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Diving petrel lost (and found) in local re-cycle bin



The diving petrel or *kuaka* before being released at dusk on FitzRoy saddle. Photo by Helena Jamieson

OKIWI SCHOOLBOY Tahī Ngawaka found this petite seabird in the plastics recycling bin at Okiwi. It is a diving petrel or *kuaka* (*pelecanoides urinatrix*) and how it got into recycling is a mystery. They breed in the winter on Little Barrier, the Mokohinau and rat-free rock stacks around the Barrier. Historically they would have been numbered in the millions on Aotea but the introduction of firstly the kioere and then the black rat means they no longer can breed on Great Barrier.

Rabbit cull exposes 'panthers' in Okiwi

Paul "Ditch" Keeling has been culling rabbits in the Okiwi (and other spots) for a few weeks now. Over the course of 20 night shoots he has removed 3528 rabbits and 15 cats. The male cats shown are among the largest and heaviest seen in Okiwi in recent years.

"Night shooting as ongoing rabbit control will also facilitate eradicating these mature trap-shy animals. Evidence gathered NZ wide shows that the most successful and important breeding cats are the least likely to be removed by traditional trapping methodologies" he said.

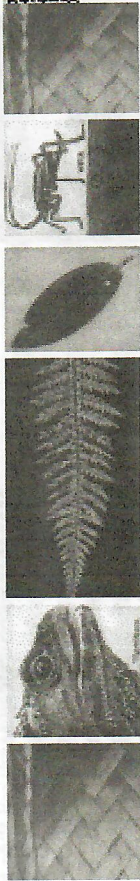
Cat trapping by DoC in the Okiwi basin is limited to specific trap types because of the potential to harm brown teal ducks.



Ditch – a little bleary-eyed after 20 nights on the job. Photo: IslandStay

GBI Environmental News

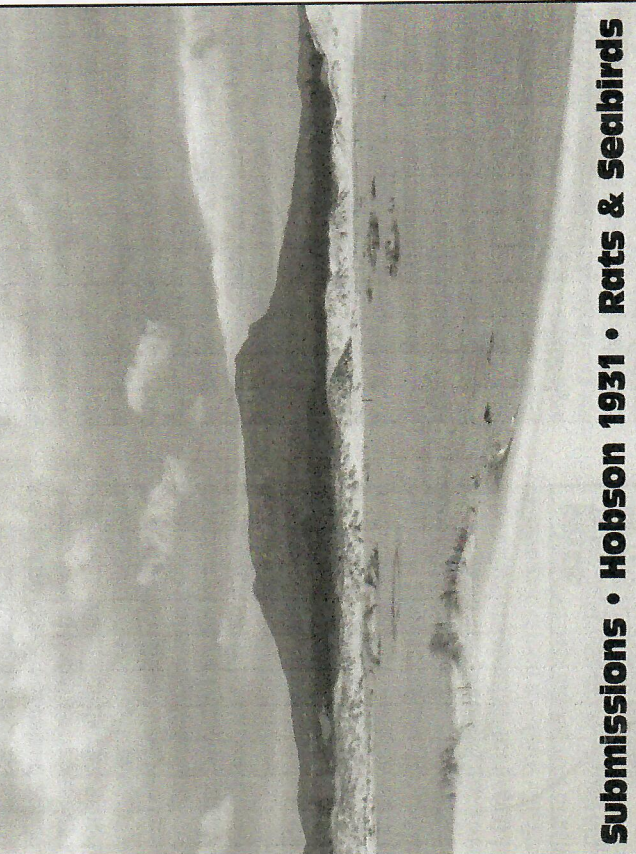
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G R E A T B A R R I E R I S L A N D C H A R I T A B L E T R U S T

Trustees: John Ogden (Chair), Tony Bouzaid, Jude Gilbert, Liz Westbrooke, Jo Riechiné,
Sue Daly and Fenella Christian (Secretary). David Speir is Magazine Editor

Stormclouds gather over Te Ahumata



Submissions • Hobson 1931 • Rats & Seabirds

Mission Statement: Our vision is to protect native species through the eradication of rats and feral cats, to re-introduce species lost to the Island, and to work towards building an ecology-based economic framework for Great Barrier Island.

Editorial

The State of Environment Report completed just in time!

BY JOHN OGDEN



The Great Barrier Island State of Environment Report (SOER) – a major project for the GBICT trustees in 2009 – was completed and ‘launched’ in February 2010. The timing, as it turned out, could not have been better. In the same month the Department of Conservation announced probable major cut-backs to its staff at Port Fitzroy, while the National Government leaked its intention to make a ‘stocktake’ of the mineral potential beneath previously protected lands in National Parks and elsewhere. As one of the areas earmarked for potential mining was Te Ahumata (Whitecliffs) on Great Barrier Island, both these issues had strong implications for the future economy and environment of the Island. Also, in both cases, the SOER was immediately relevant, providing information on the significance of the endangered species, and the relatively high biodiversity and unspoiled environment, of Great Barrier Island.

It is clear that conservation and the unique biota of New Zealand are under threat from the National Government. Cut backs to DOC are only the tip of the ice-berg – but it

seems bizarre that an Island which is recognised in the Conservation Management Strategy as one of the key conservation areas near Auckland and “the jewel of the Hauraki Gulf” should be singled out for reduction in administrative priority. Loss of half-a-dozen jobs in the north of Great Barrier Island may not seem important in Wellington, but it has repercussions for all aspects of the economy and social structure of the small community there. The Trust made a strong submission on this to the Minister of Conservation, local MPs, and the Auckland Conservator.

The schedule 4 ‘stock-take’ breaks a deal with the New Zealand public. Land covered in native ecosystems, uninhabited and largely untouched by man, is an increasingly rare commodity worldwide. Schedule 4 was created to protect New Zealand’s exceptional places from inappropriate developments with large environmental impacts, such as mining.

