Coastal news

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Newsletter of the New Zealand Coastal Society: a Technical Group of IPENZ

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Nourishment at Amberley Beach, North Canterbury

The small North Canterbury coastal settlement of Amberley Beach, about 40 km north of Christchurch, is about to benefit from a 1250 metre long, 10,000 m^3 beach nourishment project. Following significant damage to the mixed sand and gravel beach as a result of a number of storms over the past two years, concern was raised by Amberley Beach residents regarding their increased vulnerability to coastal hazards in the form of accelerated erosion rates and seawater inundation of the settlement. Following an initial investigation by Environment Canterbury into historic and contemporary erosion rates, including beach volume losses from recent storms, the Hurunui District Council commissioned DTec Consulting of Christchurch to look at a number of beach protection options including seawalls, revetments, beach nourishment and offshore breakwaters.

Figure 1: Low beach (3.5 m above MSL) at Amberley. The beach crest here is easily overtopped during coastal storms.

The option preferred by the community and the District Council was to proceed with a nourishment project, the purpose of which would be to reduce the rate and risk of coastal erosion and sea flooding. To minimise costs to the community, Environment Canterbury undertook the initial topographic survey of the proposed area to gather base information with which DTec Consulting could design the nourishment. DTec's basic design involves placing approximately 10,000 m^3 of suitable sized gravels along the crest and backshore of the beach over a total length of 1250 metres in front of the settlement and access road. The material will be placed above Mean High Water Springs and will increase existing beach elevations by around 1-metre and significantly increase beach volumes above the 3m contour.

The main purpose of this nourishment is to add bulk to the beach so as to absorb wave energy during large damaging storms. Borrow material is to be placed as far landward as possible to minimise sediment losses in minor storm events.

Figure 2: The Amberley Beach carpark after 3m of erosion following a storm in February 2002.

Excluding transportation costs, borrow material for the nourishment will be provided free of charge by a local aggregate company who operate a quarry nearby which has a stockpile of suitably sized screened tailings. Resource consent has been granted for the project which, when completed, will provide a good example of communities, local and regional authorities and local companies working together co-operatively to manage coastal hazards.

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Vessel wake issues in New Zealand

Issues related to vessel wakes received prominence when the first fast ferry service between Wellington and Picton was commenced in 1994 and 1995. Subsequently, other perhaps less significant issues relating to the management of wakes have arisen in other places (for example, jet boats in the rivers of the Bay of Plenty, and ferry wakes in Auckland harbour), but it remains with the Marlborough District Council (MDC), one of four unitary authorities in New Zealand, to take the lead.

The judgement of the then Planning Tribunal (Decision W40/95), following the commencement of fast ferry operations, has been widely discussed. The tribunal considered that the new service did not require a resource consent as it was a continuing activity (covered by Section 12 of the RMA), despite the fact that the service used different vessels than earlier services. The Tribunal also considered that although environmental change had taken place following the introduction of the fast ferry services, a 'new equilibrium' had been reached and the changes were not necessarily adverse. The appropriateness of these decisions has received considerable attention, and concern about the fast ferry operation continues to the present day.

Over the years following the Tribunal decision, numerous studies of the environmental effects of wakes in the Marlborough Sounds have been conducted,and a beach monitoring programme has been established. A number of different fast vessels have operated on the route, alongside the conventional vessels. With the introduction of a new generation of fast ferries in 1999, the focus of attention shifted somewhat from environmental to safety concerns. Partly in response to a risk assessment, MDC implemented a navigation bylaw in December 2000, that limits the speed of fast ferries to 18 knots while travelling through the Sounds, unless it could be demonstrated by the operators that a wake wave criterion, based on a variant of a criterion used in Denmark and elsewhere, is not exceeded. An application by Tranzrail to increase the speed of the remaining fast ferry operation (InCat 057, also known as the Lynx) has recently been turned down by the MDC.

MDC have indicated that it believes the regulation of vessel speed is a resource management issue, by proposing a variation to the Marlborough Sounds Resource Management Plan to address adverse environmental effects of shipping activity. A review fulfilling the requirements under section 32 of the RMA has been completed, and a period for submissions is presently in progress. The variation applies to large vessels operating over 15 knots, and requires these vessels demonstrate compliance with a criterion, based on the Danish model. A range of background documents produced in relation to the variation and the application by TranzRail for a speed increase can be found at: www.marlborough.govt.nz/documents.html.

We now know quite a lot about vessel wakes and about designing low wake vessels (although low wake vessels able to contend with open waters have yet to be developed). The depth based Froude number is a very useful first step in assessing wakes (where Vs is vessel speed through the water (although speed over the ground is regularly used as an approximation), g is the gravity constant ~ 9.8 m/s/s, and h is water depth). Although the Froude number does not predict the actual characteristics of a wake from a vessel, it does predict, for a known water depth, the speed at which the highest waves are likely to occur and the general form the wake is likely to take.

Figure 1 shows a conventional ferry (on the left) travelling at sub-critical speed (Fnh less than about 0.8) and a fast ferry travelling at super-critical speed (Fnh greater than about 1.2). Figure 2 shows a fast vessel travelling close to critical speed (Fnh =1). Of particular note in Figure 2 is the speed with which the wave extends laterally from the ship's path, being the same speed that the vessel is travelling through the water.

Figure 1: A conventional ferry travelling at sub-critical speed on the left and a fast ferry travelling at super-critical speed, in Tory Channel (© Marlborough District Council, used with permission. Graeme Matthews, Photographer)

Figure 2: A fast ferry travelling at close to critical speed (© Marlborough District Council, used with permission. Graeme Matthews, Photographer)

Anybody on a shoreline close to the ship's path can expect a large wave within seconds of the ship passing. Between Picton and Tory Heads a fast ferry travelling at cruising speed of about 42 knots, is operating with a Fnh close to 1 for much of the route. This indicates that it is in part an accident of water depth and preferred operating speed that caused problems when fast ferries were first introduced.

The results of the two regulatory processes currently underway that may result in changes to the present operating regime for fast ferries in the Marlborough Sounds are still not known. The Marlborough experience is, however, unlikely to be repeated elsewhere in New Zealand, because there are no other likely routes for large, fast ferries, travelling close to low-energy shorelines. Vessel wake related issues are likely to arise in other places, but these can normally be managed with the cooperation of vessel operators and an understanding of the basic theory of vessel wakes. Sometimes our local authorities have to confront issues that are peculiar to their region or district, and consequently support is minimal.

Large and fast vehicle and passenger carrying vessels became common worldwide over a very short period in the early to mid 1990s. MDC was dealing with their introduction at the same time as other countries, with limited base knowledge or experience available anywhere. MDC has drawn on expertise from New Zealand and overseas as appropriate, and has managed its way through a minefield of political, commercial and public opinion. MDC has become an important part of an international scientific community sharing data on the nature and management of vessel wakes, and they have been generous in making data available to others, including multitudes of schools who find the fast ferry issue fits their syllabus quite well.

Reference
Parnell K E & Kofoed-Hansen H, 2001. "Wakes from large high-speed ferries in confined coastal waters: Management approaches with examples from New Zealand and Denmark", *Coastal Management 29(3)*, 217-237.

Kevin Parnell, School of Geography and Environmental Science, University of Auckland

Whaingaroa (Raglan) Catchment & Harbour Plan

On Saturday 07 December 2002 the Whaingaroa community catchment and harbour plan was launched with an open day at the Raglan Town Hall featuring displays by community groups and management agencies. The launch was the culmination of six years work by the Whaingaroa Environment Centre and represents a national first and is already being viewed with interest by other communities. It is all about management agencies and communities working together for sustainable development.

The project focuses on the Whaingaroa Harbour (33 km^2) and catchment (530 km^2). It started in the mid 1990s with concerns over harbour water quality. These can be summarised as:

- sedimentation: kaimoana, stormwater discolouration & streambank erosion;
- nutrient enrichment: sewage discharges;
- habitat modification: stock in the CMA, modification of waterways and wetlands; and
- pathogens: sewage discharges, kaimoana.

It recognises that there are few large users of natural resources in the catchment, and that declining resource and harbour quality is a consequence of the cumulative effects of people going about their every day activities in the catchment.

