

Contents

Limits of Acceptable Change	1
Communities Caring for the Coast	4
Word from the Chair	5
NZCS Management Committee	5
NZ's First Artificial Surfing Reef	6
Managing Coastal Hazard Risk in Tokelau	8
Seeking Contributions to Coastal News	9
On Campus: Coastal Research in NZ Universities	10
Coasts & Ports 2005 Conference Report	12
Conferences and Workshops	13
Sandy Bits	14
Community Guide to Coastal Development	16
Editorial	17
NZCS Regional Co-ordinators	17
News from the Regions	18

Limits of Acceptable Change

A stakeholder-collaborative framework for managing environmental performance of New Zealand marine farming

John Zeldis (NIWA), Malene Felsing (Environment Waikato) and John Wilson (John Wilson Consulting Ltd) present a report answering some of the questions associated with the management of marine farming in New Zealand.

Sustainable management of marine farming requires certainty for industry investment, while maintaining coastal ecosystem health and integrity.

- Can rules governing environmental impacts be agreed upon, to enable this to happen?
- If the rules were breached, what would be the response of a Regional Council responsible for managing the health of the local coastal ecosystem?
- How can we accommodate uncertainty in the science about ecosystem effects of aquaculture, when formulating the rules?

In early 2003, Environment Waikato (EW) initiated some work to search for answers to these questions. The Marine Farming Variation of EW's Regional Coastal Plan stipulates that staged development of the marine farming zone should be undertaken to ensure that farming activities do not cause significant adverse effects. NIWA was commissioned to investigate options, and came up with a novel management framework that had previously been applied in context of National Park tourist usage in the USA and dredge spoil disposal on the

Great Barrier Reef, but had never before been applied to aquaculture.

The framework is called 'Limits of Acceptable Change', or LAC. LAC is not a tool for determining resource usage levels that are 'ecologically sustainable' or that

maintain a certain 'carrying capacity'. Rather, its goal is to provide an adaptive management framework by which significant adverse environmental impacts may be prevented during resource use.

EW has now implemented a 'trigger point' framework for aquaculture management, based on the LAC concept, for the Wilson Bay Marine Farm Zone in the eastern Firth of Thames. This Aquaculture Management Area (AMA), of a total area

of over 3000 ha, harbours the largest block of marine farms in New Zealand.

In ecological terms what constitutes 'adverse' and 'significant' can be difficult to determine, and the LAC approach acknowledges that it is difficult to define levels of acceptable ecological change. Nonetheless, it still demands that acceptable degrees of change be agreed upon, while recognising that these may need to be reviewed in the light of further knowledge.

The approach provides a collaborative framework for identifying environmental indicators of change, setting levels of acceptable change, and identifying management responses when the levels are exceeded.





Stakeholder participation at Wilson Bay

The use of LAC is well illustrated by our experience at Wilson Bay. In February and May 2003, meetings were convened between representatives of EW, the marine farmers at Wilson Bay, Auckland Regional Council, Environment Bay of Plenty, and scientists from the Cawthron Institute and NIWA. Based on the best scientific advice available for the Firth of Thames ecosystem, NIWA recommended ecologically acceptable levels of phytoplankton depletion and seabed impacts by marine farming at Wilson Bay. The recommendations were peer reviewed, and meeting participants considered all information available to arrive at draft acceptable limits of depletion resulting from marine farm development.

NIWA's scientific advice on the water column was based on extensive ecosystem research in the Firth and Hauraki Gulf made in the late 1980s. This work showed that the Firth ecosystem is resource-limited: natural changes from year-to-year in phytoplankton levels causes large changes in zooplankton population levels, which in turn, causes large changes in larval fish abundances. Based on this, NIWA proposed that phytoplankton was an important fundamental resource and that some control over its depletion by mussel farming was desirable. The trigger point recommended was that phytoplankton depletion arising from development at Wilson Bay should not exceed 20% over 10% or more of the Firth. This addressed Council requirements that effects be considered with respect to the total Firth ecosystem. This trigger point is conservative: it limits

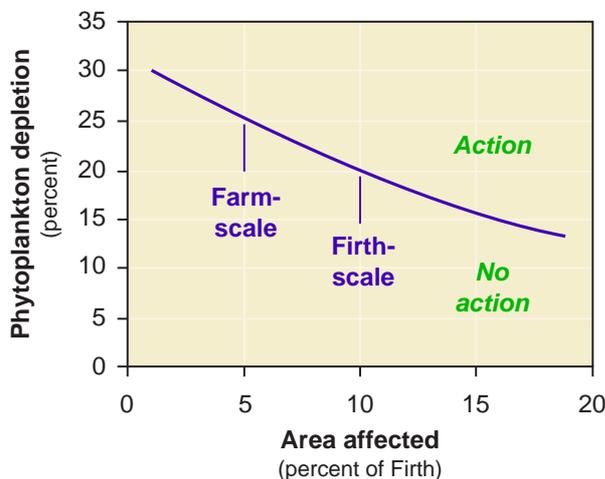


phytoplankton depletion to levels well below those known to cause large effects on higher parts of the food web, both in terms of magnitude and spatial extent. The trigger point was not proposed to achieve a certain level of 'carrying capacity', but was 'a line in the sand', set to prevent unacceptable environmental change. After deliberation, the '20% /10%' trigger point was agreed upon by the participants.

An additional outcome from the deliberations was that there needed to be a more 'local' trigger level implemented, that considered effects in the immediate farm vicinity. This recognises that while effects were ultimately to be considered with respect to the whole Firth ecosystem, they were actually measured in the immediate vicinity of the farms, primarily by the water quality monitoring programme stipulated by the resource consents. This

'farm-scale' trigger level states that depletion should not exceed 25%, in an area twice the size of the AMA and measured with respect to when the farm was not stocked. Other measures relative to unimpacted surrounding waters were also implemented. The Figure below shows the relationships of the Farm- and Firth-scale trigger levels. The framework has been formalised within environmental management of the Wilson Bay development, and includes a clear step-by-step set of management responses should the trigger levels be exceeded. Responses range from convening a meeting to consider the evidence further, to commissioning further investigations, to reviewing consent conditions.

The issue of monitoring raises another important feature of LAC - its rules must be based on



The Farm-scale and Firth-scale trigger levels for phytoplankton depletion. For each trigger, arrows point to locations in the depletion-by-spatial extent space, which trigger a management action.

Management actions are schematised simply here, but in practice can range from consideration of existing information, to further field investigation, to change in management practice and consent conditions.

ecological indicators that are environmentally significant but also are practical and cost effective to measure. As well as phytoplankton, various seabed indicators of animal abundance and sediment characteristics have had trigger levels applied. These indicators and associated trigger levels were also selected in consultation with stakeholders. They are currently monitored with periodic benthic video and grab surveys within and outside the farm zone.

Adaptability and Transparency

An important point is that LAC indicators and associated trigger levels will be modified should improved scientific information become available. This is where information on 'sustainability' or 'carrying capacity', obtained through ecosystem research, can be added. The LAC framework therefore allows for adaptive management in a number of different ways and time scales.

Finally, a great advantage of LAC is the transparency of the process. In the Wilson Bay case, industry, environmental managers and science providers all took part in discussions that resulted in both the proposed trigger points and



the anticipated management responses. The process designates indicators for environmental performance and associated trigger levels in advance of development, and clearly delineates management responses should these trigger levels be exceeded. It thus provides certainty for stakeholders, all of whom value the natural resources involved in the marine farming industry.

This is the first time the LAC framework has been implemented in the context of aquaculture, and it is a great 'first step' for aquaculture management in the Wilson Bay AMA. To ensure its continued relevance, and to ensure we

document and learn from experience, EW, in association with stakeholders, intends to instigate regular reviews of the variables monitored, and the trigger points. Our experience with LAC provides a valuable reference for management of large-scale aquaculture elsewhere in New Zealand, and internationally.