And, in creating Schedule 4, there was also an understanding of the growing role of international tourism in the New Zealand economy, and the role such places played in the furtherance of this, and in propagating a ‘clean-green’ international image. Great Barrier Island epitomises this image.

COVER:

Te Ahumata (Whitecliffs) taken from the Kaitoke Beach. Geologic indications that it could be mined “down to sea level” have many locals concerned.

Photo: IslandStay

At a meeting hosted by the Community Board in Claris in April, it was good to see and hear the clarity and vehemence with which some 200 residents rejected the so called ‘stock-take’ and demanded that Te Ahumata be left untouched. The message was that past exploitation has brought few lasting benefits to the Island, and that Te Ahumata should remain as a magnificent and accessible area for the enjoyment of current and future residents. The importance of the environment is clearly understood

when it comes to the obvious industrial impacts of mining, toxic waste, and tailings disposal. The economic benefits were clearly seen as small and of no consequence compared to the potential for long-term damage. It is perhaps a pity that the devastating impacts of rats and feral cats on our ecosystems are not so clearly understood, nor are the possible long-term sustainable economic benefits of a pest-free status recognised. However, on the mining issue at least the Trust found itself in total agreement with the majority of Islanders. If the Community Board was split before that meeting, it could have no doubt where it should stand to support the community after it. And, to her credit, the National MP for Auckland, Nikki Kaye, was also highly supportive of the no-mining lobby.

The Ministry of Economic Development Discussion Paper, entitled “Maximising our Mineral Potential” is pathetically weak – a poorly disguised attempt to fool people into thinking that mining will bring economic – and conservation (!) – gains from mineral royalties. The actual conservation information in the document is so scant that it confirms the extent to which the Department has been sidelined. For example, the ‘Conservation

We drew particular attention to the question of the disposal of the waste rock (tailings), and the risks to water quality and the Kaitoke Swamp ecosystem.

Value’ of Te Ahumata receives four (unreferenced) sentences.

The Trust made a strong eleven page submission, based on factual evidence about the endangered plants, birds and reptiles occurring, or probably occurring, on Te Ahumata. We also analysed the geological and economic basis for the claimed value of the mineral deposits on the Island, and found them to be inadequate or flawed. We drew particular attention to the question of the disposal of the waste rock (tailings), and the risks to water quality and the Kaitoke Swamp ecosystem.

However, the protests, including the 40,000 people marching in Auckland on May Day, have left many residents thinking that mining will never occur on Great Barrier. I do not share that complacency, and I urge all of you who are opposed to mining to make your voice known in Wellington, especially to Nikki Kaye. Web addresses are listed at the end of this piece.

Having the factual back-up of the SOER the Trust felt in a much stronger position to comment on the above issues. Moreover, the launch of the SOER, at the 10th Anniversary celebrations of the Hauraki Gulf

Marine Park on Motutapu in February (See page 13) brought us into positive contact with other bodies involved in the care of the Hauraki Gulf environment. As a consequence of these contacts with the Hauraki Gulf Forum at the Symposium on the Hauraki Gulf, and the Auckland Conservation Board one of our key recommendations – the need for a full-scale feasibility study of rat and feral cat eradication on Great Barrier – was endorsed by both bodies. We also made a verbal presentation to the Great Barrier Island Community Board, and we will continue to work with the community towards the aim of a pest-free Island.

Many environmental issues – toxin use in biodiversity protection, the role of DOC as an employee on the Island, the effects of a possible mine on Te Ahumata – have been to the fore this summer. Strong views have been expressed on both sides of these debates, but some common ground is discernable. The Community Board has been active in facilitating discussion. The trust welcomes this – it has had a voice on all these issues. The community now has a substantial document to be used for the advocacy and environmental protection of Great Barrier Island and a sustainable future for its community. Once again the Trust wishes to express its thanks to everyone who helped with it.

REFERENCES

The Ministry of Economic Development
Discussion Paper: www.med.govt.nz/schedule4
30 Seconds submission against mining on Great Barrier: www.greatbarrieris.co.nz
Great Barrier Island State of Environment Report on line: www.gbict.co.nz
Nikki Kaye (Nat. MP. Auckland central)
nikki.kaye@parliament.govt.nz.

World nature group attacks mining proposals

BY MATTHEW HAGGART

THE HEAD of the world's largest environmental conservation authority has taken an "almost unprecedented step" of criticising the New Zealand Government for its stance on mining the country's conservation estate.

Julia Marton-Lefevre, the director-general of the International Union for Conservation of Nature (IUCN), wrote to Prime Minister John Key to express the "serious" and "deep" concerns of her organisation.

The Government has proposed removing areas of New Zealand's conservation estate from schedule 4 of the Crown Minerals Act – a list of protected areas deemed to have special environmental accord.

World Commission on Protected Areas (WCPA) chairman Nik Lopoukhine joined Ms Marton-Lefevre as a signatory on the IUCN letter which stated that the Government's decision would risk New Zealand's "valued IUCN member" reputation and also its standing in the international arena... of biodiversity conservation.

New Zealand's WCPA spokesman Bruce Jefferies, of Wanaka, said the letter was an "almost unprecedented step from the IUCN."

"The apolitical organisation, the world's oldest and largest environmental network, rarely took a direct step to involve itself with the policy of governments," he said.

Submission

The Great Barrier Island Charitable Trust is opposed to the government's proposal to facilitate mining on Conservation land at Te Ahumata on Great Barrier Island.

