary, Omokoroa Peninsula and Tanners Point / Athenree. The full removal operation is expected to take approximately 5 months.

Environment Bay of Plenty's support for community removal of mangroves and its agreement to mechanically remove mature plants from existing consented areas has been provided on the understanding that care groups will assume responsibility for maintaining the areas clear of mangroves into the future.

Any efforts to maintain areas clear of mangroves will be assisted by a reduction of further sediment entering the harbour. Community-supported catchment based sediment control programmes integrated with the protection of wetlands, forest areas and riparian margins will therefore remain a major work focus for the Land Resources Team.

It is likely that there will be on-going interest by the communities surrounding the harbour to have further areas cleared of mangroves. In determining whether support should be provided for mangrove removal beyond existing consented areas, consideration will need to be given to whether the areas, once cleared of mangroves, will revert back to sand flat and what the on-going maintenance requirements are likely to be. Recent research undertaken by NIWA as part of their Tauranga Harbour sediment study will assist with this assessment.

If you would like more information regarding this project the Environment Bay of Plenty Estuary Care Officer can be contacted on 0800 368 267 or braden.rowson@envbop.govt.nz.

Consents

A resource consent was granted by Environment Bay of Plenty and a recommendation made to the Minister of Conservation to authorise the works associated with the development of the Opotiki Harbour entrance. The site is located approximately 400 m east of the existing Waioeka/Otara Rivers entrance and the new entrance will comprise a new 120 m wide channel, two river training walls (approximately 500 m in length) and scour protection works. The existing river mouth will be closed.

Environment Bay of Plenty has received 90 submissions on an application from the Port of Tauranga to dredge up to 15 million cubic metres of material from Tauranga Harbour. The purpose of this project is to position Port of Tauranga

Limited to respond to the opportunity to accept larger vessels of up to 7,000 TEU with a draught 14.5 m and LOA of 347 m, requiring channel depth of up to 17.4 m. There are 8 submissions in support, 1 neutral and 81 in opposition. A hearing date has been tentatively set, beginning on the 23rd of November. However, Port of Tauranga has established a working party with tangata whenua to work through cultural concerns and the timeframes for this process are yet to be finalised.

Northland Regional News

Ben Lee, Northland Regional Coordinator

Review of Oyster Farm Consents

An interim decision has been released by the hearing committee for the review of consent conditions for oyster farms inherited from the Ministry of Fisheries (old leases). The only real condition of contention was a proposed condition for a bond. Much of the debate was around the level of risk and the quantum of a bond. The interim decision concluded that a financial surety is required, that the annual risk of abandonment is 0.5% (i.e. on average, 0.5% of farms will be abandoned every year), and the appropriate figure is \$9000 per hectare or \$6.95 per lineal metre of rack. The interim decision noted that a bond is the obvious method to provide the surety, but has allowed time (until the end of December 2009) for the parties to come up with an alternative (e.g. fidelity fund). Otherwise the decision will default to the bond.

Marine Pest Management Strategy

The Northland Regional Council has released a Proposed Regional Marine Pest Management Strategy for public submissions. The strategy outlines the approaches to managing various marine pests within Northland. The key aims of the proposed strategy are to add value to the work of Biosecurity New Zealand in the form of additional surveillance (with a focus on high value areas), developing joint agency responses to incursions and raising awareness of marine pests. Another key focus is to enable stakeholders and communities to address localised impacts of marine pests where practicable. Submissions on the strategy close on 20 November 2009.

Seeking Contributions to Coastal News

Your contributions to *Coastal News* are welcome. These contributions are important to keep NZCS members informed about coastal issues in New Zealand and around the world. Contributions may be in the form of notifications about conferences or workshops, short news items, or longer articles of 400-800 words, plus photos or diagrams.

For further information or to submit an idea please contact Shelly Biswell, Editor *Coastal News*, on shelly@biswell.net.

**Coastal
News**



Mangrove Management – Balancing Values

The New Zealand mangrove (*Avicennia marina* var. *australasica*) is native to New Zealand and is the most temperate tolerant of all mangrove species worldwide. In New Zealand, distribution is restricted to the north of the North Island in areas of low hydrodynamic energy.

