



Great Barrier Island
ENVIRONMENTAL TRUST
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ENVIRONMENTAL NEWS



Marine Conservation on GBI
Black Petrel Progress
Kaka Tracks • Royal Society Speaks Out



Editorial

BY EMMA CRONIN



In our last newsletter, John Ogden began by describing beautiful blue days and calm seas as the island 'norm'. Indeed, we were fortunate to have a glorious extended summer and excessively mild autumn lasting well into late May/early June. However, on the night of the 10th winter arrived in its extreme. A massive storm, the likes of which have not been experienced on island for 100 years, dumped 305 mm of rain in the space of a few hours. Northern Great Barrier was the focal point of the activity, with Akapoua experiencing 443.5 mm of rain over the three days up to and including the night of the storm.

COVER PHOTO:

While catching and banding juvenile taiko on the summit of Hirakimata (see p. 14) Taric and Eli found and photographed this elegant specimen of the Blue Mushroom (*entoloma hochstetteri*). It is found only in NZ and India, in association with nothofagus (kauri) and podocarp species and is uniquely featured on the reverse of our fifty dollar note, under the kokako.

From my location at Glenfern the night of the storm was not dissimilar to other storms I have experienced on GBI. I lay awake listening to the screaming wind and torrential rain, listing the likely repair jobs for the morning, but never did I think it was much different to a 'normal' Barrier storm. That was until I awoke to an uncannily still and quiet morning, and quickly registered that the hill face directly across the Bay was now in the sea. An enormous land slide had fallen across the road and boat ramp, burying Port FitzRoy's rubbish and recycling site. I knew then we were in for a lot of damage. However, it wasn't until news slowly began to filter in (our phones were out) that the enormity of the damage was gradually revealed.

There were numerous slips along many of the northern Barrier roads and extensive damage to DOC tracks. Some buildings were damaged by trees and many experienced flooding. People were marooned within their settlements and without phones, power, water or adequate sewage. Port Fitzroy had turned a muddy brown and was littered with innumerable logs and debris – entire nikau lay prostrate among broken branches and trunks of puriris semi-submerged in the vast volume of debris deposited at the head of the Unguru Bay. The entire wharf area was covered with stones and silty sand. Mud and water lay everywhere. The Akapoua bridge had gone completely and the campsite was littered under metres of broken branches, silt and stones. Fortunately and miraculously there were no injuries reported.

This was damage that was reasonably

and immediately accessible – houses, roads and tracks. However, helicopters were necessary to assess damage further afield. DOC reported numerous landslides throughout the Conservation Area including a massive slip on the eastern slopes of Hirakimata. This is part of the breeding area of black petrel or tāiko – one of only two locations in the world where this species breeds. (See p.13) There was a distinct sickly-sweet scent of decomposing foliage along the receding streams and in the bays. There were few birds to be heard and I found some dead freshwater fish stranded along the banks of widened streams. On the up side, we found several chevron skinks happily relocated in the massive debris dams that had formed. Rabbits and rats were heavily hit, their swollen carcasses a common site for a few days after the storm with even more presumably drowned in their burrows. Fewer rabbits were definitely noted by locals.

As I write this, another weather event is hitting the island with 170 km/hour winds and more rain forecast. It's certainly testing the tenacity of the community, but they are well-experienced in keeping on keeping on, and have set to work gradually fixing and repairing the damage. It's certainly a time where you reassess what is important and disregard those trivialities that too often absorb our energy.

The trust is also moving forward, presenting a new face with a recently revamped website and a fresh approach engaging the community more, and recognising and celebrating their conservation achievements. In April, we shared a stall with Zero Waste and promoted the 'Great Easter Rat Hunt' at the Easter Fair. A good number of rat tails were exchanged for chocolate mice, and pest plant and animal information were provided. We hope to grow this as an



annual event and become more present and involved in initiating and supporting local community environmental activities. Collaboration between Ngati Rehua Ngatiwai ki Aotea Trust, the Great Barrier Local Board and the GBIET continues to grow, with some major projects gaining traction and funding being sought. Clarification of these projects will hopefully occur before the end of the year, enabling them to be initiated in the New Year.

By then, much of the damage from the storm will hopefully have been repaired including the many tracks presently closed to walkers. Our island benefits hugely from tourism associated with the natural and wild nature of Aotea. The tenacity to keep moving ahead together to restore and enhance those qualities that we value on GBI, will be paramount to our future.

Emerging Issues

The Royal Society speaks out on pests

BY JOHN OGDEN



A recent issue (March 2014) of the Royal Society of New Zealand's "emerging Issues" papers, addresses the challenge of pest management. This is a 'heavy' document, put together and reviewed by panels of experts and with over 100 references. It contains information about invertebrate pests, pathogenic micro-organisms, weeds, vertebrate pests, freshwater aquatic pests, and marine pests. This wide coverage somewhat dilutes the overall impact of the paper, presumably because it is hard to come up with specific recommendations applying in all these varied cases, except that more research and more action is needed in all cases!

There are some quite staggering estimates of the economic impacts – for example eradication costs for the Painted Apple Moth (1999-2006) were \$58 million, but the savings (i.e. averted costs) amount to possibly as much as \$259 million over 20 years. The cost of managing vertebrate pests – possums, deer, rabbits, rats, mustelids etc. is estimated at a billion dollars every year, but it could be higher than this – possibly 3.3% or nearly 2% of GDP. New Zealand's outstanding international reputation in eradication of pest mammals for biodiversity protection on islands is summarised. The future challenge of eradication of mammalian pests on inhabited Islands, and the huge vision of a "predator-free New Zealand" are briefly mentioned and referenced (<http://predatorfreenz.org/>).