For more information, contact: John Zeldis at j.zeldis@niwa.co.nz, Malene Felsing at malene.felsing@ew.govt.nz, or John Wilson at jaw.sealord.co.nz.



Communities Caring for the Coast

Coastal News



Coast Care A Winner

Coast Care Bay of Plenty's fantastic work in restoring coastal dunes has been recognised by the New Zealand Plant Conservation Network (NZPCN).

Environment Bay of Plenty was given a national award for the programme, which it runs in partnership with the four coastal district councils and the Department of Conservation.

NZPCN president Ian Spellerberg described the regional council as "the New Zealand council making the greatest contribution to caring for plants -the contribution they are making to sustainable coastal management is world class."

Environment Bay of Plenty already supports 61 groups, including the 28 very successful Coast Care groups. The number is likely to grow considerably over the next few years.

By supporting care groups Environment Bay of Plenty enables people in the community the opportunity to make a real difference to their environment.

The council's mission statement is "Working with our communities for a better environment" and these groups provide an outstanding example of this in practice.

Green Ribbon Winners 2005

The Guardians of Fiordland's Fisheries and Marine Environment Inc have been named as the winners in the Minister for the Environment's Green Awards caring for our water - fresh and sea water category in 2005 for developing their own community-led strategy to sustainably manage the Fiordland (Te Moana o Atahenua) Marine Area.

Formed in 1995, the Guardians are a group of community representatives passionate about the Fiordland marine area who have worked with the community to develop a strategy to minimise and control human impacts within the world-famous fiords of the south west of the South Island. As a result of their work a special bill - the Fiordland Marine Management Bill 2004 is being implemented by the government which will include:

- the creation of a new geographical area known as the Fiordland (Te Moana o Atahenua) Marine Area - encompassing 882,000 hectares of sea including Milford and Doubtful Sounds;
- the establishment of a special statutory committee known as the Fiordland

Marine Guardians, to advise the government and Environment Southland;

- a community-led sustainable management regime;
- eight new marine reserves totalling 9,520 hectares; and
- changes to fisheries management and coastal planning.

Another coastal action group - Waikaraka Estuary Managers Inc of Te Puna, Tauranga - were Highly Commended in the community action for the environment section of the Green Ribbon Awards for restoring the Waikaraka Estuary. The residents got together in 1997 united by their concern that mangroves were taking over the estuary. Since then the group has developed a catchment management and ecological restoration plan in conjunction with a number of agencies, science organisations and, in fact, the entire local community.

MEG Saving the Dotterels in Waikawau Bay

Thanks to the tireless work of the Moehau Environment Group, or MEG as they are affectionately known, it has been a wonderful nesting season for the dotterels at Waikawau Bay. Except for a couple of big sea-big tide washovers on the northern sandspit taking out some nests, the fledged chick survival rate is the best to date.

Ten of the twelve chicks have so far survived. This year far less predators have been caught (especially stoats and hedgehogs) than in the previous three years.

The Coromandel Peninsula as a whole has seen a 70% increase from 174 birds in 1996, to 274 in 2004, according to the last census in October.

MEG is hoping for even greater things for the 2005-2006 breeding season with the increased predator trapping taking place in the MEG Kiwi Sanctuary, which surrounds Waikawau Bay.

Word from the Chair

As always the Conference Committee have worked extremely hard to bring us another successful conference, and this year's has been no different. With a great variety of thought-provoking speakers, an excellent choice of field trips and a wonderful venue in Tutukaka, it once again proves that even in isolated locations we can offer our members a value for money industry conference that inspires and motivates. On behalf of all the NZCS members and the Management Committee I would like to pass sincere thanks onto the conference organisers.

The organising committee for the NZCS 2006 Conference in Kaikoura has now been set up, led by Brodie Young and Justin Cope. We look forward to another excellent conference – with a very personal Canterbury touch!

Still on the topic of conferences, the Coasts and Ports 2005 Conference in Adelaide was very successful. There was a wide range of very technical speakers and I have written an article in this Coastal News, which provides you with some more detail on the conference. It was great to see over 20 attendees from New Zealand and I know the organisers were very pleased with the turnout. I have talked before of the reciprocal arrangement NZCS has with our Australian cousins and how we do financially benefit directly from any New Zealand registrations – I will advise you of the final outcome of this once the conference accounts are completed. The Coasts and Ports 2007 Conference will be held in Melbourne and the NZCS Management Committee are currently working on plans for our turn at hosting in 2009. If you have any ideas or

thoughts on that we would welcome your inputs.

Those of you who attended the AGM at the NZCS Conference in October will be aware that the Management Committee presented a new structure for the Corporate Membership. This was discussed personally with each of our current Corporate members to explain the new proposed structure and to gain their support for the changes. These are now approved and we will be promoting the new membership structure to those corporates and to hopefully encourage more corporates to join NZCS. If you would like more information on this please contact David Phizacklea, NZCS Membership Co-ordinator.

Once again it is great to see that Coastal News packed with interesting and thought-provoking articles. This newsletter really does provide a great opportunity for the NZCS members to read about what industry people around NZ are involved in and pick up some ideas for their own work. I know the NZCS Management Committee and Coastal News Editor work hard to bring you new and diverse articles and items and always welcome contributions.

If you have any comments about the NZCS I would be happy to hear from you directly and am interested in any thoughts from the members. Otherwise I hope you enjoy the coast that we all work so hard to look after over the coming summer.

*Lucy Brake
Chair*

*New Zealand Coastal Society
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**Coastal
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NZCS Editor Alex Eagles (penguins@clear.net.nz).

New Zealand's First Artificial Surfing Reef at Mount Maunganui

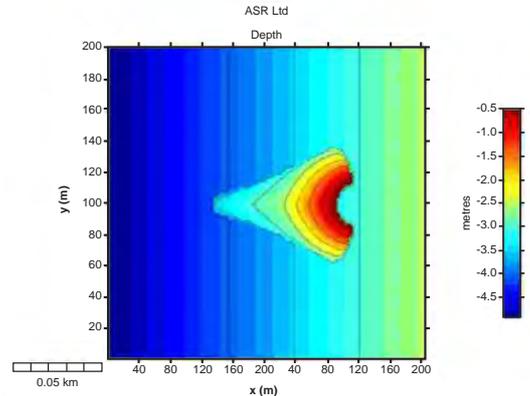
After nine years, the proposed artificial surf reef at Tay Street, Mount Maunganui, is finally due to start construction in October 2005. The Mount Reef will be a small delta shaped 'A frame' surfing reef that will provide 50 metre right and left-hand rides.

The artificial reef is designed to have a primary purpose of creating high quality surfing waves. A database showing the shape of world-class surfing breaks has been utilised to design the reef with sophisticated computer models, like those used for racing yacht design. The reef will be 250 m offshore and will be built to 0.4 m below the lowest tide level, it will not be visible above water. It has been designed to produce fast peeling, tubing, right-hand and left-hand waves, suitable for competent and experienced surfers. The reef will also be extensively monitored for its performance in terms of surfing wave quality, biological enhancement and socio-economic impacts.

An added feature of the reef is the ability to remove it if necessary. The research of the Artificial Reefs Programme (ARP) has found that effects of an offshore submerged reef are positive and minimal, however, by designing with removal in mind a precautionary approach can be taken. The findings of this research will push New Zealand further ahead in the field of multi-purpose reef design and the application of positive coastal technology.

Mount Maunganui was chosen as the location for New Zealand's first artificial surfing reef for several reasons. The Mount is New Zealand's 'Surf City'; it has a large population of resident surfers and a thriving surfing industry.

The coast east of Main Beach receives swell for most of the year; however, the sand banks are constantly changing which means there are seldom consistent high-quality surfing waves at



one spot. The placement of an artificial surfing reef would create a consistent high-quality wave at a known location.