Schedule 4 lands – a social and ethical issue

Land covered in native ecosystems, uninhabited and largely untouched by man, is an increasingly rare commodity worldwide. In the 1980's the government of New Zealand, with much popular support, chose to place certain land areas, mainly in National Parks, into a special category –

Schedule 4. The point of this Schedule was to protect the land from inappropriate developments, especially those having large environmental impacts, such as mining. This was in recognition of mankind's dependence on a healthy planet in which at least some areas remained as examples of the natural order and beauty of the world. These places link us as a nation and as individuals to our past, both Maori and Pakeha, in ways that cannot be achieved in highly modified landscapes. There was also an understanding of the growing role of tourism in the New Zealand economy, and the role such places played in the furtherance of this, and in propagating a 'clean-green' international image.

Land was not put into Schedule 4 as some sort of land-bank, which could be exploited once the price was right. We do not believe that facilitating mining in Schedule 4 lands is appropriate or important for New Zealand's economic well-being. On the contrary, we believe it could have serious negative repercussions on our tourist industry and on our agricultural exports.

Clearly there is an intention to mine in Schedule 4 lands. It is not logical to imply that the current exercise is merely a stock-take, solely to find out what is present in these areas, unless there is the possibility of mining. Such a cynical approach would be hugely wasteful of many people's time and money.

The environmental case against mining on Te Ahumata

Great Barrier Island is promoted to Aucklanders and overseas tourists alike as "the jewel in the crown" of the Hauraki Gulf. The Gulf is a Marine Park, and mining is not permitted under the District Plan.

The Island includes the largest area of Conservation Land within the Auckland Conservancy, and is regarded as significant for its high biodiversity values (endangered birds, reptiles and plants) and the absence of some significant mammalian pests (eg possums, deer).

It is inconceivable to us that the Minister of Conservation, Hon. Kate Wilkinson, should countenance the removal of any part of this Island from Schedule 4. The Mayor of Auckland, John Banks, the National MP for Auckland Central, Nikki Kaye, and the chairperson of the local Community Board, Paul Downie, have all expressed strong opposition to any mining on Te Ahumata.

There will be strong opposition to

“The scars of mining would tend to be obvious, both to the local population and to visitors by air”.

this proposal from lobby groups such as the Environmental Defence Society, The Royal Forest and Bird Society and Coromandel Watchdogs. The Great Barrier Island Charitable Trust can offer support to such groups in the form of information in its recently completed “Great Barrier Island State of the Environment Report”.

The area in question is crossed by the central portion of “The Great Walk”, which is being developed to encourage tourism on the Island.

Te Ahumata is highly prominent feature of the central part of the Island, visible from many points, including the administrative centre (Claris), and the airport. It is the most conspicuous feature seen by tourists as they approach the Island from the air. In his 1980 report (Ministry of Development #372) Rabone noted that: “The scars of mining would tend to be obvious, both to the local population and to visitors by air”.

Rabone (1980) also notes: “In the event of open-pit mining, a suitable area for spoil/tailings is the adjacent Kaitoke swamp ... which would also provide soil material suitable for post-mining rehabilitation.”

He indicates that the vegetation of the Te Ahumata area is of no consequence, and suggests that hydrothermal power might be tapped at the hot springs.

While these views are now historic, and hopefully do not reflect current thinking, the points they raise, namely

high visibility, the problems of an adequate power source, what to do with vast quantities of toxic tailings, and how to rehabilitate the site, remain pertinent.

The casual disregard of the local community by mining companies, as demonstrated in the above quotations, should not be furthered by the government, whose role is to serve the best interests of all New Zealanders; in our view, to create a large industrial site in this setting is totally inappropriate for the future long-term sustainable development of the Island's economy, and is likely to be resisted and resisted by a significant proportion of the population.

The environmental case against mining on Great Barrier Island is very strong, and is backed by legal precedents, which demonstrate the high biodiversity, environmental and social values of the Island.

The economic case against mining on Te Ahumata

The economic case for mining on Great Barrier is very weak, and backed by a history of resource exploitation which has left no appreciable benefits for the local community.

Background Research

Three main quartz veins or reefs, the Iona, Sunbeam and Barrier reefs, have been worked in the past. The quartz in these veins carries on average about 3.6g/tonne of gold, and from 140 to 1100g/tonne of silver, but the grades vary greatly from sample to sample. When the mines closed (c. 1920) the Barrier reef was considered to be ‘worked out’.

Since the old mines closed, very extensive exploratory investigations, drilling and sampling has been carried out on Te Ahumata (Quennell 1963,

Mount Hobson's Scroll of Fame

While Liz Westbrook was doing research in the Auckland Public Library she came across this article in the 1931 *New Zealand Observer*. The lyrical descriptions of the Mount Hobson environment and the inside-look into attitudes of the day provide a snapshot of bygone times.

BY JOHN MOWBRAY

The dominating peak of the confused mass of spurs and ridges which breaks up the whole of the surface of the Great Barrier Island is Mount Hobson, a weathered summit over 2000 feet in height.

My first attempt on Mount Hobson – which from the point of view of the serious climber would not be considered a very notable mountaineering achievement – was made when the timber workings of the Kaiarara (sic) Valley, by which the summit is reached from Port Fitzroy, were in full blast. Yet even then the former glory of the forests had largely departed.

Earlier activities, conducted on a grand scale by the Kauri Timber Company from its bases on the Whangaparapara side, had swept the lower slopes almost clear of standing timber. The K.T.C. with its 12,000 acre concession, had been in possession for many years, and mention of its magic name still evoked among Barrier residents the most reverent recollections of the days when that notable camp, “the Drum” so named after a massive excrescence on the flanks of Mt Hobson, was in its heyday, and prosperity and the K.T.C. ruled the fortunes of the Great Barrier with a lavish hand.

TO TIDE WATER
FROM Raroharo Bay at “Fitzroy” we rowed round to the mouth of the

Kaiarara in the cool of one of the mornings which seem full of glorious promise for the afternoon. Alas for our fond anticipations! Even the upper air bore faintly-trailing wreathes of cloud which a few hours later were to descend like a blanket on our goal.