"There are only two native land mammals in New Zealand (two bat species), the result of 80 million years of geographical isolation. In contrast, 32

species of mammals (and 35 birds) have become established. New Zealand's native flora and fauna are particularly vulnerable to predation by mammal pests. Rats, mice, weasels and stoats, hares and rabbits, hedgehogs, possums, wild pigs and feral cats all present serious threats. Strenuous efforts are being made to create vertebrate pest-free areas on islands and in predator-fenced sanctuaries. However, these areas are mostly small, and reinvasion is always a risk. Emerging issues include the need for:

- the cost-effective, humane management of vertebrate pests at very large scales;
- larger areas free of mammal pests, and keeping them free by effective monitoring, detection and rapid removal of invaders;
- maintenance and more public support for mammal pest control or eradication, especially where this involves toxins (e.g. the Predator Free New Zealand initiative).

Those three bullet points all apply to Great Barrier Island – if we are to eradicate the island's pests we will need (1) community support and involvement especially in inhabited areas; (2) an acceptable method applicable to large areas of diverse topography, and (3) effective monitoring and biosecurity. The Island could benefit from being a large scale test case, but the economic benefits must be apparent to all before this will be achieved.

To read the whole item, and others involving 'green economy' and climate change, google 'New Zealand Royal Society Emerging Issues', or see:
www.royalsociety.org.nz/pestmanagement

Marine Conservation on GBI

Past failures, present dilemmas and future pathways

BY DAVID SPEIR

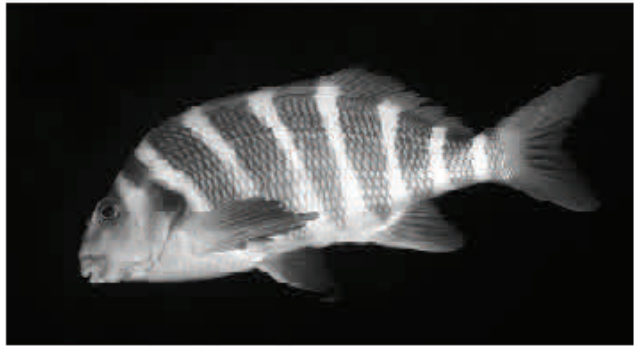
Our beloved rock, Pikiparia, Aotea, GBI, call it what you will, has an amazing length of coastline: exposed rocky cliffs, surf-washed beaches, mangrove-fringed estuaries, fjord-like harbours with multiple variations of exposure, substrate, aspect and tidal effect.

These shallow waters around us are flushed with nutrient from the land, oxygenated by wave and wind action, and stirred by tidal movement.

Millions of creatures inhabit these waters – a food chain beginning with atomic sized viruses, through miniature brocoli-like phytoplankton and fungi, upwards through multiple trophic levels to the apex predators we are so fond of eating. It's a sophisticated self-regulating food chain – that is, until we entered the picture.

We prize our seafood – the snapper, kingfish and crayfish we enjoy is perceived viscerally, genetically even, as part of our lives. For the pioneer settlers of Aotea (maori and pakeha alike) the readily harvestable (and seemingly inexhaustible) supply of marine protein was critical to their survival when conventional farming and crop growing proved challenging to say the least.

Time has changed that picture considerably as populations burgeoned. (The tiny tuatua shells in the Whangapoua middens tell the story of maori population pressure). Nowadays we have cultivated a visitor industry, a curious term that implies profit or



• *Red Moki – a slow moving and territorial keystone reef species – and a sitting duck for spear-fishermen. In steady decline around GBI.*

production from visitors. This may be the case if you hire cars or rent out accommodation, but for our marine resources it translates into more fishing pressure. While many locals still harvest kai moana for sustenance, many of our visitors do so as a holiday experience.

They come with dreams of snapper fillets and crayfish tails, equipped with the latest technical support – up to the minute weather reports, high speed fizzle-boats, fish-finders and soft baits, radar and cell phones. Their money is invested in this extractive technology and they want a return.

And so do others. Day in and day out, in all types of weather, commercial fishing vessels work our waters. They operate more efficiently than ever, under statutory regulations that licence them to impact massively on local fish and shellfish stocks.

The pressure is on and the effects are being noticed. For snapper, our table fish of choice, local feedback tells us that the

average sizes are dropping and amateur catches are declining. Look however at non-migratory, territorial and longer-lived species and you have a truer picture. Hapuku that used to be caught off the local point are now targeted on deepwater reefs over the horizon – in short they are becoming a locally absent species. A key apex predator in our reef communities has been fished out of the picture.

Marine conservation on GBI

Historically Maori are said to have regulated their seafood gathering on a tribal basis in local areas. This would have been confined to sedentary species like shellfish where their intensive gathering could have had considerable impact.

More recently efforts at marine conservation on GBI have had two major thrusts.

After the Marine Reserves Act (1971) was passed, scientists from the Leigh Marine Laboratory of Auckland University became interested in the Whangapoua mangrove estuary of Great Barrier. The compact and relatively unspoilt estuary (by mainland standards) presented a potential study site which they lacked elsewhere. Further investigation established the rich variation in substrate, exposure and habitat presented in the exposed soft shores and rocky coasts of Harataonga and Arid Island. Their work, and recommendations from the Ministry of Fisheries Management Division of MAF identified areas of the northeast coast as warranting some form of protection. The Marine Reserves Act empowered the Director General of the Department of Conservation to apply for an Order-in-Council to establish a marine reserve in the area.

DOC initiated informal discussions with tangata whenua and local residents

commencing in 1989. A public discussion document was circulated to GBI local residents, visitors and other interested groups in 1991. After this consultation, and liaison with a locally formed GBI Marine Reserve Steering Committee, a draft plan was released "to a targeted audience". The draft plan defined an area from "Waikaro point in the north to Whakatautuna Point in the south and offshore to encapsulate Arid Island".

Submissions were invited – a total of 65 were received.¹ Only 12 came from GBI residents and the GBI Steering Committee, 2 from Tangata Whenua, 9 from commercial fishing interests and 43 from 'Interested parties' including Forest and Bird and the NZ Underwater Association. The limited response reflected the restricted scope of the consultation and publicity.

