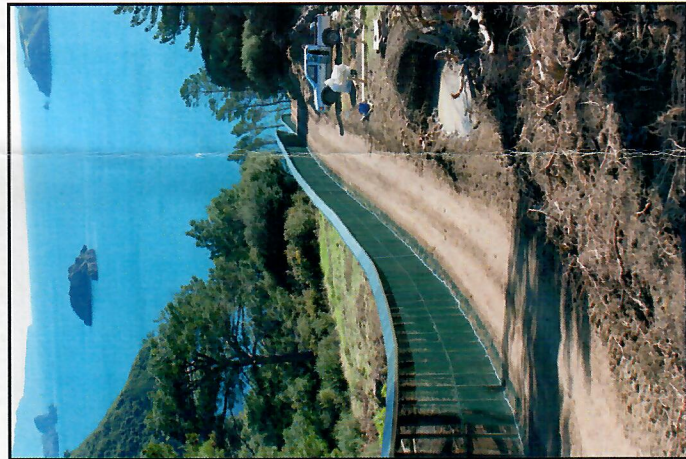




GBI Environmental News

The publication of the Great Barrier Island Charitable Trust, whose trustees are:
John Ogden (Chair), Tony Bouzaid, Jude Gilbert, Liz Westbrooke, Jo Ritchie, Sue Daly
Fenella Christian (Secretary)



Pestproofing a Peninsular *Continued from page 9*

secured to the boots of the team to enable hand-boring of the postholes.

At the present rate of progress the fence will be completed by the end of June—including the gates, monitoring system and a comprehensive maintenance plan.

Tony has already started on the next phase of the project: pre-planning for the eradication of pests inside the fence.

GBI Environment News will further cover these developments together with the July pest eradication of Kaikoura.

Looking down into Karaka Bay—a completed section of fence on the Telecom track. Photo: T. Bouzaid



Cat confusion – Playing God on GBI Diary of a Fence • Carbon Credits



Vision 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.

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Quick Catch for Reinventing Rats

BY JUDY GILBERT

THE CONSERVATION Dept. needs to be congratulated for the efficient and effective capturing of the rats which recently re-invaded pest free Motuora and Motuie Islands. Pest-free islands will always run the risk of re-invasion—its not for nothing that rats have the deserved reputation for being the most successful mammals in the world—and a quick response plan is needed to respond to a suspected sighting. On the Barrier when a

sighting of a suspected mustelid or possum is reported both the Conservation Dept. and the Auckland Regional Council have equipment and people ready to go on setting up a trap-ping or monitoring grid in the area.

The involvement of visitors and people based on pest-free islands has been critical to tracks being spotted and then followed up with comprehensive trapping. Pest specific trained dogs have also assisted the success of locate and capture.

Iconic Species Stages Dramatic Recovery

THE LARGEST AND MOST endangered lizard in NZ; the chevron skink is alive and well in Glenfern Sanctuary. Ben Barr, currently doing fieldwork towards a master's degree on the impact of rats on chevron skinks, has caught 50 chevrons in two mature valley catchments in Glenfern Sanctuary. These range in size from neo natal at 100mm to full size adults at 450mm. Miniature transmitters have been attached to three adults to monitor their dynamics in varying environments and weather conditions.

Only 300 chevrons have been found in the wild since they were first discovered on Little Barrier and Great Barrier Islands so to have 50 turn up in two valleys on Glenfern Sanctuary is remarkable.

Rat and cat control in Glenfern Sanctuary over the last

seven years may have had an impact on the ability of these skinks to survive. The pest exclusion fence now under construction across the peninsula can only enhance their survival rate.

"I feel privileged to have this iconic endangered species living so close on our property and to be able to provide a safe environment for their continued survival," says Tony Bouzaid, Chairman of the Glenfern Sanctuary Charitable Trust.

COVER: The striking flower of the Yellow rata was captured by Judy Gilbert on Little Windy Hill.

Ben Barr's up close and personal shot of the adult chevron was taken in the Glenfern Sanctuary.