The usual planning and consent processes have been undertaken with a full assessment of environmental effects, public meetings and community consultation to involve all interested and effected parties. The Mount Reef Trust gained consent approval in 2002 after winning a High Court challenge.

How will the reef be designed?

A contour diagram of the Mount reef is shown below (waves coming from left to right). The reef will be constructed in around 4.5 m water depth. The reef crest (shallowest point) will be about 0.4 m below lowest astronomical tide. The total volume of the reef is about 5000 m³.

What will the Waves be like?

With a ranking on the '1-10 ASR Wave Scale' of 6-7, i.e. suitable for top amateurs, the ride length will be about 50 metres on each side and the breaking wave will be 'hollow', particularly on low tides.

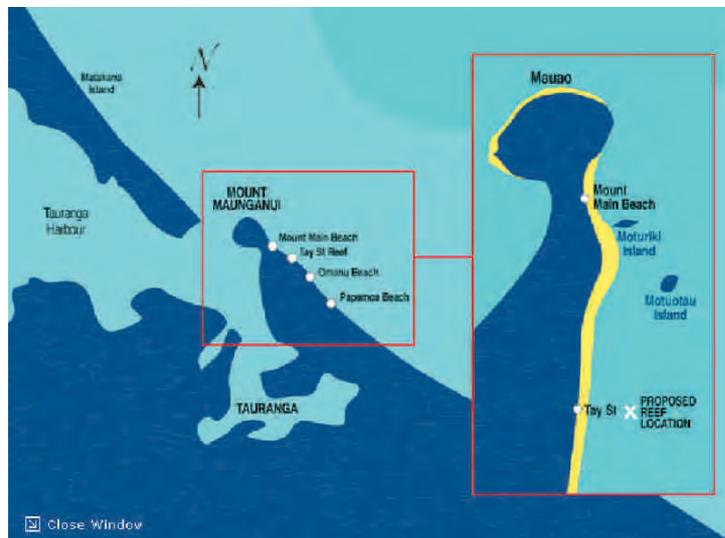
Reef designer Dr Kerry Black, says the A-frame has always been one of the classic rides. "The Mount Reef will be a small version of Pipeline in Hawaii - with a fast wave on one side and a slower wave on the other depending on swell direction.

Fifty surfers at a time should be able to use the reef taking off in two directions. It will be spectacular. It's the ultimate for surfers and after all this time the Mount will finally have a leading reef."

How will the Reef be built?

The reef will be made from a series of modular custom-designed geotextile sections each

Coastal
News



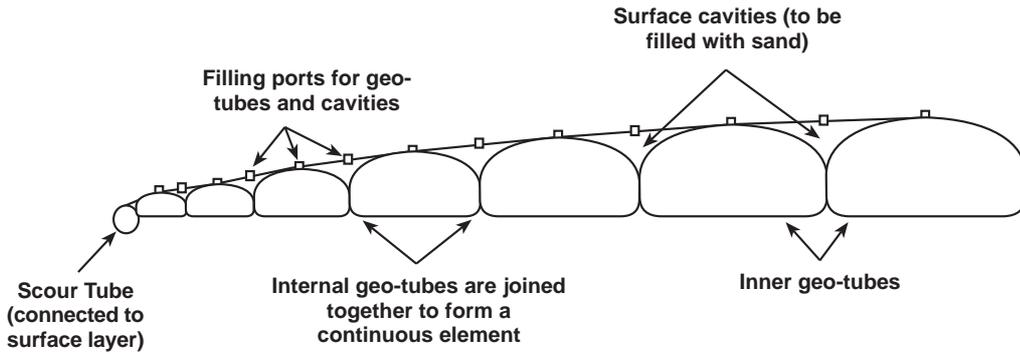
averaging 15 metres wide which will be systematically dropped in place from a dredge with satellite position fixing to make up the shape of the reef. Each bag will hold between 27 to 300 m³ of sand.

Each section consists of a series of connected geo-tubes with an overlying geo-textile 'cover'. Each internal geo-tube in the section will be hydraulically filled on the seabed with a sand/water slurry through a series of filling nozzles on the top of each section.

The gaps between the geo-tubes and the overlying geo-textile 'cover' will then be filled to eliminate ridges in the top of the reef and thereby form a smooth surface for surfing.

A smaller geo-textile tube ('scour tube') will also be attached to the front of the reef and dug into the seabed to provide toe protection for the structure and prevent sand being scoured from under the front of the reef.

For further information see www.mountreef.co.nz.



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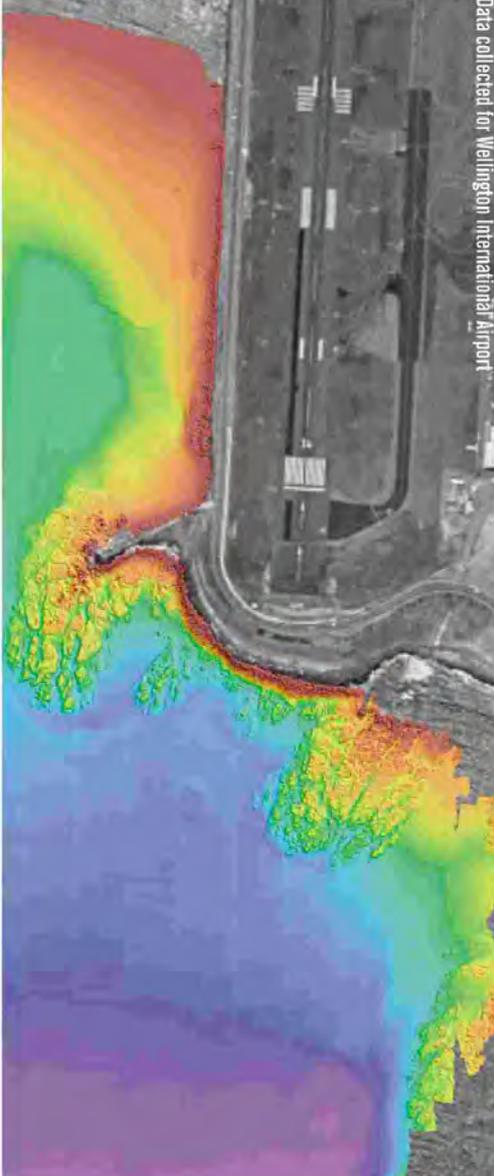


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Managing Coastal Hazard Risk in Tokelau



Figure 1: Quickbird satellite imagery of the inhabited motu on Nukunonu atoll. The width of the motu is about 100 m wide. (© 2005 DigitalGlobe, Inc. All rights reserved).

As the havoc wreaked by tropical storms on the other side of the world fills the pages of our newspapers NIWA's Doug Ramsay reminds us that natural disasters are also occurring closer to home here in the Pacific.

On 25 February 2005 Tropical Cyclone Percy affected the three atolls of Tokelau. The cyclone was of category 3 intensity as it passed around 100 km to the south west, intensifying further as it passed through the northern Cook Islands with sustained winds measuring from 178 to 249 km/hr. The cyclone resulted in widespread damage on the atolls of both Tokelau and the northern Cook Islands as a result of both strong winds and inundation due to high waves and water levels.

Tokelau is about 600 km to the north of Samoa. It is one of the smallest Pacific Island nations, consisting of just three atolls, Fakaofu, Nukunonu, and Atafu. Total land area is approximately 12 km² and land elevation rises to no more than 5 m above sea level. The approximately 1500 inhabitants live on four small 'motu' (atoll islets), two on Fakaofu, one on Nukunonu, and one on Atafu. The inhabited motu are all on the western (leeward) side of the atolls, and are little more than the width of a typical coastal hazard zone in New Zealand.

In the aftermath of Cyclone Percy, the

National Institute of Water & Atmospheric Research (NIWA) is working with the United Nations Development Programme (UNDP) and the Government of Tokelau to develop ways to reduce coastal hazard risks within each of the Tokelauan communities.