There was some on-island support for a marine reserve (in principle), but opinion was divided over design and location. Locals in the proposed area did not wish to lose access to fishing sites and sought to manipulate the boundaries to preserve these. Consequently DOC's final plan was rejected by the few local residents' submissions as it did not 'bend' to local needs. Of interest was that iwi at the time opposed DOC's plan on the basis that they wanted a much larger area of marine reserve (from the Needles to Wakatautuna Point).

The application failed to get beyond the draft stage. The official word from DOC was: "In light of a review of priorities for Auckland Conservancy, the draft application was put aside and the marine reserve project postponed."²

A new proposal for a Marine Reserve in the same area got legs in the early 2000's. A public consultation document produced by the Department of Conservation: *A Marine Reserve for Great Barrier Island? Your chance to have a say* ran to 11,000 copies. Over 1800 written

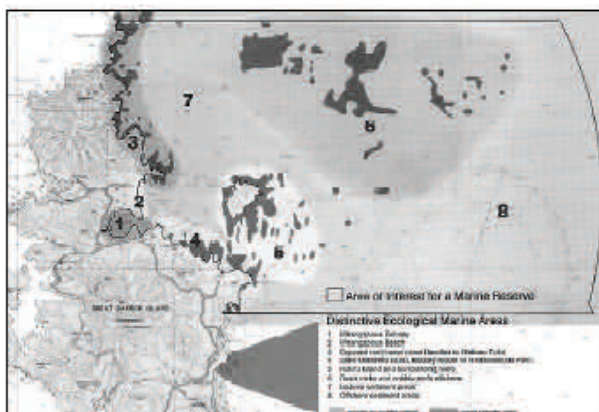
submissions were received in response. DOC's formal application was for an expanded area of coastline from the Needles to just south of Wakatautuna Point and extending eastwards out to the 12 mile limit, an area of over 50,000 hectares. In a political concession to iwi the Whangapoua estuary was completely excluded from the plan.

It was a big slice, and one which shut the door for local (and visitor) fishing and gathering on the whole northeast coast. Locals were not amused and their level of negativity and distrust in the project (and DOC) went up several levels.

The much larger number of submissions received went down 'party' lines: both recreational and commercial fishers opposed, scientists and conservation groups supported, affected locals mostly opposed but suggested workable options, and the silent majority remained silent. Recreational fishing interests, through an organisation known as Option 4, tendered over 550 form objections – although there was no breakdown of local content in this.

The final application disappeared into the Beehive and came to naught as crucial Ministerial support did not materialise. Inside sources suggested that a critical reason for the Minister of Fisheries "NO" to the proposal was the withdrawal of iwi (Ngati Wai) support, the issue (in their minds) no doubt conflicted by the then current seabed and foreshore rights debate.

Locals shook their heads, DOC pulled theirs in and everyone kept fishing. Twenty years later some openly regret that we do not have one of the finest temperate waters marine reserves in the



• Proposed marine reserve area (2004 application) for NE Great Barrier coast

Southern Hemisphere with all the attention, visitor interest and economic activity this would have created.

More recently in June 2013 the GBI Local Board sought submissions on the Aotea/Great Barrier Local Marine Protection and Planning Proposal. 164 submissions to a questionnaire were received and nine submitters appeared in person before the panel which was made up of all the members of the Local Board, Mike Lee (Gulf Islands Auckland Council Representative) plus Auckland Council, DOC and iwi representatives.

The panel reported that the common themes of submissions were: "a ban on commercial fishing, a sustenance fishing right for locals" and "...some marine protection/reserve areas within this".³ This has been restated into the recently produced Local Board Plan along with some detail on how this might happen.

Sea Change

One of the Local Board's indicated pathways to marine protection for GBI waters is through Sea Change – Tai Timu Tai Pari. The first forum of its kind in New Zealand, Sea Change began in 2013 and

is charged with developing a new spatial plan for the Hauraki Gulf. The plan, to be delivered in 2015, will identify solutions to issues in the 1.2 million hectare Hauraki Gulf Marine Park area and what is needed to safeguard its future. Plan recommendations will guide the development of policies and processes of various councils and agencies with a view to safeguarding the gulf's core cultural, environmental, social and economic values.⁴

The Sea Change project is a partnership involving mana whenua and statutory agencies Auckland Council, Waikato Regional Council, the Hauraki Gulf Forum, the Dept. of Conservation, and the Ministry for Primary Industries. The wider public will also be involved throughout the development of the draft marine spatial plan through targeted engagement with a stakeholder working group.

The GBI Local Board has stated in its draft plan that “we propose that our local marine protection initiative be progressed as part of SeaChange, *provided it progresses in a manner which addresses the island issues.*”⁵

SeaChange is an outcome of the application of the theory and attempted practice of Integrated Coastal Management – “a process rather than an outcome, which seeks to integrate the planning and management decisions made over coastal land and adjacent sea by a number of agencies of the crown and local government.”⁶

Integrated coastal management has evolved in an attempt to rectify our present disintegrated management system. Nowhere was this more apparent than in the attempted implementation of marine conservation on Great Barrier.

Raewyn Peart in her paper to the 2008 Conserv-Vision Conference, *Integrating the management of New Zealand's coasts: challenges and prospects*,

...the present coastal management system

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“embedded with

underlying conflict”

suggests that the present coastal management system we have been working under is “embedded with underlying conflict”. Why? Because “different management agencies are trying to achieve different outcomes, through different management approaches, which benefit different stakeholders”.⁶ Her research into the management of the Hauraki Gulf showed the disjunctive approaches between agencies and authorities and she broadly summarised these as follows:

- In their coastal planning *Regional Councils* strive for balance between maintaining “values” while enabling activities to take place. They do so through “discretionary decision making within a regulatory framework”. Their delicate balancing act theoretically allows people to co-exist with nature. People being able to drive their cars on beaches comes to mind as an example.

- *Territorial Authority Planners* “are more concerned with managing the coastal land development process” and this “can result in process focussing more on meeting the needs of people rather than nature.” The Te Arai beach real estate development adjacent to the critically endangered fairy tern nesting site is a graphic example.