But even if that excursion did not bring the fulfilment of an ambition to climb Mount Hobson, it at least gave a practical insight into that most interesting of the timber-getter's arts, the utilisation of a running stream to get the timber to tidal water.

Ultimately the path reached an abrupt escarpment perhaps 100 feet high. Climbing up the goat-track which zig-zagged across this face was by no means pleasant for the uninitiated. Above lay a reasonably level piece of ground, in which the encampments of the timber-workers, and their fowl runs, pig-sties, tool-sheds and dining hall – for this was a semi-permanent “township” – were scattered among noble kauris.

From a hogs-head at the door of the dining hall the cook – a jovial fellow who confessed that he had lately “blued” his entire earnings for the past year at a race meeting in Ellerslie – poured us out a draught of home-made beer, heady stuff that fired our ambitions, lent new zest to fatigued muscles, and set us hot-foot up the narrowing path to complete the conquest of the mountain.

quartz is removed, and all the metal extracted from it, from the surface to sea-level.

Moreover, Barker's (2010) report also stresses the "substantial investment in exploration, feasibility investigations and development", which would be needed to realise any potential economic benefits.

Rabone's (1981) statement about the thinning of the reef with depth, calls into question even Barker's (2010) lower estimated value, as he assumed that the Iona reef maintained both its thickness and mineralisation to sea level. Canyon Resources (1984) statements appear to be based on an optimistic assessment of drill hole 2 (DDH2) and analogy with supposedly similar situations on Coromandel.

Thus, while there is clearly some gold-silver mineralisation in the quartz veins and associated rock, we are left with no convincing evidence that an economic gold/silver ore body, or economic quartz reefs, lie under Te Ahumata.

We conclude that the value of the resource estimated by Barker (2010) is based on assumptions for which there is rather weak supporting evidence. The three-fold higher value given by the Ministry of Economic Development cannot be substantiated from any of the published reports referred to, and seems to be a wildly optimistic speculation.

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In addition, according to Barker (2010) "over the last ten years, reviews and assessments of the mineral potential of the goldfields have been made". However, no further reference is made to these additional, more recent, data.

Thus, the nature of the underlying geology, and the possibility of further gold and silver deposits, have both been very thoroughly investigated already.

Ten drill holes have been bored through the plateau, initially with the intention of intersecting the known reefs, and subsequently to investigate the potential for a larger stratified diffuse ore-body beneath the mound. The latter was not found: "a large tonnage of ore-grade mineralisation within the rhyolitic tuffs is now virtually excluded" (Rabone 1981).

Referring to the Iona reef Rabone (1981) notes that some potential remains: "as a relatively small-scale quarrying proposition for a small mining company". But he also notes that: "At deeper levels, where intersected in drill holes, it (the Iona vein) was found to be much narrower and weaker than at the surface, and was not significantly mineralised".

Canyon Resources (1984) reinterpreted the drill hole results, and assumed that the most significant drill hole (DDH2) did not in fact reach the main Iona vein, rather it sampled small veins penetrating the rock above the main vein.

Confusingly, Canyon Resources (1984) claim that (by analogy with similar veins on the Coromandel Peninsula): "...it is likely that mineralisation would reduce sharply with depth to the underlying

andesites", and also (without any drill-hole based evidence) that there is "good potential for significant grade improvement and increased gold/silver ratio in the deeper levels" (i.e. in quartz vein where it penetrates the underlying andesites).

The Tailings

To realise the supposed value of the gold/silver in the Iona and Sunbeam reefs would involve the removal of 4.317 million tons of quartz rock. This then would be crushed and treated with cyanide before electrolytic separation and smelting. The resultant tailings are acidic and toxic for plant growth.

Depending on the thickness of the pile, this quantity of tailings could cover up to 400 ha. It would certainly require an area of tens of hectares.

A cover of new top-soil to at least 1m depth, and extensive planting of the area with native vegetation would be required.

Value of resource

Inexplicably, the current value of the gold/silver resource on Te Ahumata has been stated as \$NZ4.3 billion by the Ministry of Economic Development. This figure is not substantiated by Ministry's own review (Barker 2010), which gives an estimate of \$NZ1.28 billion (but concludes with the figure of "more than \$NZ1 billion").¹

This much lower estimate supposes that average gold and silver concentrations (which vary widely in different samples) in the quartz are maintained throughout the reef, and that the reef thickness and lateral extent has been correctly estimated and is maintained in the underlying geological structure (andesite). Finally, it also assumes that all the

Another Viewpoint

The untapped potential estimates described in the discussion paper are extremely optimistic desk top studies based on a geologist's best guess, not on science.

Geology is the primary influence on mining methods that can be used to mine a mineralised system, not the wish to minimise environmental impacts. The geologic reports do not differentiate between mineralised systems that can be exploited by low-impact underground methods or those that are only exploitable by open pit (cast) or high impact bulk underground methods. If the government wishes to allow only low impact mining then many prospects listed in the reports need to be removed and the figures adjusted accordingly.

Stephen Leary

Stephen Leary is an experienced exploration geologist with extensive and varied experience directly related to locating and assessing the value and economic viability of mineralised systems.

He has worked for the past 15 years in NZ, Australia, Canada, Europe and South America receiving a number of international awards for excellence in his field. The comments above are extracted from his submission on the review of Schedule 4.

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FANTASTIC HEIGHTS

Presently the valley forked. The steep path was hemmed between ridges of rock sculptured by wind and rain into queer and fantastic pinnacles.

Meanwhile the weather, that had seemed so promising, began to thicken, and soon large drops of rain began to fall.

By the time No. 2 dam came into sight, the pace and the grade were beginning to tell. No. 3 dam, a little further ahead, marked the end of the path. We crawled across the top stringer of the dam, and from an open space looked about us for a route to the summit.