Community workshops were held on each atoll to identify issues and underlying causes of coastal risk and how such risk was managed within each community. This identified a range of activities that had positive and/or negative influences on coastal hazard risk on each atoll. One example of a positive approach that has successfully reduced



Figure 2: Meeting with the women's group (Fautupaepae) on Atafu atoll. (NIWA)



Figure 3: A typical house built with Tokelau Government housing grant assistance. The water tank raises the floor level about 1 m above the ground level reducing the risk of inundation. (NIWA)

damage from cyclone inundation is a housing loan scheme operated by the Tokelau Government. This scheme has allowed families to build more robust residential accommodation. Part of the grant has to be used to ensure each house had its own roof water collection system.

To save costs, concrete water tanks were typically incorporated within the foundations of the housing. This has raised floor levels to around 1 m above the surrounding ground levels. Whilst not intended as a cyclone risk reduction measure, cyclone inundation damage has reduced since the introduction of the housing loan scheme.

At first, the communities on each atoll expected that our project would focus on constructing linear seawall structures around each motu. However, we also used the workshops to discuss the long term effects of building such structures, and to identify where structural approaches would be appropriate within a wider range of strategies to reduce coastal hazard risk. This covered:

- minimising and mitigating human impacts on the natural coastal defences;
- village planning accommodating coastal hazard considerations within the decision-making processes;
- reducing risks through building design; and
- more appropriate protection measures.

The community discussions also identified the need to ensure that activities could be initiated and implemented at individual or community

levels, would build on past on-atoll experience of risk mitigation measures, and be sustained without the need for significant external assistance. The limited equipment and materials available on each of the atolls, and the need to minimise and streamline manual labour requirements were also important considerations.

Although the project is still ongoing, in developing such an approach within each community, it is hoped that a more proactive and sustained programme of risk reduction measures can be achieved, that will over time increase resilience and build adaptive capacity not only to episodic cyclone events but also to the longer term impacts relating to climate change and sea-level rise.

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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 advertisements, notification 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 Alex Eagles, Editor *Coastal News*, on penguins@clear.net.nz.



On Campus: Coastal Research in New Zealand Universities

**University of Canterbury, Department of
Geography Coastal Studies Group**

Staff Activities

Dr Deirdre Hart joined the Department as Lecturer in Coastal Studies in July 2004 and is currently researching interactions between low-island and reef platform hydrodynamics, sediments and ecology in Torres Strait in collaboration with Colin Woodroffe.

Low reef islands are essential in providing living space and agricultural land for heavily populated nations throughout the Pacific Ocean while the surrounding ecosystems provide food and building materials for island inhabitants and are frequently used for waste disposal. Pacific reef flats and islands have formed over the past 6000 years under relatively stable sea levels and are, thus, potentially very sensitive to sea-level change.

Deirdre's reef research focuses on understanding platform-island systems and forecasting adjustments to altered environmental conditions such as sea-level change through the integration of multiple disciplinary approaches.

Deirdre is also engaging in research on coastal freshwater lagoon systems on mixed sand and gravel coasts, Lyttelton Harbour sedimentation patterns, and is assisting Korean researchers in examining the role of water-column stratification in the formation of algal blooms.

Emeritus Professor Bob Kirk is contributing to graduate supervision and coastal management teaching in the Department and is active outside the Department in his role as a Regional Councillor and as Chair of the Environment Canterbury (ECAN) Coastal, and Navigation Safety Portfolio Committee.

Adjunct Dr Martin Single is working on fast ferry wake management issues in the Marlborough

Figure 1: Coastal erosion on Warraber Island, Torres Strait

Sounds, and on lakeshore management for hydroelectric power generation companies, including long-term strategic planning for sustainable resource use and the avoidance of adverse environmental effects.

Adjunct Derek Todd continues his teaching contributions in the areas of coastal hazards and resource management, and to supervise graduate research projects in these areas. He is also involved in consulting on resource management and consents for coastal projects.

During 2005 the Department has benefited from hosting Professor Allan Williams from the University of Glamorgan, Wales, as a visiting Erskine Fellow. Allan is a well-published expert in a range of coastal areas, including integrated management, litter and pollution in the coastal-marine environment, cliff erosion, and coastal scene assessment.

Student Research

Over the past twelve months the following coastal theses have been completed at Canterbury:

Maree Hemmingsen (PhD): Reduction of greywacke sediments on the Canterbury Bight coast, South Island, New Zealand. Maree is currently providing technical and consulting expertise to Christchurch City Council and Nick Davidson QC regarding the City's sand dunes, teaching about integrated resource management through UC-Opportunity, and liaising with tangata whenua on coastal issues.

Joanne Stapleton (MSc): Form and function of the Waihao-Wainono Barrier, South Canterbury. Joanne is currently working in natural resource



Figure 2: Joanne Stapleton getting down to business in a digger bucket inside the Waihao-Wainono Barrier

planning at Environment Canterbury.

Javier Leon Patino (MSc): Coastal evolution of Shelly Beach, Otago Harbour: a composite approach to examining the morphodynamic behaviour of a human-modified sand spit. Javier is currently working for a Peruvian company consulting in GIS and coastal-marine management while applying for PhD scholarships.

Michael Davies (Hons): Baths, boats and bathing: changes in beach recreation and the management of Corsair Bay.

Daniel Gargiulo (Hons): Amberley Beach renourishment project performance.

Amy McEwan (Hons): The effect of coastal subdivision at Rarangi.

Currently there are a number of research students working on coastal theses in the Department, including:

Rijal Idrus (PhD): on an integrated management approach to sustainable development of coral reefs and mangrove resources in South Sulawesi, Indonesia.

Tim Nolan (PhD): on beach cusp morphodynamics on South Island beaches.

Iain Dawe (PhD): on longshore sediment transport in mixed sand and gravel shorelines.

Gemma Knight (Hons): Tsunami run-up and inundation hazard on dune coasts.

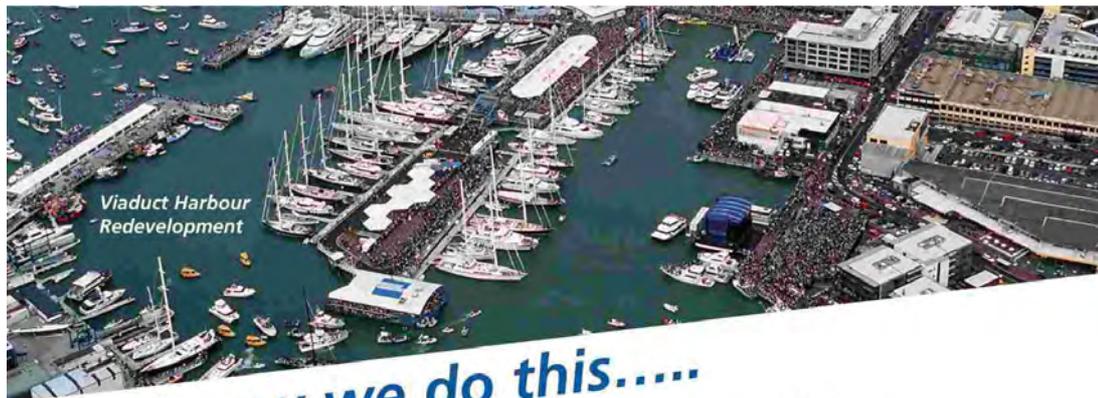
Nicolas Griffiths (Hons): Tsunami flooding hazard in the Avon-Heathcote Estuary.

David Kuru (MSc): Assessing and quantifying causes of foreshore erosion on the township beaches of Lake Te Anau.

Further information

Details of the UC Coastal Studies Group research and teaching programmes can be found at: www.geog.canterbury.ac.nz or by emailing: deirdre.hart@canterbury.ac.nz.