An integrated management approach was chosen, based upon the catchment ecosystem that took into account community dynamics and the different roles of responsible management agencies. It is community based; works with various community action groups to develop a non-statutory plan that identifies durable and affordable solutions able to be implemented by landowners and resource users with assistance from relevant management agencies. The plan focuses on:

- the recognition of issues in the catchment as defined by a synthesis of community concerns and resource information; and
- a confirmation or refinement of long term goals as identified through community meetings.

The following issues were identified as being of concern to the people of the Whaingaroa catchment and are addressed in the plan:

- On Land
  - — High risk of soil erosion.
  - — Loss of native vegetation and habitat.
  - — Urban growth puts pressure on resources
- In Rivers and Streams
  - — High levels of sediment
  - — Some rivers are not safe for swimming
  - — Decline in stream fish populations
- In the Harbour
  - — Degraded harbour water quality
  - — Degraded harbour ecology
  - — Decline in shellfish numbers
  - — Decline in finfish numbers

For further information please contact Blair Dickie, Programme Manager, Policy Group, Environment Waikato, e-mail blair.dickie@ew.govt.nz.

Long-term Sea Level Change in NZ – An Updated Analysis

The University of Otago and the Institute of Geological and Nuclear Sciences (IGNS), have jointly been involved in a project aimed at determining the eustatic sea level change occurring around the New Zealand coastline (i.e., the change that occurs due to an alteration of volume in the world oceans). This project, which has been underway for almost four years, has two major components. The first is a re-analysis of the historical sea-level data collected at the Ports of Auckland, Wellington, Lyttelton and Dunedin, together with an extension of that analysis to cover the period 1989 – 2001. The aim here has been to determine a new value for long-term sea level change.

The second component of the project is the determination of any changes to the elevation of the land due to the combined effects of local tectonic movement and glacio-isostatic uplift. This latter part of the project is being undertaken by co-locating continuously tracking GPS receivers on or close to the port tide gauges mentioned above. Ultimately we hope to use the GPS data to determine these long-term tectonic / isostatic signals to an accuracy of well below 1 mm / yr!

The first part of the project, however, has been completed and reveals an average long-term rise in sea levels around the coast of New Zealand over the last 100 years of 1.6 mm / yr – a figure that not only compares favourably with the 1.7 mm / yr computed in 1990, but also sits comfortably within the 1 – 2 mm / yr range computed for global sea level rise.

This new figure has been calculated using essentially the same data as was used in the 1990 analysis, but with the following differences.

- The original digitised hourly sea level data were re-examined using a tidal analysis software package in order to remove errors that were not detected when the original data files were formed.
- New data for the period 1989 - 2001, where available, have been added to the data sets.
- The sea level record at the Port of Wellington has been extended by the inclusion of recently discovered data for 1891 - 1893.
- All the tide gauges used in the study have recently been subject to new precise levelling. This levelling data has revealed a previously unknown wharf subsidence of 0.2 mm / yr at Wellington and confirmed an ongoing subsidence of 1 mm / yr at the Dunedin gauge.

The specific relative sea level trends for the four ports (with their associated standard deviations), as originally computed in 1990, and again in this study, are shown in Table 1. Where applicable, relative sea level change due to gauge subsidence has been removed.

Because of the high level of wharf subsidence at Dunedin, the overall (poor) quality of this gauge, and the lack of continuity of the resulting data, the trend figure from the Dunedin gauge has been down-weighted when calculating the national average.

Perhaps as importantly as the determination of a sea level trend, the new analysis reaffirmed another 1990 observation, namely that there continues to be no discernable increase in the rate of sea level rise, i.e., there is no evidence of any acceleration in the rate at which sea levels are rising! Having said this, however, if such an acceleration were to occur, it would need to be of a sizable magnitude if it were to be detectable from an additional 10 – 15 years of data.

A more detailed description of both the analysis that has been undertaken as part of this study and the results, should be able to be found in a future edition of Marine Geology – the journal to which they have been submitted for publication.

John Hannah,School of Surveying, University of Otago (johnh@albers.otago.ac.nz)

	Auckland	Wellington	Lyttelton	Dunedin
1990 sea level trend (mm/yr)	1.34 (0.11)	1.73 (0.27)	2.26 (0.14)	1.36 (0.15)
New sea level trend (mm/yr)	1.30 (0.09)	1.78 (0.21)	2.08 (0.11)	0.94 (0.12)

Table 1. Linear Relative Sea Level Trends

Scoping Exercise for a Regional Scale Marine Environmental Classification

The Ministry for the Environment has contracted Dr. Franz Smith to scope the development of a "regional-scale" Marine Environmental Classification (MEC) of the Greater Cook Strait Region.

An MEC works on the assumption that ecological processes are largely driven by physical factors. Using physical variables such as bathymetry, substrate, sediment type and temperature, etc. it is possible to identify distinct spatial areas with significantly similar physical characteristics. Where there is a lack of empirical data, the classification may be useful to predict the structure and distribution of biological communities for a

given area. These areas could be treated as "management units" by resource managers and users.

Dr Smith is working with a range of central and local government agencies, universities and research institutes to determine whether sufficient biological and physical datasets for the Greater Cook Strait Region already exist to commence building the classification.

The Ministry for the Environment is funding the scoping exercise as part of a case study in the Wellington Harbour area. The case study is a collaborative venture with Greater Wellington, and forms part of the New Zealand Biodiversity Strategy implementation programme, Managing Impacts on Marine Biodiversity at a Regional Level.

The area under consideration for classification extends from the northern end of Kapiti Island to Farewell Spit in the southwest, the Kaikoura peninsula in the southeast and to Castlepoint in the northeast.

Jenny Whyte, MfE
(jenny.whyte@mfe.govt.nz)

Aquaculture Variations to the Proposed Auckland Regional Plan: Coastal

Following the enactment of the Resource Management (Aquaculture Moratorium) Amendment Act 2002 which placed a two-year moratorium on the development of new aquaculture until March 2004, the Auckland Regional Council notified Variations 2 – 6: Aquaculture to the Proposed Auckland Regional Plan: Coastal on 29 October 2002. The Variations propose Aquaculture Management Areas in various locations around the Auckland region including the Kaipara Harbour, the Mahurangi Harbour (see Figure 1), Matakana River, Kawau Island, Great Barrier Island, Waiheke Island and Wairoa Bay. They provide for expansion in Wairoa Bay, Waiheke Island and the Kaipara Harbour. Public submissions to the Variations closed on 31 January 2003.

Over 1200 submissions have been received on the Variations. Submissions are currently being summarised. A summary of submissions will be made available to the public in late March / April for the further submission process. This provides the public with an opportunity to support or oppose existing submissions. Hearings will be held following this, then the ARC will make its decisions. There is then a further opportunity for submitters to appeal these decisions to the Environment Court.

Figure 1: Te Kapa Inlet, Mahurangi Harbour, 2002. (Source: Auckland Regional Council)

Sharlene Pardy, Auckland Regional Council
(sharlene.pardy@arc.govt.nz)

NZCS Regional Co-ordinators

There are a number of Regional Co-ordinators around the country who may be able to help you if you have any queries about NZCS going on's in your local area — or if you are just interested in getting involved in the NZCS on a local level.

Northland	Rick Stolwerk	stolwerk@xtra.co.nz
Auckland	Matt Paterson	patersom@akcity.govt.nz
Waikato	Bronwen Gibberd	Bronwen.Gibbert@ew.govt.nz
Bay of Plenty	Tom Fitzgerald	tom.fitzgerald@opus.co.nz
Hawkes Bay	VACANT	
Taranaki	Peter Atkinson	dwk.newplymouth@duffillwatts.com
Manawatu / Wanganui	Lachie Grant	lachie.grant@horizons.govt.nz
Wellington	VACANT	
Upper South Island	Eric Verstappen	eric@tdc.govt.nz
Canterbury	Justin Cope	justin.cope@ecan.govt.nz
	Brodie Young	brodie.young@ecan.govt.nz
Otago	Paul Pope	ppope@dcc.govt.nz
Southland	Mike Hilton	mjh@geography.otago.ac.nz

For further information, please feel free to contact the NZCS Regional Co-ordinator Jo Fagan (jo.Fagan@gw.govt.nz)

Coastal
News

A Word from the Chair

The year ahead brings plenty more opportunities for us all across the full spectrum of coastal and ocean issues. In terms of our coastal society, the Australasian Coasts and Ports conference, being held in Auckland from 9-12 September, provides us with a major chance to share research, knowledge and experiences from others in New Zealand and from around the World. The last time the conference was in New Zealand was 1997 in Christchurch, an event that was very successful and a significant vehicle to promote the New Zealand Coastal Society. Our society has a major role in the management of this year's conference, as well as a major stake in its success. Importantly, our annual seminar will be held over until 2004 to accommodate the conference. We will still however hold a Coastal Society AGM during the conference. I'd urge as many of you as possible to attend the conference.