Ecological value

Mangroves play an important functional role in coastal ecology, not only through the provision of habitat, but through their role in food webs and sediment dynamics. Research carried out over the past 20 years has shown that mangrove forests are habitat for a wide range of organisms, including fish, invertebrates and birds. Current research indicates that fish use mangroves as nursery grounds, birds use mangroves as a secretive, safe habitat, roosting areas and feeding grounds, and invertebrates inhabit both the trees themselves and the benthic sediment. Mangrove forests provide a biogenic habitat, with important structures and resources for a diversity of benthic organisms (Alfaro, 2006) and are an important part of estuarine food webs. Research has indicated that invertebrate diversity is low overall, particularly when compared to open mudflats and sandflats, eelgrass and saltmarsh. However, there are very few papers published on the benthic invertebrate community composition within mangrove forests in New Zealand. Recent research (De Luca et al., in prep) suggests that benthic invertebrate diversity is lower in mangrove forests that have been historically mistreated or modified, whereas more pristine mangrove areas may have a higher diversity of invertebrates.

Perceptions of mangroves

Historically, there has been a perception by many landowners that mangroves (and wetlands) have little value and are unproductive waste areas. This has led to mistreatment of mangroves and wetlands in the past, including infilling and reclamation, dumping of rubbish and debris, discharge of contaminants, stock grazing and vegetation clearance. Today, some of that attitude remains.

Mangrove spread

The area covered by mangrove forests in New Zealand is increasing in a seaward direction, at an accelerated rate of spread in the past 10-20 years. The expansion is viewed by many as unnatural (Harty, 2009). The factors associated with the expansion of mangrove forests are primarily sedimentation and secondarily nutrient enrichment (Morrissey et al., 2003; Lovelock et al., 2007), with climate change possibly playing a minor role.

In contrast, mangrove forests in many tropical and subtropical areas are being protected and restored e.g. Indonesia and Malaysia (Warne,



Figure 1: Beneath a mangrove stand at Rangataua Bay, Tauranga, showing a healthy population of mud snail (*Amphibola crenata*).

2007). Recent coastal events such as tsunamis and landslides have devastated coastal settlements in these countries, and it is thought that stabilisation of the coastal fringe through revegetation of mangroves will assist with ameliorating adverse effects through accumulating sediment and reducing erosion of the coastal fringe. However, mangroves in other parts of the tropics are rapidly being removed to make way for aquaculture operations, primarily shrimp ponds.

Mangrove removal

Pressure is being exerted on local and regional authorities in the upper North Island to reduce areas of mangroves for two main reasons; firstly to restore recreational and aesthetic values, and secondly to protect habitat diversity. There is significant emotion and political pressure around mangrove expansion and subsequent removal.



Figure 2: Mangroves in a creek that discharges in the Orewa Estuary. Note the presence of trees felled into the creek and the high concentration of suspended sediment in the water, originating from adjacent earthworks.





Figure 3: Mangrove stand at Waimapu Estuary, Tauranga. Manual removal has been undertaken at this site to halt the seaward expansion.

Submissions from the public in support of a recent resource consent application in the Bay of Plenty stated that mangroves are a sign of a failing ecosystem, signal the imminent death of the waterway, are a haven for rats, exclude birds, are a noxious weed and are ugly, unattractive and unwanted.

Permissions to remove mangroves have been granted in Northland, Auckland, Waikato and Bay of Plenty regions. In Northland, consent has been granted to remove many small areas of mangroves in order to retain access to the coast for recreation, and to maintain clear drainage paths, and to ensure jetties, bridges and roads are kept clear. Consent has recently been given in the Auckland region to remove mangroves from the Pahurehure Inlet and in the Waikato mangroves have been removed from Whangamata and the Firth of Thames. In the Bay of Plenty (BOP), consents were granted for the manual removal of mangroves in many estuaries, primarily in

order to restore aesthetic values and habitat diversity. The removal work has been undertaken voluntarily by Estuary Care Groups. Concerns were raised during the BOP consenting process around the potential for adverse effects from removal of mangroves on indigenous fauna, especially threatened wading birds. In response, monitoring programmes were designed and implemented, with no adverse effects detected on benthic invertebrates or birds.

A one off removal of 90 ha of mangroves using mechanical methods has recently been approved in the BOP by the Minister of Conservation, due to start later this summer. Manual removal of mangroves has proved to be an excessively onerous task for Estuary Care Groups and the mechanical removal of mangroves will permit the redirection of effort towards other catchment management issues, such as minimising the discharge of sediment from the land to the estuaries. The removal method trialed involved



Figure 4: Mangrove stand within an arm of the Orewa Estuary, showing the dense cover of pneumatophores within the channel.





the use of a mulching device attached to a bulldozer that manoeuvres through the mud on wide swamp tracks. Mangroves are cut at sediment level using this method, potentially leaving behind a stubble of trunks, seedling stems and pneumatophores. The woody stubble left behind after cutting off mangroves at sediment level will take many years to break down.