Each year 75 distinguished, international academic leaders in their field are invited to the University of Canterbury as part of the Erskine lecturing programme: for details on becoming an Erskine Visitor see: www.canterbury.ac.nz/erskine.



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Whangarei Coastal Management Strategy

Coasts and Ports 2005 Conference, Adelaide

NZCS Chair and BECA senior planner Lucy Brake provides an overview of this year's Coasts and Ports Conference where she recently gave a presentation.

The 17th Coastal and Ocean Engineering Conference and the 10th Australasian Port and Harbour Conference was held in Adelaide from 20-23 September 2005. This conference was convened by Engineers Australia, the NCCOR and PIANC. The NZ Coastal Society supports these bi-annual conferences and every 6th year is host to the conference in New Zealand.

This year's conference focused on the technical side of coastal and port engineering and science. Over 250 delegates attended the conference from countries including Malaysia, Fiji, Singapore, USA, Korea, Vietnam, Sweden and Norway. There were 20 delegates from New Zealand.

Keynote presentations were given by Dr Robert Engler, USA Army Engineer Research and Development Centre and the president of PIANC, who spoke about the role of PIANC in environmental management and navigation infrastructure. Dr Engler also touched on the current issues in New Orleans as a last minute request. Professor Ian Young, Swinburne University of Technology, talked about future trends in wind and wave research and Vincent Tremaine, CEO of Flinders Port, discussed the future use and expansion of the port and the environmental issues surrounding dredging.

The speaker sessions were focused around topics including dredging, environmental and coastal management, port infrastructure, navigation, replenishment, waves, hydrodynamics, sediment transport, policy and planning, numerical modelling, monitoring and the Adelaide coastal waters studies. All of the sessions were well attended by the delegates and some good debate followed each session. A special workshop was also held on the Boxing Day tsunami, chaired by

Barry Grear, the past World President of RedR. This workshop focused on the recovery, future prediction and mitigation.

Field trips were varied and we were lucky the weather held out. A group chose to head off on a boat trip along the Port Adelaide River, looking at the port infrastructure and future developments, as well as some of the associated industry along this area of Adelaide. This group were rewarded with a visit from the local dolphins who inhabit the Adelaide Dolphin Sanctuary within which the port is located. Another trip headed off around the beaches of Adelaide to look at the coastal management of the local area and to pick up many inspiring ideas to take back to their part of the world.

The conference dinner was a great success, with the bi-annual awards handed out to very deserving engineering students. The food was excellent and the entertainment was provided by a string quartet!

The conference proceedings can be purchased for a nominal sum from the Institution of Engineers, Australia. For further information please go to the website www.plevin.com.au/coastsandports2005.

Congratulations to Murray Townsend and all the organising committee for another successful Coasts and Ports Conference. The 2007 Coasts and Ports Conference is to be held in Melbourne. For more information or to register your interest you can go to www.clems.com.au. The 2009 conference will be hosted by the NZCS – so if you are interested in helping out with that please feel free to contact one of the NZCS committee members by going to www.coastalsociety.org.nz/

*Lucy Brake
NZCS Chair
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**Coastal
News**



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.

Applications for membership should be sent to NZCS Administrator
Hannah Ruffell (e-mail: hannah.ruffell@ew.govt.nz)

Conferences and Workshops

First International Conference on the Application of Physical Modelling to Port and Coastal Protection – CoastLab06

May 2-4, 2006, Faculty of Engineering of the University of Porto, Portugal.

Topics addressed at the conference will be at the forefront of scientific research and interdisciplinary on physical coastal modelling related issues regarding wave climates, coastal hydrodynamics, coastal flooding, sea wave patterns, sediment transport circulation patterns, beach erosion and shoreline protection.

For further information visit
www.fe.up.pt/~lpneves/coastlab06

The Coastal Society's 20th Biennial Conference - Charting a New Course: Shaping Solutions for the Coasts

May 13-18, 2006, St. Pete Beach, Florida, USA.

TCS 20 will follow the theme of Innovative Solutions on the topics of land use challenges; ocean use conflicts; effective integration of science; changing behaviors: professionals and the public and mitigating coastal natural hazards.

For more information contact Judy Tucker at coastalsoc@aol.com or visit
www.thecoastalsociety.org/conference/tcs20/.

Coast to Coast 2006: Australia's National Coastal Conference

May 22-25, 2006 Melbourne, Australia.

Australia's biennial national coastal conference will focus debate across a full range of coastal and marine issues including the need for sustainable coastal and marine use, planning and management regarding increasing natural disasters, higher demand to live on the coast, more certainty in climate change research, continuous battles with weeds, new marine pests, and dwindling fish populations.

For more information visit
www.iceaustralia.com/coasttocoast2006

Coastal Zone Canada 2006 and Youth Forum: Arctic Change and Coastal Communities

July 10-14, 2006, Tuktoyaktuk, Northwest Territories, Canada.

The intent of the Coastal Zone Canada 2006 conference is to raise awareness about the unique challenges faced by residents of the Arctic coastal zone in the face of rapid changes occurring in Arctic marine ecosystems. While the focus is on coastal and ocean issues in the north, contributions from coastal areas around the world are welcomed as many of the drivers of coastal change, and the adaptation of people to them, are common to many parts of the globe.

For more information please visit
www.czc06.ca/e/home.html.

CoastGIS 2006: GIS for the coastal zone: Spatial Data, Modelling and Management Extending the Spatial Data Infrastructure

July 13-17, 2006, Wollongong and Sydney, New South Wales, Australia.

The seventh in the series of international symposia on GIS and Computer Mapping for Coastal Zone Management is directed at scientists and practitioners with an interest in the research and application of GIS to all aspects of coastal science, management and policy.

For further information visit
www.uow.edu.au/science/eesc/conferences/coastgis06.html or www.coastgis.org or email rfurness@ozemail.com.au.

The 5th International Surfing Reef Conference

July 31-August 3, 2006, Lombok, Indonesia.

This conference is for people who have any interest in the coast with a penchant for reefs - surfers, scientists, ocean enthusiasts, and coastal zone managers.

Themes of the conference will include: methods of shore protection, surf zone dynamics, beach responses to structures, salients, sediment transport, rip currents; design of artificial reefs, case studies, natural reefs; surfing, sport kinematics; ecological benefits, monitoring, artificial and natural reefs; human benefits, economic studies, environmental management, beach planning, regulations, legislation, and public issues; and ways to build multi-functional reefs, longevity, stability, ease of construction, tropical regions.

For further information visit
www.asrltd.co.nz/conference.htm

Coastal Sediments 07: Coastal Engineering and Science in Cascading Spatial and Temporal Scales

May 2007, New Orleans, USA

The Coasts, Oceans, Ports, and Rivers Institute (COPRI) of the American Society of Civil Engineers Conference will provide an international forum for exchange of information among coastal engineers, geologists, marine scientists, shallow-water oceanographers, and others interested in the physical processes of coastal sediment transport and morphology change.

For further information visit
www.asce.org/conferences/cs07/index.cfm

"Words without actions are the assassins of idealism."

Herbert Hoover (1874 - 1964)

Coastal News





Managing Coastal Hazards

Two dozen representatives of local and central government, and consulting organisations attended a course on managing coastal hazards, held in Hamilton earlier in the year. The two-day course discussed: the main causes of coastal hazards; the potential impacts of climate change; coastal erosion and inundation; coastal morphodynamics (how the form of the coast changes); cliff erosion; coastal mitigation options; the human dimensions of managing the coast; and the realities and challenges of mitigating coastal hazards. Group projects and a field trip to Raglan to look at coastal hazard mitigation measures, such as sand fences and a proposed seawall, illustrated the issues being discussed. The course was run by NIWA under the auspices of the NIWA/GNS Natural Hazards Centre. Willem de Lange (University of Waikato) and Jim Dahm (Eco Nomos Ltd) presented parts of the course. The Managing Coastal Hazards course will be offered again next year. For details of this, and other short courses available through the Natural Hazards Centre, visit www.naturalhazards.net.nz/courses.