Cat Confusion Playing God on the Barrier

BY JOHN OGDEN

Feral cats are good because they control rats, mice and rabbits.

Feral cats are bad because they kill birds and skinks.

True or false?

Frequently we hear that cats help to maintain 'the balance of nature'. Leaving aside the philosophical question of whether or not there is, or ever was, such a balance, in New Zealand we can be sure that any original hypothetical balance did not include cats, or rats, or any other mammals (except a couple of bats).

Balance there may have been, in the sense that the fauna and flora changed little over thousands of years, but that was upset first by the arrival of Maori people and kore, and then again by Europeans with their associated pests.

pets and domestic animals. Since then, at least forty species of birds have become extinct, and many others are reduced to critically low numbers. This is partly due to bush clearance for agriculture, towns etc., but predatory mammals, especially rats, cats and stoats have played, and are still playing, a key role. Cats have been directly responsible for at least one extinction – the lighthouse man's cat single-handedly finished-off the last flightless wren present on Stephens Island in 1893. My point is that the natural balance was upset long ago by many interacting introduced animals,

The SPCA information sheet suggests the following definitions:

- 1. Domestic owned cats:** These cats live entirely with humans as companion cats. They are completely dependent on humans to provide their food, water and shelter, as well as their social structure. Humans are expected to control disease and reproduction potential.
- 2. Domestic, unowned cats (can also be known as stray or 'wild'):** These cats have many of their needs indirectly supplied by human activities, acquiring much of their food from scraps through carers who attend to their colonies. They are likely to live in and around human habitation and interbreed with the unneutered / unspeyed domestic cat population.
- 3. Feral cats:** These cats have none of their needs provided by humans. By definition, feral cats do not live around centres of human habitation. Their population fluctuates independently of humans and domestic cats.

birds and plants. We cannot go back to this idyllic state of nature, but neither should we expect that a few benign feral cats are somehow keeping it all in balance for us. In my experience, cats just ain't like that.

The Okivi Basin is a good place to start, as the long-suffering staff of the Department of Conservation are often told how to manage it by all and sundry, so they must be used to it by now. My first point is that the estuarine basin is changing rapidly through siltation and mangrove spread. This is not a 'natural' process, as it was initiated by erosion following burning of the forest c. 750 years ago.

European forest clearance for farming added another dose of silt, and higher nutrient levels⁽¹⁾. The basin's paddocks have also changed, mainly by spread of kanuka. The details don't matter — the point is that the habitats in the basin are predominantly man-made, and the birds, especially brown teal, have learned to use them. As these habits change, so too will the bird populations which utilise them.

Figure 1 shows a simplified version of the 'food web' of which brown teal are a part. Also indicated by arrows is the link between rabbits, rats and ducks, and the vegetation. The intrinsically unstable dunes are particularly vulnerable to rabbit grazing and/or seed predation by rodents. It is fairly clear that vehicles, harriers, pukeko, rats and cats all kill some teal. The question is, which is the worst, and what can be done about it?

Harrier hawks (kahu) are found throughout S.E. Asia and Australia, and one or two species have been present in New Zealand since before Maori settlement⁽²⁾. The current species is thus native, not introduced by man as is often supposed. While in some parts of the country (eg. North Canterbury) it is regarded as beneficial, scaring small birds from vineyards and cleaning up rabbit carcasses etc., on Great Barrier it is often seen as a pest because it undoubtedly kills some brown teal. But it has done so for centuries — so if it is worse now, why? Presumably, because there are more of them because they are no longer shot. But then, there are more rabbits too. Note that harriers are not controlled by

any predator (except man), so their numbers are determined largely by the abundance of their prey ("bottom-up" control).

Rabbits are almost certainly much commoner on kahu's menu than teal, and these have flourished despite high predation from cats and harriers. Several studies elsewhere in New Zealand suggest that rabbits are high on the preferred food list of many feral cats, so that removing cats may favour rabbits. However, the short-grass farming habitat in the basin is highly suitable for rabbits, just as it is elsewhere in New Zealand where these same predators (and others) are also present. Top-dressing presumably feeds rabbits just as it feeds stock.