The committee has a full year ahead as we strive to provide you with a top quality service, and also to make sure that the key connections between leaders in coastal science, management, engineering and planning are developed and enhanced. On 13 February the committee met with senior officals from the Department of Conservation, the Ministry for the Enviornment and with Morgan Williams, the Parliamentary Comissioner for the Environment. We hope that meeting will help us to achieve our strategic goals of taking a leadership role in New Zealand's coastal and ocean management, as well as making clear the skills and attributes that our society and its members posses. I will update you on the results of that meeting at a later date.

Best wishes

Harvey Brookes, Chairman, New Zealand Coastal Society, e-mail: Harvey.Brookes@arc.govt.nz

Coastal Occupation Charging

This year the Auckland Regional Council will be looking seriously at whether or not coastal occupation charging should be introduced to the Auckland region.

All regional councils must consider this issue under the RMA (1997 amendment). Section 64A says that councils must make a change to the regional coastal plan reflecting their decision whether to charge or not.

Section 64A requires that a council must consider the extent to which public benefits from the coastal marine area (CMA) are lost or gained, and the extent to which private benefit is obtained from occupation of the CMA. It also requires that all monies obtained return to the coast for the purpose of promoting sustainable management.

This whole exercise is predicated on the Crown's ownership of the seabed (occupation and occupation charges only apply to "land of the Crown"), which various iwi are currently contesting. The outcome of the Crown/iwi ownership issue is likely to be a key issue for Tangata Whenua in terms of the context for coastal occupation charging. And it is with this in mind that the ARC will be approaching iwi in the Auckland region.

The ARC's approach to the regional coastal community in the first part of this year will be to explain what a coastal occupation charging regime is, and to ask some simple questions to get a gauge of community opinion. Should we charge or shouldn't we charge? If we charge, then what kind of regime is appropriate and how should the money be spent?

It is difficult to meaningfully discuss what a "yes" to the first question means unless a charging regime is presented. The ARC is preparing a potential charging regime to discuss with in detail with those groups likely to be affected. Some sectors, particularly those that would be required to pay under a regime, may be involved in helping determine the regime.

We plan to inform the wider coastal community as well as those likely to be directly affected by possible charges, as the regime affects everyone. Issues such as, "will this mean my rates reduce, or will this be extra money for the coastal environment?" need to be debated at community level.

The team developing the charging regime meets regularly with other regional councils to discuss whether a national approach is possible.

Following community feedback, ARC will make a decision and consult formally on that decision, probably later in 2003. For further information please contact Greg Hill, ARC (greg.hill@arc.govt.nz).

Instructions for authors

Your contributions to *Coastal News* keep Society members and the coastal community informed about coastal issues.

Contributions can be advertisements for conferences or workshops, short news items or longer articles. We prefer articles of a maximum of 400 words (about 1-page in the newsletter), preferably with pictures or diagrams. Submit articles to Mike Hilton, Associate Editor (e-mail: mjh@geography.otago.ac.nz).

Coasts & Ports 2003 Keynote Speaker Profile — Richard A Pickrill

Dick Pickrill joins Geoff Vasey and Tom Schnackenberg as a Keynote Speaker at Coasts & Ports. Dick is currently head of the marine geology group at the Bedford Institute of Oceanography of the Geological Survey of Canada (Atlantic) and based in Dartmouth, Nova Scotia. He graduated from the University of Canterbury Christchurch, New Zealand with a PhD in geography.

He joined New Zealand Oceanographic Institute (NZOI) in 1976 as a marine geologist working on a variety of research programs including estuarine and fiord sedimentation, nearshore sedimentology, circulation, sediment transport and sedimentation in lakes. A post-doctoral fellowship was held at the Pacific Geoscience Center Sidney BC (1981-82), and a Humboldt Fellowships at the University of Kiel Germany (1989-90). In 1987 he was appointed Commercial Manager at New Zealand Oceanographic Institute, assuming the role of Manager at NZOI in 1991.

In 1993 Dick moved to Canada as head of the marine geology group at the Bedford Institute of Oceanography where he is currently responsible for research programs across Canada. Dick's keynote address is entitled "Integrated sea floor surveys: tools and a knowledge base for sustainable management of our offshore lands". It will describe how multibeam seafloor mapping is providing the opportunity to accurately map the shape of the seabed, the sediment cover and associated benthic habitat, and how this knowledge base supports sustainable, integrated ocean management and completes the mapping of our offshore lands.

Several countries are in the process of developing strategies to support national seafloor mapping programs.

Artificial Surf Reefs 2003 – 3rd International Conference

23-25 June, Raglan, New Zealand

Conference Theme: Unifying Amenity, Ecology and Coastal Protection

The Conference Issues will include surfing, coastal protection, ecology, construction, planning, economics, sustainability indicators, integrated coastal zone management and legal. Multi-purpose coastal construction is gaining momentum world-wide as the real values of our coast (recreation, ecological, aesthetic, etc.) are being given the attention they deserve. While there will be plenty of serious discussion on these topics, a serious social calendar has been organised to accompany the theme and the venue.

ASR Ltd will host the 2003 Conference in Raglan, New Zealand. Raglan is New Zealand's best surfing break and while the water is a bit cold (about 15˚C in late June), the waves are often great in June and generally uncrowded. The Conference will mix plenary, presentation and poster sessions. Sessions timing will vary with the tides and weather so that there is no conflict with best surfing conditions. It may be necessary to extend by 1 day if the surf is really good, so be prepared for that.

It will include half-day tours. The best event may be the Kiwi surfing tour in Campervans, which will start after the conference and run for 5 days.

Social events will include Registration Reception, a Civic Reception and a Conference Dinner. There will be a choice of 2/3 day Post-Conference Tours, in addition to the NZ surfari.

For further information and registration please go to the website:
www.asrltd.co.nz/news.html

Coastal_List

Coastal_list is a moderated email list for coastal engineers and practitioners. Tony Dalrymple, the professor of coastal studies at Delware University is the originator of COAST LIST, a specialist coastal email discussion group. This is an excellent web based source of current international issues in the coastal scene, it provides an opportunity to gain access to coastal scientists, engineers and practitioners from all over the globe for interesting leads and exposure to international coastal work.

The discussions are always informative and of interest to a range of levels within the industry. Subscription and other information about coastal_list is found at:
www.coastal.udel.edu/coastal/coastal_list.html

2003 National Coastal Survey: Assessing community understanding and participation in coastal management in New Zealand

New Zealanders love the seaside experience and want to live close to the sea—sometimes too close. New coastal subdivisions are constantly being developed and property prices are soaring thereby increasing the overall risk of damage from coastal hazards to people and property. Global warming and the threat of sea-level rise will exacerbate existing coastal hazards. There is plenty of anecdotal information on NZ societal perceptions of risks associated with the coastal zone, but really how aware are residents and visitors of the risks of living at and visiting the coast.

GNS and NIWA, through their joint Natural Hazards Centre, have recently conducted a large-scale national survey of coastal residents and visitors to determine perceptions of, and preparedness for, coastal hazards (mainly tsunami and coastal erosion). The survey aim was to build up a picture of the social dynamics at work in coastal communities.

Over 6000 questionnaires were delivered in January and February to 34 coastal communities from Riverton in the far south of the South Island to Waipu Cove in the Northland region of the North Island. Some Auckland communities will be surveyed in March. The content of the questionnaire included: perceived threats from a range of natural hazards, specific awareness of and preparedness for tsunami, perceptions of coastal erosion threats and preferred mitigation options, general emergency preparedness, willingness to pay for coastal dune care and socio-economic data on survey respondents. With the support of ten local and regional councils, the initial survey scope was extended to enable targeted questions to be asked at different locations and we were able to extend the number of communities surveyed. Results from the National Coastal Survey will be presented at the Coasts & Ports '03 conference in Auckland.

For further information, contact David Johnston (d.johnston@gns.cri.nz) or Rob Bell (r.bell@niwa.co.nz).