- The *Ministry of Fisheries* manages the natural resources of fisheries in a way which maximises value – “allocating the

resource to the combination of uses that derive the highest additive value...” This can mean allowing commercial interests to fish down the biomass of a stock (such as snapper) to less than 25% of its original with the attendant impact on recreational fishing and the environment.

- The *Department of Conservation* is charged with “conserving NZ’s natural and historic heritage for all to enjoy now and into the future”. The exclusion of people from undertaking extractive and damaging activities in areas to be protected is their main management approach. Proposals to protect whole marine ecosystems from negative human activity through creation of no-take reserves are typical.

- *Tangata Whenua* seek “to apply a whole different set of values to resource management that are founded on the spiritual connection between people and nature, and between past, present and future generations.” People are never disconnected from nature, and never valued less than nature. In objections to marine reserves, Maori have consistently reserved their right to harvest seafood if and when stocks improve, and so support their marine conservation management role (kaitiakitanga) through mataitai driven fishery regulation.

- The *Resource Management Act* plays a pivotal role in the allocation of public space for marine aquaculture. It is a market-driven resource allocation process which does not concern itself with the effects of the activities although it is charged with “sustainable management” – a loose term that is “not backed up by the agency’s patchy monitoring of marine ecology or of providing clear accountability.”⁶

We hear the echo of these entrenched positions when any marine conservation debate re-emerges on GBI. A debate that is inevitably charged with unresolved conflicts of the past.



• *Hapuku* – “I have seen the moa vanishing – underwater ...”

Photo and tweet: Wade Doak

Integrated coastal management as a solution to this embedded conflict in planning for the Hauraki Gulf was first explored through the Hauraki Gulf Forum, which has had a statutory basis since the Hauraki Gulf Marine Park Act 2000 was enacted. The forum has representatives from two regional councils, 10 territorial authorities, 6 tangata whenua representatives and appointees from DOC, MPI and Ministry of Maori Affairs.

Their statutory approaches to achieve integration at this level have had in Peart’s words “little direct impact on the coastal management activities of individual agencies”.⁶

It’s most likely a question of scale. The job is too big, too complicated, too protracted a process and too bound up in politics. Peart suggested in her papers’ summary that “doable, small spatial scale integration” is happening and will in the future “focus on localised hotspots where interagency collaboration is required to address issues of immediate concern”.⁶

Great Barrier/Aotea certainly has an issue of immediate concern. Clearly, it is

the impact of the commercial sector on our fringing waters. The only workable and long term solution is that commercial 'mining' of fish stocks in our immediate waters must reduce or cease altogether to allow the marine ecosystem to recover.

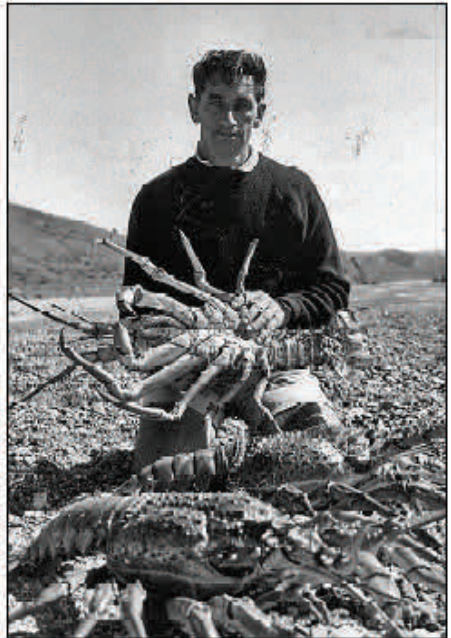
This is the hard nut to crack. It won't happen if we ask them nicely, that's for sure. It will have to go down a pathway of interagency collaboration in order to achieve a statutory outcome.

It is realistic (provided we accept a protracted process) to task Sea Change with dealing with this issue. But, it is unrealistic to expect Sea Change's gulf-wide plan to manifest the detail and local knowledge in applying appropriate marine conservation on GBI. Their 15 person stakeholder working group does not even have a representative from GBI.

As Islanders we know our resource better than any. Our focus has to shift from exploiters of this resource to managers and guardians of it. In order to get on with it we need to apply our own marine conservation from the grassroots – outside of the current statutory process. How we go about this is a conversation that we need to start.

Are Marine Reserves necessary?

There is a body of opinion that suggests that no-take Marine Reserves are unnecessary, that Marine Protected Areas with community or iwi-driven regulations are adequate. In a sense we already have this with various fishing regulations governing recreational catch, a quota management system allocating the commercial fishing pie and various other poachers with keys to the gate... and it isn't working for GBI. The best argument for no-take reserved areas as core components of marine conservation comes from the marine scientists, the first to admit of how little we know of the complex and dynamic marine world.



• Archival shot from an early NZ 'Dive' magazine of Robin Wales holding a 20lb pachhorse cray – taken in the Cavalli Islands. The NE Barrier coast is one of only two other sites where they are found. Photo: Courtesy of Wade Doak

They do know that nowhere on the NZ coast can you find a pristine marine space to compare as a baseline. It is nigh impossible to gain understanding of natural processes from a study of ecosystems which are being constantly harvested. Management needs to be based on knowledge of *natural* systems. We have to protect some habitat in order to gain an understanding of how to manage it sustainably.

Options for spatial definition of Marine Reserves.

From a science-based first-principles stance marine reserves in our fringing waters can be spatially defined with relative ease: Identify the major habitat types and try to represent them all in a



• *Snapper biomass in SNI is now estimated at 16% of its original size*

network of sites around the island. If possible, get two of each in case one suffers catastrophic damage. The differentiation of sites is based on exposure (open ocean easterly to SW sheltered waters), substrate (muddy estuarine through sandy beach to boulders and rocky reef), depth and terrestrial influences like stream mouths/runoff and shoreline vegetation types. Make them big enough to be a significant percentage of the whole and give them clearly demarcated boundaries. And yes, somebody will have to keep a watchful eye on them.