By this time the summit was blotted out. Rain was falling in a soft steady downpour. Occasionally the wisps of mist parted, to show us an angular abutment that seemed almost directly over our heads. Perched on that abutment we would see a cross that looked uncommonly like a rude trig. But before we could locate it the mists would come down again.

So, we set off by the most obvious route, a line of log skids down which the kauri boles had been consigned to the dam from the upper slopes.

When the skids petered out we were left hanging to a steep face in almost impenetrable bush, that shed water on us in so many bucketfuls that a unanimous sigh from all three members of the party quickly brought us to the one possible conclusion. It were far better to acknowledge defeat than to spend the afternoon and possibly the evening exploring a kauri forest and looking for Mt Hobson.

Every item in our environment, from our saturated boots to the rain clouds, seemed to say "Beat it" and we did; back to the Dams Nos. 3, 2 and 1, in that sequence; the cook, and the beer, and back to the boat in

attempt to scale Mount Hobson. This second promise had to do with the cook at the timber camp, and his beer.

But as soon as we entered the pathway through the manuka trees, and I saw what had happened to the Kaiarara stream, doubts began to assail me. The banks of the stream had been torn and mutilated. Its bed was four or five times its former width. The trim little shingle bars of two years earlier had been lacerated or swept out of existence. In their place lay enormous yellow boulders. It gradually dawned on me that this was what happened when the timber men carried out their flooding operations to get the kauri to the sea.

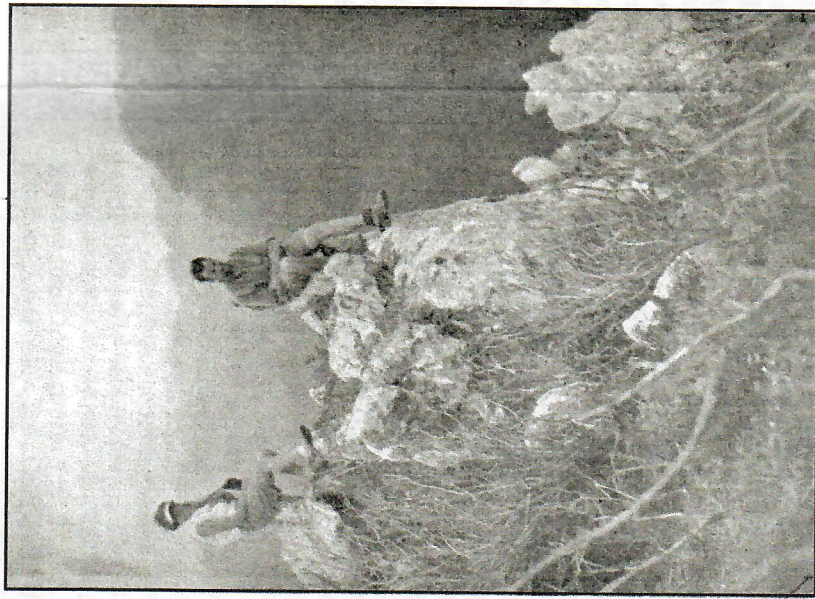
The defacement of that valley was complete. One realised that it was inevitable. But never again will the Kaiarara be what it was.

The clumps of kauri that I remembered were gone. There were dead branches and leaves among the undergrowth, and here and there a young or withered tree. But the plumes that decked the skyline were no more.

The hospitable cook, and all those he had fed save one stray fowl and a sheep that was trailing its unkempt fleece through the bracken - they, too, had gone. So also had the beer.

The hogshead was still outside the door, but of home brew there was none. It was the unkindest cut of all.

We sat in the dining hall, roofless now, for the roofing material had been taken away, though the kauri rafters were left there to rot, and studied the litter that timber contractors leave behind them. Bottles were there a-plenty. They must have had a farewell party up



Two unknown Auckland climbers sitting above the precipitous face of the Drum Rock.

Kaiarara Bay. And that, as far as I was concerned, was the end of Mount Hobson for some time.

PROMISE - AND ILLUSION

Two years later I tried again. From Raroharo Bay at Port Fitzroy we rowed round to the mouth of the Kaiarara in the cool of one of those mornings which seem full of glorious promise for the afternoon. And this time the promise held true.

There was another promise I had made. Without it I should never have lured my two companions on this occasion into anything so unconventional and energetic as an

there in the Kaiarara before they left, and our sympathetic eyes even alighted on some familiar labels, bearing the magic name of one Charles Heidseick, Rheims. The tastes of bushmen are by no means as simple as people imagine, we thought, as we set off again up the track; and I remembered that when there before I had seen a modern calculating machine in that sylvan setting.

THE SCROLL OF FAME

This time we reached the top of Mount Hobson. We forced our way up the last face, through "cutty grass" and the stunted trees that guard the rocky platform at the summit of the mountain, and added our names to the many already enshrined there in a whiskey bottle under the trig. There had been many there before us. City dentists, stock brokers, telegraphists, reporters, architects, and others of unknown denomination, had all inscribed themselves triumphantly on Mount Hobson's scroll of fame.

The smoke of an outward-bound liner lay like a smudge beside distant Cuvier Island. There was the glimmering of a waterfall on the slopes of the Coromandel Peninsula. Rangitoto's cloven summit beckoned to us like a friend, and all around us we could see the indented coast of the Barrier, its harbours like mirrors at our feet.

Even from its satellites, the Drum, the Sisters and those many other freakish crags which stand sentinel upon its slopes, Mount Hobson maintains a charming aloofness.

It is something to have climbed Mount Hobson, to have admired the view, and to have placed one's name in exclusive company inside a whiskey bottle. That was in 1929. I wonder how many have been added since then.