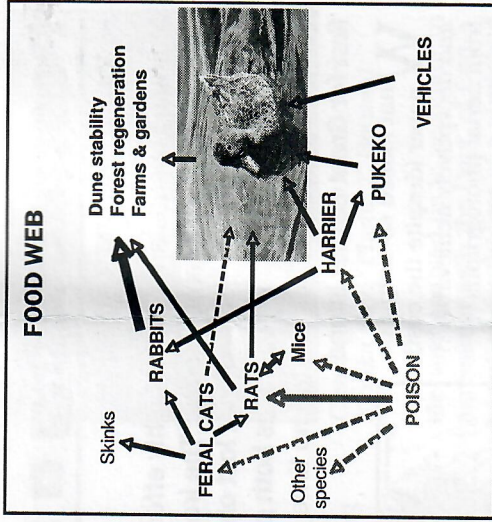
Feral cats are the 'top predator' in the system, and they are notoriously difficult to study due to their intelligence and semi-nocturnal habits. Rabbits may be their preferred prey, but rodents probably come next. Although pet cats often drag in dead birds⁽³⁾, birds are much harder to catch than rabbits and probably rarely constitute the main food source of feral cats.

The diagram suggests that, if we were to eliminate cats only, rabbits and rats could both increase. There are cases where this has happened. This is the 'balance of nature' often referred to. On the other hand, if we were to eliminate rats, then the cats might devote themselves to baby rabbits. They might also take more birds, and skinks. If we eliminate rabbits (only) then both cats and harriers might prey more on ground birds. Although my example is simplified, it is still complex.

Fig. 1. Some of the main food-web interactions between mammalian pests, brown teal and other species, and the possible effects of rat eradication using poison. Supposedly minor interactions and effects are shown dashed.

Introducing a poison into this system specifically to eliminate rats poses another set of problems — namely the effects on 'non-target species'. Fortunately the most affected are species we'd like to see reduced anyway. Small indigenous native birds, even morepork, rapidly regain their numbers following rat elimination by aerial poison drops⁽⁴⁾. Surviving cats are more likely to prey on rabbits than on teal, but this may allow them to regain their numbers even in the absence of rats, and teal cannot withstand even a small increase in predation.

What should be evident from these considerations is that we, not feral cats, control the 'balance of nature'. Pretending to understand the effects of removal, or reduction in, any one species, is tantamount to playing God. We need good research data to support an integrated approach. Targeting all the pest species in sequence over a short period seems to be the safest approach. A variety of methods — not just poison — will be required and nothing will be achieved without community support. Many members of the community have years, even generations, of observations



on these topics, and these are highly valuable in helping to predict what might happen when particular control or elimination procedures are proposed. The answers to all the questions are not known, and there are indeed risks — but the economic and biodiversity benefits, which could accrue from a rat-free island, surely make this a topic worthy of careful consideration by us all.

NOTES

- (1) See: Ogden, J., Deng, Y., Horrocks, S., Nichol, S. and Anderson, S. 2006. Sequential impacts of Polynesian and European settlement on vegetation and environmental processes recorded in sediments at Whangapoua Estuary, Great Barrier Island, New Zealand. *Regional Environmental Change* 6: 25-40.
- (2) Worthy, T. H. & Holdaway, R. N. 2002. *The Lost World of the Moa*. Cambridge University Press. (pp 336-335).
- (3) For a readable account of predation by pet cats, and what you can do about it, see: Ann Graeme. 2007. The Fowl and the Pussy Cat. *Forest and Bird* 326: 40-41.
- (4) For example, see item by E. Fraser in the latest edition of *NZ Journal of Zoology*.