Conferences/Workshops

New Zealand Geographical Society Conference
6 - 11 July 2003, University of Auckland, New Zealand

This conference is the 22nd Biennial Conference of the New Zealand Geographical Society, co-hosted by the School of Geography and Environmental Science at the University of Auckland. For further information contact the Conference Secretariat: j.logie@auckland.ac.nz

Coasts & Ports Australasian Conference 2003
9-12 September 2003 Auckland, New Zealand

"Coastal Development - A Quest for Excellence". A unique forum that brings together diverse groups interested in coastlines, coastal development and ports. For more information go to website: www.coastsandports.co.nz

Canadian Coastal Conference
15-17 October 2003, Kingston, Canada

First Announcement and call for papers for the 2003 Canadian Coastal Conference. Deadline for receipt of abstracts is 15 April 2003. To find out more contact: michael.skafel@ec.gc.ca

The NZ Ecological Society Annual Conference 2003
16-20 November 2003, Auckland, New Zealand

The 2003 Annual Conference of the New Zealand Ecological Society will be held in Auckland. The theme is "Theory and Practice in Ecology." A student day will be held on 16 November, with field trips on 19 November. Conference days will be 17, 18, and 20 November. For more info, contact Dianne Brunton at d.brunton@auckland.ac.nz

HYDRO 2003 The 4th Australasian Hydrographic Symposium
24-26 November 2003, Christchurch, New Zealand

This conference is hosted by the NZ branch of the Hydrographic Society of Australasia. This symposium is only held every 6 years, for those involved in hydrographic surveys or coastal and offshore oceanography. To find out more about this conference contact the Conference Secretariat on email: wendybarker@xtra.co.nz.

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 about 300 members. Members represent the 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 the Secretary *(see address on p 18)*

Editorial

With so much national media attention recently being focused on 'coastal erosion' (something the Coastal Society has been discussing for years) we felt it was perfect timing to discuss a wide range of areas of interest, including the continuing work in aquaculture, new work in marine environmental classification and the ongoing fast ferries issue.

In this issue of Coastal News we have tried to capture the wide variety of projects that are being worked on around the country in coastal management, science, engineering and planning. As always there are many people working away in their own corner of New Zealand and it is great to read about what these people are up to. It would seem that many of the issues are often replicated around the country with different environments, communities and local issues to deal with, but the concepts and tools for managing these are often the same. Coastal News therefore presents an excellent opportunity to share ideas and to find places and people you can go to find out more about a specific problem you may be dealing with. Take the mangrove management issue for example; it is without doubt a hotly debated issue at the moment throughout the top of the north island with communities, councils and scientists discussing a range of issues, concerns and management techniques.

We have also introduced a new column called 'Sand Bites', designed to provide you with an update on current coastal issues and decisions.

As always we have attempted to portray an unbiased view of what is happening out there in the coastal world and have left the articles as untouched as possible to allow the authors individuality to prevail. Therefore please be assured that the views expressed by the authors are not necessarily those of the Coastal Society – we are merely providing a forum for discussion.

We do rely heavily on assistance from the society members to provide us with up-to-date information on work they are involved with and sincerely appreciate those who put their hands up to write the brief and thought provoking articles which now make up the Coastal News.

Lucy Brake, Editor
(lbrake@beca.co.nz)

Update on the NZCPS Review

Dr Jo Rosier has been appointed by the Minister of Conservation as the independent reviewer of the New Zealand Coastal Policy Statement (NZCPS). Dr Rosier started her task on 3 February 2003 and is required to submit her report by 30 November 2003.

The objectives of the review are to report on the effectiveness of the New Zealand Coastal Policy Statement (NZCPS). To achieve this it is necessary to:

- Assess the ability of the (NZCPS) policies to address current and emerging coastal issues, and
- Make recommendations to the Minister of Conservation of the need, if any, to review, change or revoke any policies within the statement.

In determining the effectiveness of the policies there is a need to examine how these policies have been implemented through plans and resource consents.

Does the NZCPS provide clear and sufficient guidance to aid decision-makers? What changes have occurred in coastal management over the last decade, what new pressures have emerged? How well do policies in the current NZCPS deal with these emerging coastal issues?

The reviewer is meeting with various stakeholders whose activities may be affected by the NZCPS including local government, industry, ports, surf lifesaving, conservation groups, recreational user groups, professional bodies and research organisations during late April to late July.

Discussions with key people in iwi organisations who deal directly with resource management issues, including iwi liaison people within local government, will occur throughout the year.

The reviewer will also be talking to government officials involved in related policy initiatives, including those involved in the development of the Ocean's Policy for NZ, the Aquaculture Reform and the review of the Marine Reserves Act.

In addition to talking to key stakeholders the Review will also be publicly advertised in late April and it is likely that a 4-page flyer will be produced so that people who have an interest in the coast can send in written comments.

While there will be no formal submission process it is envisaged that comments will be received up until 30 July 2003.

Members of the NZ Coastal Society may make submissions directly to Dr Jo Rosier, School of People Environment and Planning, Massey University, Private Bag 11222, Palmerston North, Ph. 06 3504347 Fax 06 3505689, e-mail: D.J.Rosier@massey.ac.nz

Coastal News

Sand-bites - news from the coast

Government Pays $3.54m for Waikawau Bay

The Department of Conservation has purchased 149ha of "pristine" Coromandel coastal property from the University of Auckland. Conservation Minister Chris Carter was disappointed his Department was forced to compete with development interests for the land (NZ Herald, 27.02.03)

Paraparaumu Residents Suing Kapiti Coast District Council

The owners of an exclusive beachfront subdivision in Paraparaumu are suing the KCDC saying the Council was negligent when it approved the subdivision in 1989 and a building consent should not have granted. The Wellington Regional Council has indicated that a temporary block seawall, built by KCDC, would have to be removed after the consent expires in 2004 (NZLG, Jan 03).

Consultants Dispute Impact of Clutha Dams on Coastal Erosion in South Otago

Consultants for Contact Energy and the Clutha District Council could not agree on the impact of dams on the amount of sediment input to the coast and related coastal erosion during recent consent hearings. The debate highlights our ignorance of many coastal sand systems and the significance of fluvial inputs of sand to beach-nearshore sand systems (ODT, 28.01.03)

Northern Regional Councils Reconsider "Coastal Occupation Charges"

Auckland, Northland, Bay of Plenty and Waikato Regional Councils are reconsidering introducing occupation charges for marinas, private jetties, wharves, marine farms and similar uses. Councils have had the option of imposing coastal and marine occupancy charges since 1997 but have been reluctant to do so. Such charges may be introduced in the next 3-5 years, but only after a coastal plan change (NZ Herald, 01.11.02)

Pakiri Subdivision Gains Court Approval

The Environment Court has granted consent to developers to subdivide 150ha of farmland into 14 lifestyle blocks (4-20ha lots) above the southern coast of Pakiri Beach. The decision concludes a case that involved the High Court and Court of Appeal. The Environment Court imposed strict conditions, including a requirement to plant hundreds of thousands of native trees on the exposed site. The vegetation must be maintained until the canopy cover reaches 75 per cent. Four more applications at Pakiri are before Rodney District Council (NZ Herald, 22.09.02)

Dunedin City Council Faces Strong Opposition to Offshore Sewage Disposal

The Dunedin City Council has faced strong opposition since it lodged a resource consent application with the Otago Regional Council to build a $22 million pipeline to take waste water from the Tahuna treatment station and discharge it 1.1km off the St Kilda coast. Effluent is currently discharged close to Lawyers Head. Community groups are seeking advanced secondary treatment prior to discharge.

New Zealand Coastal Society Student Travel Scholarships

The Society is pleased to announce scholarships to assist students or recent graduates of a New Zealand University attend the Society's annual seminar. The value of each scholarship is up to $500. Successful applicants will also receive free seminar registration. Up to three scholarships will be awarded annually.

Applications for the 2003 Scholarships close on the 30 May 2003. Applicants must be currently enrolled in a graduate program or have completed their studies within the last 6 months. Successful applicants will be notified by the 30 June and must confirm acceptance of the scholarship by 31 July. The next annual seminar of the Society is being held in Auckland from 9-12 September 2003.

Applicants must be student or full members of the New Zealand Coastal Society when applications are submitted.

Applications should cover no more than one A4 page and contain:

a. the applicants name and contact details (address, phone, email);

b. the degree completed or enrolled in;

c. date of completion or intended date of completion of research;

d. the title of the dissertation or thesis;e. a brief (no more than 200 words) account of how the student's research relates to the goals of the Society;

f. a travel budget (based on advance-booked fares);

g. their supervisor's signature.