A Busy Autumn

Meetings, conferences, forums and lectures raises the Trust's profile

BY LIZ WESTBROOKE & JOHN OGDEN

The objective of a State of Environment report is to bring together all relevant information on the state of the human, physical and biological environments of an area. The Trust had a number of aims in producing such a document for Great Barrier Island. It wanted to provide a current snapshot of this information, create a working document that could be expanded in the future, find out where data is inadequate or does not exist, provide a resource for the many projects on the island, show that the environment supports a way of life and is an environment worth protecting, and finally to explain the view that a rat and feral cat eradication using an acceptable method, is the only way to stop the further decline of key species.

Since the completion of its State of Environment report in February this year, the Trust has been asked to present its findings briefly at a number of Auckland meetings.

In early February (8-12th) John Ogdén and Judy Gilbert attended a large international conference on the Eradication of Invasive Species. Our presentation was entitled "Running the gauntlet - eradicating rodents on an inhabited island" and it was very well received. The conference was held at the Tamaki Campus of Auckland University, and was attended by over 240 delegates from all over the world. Twenty three

headlands, their contributions to ecosystems are now very localised. 'Our economic prosperity is based on what comes from the sea, for example, the use of rock phosphate as fertiliser. Nutrients that boost plant production such as phosphorous and nitrogen were once brought in by seabirds but these ecosystem engineers are now gone.

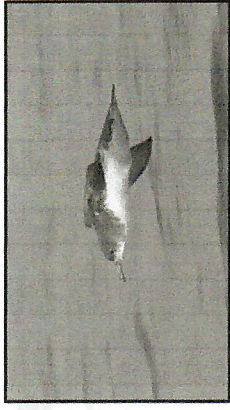
'By looking at what the natural vegetation is like when there are no predators and what the impacts of rodents are, we are seeking to develop a practical approach to the restoration of ecosystems.'

How seabirds and rats affect ecosystem function

The research was undertaken on islands offshore from Whangarei to the Bay of Plenty. Some have never been invaded by rats, while others currently have rats. The work was done with permission from and the support of tangata whenua, either in their role as owners of the islands or kaitiaki (guardians).

The multi-disciplinary team assessed how plant communities above the ground and invertebrates below are interlinked, how native ecosystem engineers (seabirds) affect ecosystem function and how alien predators (rats) disrupt processes. Sample plots in forest on each island were examined for burrow densities, vegetation structure, soil microbiota and invertebrates, and litter and wood decomposition.

The research showed the main effects of rat predation are that nutrients are no longer being brought in by seabirds, and trampling and burrowing which brings new soil to the surface has come to a shuddering halt. Plant and invertebrate species once present are gone and other



The Puhi Peaks Nature Reserve covenant in Kaikoura protects a breeding colony of the Hutton's shearwater *Puffinus huttonii*. Photo: Dennis Baarman



A grey-faced petrel *Pterodroma macroptera* after landing near its burrow after dark in the Rapanui covenant in Taranaki. Photo: Barry Hartley

species rushing in to fill the gaps.

'The balance alters,' explains Peter. 'What was once forest turns to a thicket. Species such as karaka become more common. Above ground, the total carbon budget goes up by about a third, whereas there is not so much carbon below ground.'

'Soil communities change dramatically with numbers of animals from springtails to small beetles to moss larvae going into freefall. Land snails are also lower in number.'

'The results indicate that rats and seabirds act as major ecosystem drivers by exerting wide-ranging effects on both above and below ground systems.'

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At the Hauraki Gulf Forum. From left: Mike Lee (Chair ARC), Kate Wilkinson (Minister of Conservation), John Ogdén, John Tregidda CEO of Fullers and Graeme Campbell (former Conservator, now Waitakere District Councillor).

different countries were represented.

Many different aspects of pest eradication were covered - it was amazing to discover just how much of this sort of work is occurring worldwide. Islands are seen as key locations for the survival of threatened species worldwide. The Trust's presentation was in a group concerned with eradications on inhabited islands. The discussions held, and the contacts made, will be very helpful as we move towards an eradication feasibility study on Great Barrier. Our paper from this conference has been peer reviewed and is to be published later this year. It outlines the Trust's methodology and progress in 'conservation education' and some of the set-backs!

On Feb 27 the Hauraki Gulf

Impact of Rats on Seabirds

An update from the Landcare Research Sustaining and Restoring Biodiversity Programme funded by the Foundation for Research, Science and Technology.

Birds transfer nutrients within and across our landscape, creating local nutrient-rich sites that support distinctive plant and animal communities. Prior to human settlement, the New Zealand mainland supported very high densities of nesting seabirds that functioned as major ecosystem drivers by transporting nutrients from the ocean to land and by cultivating soil with their burrowing.

One study under the Landcare Research collaborative research project Sustaining Critical Interactions between Functional Species is determining the relative importance of seabirds in restoring nutrient-rich coastal and island ecosystems. Using islands with seabirds present and others without seabirds due to rat predation, the research team is finding out how the birds affect linkages between above and below ground subsystems and is gaining an understanding of how rat eradication would help to restore the health of ecosystems.

Peter Bellingham from Landcare Research says the study fits into global efforts on developing an understanding on how seabirds fit into ecosystems. 'New Zealand is the world capital of seabirds,' he says. 'We have more species of breeding seabirds than anywhere else. Of the 350 species worldwide, there are 140 species here. Of these, 84 species breed in New Zealand with 35 species such as the Buller's shearwater breeding nowhere else.'

Forum launched the Trust's State of Environment report at its 10th Anniversary celebration on Motutapu Island. The Forum is responsible for administering the Hauraki Gulf Marine Park. John Ogden, chair of the Trust, spoke to a large audience along with Sean Goddard, the Auckland Conservator, John Tregidda, and Mike Lee (the Chair and Deputy Chairs respectively for the Hauraki Gulf Forum), and Kate Wilkinson, Minister of Conservation. Paul Downie, Peter and Lynette Hoey Haughie (from Ngati Rehua) and three of our Trustees attended this event.