Pestproofing a Penninsular

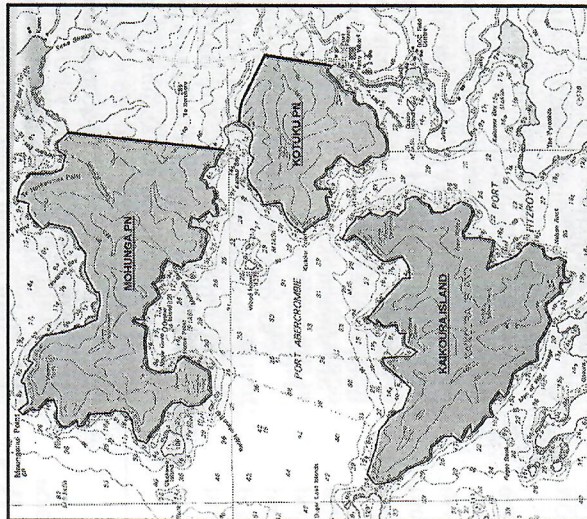
BY TONY BOUZAID AND DAVID SPEIR

Mainland islands are proving highly effective at creating predator-free habitats for endangered species. The irony of this, the first created on the Barrier (itself an island) is not lost on Tony Bouzaid. However his vision for Glenfern Sanctuary was both politically and financially achievable, and he has wasted no time in pioneering a conservation first for Great Barrier Island.

What looked so simple on paper (despite the cost); and deceptively achievable from aerial photographs proved to be a challenge that demanded everything from Tony Bouzaid and his team. Only time, the weather and the remote location would reveal the true scale of this project, and logistics of an entirely new dimension.

The concept of pestproofing the Kotuku Peninsula was first explored in 2003, but Tony reached the conclusion then that the terrain made it impracticable. During the next few years pest-proof fences really came of age with a number of sites appearing around the country.

A visit in 2005 to the nearest one at Tawharanui near Warkworth for a Sanctuaries of NZ Conference provided Tony a good opportunity to see a finished fence in situ and examine how the open ends on the shore were dealt with. However the terrain was mild in comparison to the Kotuku Peninsula where the elevation reaches 200m only 1200m from Karaka Bay in Port Abercrombie and 850m from Port FitzRoy.



The chart shows the boundaries of the fenced area of Kotuku Peninsula as well as adjacent Kaitiaki Island which will be pest eradicated shortly.

At the newly established Karori Wildlife Sanctuary in Wellington the building of an almost vertical section of fence proved what could be achieved over very difficult terrain. Then came the completion of the 47km fence around the mountain at Maungatautari, which included some very steep sections up the side of the mountain. This seemed to indicate the 2km

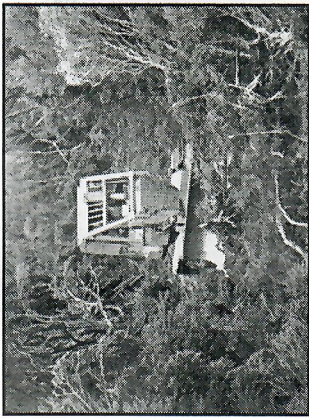
Glenfern Sanctuary fence would be a breeze.

In February the decision was made to proceed with building a pest-proof fence across the Kotuku Peninsula in 2008 if sufficient funds could be raised. Jo Ritchie was employed to prepare a feasibility study, an ecological assessment, help with consultation and prepare resource consent applications. Her experience in facilitating the Tawharanui pest fence made her well qualified for the job.

Orama had already given approval to build the fence across their land. Letters of support were obtained from all adjacent landowners including the Department of Conservation and an application was made to Ngati Rehua, the Great Barrier Iwi, for support.

In March 2007 fund-raising started in earnest. With seed funding by the Bouzaid Family Trust of \$215,000, applications were lodged with the ASB Community Trust, the Biodiversity Condition Fund and Lotteries. With help from Joel Bouzaid and Scott Sambar from OPC (Outdoor Pursuits Centre) a PowerPoint presentation was compiled to promote the project and hopefully find sponsors. Several dinner presentations were given with the whole of the North Barrier community invited, which generated good attendance. The PowerPoint was also presented to the Orama Trust Board, the Motu Kaitiaki Trust and the Sanctuaries of NZ Conference in Silverstream.