At the social end of the pendulum swing is a community-based model. Each significant cluster of coastal population takes 'ownership' and 'management' of a reserved area – ideally its location adjacent, accessible and observable from the population clusters. Again, clear demarcation of borders is important. Local knowledge will assist in these decisions as the location still needs to protect known aggregation and spawning sites, reefs and sea meadows, as much as it facilitates fishing around them. In these surrounding "fishing allowed" zones each caretaker community could experiment with regulatory process.

Given a clear picture of the options, some independent scientific advice and conflict resolution guidance, I have no doubt that local committees would come up with acceptable solutions for their

respective areas. The debate would be local, and not hijacked by outside interests, as was the case with Option 4 in the last Marine Reserve application. The outcomes would be site specific, tweakable over time and transparent to all.

We would have to accept firstly an education and acceptance process among our own, and after that a similar process for visitors. It would take time and patience, but it would be our plan for our waters. Our guests and friends would come to "do as the Romans do" – this community is small and connected enough for the message to propagate.

The outcomes would not have immediate statutory basis, but would have wide community support which, I suggest, is far more potent. We could proceed in the knowledge that a cohesive community voice would be a powerful tool in the process of 'fencing out' the commercial fishing sector, and that leading by example is the best political pressure we can bring to the table in order to gain eventual statutory backing.

The process would be integrating of our community rather than divisive, empowering of our mana and creative of a legacy for our children.

We have the energy, the experience and the skills within our community to do this. Do we have the will?

REFERENCES

- ¹ *Analysis of the Submissions to the Draft Application for the Rakitu Marine Reserve*, Alan Moore, Auckland Conservancy, Dept. of Conservation Sept 1994.
- ² *Aotea (Great Barrier) Marine Reserve Application Report* February 2005 Dept. of Conservation, Auckland Conservancy
- ³ *Report of the Aotea/Great Barrier Local Marine Protection and Planning Hearings Panel*, 24 July 2013 Great Barrier Environmental Planning Committee
- ⁴ www.Seachange.org.nz
- ⁵ *Aotea Great Barrier Local Board Plan Draft* p 27 "Marine Protection"
- ⁶ *Integrating the management of New Zealand's coasts: challenges and prospects*, Peart, Raewyn December 2008 Proceedings of the Conserv-Vision Conference, University of Waikato 2-4 July 2007.

Beyond the Barrier

by Des Casey

The Oceans' Rubbish Tips:

Floating rubbish tips pollute the oceans as millions of tonnes of plastic and other forms of human throw-aways accumulate at speed. These tips collect in concentrated patches across the globe and one example, the Great Pacific Garbage Patch, stretches for hundreds of kilometres. It is estimated (NZ Herald 13/06/14) that even if we all stopped adding to the collection now it will take hundreds of years for these "dumps" to stop growing.

There is a move to stop the rot. Using 50km floating barriers positioned strategically to move with ocean currents there is hope that these will catch and collect the rubbish in tight, concentrated areas where it can be picked up.

If it works, great! But that's at the bottom of the cliff. Ending the input is a place we can all contribute to stopping the rot. Thinking globally and acting locally might see Great Barrierites making our coastline and beaches pristine – there's always something lying on a beach that can be picked up, something to ensure goes to a controlled collection system and not out to the sea, some chemical we don't really need that goes seawards down the sink or wash-tub.

That RMA:

The NZ Herald of 26/05/14, in its editorial, told us "..... to the heart of the question: which is more important, the environment or the economy?" PM, John Key, had acknowledged he did not have the numbers to make certain changes to the Resource Management Act that would involve removing its present status giving priority to the environment. National and Act say they should be on equal terms; others, including Peter Dunne and the Maori Party, say no.

The time-delays, costs and bureaucratic obstacles surrounding the RMA need a significant tidy-up, but natural and physical resources need protection. The rest of this century is going to emphasise fast-growing attention to environmental restoration and protection or, like the floating ocean rubbish tips mentioned above, humanity will be awash in a revolving circle of loss and decay.

The RMA, in its present form, goes some way to protect the nation's coasts, lakes, rivers and wetlands, ecosystems and their inhabitants, natural amenities and habitats, historic sites and the resources that feed the natural world and ourselves. This needs strengthening, not under-mining. Given that most people think economy (money) before environment, placing them officially on equal terms would be dangerous. Failure to recognise that the natural environment is the fundamental and primary economic resource we have on the planet is a major disconnect in human thinking.

Saving Bees with spider venom:

Technology has always had a Jekyll and Hyde ring to it. From the industrial revolution to many of today's amazing creations, the swing from exciting advance to environmental damage goes on. Take pesticides for example. Popular neonicotinoid pesticides are now believed to be the basis for the serious decline in honeybee populations world-wide (NZ Herald 5/6/14).



Australian funnel web – venom source for a new pesticide

These pesticides attack bees' nerve centres, interfering with their ability to find their way home to the hive. Most plants rely on bees for pollination, and their decline has big implications for food production.

But technology has come up with a new pesticide (Hv1/GNA) which has no negative effect on bees. Research in Britain has produced a "bio-pesticide" that has no such negative effect. It is made from the combination of the venom of the Australian funnel-web spider and lectin from snow-drops. Australia, look after your funnel-webs!

The Kiwi is not an Auzzie after all:

This time last year we were swallowing research suggestions that a very long time ago the kiwi found its way to NZ from Australia. We were struggling. This on top of attempts to nick Phar Lapp and pavlova. But now we learn that the kiwi originated elsewhere. Its only near 'relative' is the extinct 2.3m-tall elephant bird of Madagascar. It seems they separated with the separation of the southern continents over 130 million years ago, and don't have the links to the large ratites of emu, moa and ostrich as previously thought. Researchers now believe that the kiwi and elephant bird originated from a small bird which flew from a resource population on the then more friendly Antarctica continent, some ending up here and some on Madagascar. Once there its evolutionary development into a large bird

was made possible because there was no other bird competing for the top-of-the-chain herbivore role. So it just kept on growing to ensure the spot. Its claim was similar to that of the emu and ostrich in other places. But in New Zealand the moa already had the

Elephant bird

Aepyornis maximus
Extinct
Madagascar



jump for top spot, and so the kiwi settled for being smaller, insectivorous and nocturnal, at the same time developing a long beak to reach food 'no-one' else could get to. The wonders of evolution when left to do its thing!