The reality of what can be achieved by mangrove removal and the long term implications are not clear. However, the return of areas inhabited by mangroves to the sand flats that landowners recall and anticipate returning may be unlikely in the short term.

In order to manage the increasing spread of mangroves, consenting authorities face the difficult task of balancing the aspirations and perceptions of the community, aesthetic values, iwi and recreational users, with scientific research, ecological values, biodiversity and catchment management objectives.

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On Campus

Coastal Research at Lincoln. Yes, Really!

Lincoln University was founded in 1878 as one of the first three Agricultural Colleges in the Empire and has remained strongly associated with land-based applied research ever since. However, there is only one staff member (Hamish Rennie) whose research and teaching is almost entirely devoted to coastal matters, it has a small, but strong interest in multi-disciplinary research on coastal and marine issues. These build primarily on its strengths in Environmental Management and Planning and in Tourism, Parks and Recreation. Much of the research is associated with research themes in the Land Environment and People Research Centre (LEaP: www.leap.ac.nz) or the Lincoln University Centre for International Development. Coastal planning and management are incorporated in environmental management, recreation and planning courses at different levels in the degree offerings.

Current and new research projects include: simulating the occupation of marine (aquaculture) space (Hamish Rennie, Crile Doscher, Roger White (Newfoundland), present and past social, tourism recreation and food gathering use/ values of the Ihutai (Avon-Heathcote) Estuary (Roy Montgomery, Su Vallance, Jo Fountain, and Greg Ryan), Lake Ellesmere (Te Waihora) management and restoration (Ken Hughey, Hamish Rennie, Crile Doscher, Magdy Mohssen), surfing, property rights, marine spatial planning and integrated coastal planning (Hamish Rennie, Rob Makgill -

North South Environmental Law), socio-ecological embeddedness of New Zealand fisheries (Ali Memon), fisheries bycatch economics (Geoff Kerr), environmental perspectives (Ken Hughey, Geoff Kerr and Kevin Moore), transport systems and ports (Chris Kissling, James Upton) and marine park and tourism management in Thailand (Stephen Espiner, Hamish Rennie, Tippawan Sethapun). Research linkages are also maintained with other universities (e.g. Ghent and Waikato Universities).

The Ihutai Estuary and Lake Ellesmere research involves working closely with Ngai Tahu, local community trusts and diverse other researchers and stakeholders (e.g., Canterbury University, NIWA, central government, regional and district councils). They will form the basis for future decisions on Ramsar status and lake opening regimes respectively. They also include a number of graduate and undergraduates in research activities. The Second Living Lake Symposium being held at Lincoln on 4th November will bring together much of the Lake Ellesmere research for community and peer scrutiny.

Hamish Rennie, Department of Environmental Management and LEaP 'Human Dimensions of Fisheries and Aquaculture' Research Theme Leader, Lincoln University

University of Waikato

The Coastal Marine Group at the University of Waikato consists of Prof Terry Healy, Dr Willem

de Lange, Dr Karin Bryan, Dirk Immenga (all from the Earth and Ocean Sciences Department) and Dr Conrad Pilditch (Department of Biological Sciences). The group has a wide range of research interests, ranging from port and harbour studies, coastal erosion, tsunami prediction, surf-zone processes and video image analysis, benthic ecology, estuarine nutrient dynamics, and hydrographic surveying.

Coastal Marine Group PhD students are working on a range of exciting projects. Bryna Flaim is investigating the issues surrounding the consenting of an offshore dredge spoil disposal. Alex Schimel is characterising benthic habitat from detailed signal analysis of the MBES backscatter. Debra Stokes is very nearly finished her studies on the impact of mangrove removal on the sedimentation regime of two small estuaries of Tauranga Harbour. Kyle Spiers is near completion of his modelling the impact of channel deepening to 18 m to allow for the future 7000 CEU vessels entering Port of Tauranga, and including a novel approach to modelling channel design efficiency to minimise future maintenance dredging. Kyle has recently moved overseas to a consulting position with COWI in Qatar, recruited by former Waikato Graduate, Dr Peter Longdill. Gegar Prasetya has essentially completed his thesis on the devastating 2004 tsunami, modelling impacts on Banda Aceh, and including public education material for minimising impacts of future tsunamis in Indonesia. Yvonne Tay is mid way through her thesis on the nutrient dynamics of the shallow sub-estuaries of Tauranga Harbour. Barend van Maanen is working with Giovanni Coco at NIWA on a decadal-scale morphological model of estuarine channel development. Rafael Guedes has recently arrived from Brazil to work on the swash dynamics on west coast dissipative beaches. On the ecology side, Hazel Needham is working on bioturbation and ecosystem function in conjunction with NIWA, Hannah Jones is working on the influence of cockle filtration on water quality and Phil Ross is working on population connectivity of estuarine fauna, also in conjunction with NIWA. Virginie dos Santos is working with Fleur Matheson at NIWA on the effects of swan-grazing on seagrass beds.