Successful applicants may be required to present a short paper on their research at the annual seminar.

The goals of the Society and applications forms for membership are contained in the website www.cae.canterbury.ac.nz/nzcs/nzcs.htm

Send applications to: Paul Baunton, The Secretary, New Zealand Coastal Society, c/o Tauranga District Council, Private Bag 12022, TAURANGA.

Coasts & Ports Australasian Conference 2003

The Coasts & Ports Australasian Conference is to be held in Auckland, New Zealand from the 9 – 12 September 2003. The theme is "Coastal development – a quest for excellence". The conference will also be the venue for the16th Australasian Coastal and Ocean Engineering Conference and the 9th Australasian Port & Harbour Conference.

The NZ Coastal Society is actively involved in the organisation of this conference, which replaces the Societies annual conference in 2003. The organising committee now have Beca's, Ports of Auckland Ltd, Fletchers, NIWA and Ballastham Dredging on board as five major sponsors. Several minor sponsors are also lined up. Keynote speakers include:

- Malcolm Latham (Executive Chairman South Sydney Development Corporation Australia and Auckland Waterfront Advisory Group);
- Geoff Vasey (CEO of Ports of Auckland);
- Tom Schnackenburg (Syndicate Head Design coordinator Americas Cup-team New Zealand); and
- Dick Pickrill (Director of the Bedford Institute, Nova Scotia, Canada).

The conference programme including field trips is taking shape. Abstracts (due 28 February) have been flooding in and full papers will be required by 30 June 2003. A team is being assembled to review the papers which will be available on CD at the time of the conference.

Coasts & Ports is shaping up to be a bumper event with over 200 registrants expected. Give it your support and tell others about it. You can keep in touch with further developments via the conference website (www.coastsandports.co.nz) or email the conference managers for specific information (coastsandports@tcc.co.nz).

Terry Hume
(NZCS Coasts and Ports Coordinator)

News from the Regions

Coastal News

Waikato/Bay of Plenty Region

On Saturday 07 December 2002 the Whaingaroa community catchment and harbour plan was launched with an open day at the Raglan Town Hall featuring displays by community groups and management agencies. The launch was the culmination of six years work by the Whaingaroa Environment Centre and represents a national first and is already being viewed with interest by other communities. It is all about management agencies and communities working together for Sustainable Development.

Bronwen Gibberd, Environment Waikato
e-mail: bronwen.gibberd@ew.govt.nz

Auckland Region

The annual seminar series was kicked off in February with two informative presentations by independent consultants on coastal erosion management systems.

Hans Vesterby, assisted by Trevor Richards (Beach Management Systems), discussed the concept and application of beach drainage / beach-face dewatering, and Chris Johnson (Risk Safe Solutions Ltd) introduced 'Undercurrent Stabiliser' Systems.

With a relatively small crowd in attendance there was good opportunity for discussion. Though neither system has yet to be implemented in New Zealand, the group was interested to learn that the Gisborne District Council (Dave Peacock is the GDC contact) have commissioned a pre-feasibility beach-face dewatering study. We will be interested — Trevor, Hans or Dave — to hear in due course the outcome of that project.

We will host at least 3 more seminar evenings throughout this year, the next being in April.

Each seminar is advertised by distributing notices of the meetings to all those on the local mailing list, and generally to those on the mailing lists of those in neighbouring regions, as well as posting the notices round various notice boards. Everyone is welcome.

Andrew Benson, Auckland Regional Council
e-mail: andrew.benson@arc.govt.nz

Otago Region

The CDVN conference held from February 12th - 15th was a great success with over 106 delegates from all parts of New Zealand. Some of the highlights of the conference were the visit to the Tavora restoration site, being welcomed onto the marae at Karitane, and the launching of the Pikao Recovery Group's Pikao Brochure by the children of the Kiwi Conservation Corps, and a coastal expo for the Dunedin community to learn about their coastline.

In other news, the City Council continue on design and project development of the St Clair seawall. This project which is combining the wall and it end wall mitigation works will include amenity works on the St Clair Esplanade. A further update on the projects start and progress will be available as more information comes to hand.

Paul Pope, Dunedin City Council
e-mail: ppope@dcc.govt.nz

Test your coastal knowledge

Where is this popular holiday / boating spot?
(answer on page 17)

NZCS Management Committee

NIWA's New Tide Forecaster

Going on holiday to an out-of-the-way place and want to know the tides? Or are you planning a fishing trip, or a beach wedding in a year or two perhaps? Need to correct hydrographic soundings?

Maybe you are interested in historic events, such as floods, and want to know what the tides were on a certain day, the Great Cyclone of 2nd February 1936 for example?

Either way, NIWA's new Tide Forecaster service can help you.

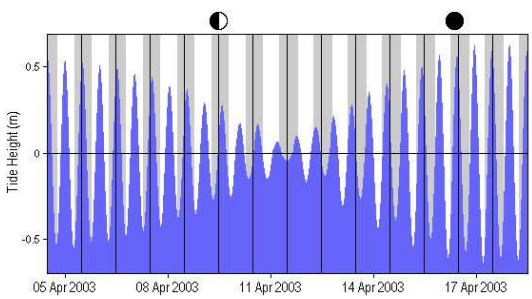
It is now available as a free service on the NIWA web site at www.niwa.co.nz / services / tides. Just select the area and start date (from 1930 to 2006) you are interested in and the service will give you a table with tide information and a graph like the one below. The dark shaded areas are hours between sunset and sunrise, while symbols indicate the 4 phases of the moon.

This new tide forecasting service is a step ahead of existing methods because it will produce tide times and heights anywhere in the ocean or open coastlines around New Zealand. This innovative approach has been achieved by using an ocean tide model developed by NIWA scientists Derek Goring and Roy Walters.

Forecasts for up to 28-days of the tide relative to the mean level of the sea can be downloaded for the area you are interested in.

At this stage, the tide model doesn't include the inner regions of harbours, ports, and estuaries (sea entrances are OK), but you can get this tidal information from the LINZ site for standard ports (www.hydro.linz.govt.nz / tides / majports / index.asp) or use the tide tables. Further improvements are in the pipeline.

NIWA also provides a list of Red-Alert days during the year when tides will be very high. This can be used as a rudimentary warning system for coastal flooding and wave overtopping in low-lying areas by keeping a watchful eye on weather systems (e.g. low-pressure systems or high winds and waves) during these periods. The Tide Forecaster includes a link at the bottom to the 2003 Red-Alert dates.



Rob Bell, NIWA (email: r.bell@niwa.co.nz)

A New Zealand coastal book – an update

The New Zealand Coast: Te Tai O Aotearoa is only a few weeks away from release now. The beginning of 2003 has seen a flurry of work being undertaken into gathering of photographs, proofing of text and final confirmations. The book is edited by Helen Rouse (West Coast Regional Council), James Goff (GeoEnvironmental Consultants) and Scott Nichol (University of Auckland). Chapter contributions have come from 22 authors, representing a cross section of Universities, Regional Authorities and Crown Research Institutes.

The NZCS have contributed to the book by way of contribution to the publication costs and Coastal Society members writing chapters.

Copies should be available at an affordable price from Whitireia Publishing in Auckland. Full details on how to buy a copy of the New Zealand Coast will be published in the next Newsletter of the Coastal Society. For further information please contact Lucy Brake, Coastal News Editor, lbrake@beca.co.nz

8th International Coastal Symposium
New information available

The ICS2004 is to be held from March 14 to 19, 2004 in Plaza Itaperna Resort, Santa Catarina State, Brazil. This is the 8th in a series of International Coastal Symposia supported by the Coastal Education and Research Foundation – Journal of Coastal Research.

This multi-disciplinary international symposium is convened as a forum for scientists, engineers, planners and managers to discuss recent or new advances in scientific, technical, and socio-economic understanding of environmental issues related to coastal processes. Traditionally the ICS provides a high level forum for exchange of information among related fields of study. The Conference includes a fieldtrip / diving trip to the diverse and scenic environments of the Santa Catarina State, Southern Brazil. .