Climate Change – Again

I hear you saying: "Not another call telling me that climate change is in the air". Unfortunately the evidence is not going away. More and more scientists and meteorologists are becoming more convinced about it, so too many people in general. Even a few politicians and governments appear to be catching on. But progress is slow. At leadership level we are stuck and unwilling. There are some head-scratching conclusions and decisions being made. For example, New Zealand has vowed to reduce emissions by 5% by 2020, yet the Government estimates there will be a 25% rise. Who's doing the maths?

If government and politicians have nous and commitment on this issue they will drop the political party approach and get talking. That is, lead. Give it a war-zone status. Come on you younger bright lights – Nikki Kaye, Jacinda Ardern, there are a lot of you, and start looking at what you can do together. Drop your party focus once a month, get round a table and nut out a united strategy and programme, and lead this nation. Others will latch on. Talk and act as if you are on a war footing. Catastrophic outcomes may well be more imminent than we are prepared to admit. This is not idle, alarmist thinking any more. Growing evidence is that if radical solutions are not taken by countries' leaders very soon the economic, social and environmental fall-out of climate change will make the Japanese tsunami, Bhukett and the world's worst earthquakes, Gallipoli, Flanders and present day Syria or the West Bank look like a practice run. I'm picking you don't wish that to be the political, social, economic and environmental legacy you leave your and my grandchildren.

Dive, dig, fly thousands of miles

An update on our endangered Black Petrel

BY KATE WATERHOUSE

Can you fly to Peru and back, dive 34m to get a feed, dig out a burrow with your bare beak and claws? All in a year's work for Great Barrier's little known hero. But what are we doing to make sure it survives our generation?

If, at the age of 4 years, you are one of the one in ten black petrel chicks that ever makes it back to the colony high on Hirikimata/Mt Hobson to breed, then you are tough. Very tough. The latest population research tells us you are likely to be much lighter than birds who came before you – just why is not clear but it's likely that lack of food is a factor. Adding to the odds against you, next October when you return to your potential burrow site it may not be there – thanks to the storm of June 10th which caused massive slips on the mountain. So you will have to search around for another, or make the decision not to breed this year. If you do find your mate, dig out a burrow and if an egg is laid, you'll spend over a month incubating it, taking turns to fly out to the continental shelf, or even as far as Norfolk Island or the Australian coast to forage. Once the chick hatches it has a voracious appetite so you'll need to make more and more foraging trips like these to feed it and yourself. Finally in about April or May it will be time for tough love. You leave your chick and your mate and fly east across the Pacific to the coastal waters of Peru and Ecuador for a winter holiday, until October. Your chick will spend its evenings stretching its wings until it is hungry and strong enough to lift off a launch rock in the bush and head



• *Black Petrel adult, April 2014 on Hirikimata, Great Barrier Island*
Photo: Pip Watson, University of Waikato

east itself. It might crash land on a Barrier road on its way out and it has a 90% chance of never returning. Why, again, is not yet understood.

Updated risk assessment still puts black petrel at the top of the list

In 2011 alarm bells rang when the first comprehensive risk assessment was completed for seabirds in New Zealand. Based on their interactions with fishing, black petrels were the most at risk bird we have. Black petrels chase or dive on squid baits used in longline fisheries and can be hooked and drown. The Ministry of Primary Industries (MPI) has just completed a revised risk assessment, which includes a number of alterations to the source data and parameters of the model. Despite this, the risk is still extremely alarming for black petrels – 20 times the PBR (Potential Biological Removal) or 20 times the rate of bycatch that the species can sustain. When combined with low juvenile survival (less than 90% survive to breeding age of 4

years), this means black petrels are on a path to extinction if no action is taken.

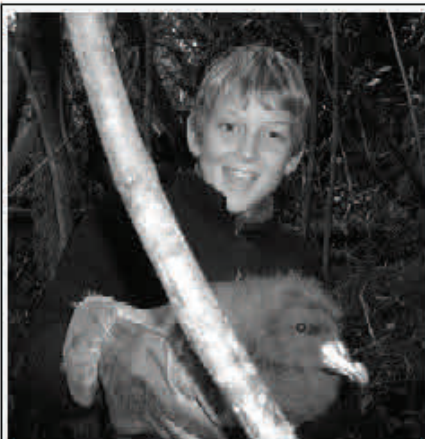
Not included in the risk assessment as yet, is spatial or gender data (anecdotally, male birds are thought to be more aggressive feeders around boats). This data is important to understand exactly where in our waters the likely overlap is between the foraging habits of black petrels and commercial fishing effort. Geospatial data collected this year shows concentrated foraging along the continental shelf between the Three Kings and East Cape during the critical early chick rearing stage in February and March. If a bird is caught at this time the adult and chick will both die as the remaining adult can't provide enough food for the chick to survive.

To date, no changes to the risk assessment parameters have made any difference to the risk priority of black petrels – they remain number one.

Dying young – are black petrels heading for a population crash?

The overall population estimates based on the work of Elizabeth (Biz) Bell and others, show that black petrels are in slow decline. However there is concern amongst seabird specialists that the population may “go off a cliff”. This is because breeding age birds (the oldest recorded is 29 years) will slowly die off and the population will simply not be sustained. Bell's view is that main risk is the sheer number of juvenile birds or “pre-breeders” killed at sea before they reach breeding age of 3-4 years. Return rates of these birds to the colony are very low – of the 2500 chicks she has banded only 225 have so far returned to breed.