Participants at a two-day course on managing coastal hazards look at fascines installed by iwi to reduce the potential for beach erosion in front of their property in Raglan. The fascines are constructed by driving stakes in to the beach and weaving Manuka (Tea Tree) branches to create a fence. This traps sand being blown along the beach helping to raise beach levels.

Mangrove Management Consent – Tauranga Harbour

The Environment Court (Decision A044/2005) has approved a coastal permit recommended by Environment Bay of Plenty to the Minister of Conservation to enable Tauranga City Council and its residents to remove juvenile mangroves within four areas of Tauranga Harbour. This followed an eleventh hour agreement being reached by way of consent order among the four appellant parties and the two councils. Judge Bollard in his report to the Minister of Conservation of 15 March 2005 recommended

the 'line in the mud' seaward of which mangroves up to 1.4 m in height may be removed as excluding mangroves with a closed canopy greater than 0.7 metres as at March 2005. The regional council's decision was for mangroves up to 1 m in height as at January 2002 to be removed. Judge Bollard also recommended the use of hand-held machinery be allowed, but that any removal is to occur only during Council supervised community mangrove management days. A consultative monitoring group is also to be established to finalise the ecological, sedimentation and wildlife monitoring required as conditions of consent.

Classifying the Coast

The Foundation for Research, Science & Technology (FRST) is funding a NIWA project, in conjunction with the regional councils, to develop a GIS-based classification of the New Zealand coast. The aim is to give coastal managers reliable information on the physical features of the area including beach type, wave and tidal characteristics, geomorphology, and hinterland. The ultimate goal is an interactive website which will allow coastal managers to better manage the coast by indicating which areas of coastline are vulnerable to storm surges or erosion, etc.

Natural Hazards Update No. 2, March 2005, NIWA, www.niwa.co.nz

Coral Reefs Important For Protecting Vulnerable Coastal Regions From Natural Disasters

Reports indicate that places with intact coral reefs and mangroves were less impacted by the tsunami than those where the reefs had been damaged or mangroves had been cut down.

www.panda.org/news_facts/newsroom/opinions/news.cfm?uNewsID=17990

Australia's coastal zone worth over \$282 billion per year

A preliminary economic assessment of some of Australia's coastal natural resources could be worth a staggering \$282 billion a year.

The estimate of ecosystem goods and services, termed 'ecoservices', is the first stage of a project attempting to value natural coastal assets of Australia such as estuaries, seagrasses and mangroves. The real value will be significantly higher because the current estimate is based on about 20% of the Australia's coastal area, focuses on the use as opposed to the non-use values of our coasts, and excludes the value of beaches and some other key coastal assets.

Preliminary findings suggest that estuaries appear to be the most valuable per square kilometre for their ecosystem services, such as removing nutrients from waste water, providing for storm and flood protection, transportation and fisheries.

On a total value basis, Australia's continental shelf appears the most valuable asset, due to its size, followed by open oceans, seagrass beds, estuaries, coral reefs, and mangroves.

For more information contact Dr Boyd Blackwell by email: boyd.blackwell@nrm.qld.gov.au.

Flotsam and Jetsam: Coastal CRC News, Sept. 2005.

Dangerous Levels Of Climate Change As Early As 2026

A new WWF study shows that dangerous levels of climate change could be reached in just over 20 years if nothing is done to stop global warming. At current rates, the Earth will be 2 degrees C above pre-industrial levels some time between 2026 and 2060. Temperatures in the Arctic could rise by three times this amount.

www.panda.org/about_wwf/what_we_do/climate_change/news/news.cfm?uNewsID=18170

Islands Rerieved?

The United Nations predicts that a rise in global temperatures of between 1.4°C and 5.8°C this century will lift sealevels by between 9 cm and 88 cm. Previous studies have warned that this may flood coral atolls, which are only a few metres above sea level.

Now New Zealand and Australian scientists say the atolls have kept building up through much bigger sea level rises in the past, and should be able to do so again.

They predict a surprise reprieve for low coral atolls that many fear will disappear under rising oceans because of global warming.

Auckland University geographers Paul Kench and Scott Nichol, and Australian professor Roger McLean have found that coral islets in the Maldives in the Indian Ocean built up in a way that kept them ahead of rising sea level in the past, and should be able to keep it up in the future.

Ironically, events such as the Boxing Day tsunami, which seemed to doom the islands when it swept over them, are part of a natural process that is stripping sediment off the surrounding reefs and dropping it on the islands.

Dr Kench says that islands on coral atolls are built by sediments from their surrounding reefs and never grow higher than the height to which storm waves can carry the sediment. They have kept up with past sea level changes that were far bigger than anything we are likely to see in the near future.

The sea level rose by about 140 m, to around its present level, when the second-to-last ice age ended between 140,000 and 130,000 years ago. It dropped back slowly to about 130 m below the present level at the peak of the last ice age about 30,000 years ago, then rose quickly to its current level 12,000 years ago. Since then the sea has not changed much. In the Maldives, the present islands built up mainly between 5500 and 4000 years ago,

and the sea may have risen by only about 2.5 m since then.

On this scale, Dr Kench says, the predicted rise of less than 1 m because of global warming this century is "unlikely to physically destabilise the reef islands.

Maori-Chinese Fish Farm Planned

A multi-million dollar onshore fish farming industry, including processing plants using the latest Chinese technology and undeveloped Maori land, could be established in the Bay of Plenty. A wide variety of marine species ranging from oysters and scallops to crayfish and flounder could be farmed in the specially built onshore facilities for export to Southeast Asia and other markets.

Bay of Plenty Times, 2 May, 2005

Tsunami Warning Systems

Tsunamis in the New Zealand region could be triggered by earthquakes, volcanoes and underwater landslides. While the Institute of Geological & Nuclear Sciences (GNS) monitor these events around the clock using GeoNet (www.geonet.org.nz) a system of sea-level gauges around the country and Pacific determines whether the event could become a tsunami. Tsunamis from the other side of the Pacific are detected by the Pacific Tsunami Warning Centre (www.prh.noaa.gov/ptwc/), while closer to home NIWA coordinates and disseminates data from a network of 21 sea-level gauges to monitor tsunamis and other coastal hazards. Once a tsunami is confirmed, emergency managers can activate public warnings and evacuation plans.

Natural Hazards Update No. 2, March 2005, NIWA, www.niwa.co.nz

50% of New Zealand's marine environment critical for biodiversity

WWF has released a report that shows the key areas for biodiversity in New Zealand's marine environment. These areas are critical for the protection of New Zealand's irreplaceable marine species. Most of these species occur only in New Zealand waters. This is the first time a report of this kind has been produced.

www.wwf.org.nz/news/2005News/2005-02-18-BioD-report.cfm

Report Details Community Caring For the Coast

The PCE report "Turning hopes and dreams into actions and results: Whangamata, a case study of community planning in a coastal area" is available at www.pce.govt.nz/reports/allreports/1_877274_54_2.shtml.

Kiwis Want More Marine Reserves

A recent WWF poll showed 95 per cent of New Zealanders believe that more of the country's coast and seas should be protected by marine reserves. See www.wwf.org.nz/news/2005news/2005-03-24-MarineRes.cfm

**Coastal
News**



Community Guide to Coastal Development

The Environmental Defence Society has released three new publications, one which deals with coastal development and two that address landscape issues.

The Community Guide to Coastal Development under the Resource Management Act 1991 provides helpful and practical information for people who wish to promote high quality development on New Zealand's coasts. It covers:

- The types of development that are happening on the coast;
- The impacts such developments can have on the coastal environment;
- How coastal development is managed under the RMA;
- Environmental issues that need to be considered when developing on the coast;
- Opportunities to promote high quality coastal development; and
- Key elements of 'good practice' planning and design for coastal development.