The ICS2004 web site has new information available regarding the Conference Program (key note lectures), Conference Fees, Accommodation, Pre-registration and an Abstract Template Download Page. To access this information go to: http: / / www.cttmar.univali.br / ~ics2004 /

Coastal News

Scheme may help Wainui

In one coastal area in Denmark the relevant official ruled that nature was to be allowed to have her way and the resulting beach erosion committed half a seaside graveyard — and its occupants — to the deep. Wainui residents, however, are keen to see their coastal properties protected and researchers have been looking into how they can oblige. Danish engineer Hans Vesterby was in Gisborne last week carrying out a pre-feasibility study as to whether the beach management system he pioneered in the early 1980s would be suitable for erosion-prone southern Wainui. He is no longer concerned silt might be an obstacle to installing a drainage-protection system at Wainui Beach.

The system works by using drainage pipes under the sand to lower the groundwater level, encouraging sand to be deposited on the beach rather than drawn away by wave action. "During my first visit to Gisborne in 2000 I learned about the presence of estuarine silt which raised concerns about how deep the system could be installed," Mr Vesterby said. "But our investigations this time show that the silt can actually be used to our advantage, making the system more effective by providing a 'floor' on which excess water could be collected."

During the week Mr Vesterby and Beach Management System (BMS) consultant Trevor Richards carried out a raft of tests to help determine how the system could work at Wainui. Examining the composition of the sand, for example, showed them that the grains were of a size and content ideally suited to a drainage system.

The engineers on Thursday presented their early findings to members of the Wainui Beach Management Strategy Committee, established by Gisborne District Council in 2001. They planned to present a final report to the council before leaving Gisborne to undertake similar work at three beaches on the Kapiti Coast.

The next step was for the council to decide whether to progress to the next stage — commissioning a full feasibility study. The costs of the pre-feasibility study were being shared between the council and owners of beachfront properties. The beach drainage system was developed by the Danish Geotechnical Institute (GEO) in the 1980s and had been successfully applied at nearly 30 locations around the world. Mr Richards said its main advantage was that it was a 'gentle' form of sand replenishment with minimal environmental impact.

Both he and Mr Vesterby were "very optimistic" the BMS method would work in sections stretching about 800 metres back from Wainui School which had been identified as problem areas. "The issue here is the protection of assets, both the beach and the houses above. Many beach protection schemes protect man-made property without consideration to the beach itself. Our aim is to benefit both."

by Kristine Walsh, Gisborne Herald, 25/2/2002

Resolving Coastal Conflict and Competition: the Whangarei Coastal Management Strategy

The Whangarei District has 270km of diverse and spectacular coastline comprising estuaries, rivers and harbours, open surf beaches, rocky shores, islands and lagoons. Parts of the coast are densely settled; others are largely in a natural state. The entire coast has significant value to tangata whenua and there are natural and landscape values of regional and national importance. There is a unique sense of place in many of the clustered settlements along the coast.

Over the last 10 years the Whangarei coast has come under significant development pressure. This has largely taken the form of lifestyle and holiday home development, however there are also proposals for tourism, aquaculture, marine industry and transport development. There is a new deep water port at Marsden Point and a burgeoning super yacht industry. All these demands offer an exciting prosperous future for Whangarei which Council is keen to embrace. However Council also recognises its obligations to protect and enhance the natural character of some of NZ's premier coastal environment for future generations.

Conventional resource management techniques and over-reliance on the District Plan will not deliver the long term outcomes sought for sustainable coastal management. A toolbox of instruments will be far more effective at delivering effective and pro-active management and resolving the conflicts and competition that exist.

This tool box will include instruments of local government such as structure plans, asset management plans, hazard management strategies, reserve management plans and annual plans as well as a wide range of community driven initiatives such as beach or dune care groups.

Whilst there is growing recognition nationally of the need to manage the coast through a range of methods, there are still only a few good examples of long term integrated management to bring the diverse range of players and tools together under a common umbrella and common vision for the future. The Whangarei Coastal Management Strategy aims to achieve this. It establishes a strategic, integrated framework for managing the protection, use and development of the coastal environment over a planning horizon of 20-50 years.

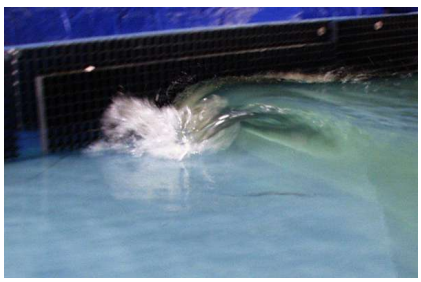
Beca will be presenting a paper at the Coasts and Ports Conference in September 2003 which will examine the approach taken to the Whangarei Coastal Management Strategy, the lessons learned through technical study and extensive community consultation and identify some of the innovations and tools developed to resolve resource conflicts and competition. The approach taken to structure planning for areas with significant pressures or threats will also be explored.

Don Lyon (dlyon@beca.co.nz) and Amelia Linzey (alinzey@beca.co.nz).

Surfing Pools for the Olympics

Surfing is extreme, intense and at a world-class level requires the skills and commitment of any professional sports person. It is also a perfect spectator sport. However, the variability of the meteorological and oceanographic conditions, and factors such as access and facilities for spectators have presented logistical difficulties for inclusion as a scheduled sport into events such as the Olympics. Recent developments in surfing pools bring the sport into a controlled arena, with controlled wave conditions, creating extreme breaking waves close-up and ideal for Olympic inclusion.

It's been many years since the completion of the first ever wave pool for surfing in Tempe, Arizona, in the late 1960's. During this time, the quality of surfing waves in pools has continually but slowly improved. Most surfable wave pools, such as Typhoon Lagoon, which has been called "the best surfing pool yet built" fail to break waves in a way that a surfer would call "powerful" or "high-quality". Intense breaking, high-quality waves are required for world-class surfers to adequately display their skills in professional or world class events such as the Olympic games. Technical leaps in pool designs, wave generators and the understanding of how to make a good artificial surfing wave have now developed to a stage where extreme surfing waves can be created in a pool.



One leader in the field of artificial wave generation is a company called Artificial Surfing Reefs Ltd (ASR), currently the world's most advanced developers of artificial surfing reefs in the ocean. They are a technology company with strong scientific roots in coastal science and computer modeling. The company is led by Dr Kerry Black, world renowned for his scientific publications in ocean waves theory, beaches and coastal protection. Dr. Black is also a former Professor of Coastal Oceanography in New Zealand. He is ably supported at ASR by 3 company directors, each with a PhD degree in coastal science.

Their breakthrough in surfing pool design came when ASR joined forces with a large US company, Aquatic Development Group (ADG), a world-leader in wave pool development. ADG specializes in high-quality wave generation equipment and wave pool manufacturing. Together they developed three innovative components that now make extreme surfing waves in a pool possible, the Groundswell™ wave generation system, the Wedge™ pool design and the Reef™ floor system.

By refining their existing wave generation technology, ADG's pneumatic system is able to create 2 m high waves at 8 -20 s intervals - perfect waves for challenging surfing conditions. The next developments came through physical models and computer simulations. ASR developed a novel wave pool design that optimises the pool shape, incorporates a changeable floor and other features to mitigate wave reflection / distortion and wave-driven currents that can be a problem when generating waves in an enclosed space. It was found that the pool must have sides that converge (the 'Wedge') as you surf down the pool – this keeps the wave height up throughout the pool, reduces water volume and eliminates unwanted distortions in the wave crest. The outcome is a perfect straight-crested 2 m high wave – one after the other – ideal for the introduction of surfing into the Olympics.

The physical proof of their successful surfing pool comes from large scale models filling an industrial building at Aquatic Development Group in Albany (New York). These models with air-injection wave generators are able to produce perfect surfing waves. The scale model is 1:8, which is very large in terms of models. The picture above shows a classic surfing wave which can be produced endlessly. Surfing waves with the extreme breaking characteristics created with the models are rare on our beaches and have never before been created at this scale in a pool.

The next developments came when ASR patented

a fully-adjustable wave pool floor. In a pool, and indeed on the open coast, it is difficult to get a range of wave breaking types without changing the bottom contours. The picture presented here demonstrates an intense breaking surfing wave, created by a specific pool bottom shape - the range of reef inserts available provide a variety to different wave types to cater to all skill levels.