In 2013/14, low numbers of returning birds and an average breeding season told a familiar story. Bell reports that her team monitoring the colony found overall lower numbers of returning birds and 72% breeding success vs a



Okivi Students on Hirakimata

In April Eli and I walked up Hirakimata with our packs on our backs to the DOC hut called the Rat's Nest, where we stayed with two scientists Claudia and Calvin for the next three nights. We were going to assist them for the next few days to retrieve and band black petrel chicks. When we weren't looking for koura in the mountain streams or talking back at camp we were working with Claudia and Calvin trekking around the never ending steep slopes, putting our arms into burrows to retrieve and band yet more endangered chicks. Over that period we discovered many awesome natural displays such as electric blue mushrooms and fuzz-covered chicks.

I hope I get to do this one more time before I go to high school. Eli and I would like to thank Claudia and Calvin for this great opportunity.

Taic Speir

P.S. My favourite thing about fledging chicks is that their hair style is never the same twice.

mean of 74% since studies began in 1996. Breeding success varies – between a low of 61% in 2011 and 81% in 2013. The team noted the large number of chicks that “disappeared” between February and April. The researchers found no evidence of predation so the causes are unclear.



• *Black Petrel chick, April 2014 on Hirakimata, Great Barrier Island.*
Photo: Pip Watson, University of Waikato

One trend that is evident to Bell is that birds now are lighter and the average bird weight is falling over time. She observes that birds were about 900g-1000g in the first years of study vs 690-700g weights being recorded now. Unfortunately weight data is not always recorded and this is an area of potential future research. Understanding the reasons for this and “poor juvenile recruitment” (why less than 10% of fledged birds return to the colony to breed) are key and both are big research needs.

Diving!

This year the research team recovered dive depth recorders attached to breeding birds. One female bird recorded a huge maximum dive depth of 34m – significantly higher than the previous 20m black petrels were thought to dive to – and for 75 seconds (don't try that at home). But these deep dives are the minority, with 94% of dives to less than 5m depths. Most birds record lots of shallower dives (presumably for squid) and the odd deep dive, chasing larger prey. Daytime feeding was the norm, with 84% of dives made during the day and 16% at night. Some recorders are still

on birds that have left the colony for winter and these will be collected next year to add to the research. This will help give guidance to fishers on how deep longline hooks need to be below the surface to ensure birds won't reach them.

Black petrels return to old trees: Glenfern Sanctuary's success and making connections with Peru.

Recently some fishers have suggested that there might be an undiscovered colony of black petrels somewhere, thus accounting for the numbers of black petrels sighted off the North Island's east coast. But such a colony would have to be in unmodified or mature forest, probably on ridgelines and likely where there are no cats, stoats or pigs (which are known to root up burrows and eat the contents). In fact while there may be perhaps 200 birds nesting on Little Barrier Island, which has been predator free for more than 10 years, there is very little of such forest left anywhere in the North Island and almost none that is predator free.

The importance of mature forests for black petrel breeding is clear, as the astonishing return of birds to old burrow sites at Glenfern shows, now that rats, cats and pigs are not present. Imagine how seabirds find such places – how they see the forest canopy from the air, marking out the puriri and other large trees with root systems and soils suitable for burrow sites.

This winter Emma Cronin of Glenfern Sanctuary, will travel to Peru on a Churchill fellowship to work with local schools to raise awareness of the plight of black petrels. It is thought many birds are killed in the fisheries of the East Pacific but very little is known about why or how. Emma has designed classroom materials and a game for kids that traces the life of black petrel chicks and juvenile birds as

they grow from giant balls of grey fluff to sleek black instruments of the wind roaming the Pacific.

Collaboration improves between fishing industry and environmental groups

Southern Seabird Solutions (a seabird advocacy body funded by DOC, WWF and the fishing industry) has set up a working group on seabirds and fishing in FMA1, (Northeast of Great Barrier Island) with representatives from all sectors which has met in March and June. The primary goals

were to bring everyone up to a common understanding of the problem and to create better information flows between scientists, fishers, Forest and Bird, WWF and the Hauraki Gulf Forum, working on seabird conservation. The response from fishers to collaborative process was positive, but concrete results in terms of “back of the boat” changes to longline fishing practice are needed from this process for it to benefit black petrels. Meanwhile, SSS continues its engagement with fishers in the main ports around the gulf on seabird smart fishing.

So what is the government doing to save the black petrel – and is it a priority?

WHILE PROGRESS has been made, the Ministry of Primary Industries (which manages our fisheries) appears to be inadequately resourcing reducing seabird mortality. Ongoing intent to change outcomes for black petrels is yet to be established. MPI's Inshore fishery seabird coordinator left in May and has yet to be replaced, so external support has been sought from Janice Molloy of Southern Seabird Solutions (SSS) to maintain momentum. While response to black petrel risk has slowed in 2014, many building blocks are at least now in place. These include:

1. *Intention to draft a Black Petrel Action Plan* – to reduce black petrel deaths from fishing and increase use of better fishing practices in FMA1 (NE of the North Island) in the longline fleet, where most risk exists for black petrels. There is mixed news here – under the National Plan of Action for Seabirds (NPOA) Species Action Plans will now be prepared for all high and very high risk seabirds, including black petrels. Where there is significant overlap in range between species, multi-species plans will be developed. This means the *long overdue*

Black Petrel Action Plan first promised a year ago will now be black petrel/flesh-footed shearwater plan. “Fleshies” as they are known, look very like black petrels in flight and have a colony on the Hen and Chickens but the population has dropped significantly in recent years. But unlike black petrels, fleshies breed elsewhere and are not as vulnerable to extinction, so this represents a backwards step for the black petrel if it causes further delays. Action plans are intended to address the cumulative effects of different fisheries on a species, but the majority of risk for black petrels is in one only – the bottom long line snapper fishery. There is as yet no sign of a draft plan for black petrels.