Regional Conservator Sean Goddard closed the speeches by recounting the words made by his predecessor Stella Frances at the opening of the marine park ten years ago:

"The Hauraki Gulf Marine Park Act is not just a replacement for the old Hauraki Gulf Maritime Act which was repealed in 1990. In its scope it is visionary. It takes a 21st Century approach to protection and resource management. It doesn't impose a further bureaucratic regime, it works to strengthen and enable and connect what is already there from rangitiratanga and kaitiaki to local government, the RMA, ministers, fisheries, and reserves. It reflects the complexity of the gulf's dynamic environment, and the complexity of its communities, and it provides opportunities to act. In summary it is an enabling piece of legislation which is forward-looking and principled. But it is only as good as the ability, wit, and willingness of people to use it. I hope that you will use it, add to it, and celebrate within it. But use it as a tool to construct and protect a better gulf for our mokopuna."

Then in mid March John Ogden

and Sue Daly presented a full copy (c. 200 pages) of the S.O.E. report to the Community Board at their meeting on March 15. On the same day, Liz Westbrook and Judy Gilbert took a short powerpoint presentation to a full meeting of the Hauraki Gulf Forum and received their endorsement for proceeding with a Technical Feasibility study.

On Friday of that same week, Liz Westbrook took the same short presentation to the Auckland Conservation Board who acknowledged the valuable work and personal time that had been put into the State of Environment report and endorsed the Trust's recommendation for a technical feasibility study of rat and feral cat eradication on for an inhabited Great Barrier Island (currently unconfirmed minutes of the meeting).

On March 30, John was one of the invited speakers at a special day focussing on the Hauraki Gulf, held at the Auckland Memorial Museum. He gave a 20 minute powerpoint presentation covering the significance of Great Barrier Island in terms of biodiversity in the Hauraki Gulf, and the role and activities of the Trust. The large audience (c. 250) were all familiar with the Hauraki Gulf and many had administrative roles involving the Gulf. John's authoritative Great Barrier Island summary was very well received. This meeting, along with the Motutapu SOE launch achieved a high profile for the Trust, and led more or less directly to an agreement between the Trust and the Hauraki Gulf Forum to further explore the feasibility of complete pest eradication on Great Barrier.

And then we got into April – with DOC cutbacks and proposals to mine Te Ahumata!.....



Taupihiti Rahi, a rat-free island in the Poor Knights. The forest floor has dense burrows of seabirds such as Buller's shearwater Puffinus bulleri. Photo: David Wardle



Aiguilles, a rat-invaded island off Great Barrier, is owned and managed by Ngati Rehua. Seabird burrows are virtually non-existent on the forest floor owing to rat predation of the birds. Photo: Tadashi Fukami

'There has been a catastrophic loss of seabirds throughout the world. We still have some shearwaters and petrels but they used to breed throughout New Zealand including in the mountains. Currently restricted to offshore islands and some isolated

Post Eradication Monitoring in Glenfern

Sept '09 to May '10

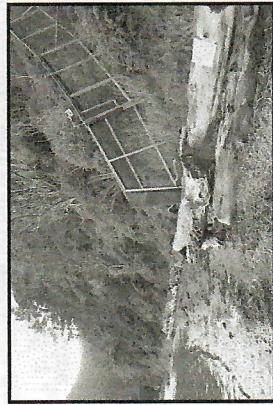
Rat incursions have intensified over this dry summer but Glenfern is repelling invaders by effort and ingenuity

BY TONY BOUZAID

History: Two aerial bait drops were carried out on Kotuku Peninsula on June 24th and August 6th 2009. A track network on a 50m x 50m grid of tracking tunnels had been installed the year between the finishing of the pest exclusion fence and the aerial drops. The grid had been delineated into 16 Pathways – each being 6-8 hours work for a person to place or retrieve index cards in the tracking tunnels. The monitoring process allows us to find and respond to incursions.

Monitoring for rodents commenced monthly in September with peanut butter being placed on ink cards in every one of a thousand tunnels by 8 people over a two day period. Two days later the cards were retrieved to establish the presence of rodents. The buffer zones around each end of the fence were being monitored once in between each monitoring run. Over the first two months only one rat print showed up under a house in Arthur's Bay (Orama). In October Paul Keeling arrived to ascertain the presence of cats and rabbits and trap for same. Over three weeks on the peninsula he caught one cat and established that there were no rabbits or cats remaining inside the fence.

In November there were incursions around the end of the fence in



The porous end of the fence at Arthur's Bay. Photo: IslandStay

Arthur's Bay and across the harbour in Port FitzRoy. In December there were several prints in Arthur's Bay, along the shore line in Port FitzRoy and one rat came ashore in the Kotuku Scenic Reserve and left prints in 5 tunnels across the peninsula. It took five days responding to these prints with traps and bait. In January a rat came ashore at Wingers on the Karaka Bay side and around the end of the fence in Port FitzRoy.

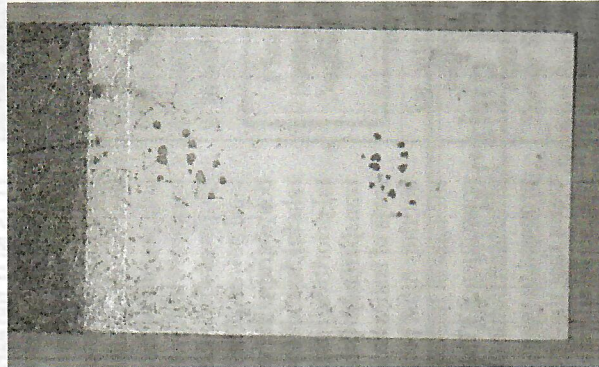
Because of the number of rats that were being caught and detected outside of the fence and along the shorelines on both sides of the peninsula the buffer zones were extended all the way to the Garden Bays on each side. Bait was also placed in the old bait station network along the shoreline around the peninsula. Bait on cradles in tunnels were alternated with traps throughout the buffer zones.