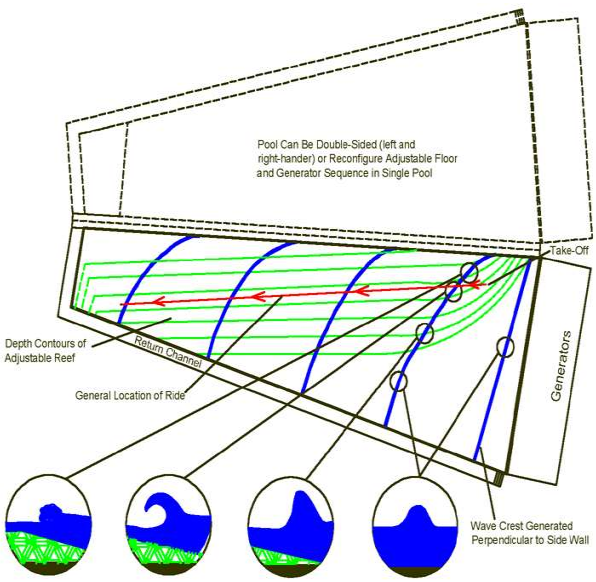
Floor changes are controlled by computers and can be quickly adjusted to make a variety of waves, enabling the world's best surfers to show off their skills in different types of conditions – such as trick riding waves or difficult tubing waves. Once again, this is ideal for the Olympics when the surfers must be versatile and able to ride in a variety of conditions – similar to the requirements of sailors confronting different weather conditions. But the difference is that the conditions are all controlled by a computer and can be varied during the competition. A variety of wave breaking intensities, peel speeds, number of sections, etc., can be created by a combination of reef / floor configurations in the pool and the wave height and direction that can be generated by the "firing" of the different sequences of generators.

The shapes of the floors are set to match the underwater reef shapes on the world's best surfing reefs. ASR is the only company worldwide which has conducted surveys of the world's best reefs to unravel the mystery of their shapes. Travelling to remote surfing locations in Indonesia, Australia, Hawaii, California and Brazil to name a few, with high-tech depth sounding equipment linked to satellite position fixing devices produced accurate maps of the shape of the seabed that are unique. Much was learned about the best ways to make a wave break for surfing and laboratory tests in the large-scale model confirmed that the application of this knowledge was producing the waves that were required.

There are three options for the pool floor: fixed, modular, or the remote operated versa-reef. It is the pool-floor (seabed) that has the biggest influence on the breaking wave, both in terms of how steep the wave breaks (breaking intensity) and how fast it peels (peel angle). Dr Mead's research concentrated on how the bathymetry at world-class surfing breaks 'condition' waves to break the way they do at specific breaks. This led to the decomposition of the bathymetry at surfing breaks into different reef components (e.g. ramp, wedge, pinnacle, focus, ridge, etc.) that combine to create specific wave types, sections, etc. - as you would expect, the operation of a surfing break is very holistic, linked by the process of refraction, or wave-bending. In the pool the same is true, except that all the 'pre-conditioning' of waves prior to breaking to create a straight crested wave moving in a particular direction does not have to be addressed - it comes straight off of the generator. Each unique floor shape will offer unique wave-breaking conditions. With the fixed floor, it can be designed to optimise the pool length and width and variety of wave heights that can be generated, but apart from some variation that can be achieved through altering the sequence of caisson firing (10 caissons in a standard pool) it will generally have a main characteristic - a bit like say your local reef break that breaks a little differently during different wave conditions (hollower when the waves are coming straight in, fatter when they are coming from a large angle, faster when small, etc, etc.). With the versa-reef the whole category of break can be quickly altered, e.g. from a relatively slow peeling and soft-breaking point break, to a fast peeling top to bottom reef break (the fixed floor in the 1:8 model on the jpgs and mpgs is based on the "Hawaiian" design). While some configurations won't work, a large amount of variability in wave breaking characteristics is possible with versa-reef, while there are pre-programmed configurations the operator is free to create whatever break is desired. The modular system is in between the fixed and versa-reef, the configurations can be changed by swapping 'reef inserts' to a specific break type.

Pool surfing is well suited to television and spectator venues – every wave follows the same route, there is access for tv cameras and the intensity of the competition comes out in the up-close views of the competitors – each trying to outperform the other on identically challenging waves.

Kerry Black and Shaw Mead
ASR Ltd (www.asrltd.co.nz)



Managing Mangroves in Tauranga Harbour

Tauranga District Council, in conjunction with Boffa Miskell Ltd, is developing a community led approach to managing mangroves in four areas of the Tauranga Harbour. The approach is to maintain the status quo, that is control the further spread of mangroves in these areas.

The justification is long-term ecological sustainability of the harbour, and preventing the loss of other valuable habitats such as saltmarsh and inter-tidal flats. There are also cultural, recreational, social and natural character effects which would be indirectly addressed by active mangrove management.

Mangroves are a highly emotive topic in Tauranga, with residents and stakeholders wanting one of three broad approaches:

1 *do nothing* - no intervention and allow nature to take its course;

2 *status quo* - prevention of the spread of further mangrove colonisation;

3 *kill, kill, kill* - complete removal of all mangroves, restoring the harbour to what it was 50 years ago.

Tauranga District Council considers the status quo approach the most appropriate form of action and has identified four areas of the harbour where active mangrove management is required, with no intervention in all other parts of the harbour. These areas are the Matua, Welcome Bay, Waimapu and Waikareao estuaries.

The main control method is intended to be a 'line in the sand approach' where the extent of mangroves is limited to their seaward position as at 2002, with juvenile mangroves and propagules able to be removed under the terms of a resource consent. Harbour margin residents are already removing mangrove juveniles in some areas of the harbour without authorisation, and the project would allow better control and enforcement by regional council. Under the Regional Coastal Environment Plan the removal of indigenous vegetation is a discretionary activity, as is disturbance of the foreshore and seabed.

Area of mangrove within Welcome Bay Estuary proposed for 'status quo' management, Tauranga

An extensive consultation process has been embarked upon with the community and stakeholders such as Forest & Bird, Tauranga Harbourwatch, Tangata Whenua hapu, and Department of Conservation.

A recent public information day was attended by over 400 residents, while more than 260 feedback forms have been received during consultation.

In addition a survey questionnaire is being conducted by the Welcome Bay Catchment Care Group in conjunction with the University of Waikato, which will provide valuable resident opinion.

There appears to be widespread support for mangrove management in the Waikareao, Waimapu and Welcome Bay estuaries, with some opposition to mangrove control in the Matua estuary. Stakeholders are generally supportive, apart from Forest & Bird and Department of Conservation. Council is to lodge a resource consent application with Environment Bay of Plenty in April 2003 to remove juvenile mangroves seaward of established mangroves. This will be a publicly notified application to allow all parties the opportunity to make a submission and have their views heard. In the end the success of the project will depend on the level of community support.

David Phizacklea, Tauranga District Council (davidp@tauranga.govt.nz)

"For and against mangrove control"

As a result of the recent significant increase in concerns at the rate of mangrove growth around the upper north island, NIWA have produced a comprehensive brochure covering the facts about mangroves, the consequences of proposed courses of action and the likelihood of achieving the goals.

An earnest and urgent debate is developing at the local community level and there are many questions unanswered, particularly in regards to the local environment.

If you would like a copy of this brochure (NIWA Information Series No .31) please contact Mal Green (m.green@niwa.co.nz).

Test Your Coastal Knowledge (p 12) — Answer

Boatsheds at Titahi Bay

What's Hot on the WWW

www-ccs.ucsd.edu/

The Center for Coastal Studies (CCS) is a research division of Scripps Institution of Oceanography (SIO), University of California, San Diego (UCSD). Located adjacent to the SIO pier, the Center engages in world-wide scholarly studies of the coastal environment, the development of data acquisition systems and research instrumentation, and advising on coastal protection and sediment management. Among the areas studied are waves, currents, and tides in nearshore and estuarine waters; sediment transport by waves, winds, and rivers; fluid-sediment interactions; and marine archaeology.

www.nodc.noaa.gov/

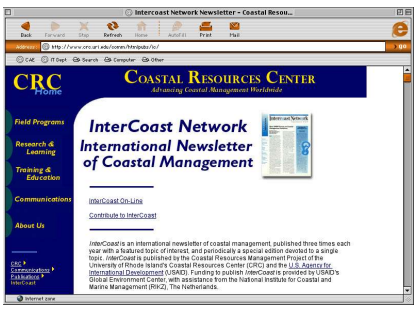
The US National Oceanographic Data Center archives and provides public access to global oceanographic and coastal data, products, and information. Check out the World Ocean Atlas and Database 2001.

www.ocrm.nos.noaa.gov/czm/

The National Coastal Management Program is a federal-state partnership dedicated to comprehensive management of the nation's coastal resources, ensuring their protection for future generations while balancing competing national economic, cultural and environmental interests.

www.livingoceans.org/marine_management.htm

The Living Oceans Society is a non-profit research and public education organization, committed to conserving marine biological diversity, in order to ensure a healthy ocean and healthy coastal communities. It is often recommended that MPAs be established within the context of Integrated Coastal Zone Management, in order to accommodate all resource use activities and develop management plans that address the conservation of biological diversity. Living Oceans Society is now researching ways that integrated Coastal Zone management can take place. Examples from around the world will be studied and research results shared with stakeholders and coastal residents.



www.crc.uri.edu/comm/htmlpubs/ic/

InterCoast is an international newsletter of coastal management, published three times each year with a featured topic of interest, and periodically a special edition devoted to a single topic. InterCoast is published by the Coastal Resources Management Project of the University of Rhode Island's Coastal Resources Center (CRC) and the U.S. Agency for International Development (USAID). Funding to publish InterCoast is provided by USAID's Global Environment Center, with assistance from the National Institute for Coastal and Marine Management (RIKZ), The Netherlands. The objective of InterCoast is to facilitate information exchange on coastal management.