2. *Liaison officer programme* – believed by MPI to be successful in their first trial season, two roles are improving awareness and knowledge across the fleet. Vessel Management Plans for 26 boats in the FMA1 fleet were completed, providing some guidance to skippers on avoiding and dealing with seabird mortality. 25 charter skippers were also covered from Gulf Harbour, Leigh and Whitianga. Measurement of outcomes from these plans is needed to assess what difference this will make for black petrel survival.

3. *Observers on boats in fisheries at high risk to black petrels* – where observers are on board a boat and record what interactions with seabirds occur while fishing and the mitigation used or not used. Actual days were lower than target and coverage was lowest in March which is a peak danger period for adults feeding chicks staying close to the colony. Only 18% of fishing effort was covered vs a target of 30%. Getting observers on smaller boats is an ongoing problem and MPI is looking at using cameras to address this. Skippers on some boats reportedly “turned around” (their attitudes to seabirds) following this season’s work and the reputation of observers improving in fleet. But observer days will fall in 2014/5 which with focus shifting to the politically sensitive SNA1 trawl fleet.

4. *Camera trials on boats* – these are happening on 10 trawlers to monitor mitigation and seabird interactions, extending 5 months from May 2014. Cameras are used in Australia and must be well positioned to cover bird captures - and well maintained. It may not be clear in FMA1 whether a bird caught on camera is a flesh footed shearwater or black petrel.

5. *Research* – risk assessment and population research continue to be funded by DOC, Ministry of Primary Industry and the fishing industry, but to some close to black petrel research, this is akin to shutting the door after the horse has bolted. The cost of the observer programme dwarfs the investment being made in known gaps in understanding that could materially change the numbers of birds caught. These include more comprehensive geospatial and dive depth research and crucially, causes of death for young black petrels – such as food availability, climate change and deaths in fisheries outside NZ waters.

Kaka nomads – links between Great Barrier and the mainland.

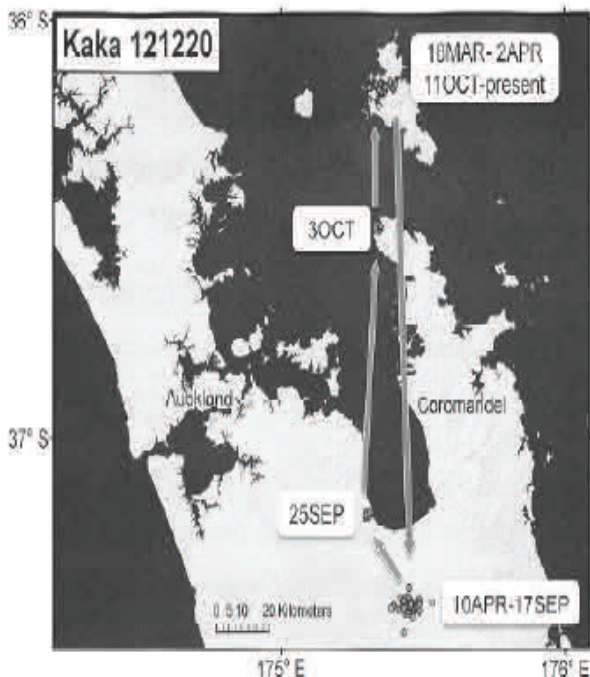
BY JOHN OGDEN AND TODD LANDERS
(Auckland Council – Research, Investigations & Monitoring Unit)

Readers of the ‘Environmental News’ may recall that The Great Barrier Island Trust organised kaka counts in 2007, 08, 09 and 10. The results were summarised in Env. News #24, 2011, and demonstrated that in winter kaka numbers on the Island decline to about half their summer abundance of 200-300 birds. Numbers start to decline in April or May, coincident with an increase on the mainland (Suzi Phillip’s Kaka Watch data; see: www.kakawatchnz.org). Kaka return to Great Barrier in September or October, when they also decline on the mainland. These results suggested the importance of Great Barrier as a breeding and ‘exporting’ location for these endangered parrots, but, strictly speaking they didn’t ‘prove’ the annual movements.

Satellite tracking of kaka captured at Glenfern Sanctuary, by a group of researchers from Auckland Council (Research, Investigations and Monitoring Unit) and the School of Biological Sciences at the University of Auckland, has clearly demonstrated the reality of this annual movement pattern (Fig 1). This migratory pattern has been found in two tracked birds to date, with the other five kaka in this study remaining on Great Barrier Island over the winter. (Glenfern Sanctuary is certainly a favourite location for Great Barrier kaka during winter: (Env. News #24, p.10, Table 3). Of course this study has only tracked seven kaka, and thus others may go elsewhere – to Little Barrier, Whangaparoa, or the Waitakere ranges for example.

The map shows the movement of a satellite-tracked kaka (bird 121220) in 2013. The bird left Glenfern Sanctuary in early April and was next recorded on the Hauraki Plains east of Hamilton about a week later. It stayed in that vicinity until late September, when it started its flight back to GBI. After a brief stopover in Coromandel it arrived back at Glenfern in early October. Map from Todd Landers, Auckland Council (Research, Investigations and Monitoring Unit).

A special thanks to Scott Sambell and Emma Cronin at Glenfern Sanctuary for their help in facilitating the satellite-tracking study.



Membership Fees

Annual Subscription: Ordinary :\$25.00 Senior :\$20.00 Family :\$35.00 Student:\$15.00

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Nature's Wrath on Port FitzRoy hill

The unprecedented rainfall on the night of June 10th was unpredicted and relatively unappreciated unless you lived north and west of the Awana.

The images show the effects of a destructive debris flow of rock, soil, water and trees on an otherwise insignificant watercourse which crossed under Aotea Road via a small culvert.

Estimated peak rainfall intensity of 80mm (or more) per hour for a continuous period of more than three hours saturated and lubricated the land – while gravity did the rest.

- Above—looking down on the road, note the scoured banks.
 - Left—looking upward to the road from the confluence with the main creek.
- Photos: David Speir