This is the first comprehensive guide on coastal development under the RMA to be produced. It will be an invaluable resource for coastal developers, environmental planners and managers, students, people living in coastal

communities and everyone else with an interest in promoting better outcomes for the coast.

The Landscape Planning Guide for Peri-urban Areas provides assistance to councils in addressing landscape management issues in their RMA policy statements and plans. The Guide describes how important landscapes can be identified, and how objectives, policies and rules can be developed for their effective management. The Guide contains useful practical examples and describes the legal mechanisms that can be used to control future subdivision.

The Community Guide to Landscape Protection under the Resource Management Act 1991 provides practical information for members of the community who would like to obtain better protection for landscapes and for developers preparing resource consent applications for proposals that may impact on landscape values. The Guide identifies opportunities to become involved in landscape protection and contains useful checklists for assessing how well plans and development proposals have addressed landscape issues.

Electronic copies of the Guides can be downloaded from the EDS website (www.eds.org.nz) and hardcopies can be purchased from the Society.

Coastal News



Profile: Jo Rosier

NZCS Manawatu/Wanganui Regional Coordinator

Jo Rosier works as a senior lecturer in Resource and Environmental Planning at Massey University, Palmerston North. She lectures in the areas of planning theory, conservation policy and natural resource planning.

Currently her research is focused on evaluation of coastal plans and policies in New Zealand and the development of conservation policies at a regional level of planning.

In 2003, the Minister for Conservation commissioned Jo to independently review the New Zealand Coastal Policy Statement and prepare a report that was submitted in January 2004.

Jo is also involved in a long-term, multidisciplinary project monitoring the effects of tourism on Heron Island in the Capricorn Group of islands, Great Barrier Reef, Queensland. This project began in 1985.

If you have any news about coastal matters in the Southern part of the North Island, please let Jo know by email D.J.Rosier@massey.ac.nz.

Missed an article in *Coastal News*?

Back issues (from Issue 6, April 1996) are available as pdf downloads from www.coastalsociety.org.nz - follow the Publications link on the front page.

The views expressed by the authors of articles published in *Coastal News* are not necessarily those of the New Zealand Coastal Society (NZCS), or those of the Institution of Professional Engineers New Zealand (IPENZ).

The *Coastal News* merely provides a forum for discussion. We appreciate all contributions and would like to thank all of the authors in this edition.

If you would like to contribute an article, news item or conference announcement to *Coastal News*, see the guide for contributors on page 9.

Editorial

As I go over in my mind what I am going to write in the editorial for this issue of *Coastal News* I realise it is going to sound something like an academy award winner's speech. This is not, I should be quick to add, because I have won an award but because, at the risk of sounding cliched, I have so many people to thank for helping to make each issue of *Coastal News* possible.

Although, general NZCS members do occasionally contribute an article under their own steam, for which I am hugely grateful, the majority of the articles that appear in *Coastal News* are as a result of the penmanship or organising of NZCS Management Committee Members.

A few NZCS members have commented in passing or in the recent members survey that they felt *Coastal News* contained too high a ratio of science related articles, too many contributions from NIWA and that the articles were not spread evenly geographically, tending to be more prolific from some areas of the country at the neglect of others.

The reason for these imbalances are simply because these are where the contributions come from and getting articles from those involved in other areas of coastal work or those who work in certain parts of the country sometimes appears to be an impossible task.

Believe me, I do try!

Before I go any further I would like to make a personal invitation, one which I know the Management Committee (MC) will endorse wholeheartedly, for anyone reading this editorial

to feel free to send in your contribution to *Coastal News*.

As I mentioned earlier the MC provide the skeleton and most of the flesh that goes to make up a *Coastal News* issue and this is often no mean feat.

As an example, one MC member had organised someone else to write an article but, as often happens with articles lined up for *Coastal News*, the writer had failed to deliver. Rather than just telling me this to which I would have replied, "thanks for trying anyone but these things happen to the best of us" the MC member stayed up half the night and wrote an article themselves before getting on a plane to undertake some work overseas for a few weeks! Another MC member sat in their room alone in the evenings in order to contribute a couple of pieces from overseas while attending and presenting at a conference.

Other MC members are also Regional Coordinators one of whom, in particular, almost without fail contributes to the regional news and organises someone else to write an article.

Basically, without the MC members providing me with contributions – small and large, chasing up other people to write articles, feeding me ideas and the contact details for potential contributors, and searching out photos to go with articles at the last minute *Coastal News* would not happen. So on behalf of myself and anyone who has ever enjoyed a *Coastal News* – thank you very much Management Committee!

Alex Eagles, Editor

**Coastal
News**



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.

North Island

Northland	André Labonté	labonte@xtra.co.nz
Auckland	Scott Nichol	s.nichol@auckland.ac.nz
Waikato	Jenni Fitzgerald	jennifer.fitzgerald@ew.govt.nz
Bay of Plenty	Aileen Lawrie	aileen@envbop.govt.nz
Hawkes Bay	Gary Clode	garyc@hbrc.govt.nz
Taranaki	Peter Atkinson	dwk.newplymouth@duffillwatts.com
Manawatu/Wanganui	Johanna Rosier	d.j.rosier@massey.ac.nz
Wellington	David Kennedy	david.kennedy@vuw.ac.nz

South Island

Upper South Island	Eric Verstappen	eric.verstappen@tdc.govt.nz
Canterbury	Justin Cope	justin.cope@ecan.govt.nz
Otago	Mike Hilton	mjh@geography.otago.ac.nz
	Paul Pope	poppa185@student.otago.ac.nz or popey@xtra.co.nz
Southland	Ken Murray	kmurray@doc.govt.nz

News From The Regions

Coastal News



Otago Region

Paul Pope, NZCS Northland Regional Coordinator

Nuggets Marine Reserve

The debate over the development of the Nuggets as a marine reserve continues to be of major media interest in Dunedin at present. There have been conflicting views of the Departments of Conservation's role in this issue and whether its consultation process has been effective or fair. Commercial and recreational fishing interests have recently undertaken to obtain information and email from the Otago Conservancy offices under the Official Information Act. The opposition to the reserve claim that the application was already planned and that documents obtained showed that the proposal was being made despite the consultative process being undertaken. While the conservancy head, Jeff Connell, denies these claims there is a considerable degree of conflict and distrust over the process that has been undertaken. It's fair to say that local MPs have also made conflicting statements regarding the final application and development of the Nuggets as a marine reserve.

St Clair Sea Wall



*The St Clair Esplanade
(Courtesy of the Otago Daily Times)*

The St Clair sea-wall has also caused concern with the failure of one of the pedestrian ramps that provides access to the beach. While the Dunedin City Council have undertaken to repair the ramp there has been considerable angst over the suggestion by the engineers that a groyne or breakwater should be further investigated to allay the continual damage to the wall and surrounding coastal environs.

Naturally the surfing community are not enthusiastic over this option.

Poo in the Pacific

Dunedin citizens and City Councillors have had the opportunity to describe what they most like and dislike about their city in a poll on the issues. While beaches were one of the positives the continual discharge of the city's sewerage into the waters off the coast was highlighted as a major dislike. It will be interesting to see the City Council's response as part of its future sewage upgrades, and with the kind of weather we have down here, this issue could really hit the fan!

Ngai Tahu Mataitai

The Ngai Tahu plan to implement a mataitai along the Kaka Point coastline. A mataitai reserve is a place of importance for customary food-gathering and allows tangata whenua to manage the area. The proposal, initiated by the Waikouo Ngai Tahu Rununga (South Otago) Incorporated committee, will take in the water from Campbell's Point south to the breakwater at an old fishermen's village. Public consultation is to be undertaken as part of the process before being approved by the Minister of Fisheries. A mataitai prohibits commercial fishing but allows recreational fishing, though quotas may be imposed. Pollution and over fishing are of strong concern to the local runanga in this area.