In February multiple incursions were detected along the shorelines of Karaka Bay, Port FitzRoy and Kotuku Reserve. As a result the buffer zone monitoring was stepped up to every 3-4 days. By responding with a trap in the tunnel the same or following day as the prints were found, the rat was

generally caught as it seemed to frequent the tunnel that it had found safe. This then became the normal practice and it was decided to decrease the gap between monitoring runs to three weeks. Most of the cards that were still viable were left out or replaced after monitoring this time to provide an idea of what took place during the intervening period.

In March two monitoring runs were conducted. The buffer zones were increased again by extending them inland from the foreshore into the adjacent hinterland to detect those rats missing the shoreline defences. Up until the 5th March there had been 12 rats caught on the Port FitzRoy side and 4 on the Orama side inside the fence. However there were 19 caught outside the fence on the Orama side and 6 caught outside on the Pt FitzRoy side.

On the first day of monitoring while the cards were being placed 8 rat prints were picked up in the extended buffer zone in Port FitzRoy, another in Kotuku Bay and one in Karaka Bay that had to be dealt with. On the second day of monitoring a rat was caught in Kotuku Bay, Karaka Bay and one in the Port FitzRoy buffer zone. On the third day of monitoring further prints were detected in the Port FitzRoy and Orama extended buffer zones.



Distinctively ratty prints...

were found. Several dead rats were found in these traps but some had tripped the traps without getting caught.

The team took traps with them this time to place in tunnels where prints were found. These traps are baited with peanut butter and macadamia nuts. When the cards are brought back to base the results are displayed on a large map of the peninsula with coloured pins representing dead rats (red), prints with traps (green), prints without traps (white), traps sprung (black) and bait on cradles (blue).

By the 13th, using the instant response method 9 rats were caught in traps where prints were found in Port FitzRoy and Kotuku and another 4 plus a mouse inside and 5 outside at Orama. By the 16th 4 more caught inside at Port FitzRoy and 2 outside with 3 plus a mouse inside and 13 outside at Orama.

The second monitoring run in March showed a similar level of incursions to the earlier one two weeks before. These were dealt with in the same manner as well as the buffer zones being attended to every 2-3 days. This indicated a drop-off in the incidence of incursions in the buffer zones, particularly on the Orama side.

For the April round all the viable cards were left or replaced in the tunnels at the end of the last round and traps were left set in the areas where prints

This proved a good way to get an overall feel and plan the response. In the May round all the cards were replaced as the ink on the cards was not lasting long enough. When the monitoring started 24 rats were found dead in traps placed in the response phase of the April round. Over the next two days another 14 rats were caught from fresh prints and over the next 10 days of response monitoring a further 12 rats were caught.

Mice prints were detected for the first time this round near the edges of the paddocks, one trapped above the Wingers and one print on the driveway near the Glenferm front gate.

A lot is being learned about rat dynamics in the Great Barrier context where there are no possums, hedgehogs or mustelids.

- When rats trip traps without being caught they become trap shy, so these traps are replaced with cradles, bait and cards.
- A single rat is often responsible for more than one set of prints although traps are placed in all tunnels with prints.
- With the long dry summer the rats that come ashore gravitate up the streams and damp gullies into the middle of the peninsula.

- The shorelines on both sides of the peninsula and Kotuku Bay have the main concentration of prints and rat kills. The next highest concentration occurs on the ridge above the dwellings at Wingers and Arthurs Bay.
- Rats often dwell in barren terrain where there is no ready food supply.

The next monitoring round (in early June) and subsequent response aims to get back close to zero rat density and still be free of rabbits, cats

Community Board Elections Sept. '10

Off-island ratepayers can register and vote for the new GBI Community Board.

IT IS NOT too early to start thinking about the local elections. The Community Board elections will be held in September – October and it is imperative that the Island gets some really able people in that role, especially because with the formation of the “Supercity” the CB will have greater local powers. This year we have seen a board grappling with significant issues relating to social justice, environmental priorities, conflicts of interests and transparency. On a small island these sorts of issues are almost unavoidable, but they must progressively be seen in the light of the expectations of a wider constituency. The current efforts by off-island home owners to combat the proposal to mine Te Ahumata illustrates that this group is engaged with the Island and should have a stronger voice in local decision making. This will certainly not be a popular view amongst some Island residents, but today’s off-islanders may be tomorrow’s locals. The Trustees urges those of you who live off-island, but feel a deep commitment to Great Barrier, to make sure you are enrolled to vote in the Great Barrier Community Board elections.

In the theory you can do this on line at <https://secure.elections.org.nz/app/enrol/> but you should also call 09 378-2088 and ask how you get the necessary voting papers and register your vote for the GBI Community Board if you are not present on Great Barrier. Democracy is worth the effort.

Rats impact on Seabirds Continued from page 12

One example of the flow-on effects of rat predation is that the pohutukawa forest along our coastline which we think of as pristine, has developed and functions in a very different way from how it did before rats were introduced.

QEII covenants help to protect the breeding sites of seabirds
‘Seabirds such as petrels and shearwaters need advocates as they are an integral part of our landscape and economic prosperity’, says Peter. ‘Farming and native forest both need marine phosphate. Our unique biodiversity, a key driver for tourism, is influenced by the action of seabirds.

‘Protecting the habitat and breeding sites of seabirds with QEII covenants helps to slow the

disruption to our ecosystems. An example is the Puhī Peaks Nature Reserve in Kaikōura that protects one of our two remaining Hutton’s shearwater breeding colonies.

‘Now that we have an understanding of the basic flow-on effects of rat predation on seabirds, we are following through with a 4-year project on a bicultural approach to the restoration of coastal ecosystems. The outcomes of this will provide some practical strategies for those restoring our natural habitats including QEII covenants.’

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