Masters students are also working on a range of stimulating projects. For example, Simon de Weppe has been measuring and modelling

hydrodynamic conditions and adjacent beach and nearshore morphodynamic effects around the artificial surfing reef at Mount Maunganui. Andrew Wood is working with Keith Smith and Vernon Pickett looking at variations in 20 years of beachface profiles collected on the Coromandel Coast. Tracey Eyre is finishing a project modelling the behaviour of sediment in the Ahuriri Estuary, Napier, in conjunction with Hawkes Bay Regional Council. Nicola Cowie is also almost finished her project studying the huge sandy sediment slug debouched from the Stony River onto the normally sediment-starved Taranaki lahar cut platform coastline, while Nor Aslinda Awang is modelling the effect of mangrove planting as a tsunami mitigation measure on a tidal flat shoreline of Malaysia. Josh Muller is starting a project to assess the impact that dune restoration has on dune and beach water tables.

The highlights of the Coastal Marine Group in 2008/2009 were the success of the INTERCOAST proposal with the University of Bremen in Germany for an international graduate school in the Bay of Plenty, and the performance of our students at the International Coastal Symposium in Lisbon, the International Coastal Engineering Conference in Hamburg and the Coasts and Ports conference in Wellington (where our students were well supported by the Coastal Society). We have also just finished the multibeam survey of Tairua for Environment Waikato. We are very much looking forward to the opportunities and interactions that the INTERCOAST project will bring to our research, and the research of our students.

*Karin Bryan, Coastal Marine Group
University of Waikato*



NZCS Mission Statement

The New Zealand Coastal Society was inaugurated in 1992 "to promote and advance sustainable management of the coastal environment".

The Society provides a forum for those with a genuine interest in the coastal zone to communicate amongst themselves and with the public. The Society currently incorporates over 300 members.

Members include representatives from a wide range of coastal science, engineering and planning disciplines, and are employed in the engineering industry, local, regional and central government, research centres and universities. Further information about the Society is available on the society's website www.coastalsociety.org.nz. Applications for membership should be sent to NZCS Administrator Hannah Hopkins (e-mail: hannah.hopkins@ew.govt.nz).



New Zealand Coastal Society Corporate Members

Coastal News



Corporate membership enables organisations and companies to become part of the New Zealand Coastal Society and support the society's mission of taking a leading role in facilitating a vibrant, healthy and sustainable coastal and ocean environment. Organisations and companies can show their support for the aims and activities of the society and achieve public recognition of that support.

Corporate membership benefits include:

- High profile listing as a corporate member sponsor on the NZCS website (www.coastalsociety.org.nz/Corporate.htm)
- Website listing of services provided by corporate organisation, contact details, and links to recent projects or corporate member website.

- One free individual membership for the person nominated as the corporate contact or any subsequent replacement alternate.
- Five complimentary copies of *Coastal News* published three times per year – March, June and November.
- Discounted registration at member rates for the corporate contact to all NZCS conferences.
- Short feature on a corporate member in *Coastal News*.

For more information on corporate memberships please contact:

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Membership Coordinator
Coastal Society Committee
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The Coastal Society would like to acknowledge our corporate members for their support:



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NIWA is New Zealand's leading provider of environmental research and consultancy services. NIWA's science provides the basis for sustainable resource management and development, and its consultancy services help clients solve problems on the use and management of:

- freshwater, coasts and oceans, atmosphere and climate, fisheries; and
- aquaculture, biodiversity, biosecurity, and biotechnology.

As at 30 June 2009, NIWA had 748 staff at 15 sites around New Zealand and another 14 in Perth, Australia.

NIWA's Maori name, *Taihoro Nukurangi*, describes our work as studying the interface between the earth and the sky.