Seal the deal

The recent prosecution of three men for shooting a New Zealand Fur seal off the coast of the Otago Peninsula has highlighted that rugby players are just not being paid enough to eat properly.



(Photo courtesy of Paul Pope)

Hawke's Bay Region

Gary Clode, NZCS Hawke's Bay Regional Coordinator

Komar Coastal Report Released

It's been a busy few months here in Hawke's Bay with coastal issues. Prof. Paul Komar, formerly of Oregon State University has recently finished his visit to the Bay, presenting his long awaited report on coastal processes between Cape Kidnappers and Tangoio in Hawke's Bay to TLA, Regional Council and public committees. Prof Komar's report was well received in most quarters, less so in Westshore, showing yet again the contentious and sensitive issues surrounding the coast of NZ. Cutting a long and very interesting report short, some of the main conclusions and most contentious of the report was that the Port of Napier and the construction of the breakwater had little effect on coastal erosion at Westshore. Also if the Port extended the breakwater it is likely to be a benefit to Westshore due to its sheltering effects.

The Bay View littoral cell (from the Port at Napier, through Westshore to Tangoio in the north) was

identified as having a neutral sediment transport process, with beach material moving north to south and visa versa depending on the swell climate with no net loss of material except for abrasion losses. Evidence for this was the reversible periods of accretion at one end of the littoral cell and erosion at the other end of the littoral cell.

Further evidence of sediment transport neutrality were from the reports written after the constructions of the two moles at the mouth of the Ahuriri Estuary which stated that as fast as they were being built, sediment filled up the western side of the western left bank mole and the eastern side of the eastern right bank mole.

Wanted: Sand

Due to the number of significant ENE to ESE storm swell events over the last year; Haumoana, Te Awanga and Westshore have received a bit of a battering. As a result the normal 10,000 m³ annual beach replenishment that the HBRC and NCC undertake at Westshore has been increased by over 50% to around 16,000 m³. This programme gets underway in October.

In Haumoana and Te Awanga, a working party has been set up with representatives from HBRC, HDC and the local community, with aims to resolve the issues of coastal erosion and the inundation of coastal properties in the area. Solutions being considered range from the do nothing, managed retreat scenario to full-scale hard engineering structures.

This is going to be a difficult problem to resolve for all parties involved with no easy cost effective choice evident.

Waikato Region

*Jenni Fitzgerald, NZCS Waikato
Regional Coordinator*

Aquaculture

With the passing of the Aquaculture Reform Act at the end of 2004 Environment Waikato has, like the other regions with established marine farms, been busy implementing the new regime. Just over 1,000 hectares of existing farms have been deemed to be Aquaculture Management Areas, including about 600 hectares in the Wilsons Bay Marine Farming Zone. Environment Waikato has initiated the process of getting the remaining area in the Zone declared an interim AMA. Once that occurs an additional 520 hectares will be available for marine farming of which 104 hectares will be allocated to Te Ohu Kaimoana as the trustee of the space allocated to Maori. Any queries should be directed to Graeme Silver 0800 800 401 or Graeme.Silver@ew.govt.nz.

More Erosion at Mokau

High spring tides this winter have caused further erosion of the dune face fronting several properties on the Mokau Spit. Historically, cycles of erosion



Photo courtesy of Environment Waikato

have caused the loss of a number of properties in the 1950s and 1960s and threatened many more in the 1980s and 1990s. During a period of particularly high wave energy in May 2004, one dwelling became severely threatened, and in August sufficiently unstable to require complete removal. Spring tides coinciding with stormy sea conditions in September have caused further erosion, and approximately 10 properties continue to be severely threatened.



Photo courtesy of Environment Waikato



Photo courtesy of Environment Waikato

Waitomo District Council and Environment Waikato have worked together with residents in the past to investigate options for management of the hazard at Mokau. Erosion protection structures are not viable given the very high energy environment and limited funds available, and in addition are prohibited under the Waitomo District Plan. Any queries should be directed to Bronwen Gibberd 0800 800 401 or Bronwen.Gibberd@ew.govt.nz.

Regional Coastal Plan

The Minister of Conservation has given his approval to the Waikato Regional Coastal Plan paving the way for Environment Waikato to make





it operative. This approval excludes the Marine Farming and Marinas variations which will be progressed separately. The Plan is likely to achieve operative status by November 2005. Any queries should be directed to Jenni Fitzgerald 0800 800 401 or Jennifer.Fitzgerald@ew.govt.nz.

Canterbury Region

Justin Cope, NZCS Canterbury
Regional Coordinator

Chatham Islands Coastal Planning

by David Gregory, Environment Canterbury

Environment Canterbury has won the contract to do the regional planning element for the Chatham Islands Council planning functions. This includes the Coastal Marine Area.

As a consequence, some very fortunate staff have put together proposals for the Chatham Islands Council and have been able to visit the islands. David Gregory and Richard Ball from ECan flew to the islands at the end of August to open discussions with the Council and iwi groups on the potential, or otherwise, for marine farming in the islands coastal waters.

Interestingly, neither Green Lip (*Perna Canaliculus*) or Blue mussels (*Mytilus Galloprovincialis*) occur naturally around the islands, which raises issues about the introduction of new species.

One of the main problems is transport costs. This in turns drives the need to consider a specific "brand" for the islands, so that the products of aquaculture can command some sort of premium which would overcome the distance and reliability issue.

With a limited area of sheltered water and many overlapping fishing operations, any marine farm structures in the islands coastal waters are going to have to withstand rough conditions, and be inserted into areas that may be vital for somebody's livelihood. Developing an area large enough to ensure continuity of supply and provide ongoing local employment is part of this issue.

It may be a case for the Chatham Islands Council and community to 'wait and see' so that they can piggy-back on developments elsewhere (the Pegasus Bay Marine Farm is an example) before leaping into an untried venture.

P.S. The crayfish was so big that I could not eat it all!

Pegasus Bay Marine Farm given green light

Environment Canterbury-appointed commissioners have granted a resource consent for a mussel farm 14 kilometres offshore in Pegasus Bay, north Canterbury. The group applying for the consent were Pegasus Bay Aquaculture Ltd, Ngai Tahu Seafood Resources Ltd and the Marlborough Mussel Company Ltd.

The hearing panel commissioners, Jane Borthwick, Dr Greg Ryder and Cr Bob Kirk granted the consent for the 2,695 ha site for a period of ten years, subject to consent conditions. These note that given the experimental nature of the marine farm, being submerged and in open water, a registered engineer is required to ensure the



Coastal Erosion at Mokau
(Photo courtesy of Environment Waikato)

structure be adequately restrained to the seafloor, secure and maintained in good working order. They also require that a baseline survey is carried out of seabirds and Hector's dolphins in the area as well as strict monitoring of water quality and the effect of the farms structures on coastal processes. The commissioners said that a bond

payable to the regional council by each of the three parties is necessary to cover any costs which could arise in the event of the farm being abandoned or broken up and requiring salvage.

The original mussel farm application was for more than 10,000 ha but for the purpose of this consent, the application only applies to an area less than a third of the original area of coastal marine space. The consent application required the agreement of the Minister of Conservation to partially uplift the moratorium on marine farm consent applications imposed in March 2002 and extended until the end of 2004.

A total of 82 submissions were received in respect of the original application, 19 in support and 63 in opposition. The mussel farm may be the largest in the country, the commissioners note, and represents an efficient use and development of the coastal marine area, using an adaptive management regime.

The Surfriider Foundation, a group that represents New Zealand's surfing community on coastal environmental issues, has signalled an intention to appeal the decision based on the potential for the farm to affect swell and wave formation in Pegasus Bay and the effect that may have on surfing and beach related activities.