Coast to Coast 2002: Source to Sea

Coast to Coast 2002, held last November at Tweed Heads, was the fifth in a series of biennial conferences concerned with coastal management in Australia. The Conference aimed to synthesize the knowledge of participants and seek convergence on the major actions required to achieve coastal sustainability; and to produce, as a tangible outcome from the conference, a range of integrated, credible and effective actions required for coastal areas that will achieve healthy coastal systems.

The organizers made an exceptional effort to facilitate dialogue towards specific recommendations and conclusions, through special plenary sessions, panel-driven discussions, advertising pre-conference themes and the appointment of "theme champions". Theme champions are charged with the task of continuing discussion and compiling position papers on the discussion during the following the conference. Overall, this conference was designed to achieve tangible outcomes.

The themes selected and advertised before the conference were:

1 population pressure and coastal development responses;

2 institutional arrangements, incentives and governance;

3 climate change and coastal stability;

4 effluents, contaminants and coastal water management;

5 indigenous involvement in coastal management;

6 coastal and marine habitat management; and

7 public versus private good.

Australia and New Zealand clearly share many of the same issues and pressures. Over 120 papers were presented, including contributors working in ecology, oceanography, geomorphology, sociology, economics; practitioners from all levels of government; and indigenous peoples.

The diversity and depth of papers is captured in a paper entitled "*Women Fishers as Coastal Co-resource Managers*" (the coast is a rich intellectual marketplace!). Reports from the states highlighted the diversity of management methods employed across Australia. All the papers can be accessed in full through the Conference website: www.coastal.crc.org.au / coast2coast2002 / index.html

Integrated coastal management emerged as a key conference theme. Several speakers lamented the complexity of federal, state and local authority law and policy and called for a rationalization of governance, some referring to the New Zealand reforms of the 1980s. This will be a challenge in contemporary Australia. Delegates were reminded of this challenge on a daily basis.

The Conference venue, the Twin Towns Services Club, is located in Tweed Heads, New South Wales. The associated hotel, 100m to the north across a narrow road, linked to the Services Club by a covered walkway, is located in Tweed Heads, Queensland. The time difference between the States (and across the walkway) is one hour! Tweed Heads is in two time zones.

The next Australian coastal management conference will be held in Tasmania in 2004.

Mike Hilton, University of Otago

Committee Member Profile – Dr Mike Hilton

Mike Hilton is a member of the NZCS Management Committee and Associate Editor of *Coastal News*. He is a senior lecturer in the Department of Geography, University of Otago, specializing in coastal management and processes, particularly in relation to dune geomorphology, ecology and restoration.

He came to Otago in 1995 via three years at the National University of Singapore, various contract positions in New Zealand and SE Asia, two years with the head office coastal unit of the Department of Conservation and some painful camel rides in the Thar Desert. His current research is concerned with the dispersal of marram grass, processes of marram grass invasion in active dune systems and the restoration of marram-dominated dunes on Stewart Island.

He teaches coastal management and planning. In his spare time he chases sheep, bees and chooks amidst a great deal of gorse beside Otago Harbour.

A Thought from the Management Committee

"In detachment lies the wisdom of uncertainty ... in the wisdom of uncertainty lies the freedom from our past, from the known, which is the prison of past conditioning. And in our willingness to step into the unknown, the field of all possibilities, we surrender ourselves to the creative mind that orchestrates the dance of the universe."

From Paul Baunton, *The Seven Spiritual Laws of Success*

Coastal Dune Vegetation Network February 2003

Conference Otago Museum, Dunedin

Pikao at St Clair

Euphorbia and sand tussock

Dunedin, St Clair

Puketeraki marae

Tavora plantings

Tavora hillside

The recent Dunedin CDVN Conference continued this successful series of meetings. The Pikao (pingao) Recovery Group, a coalition of local authority staff, academics, DoC staff, Te Runaka O Otago and others, assembled an unusually diverse array of speakers with an equally diverse range of perspectives.

The Conference was very well attended and the unanimous feeling was that the meeting, field trips and social events were a terrific success. It is to be hoped that the publicity generated by the meeting will engender greater support and understanding of the conservation management requirements of dunes and coastal vegetation.

Compared with the situation in the North Island many southern local authorities have been slow to devote significant resources to coastal vegetation restoration (and coastal management in general). In this respect the Dunedin City Council is poised to embark on a substantial new program of works and re-vegetation in its 14 coastal reserves.

Interest in matters coastal is developing within the Otago Regional Council. Dr David Bergin's review of completed and ongoing CDVN projects provided ample evidence of the potential for dune restoration in New Zealand.

Several speakers called for greater recognition of the natural character and indigenous flora and fauna of dune systems. For those engaged in dune vegetation restoration to consider the dynamic character of dunes (where appropriate).

Dr Brian Patrick (Otago Museum) introduced the little-known and poorly appreciated invertebrate fauna of dune systems. Mr Peter Raal (DoC, Otago) and Dr Mike Hilton (University of Otago) discussed existing and potential invasive weed species of coastal dunes – our dune systems are vulnerable to a great many South African and European species.

Dr Peter Johnson (Landcare) presented the depressed side of coastal dunes – interdune hollows and the dune plants of wet places – in a place with an abundance of both (Martins Bay). David Blair described the Yellow-eyed Penguin Trust's restoration work at Tavora and demonstrated the vision and commitment many NGOs have for their work.

Dr Ken Hughey of Lincoln University argued for the development of more effective indicators of the state of dunes, the pressures they face and the effectiveness of the response of managers. The Kiwi Conservation Corp, led by Jim Fyfe of DoC, presented a fabulous play enacting the Maori tradition of pingao – it was great to see the involvement of children in the conference.

Two panel discussions and a pikao-weaving demonstration completed the formal section of the conference. The first discussion considered four propositions: the coastal dune management effort varies a great deal across New Zealand (Otago vs Bay of Plenty); there is still a low level of awareness of coastal dunes as ecosystems containing a distinctive indigenous flora and fauna; the natural dynamic character of active dune systems is misunderstood (an active dune is not necessarily a problem); our knowledge of the biota of dune systems is still far from complete; and the conservation management of dune systems in New Zealand is very much about the management of invasive weeds, including the control of marram grass, lupin and gorse (but the funds are inadequate).

The second panel followed a beautifully presented talk by John Barkla of DoC (Otago) on special plants of the Otago coast. The post-conference field trip, attended by 15 delegates, visited several sites of coastal interest on the Catlins coast in South Otago.

All the presentations were stimulating and well received. All the papers warrant mention but I'll highlight two further, unusual offerings. Lyall Mason, a Southland farmer, shared his experiences of dune stabilization and provided interesting perspectives as a land manager. John Perry of the Amenities Society detailed the colorful history of the Dunedin Ocean Beach Sandhills and the floods, which were a problem in the early days of the city, giving an insight into the early interest in "dune protection" in Dunedin. John reminded us of the changing attitudes to dune systems and the coast in general.

The active participation of a very wide array of stakeholders marked this conference as an exceptional meeting. We look forward to the 2004 CDVN conference.

Mike Hilton, University of Otago
Elizabeth Miller, Network Coordinator, CDVN

Coastal News