Ngati Rehua examined the route of the fence and gave us unequivocal approval that endorsed the project as a major contribution to endangered wild-



Clearing the Telecom track down to Karaka Bay. Photo: T. Bouzaid

life, and enabled us to negotiate an agreement with the Dept. of Conservation for the use of a stretch of 100m of reserve land.

Members of the contracted team Xcluder Pest Proof Fencing Ltd made several trips to Great Barrier Island to ascertain the feasibility and confirm the route of the fence. From this investigation it was realised that 68 pine trees on the Orama side had to be removed in advance. A 4m clearance outside and 2m inside the fence is required to remove the danger of trees or branches falling and damaging the fence.

In October approval was received from the ASB Community Trust for \$58,800 and the Biodiversity Condition Fund for \$120,000 over 2 years. By the end of the year private donations totalled a further \$11,000. The Glenfern Sanctuary guided walks and sales of T-shirts and accessories contributed a further \$8,000.

In late 2007 an added impetus to the building of the fence was the loss of two female robins to rats and another to a cat. This left an already depleted robin population with 4 males and 1 female. Surveyed damage to seedlings and

undergrowth by pigs (and the resultant susceptibility to erosion) reinforced Tony's intent.

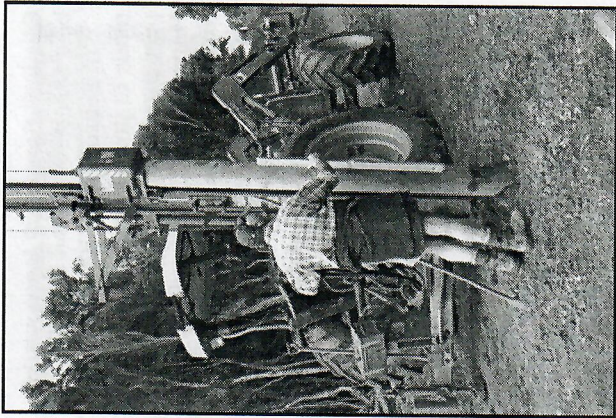
With the majority of the money in hand or promised, and with approval and commendation forthcoming from Ngati Rehu and DOC it was decided to proceed.

Resource Consents were applied for in January 2008 but due to a backlog at Auckland City the consents were postponed to March 31st. With a deadline of April 30th for completion of the earthworks we had to be started by March 31st. A Heads of Agreement with Orama was negotiated.

Con Flinn was engaged to remove the pine trees, some of which were nearing the end of their life-span and were up to 1.8m in diameter. Over the course of four weeks he felled over 60 pine trees on to what would become the fence platform, so the branches could be trimmed ready for chipping.

With ARC consents already in hand, land use consent conditions agreed and assurances from Auckland City, the barge charter for shipment of machinery and materials was booked for the 29th March. This was the last opportunity to land at Karaka Bay on a reasonable tide in the middle of the day or face a delay another two weeks.

The barge sailed on the 28th night to Port Abercrombie awaiting the tide on the 29th. Over a span of four hours the Orama truck, the FitzRoy House Unimog, two diggers and the barge forklift unloaded all the equipment and materials. A start was then made on the access to the top of the hill from the main Orama complex.



The post-rammer at work on the Telecom (Orama side) track.

The following day (with the access largely completed) the assembly area was cleared of pine logs and debris to enable the materials to be shifted up the hill.

Monday was a pre-construction meeting with representatives of the consent authorities, the environmental consultant, the contractors and the land owners who then walked the line of the fence to Port FitzRoy. Work began immediately after with forming the fence platform down to Arthur's Bay and up the Telecom line.

The earthworks contractors were well on their way up the Telecom line by the time the fencing team arrived the same day, who immediately started drilling strainer holes and ramming posts. Once the strainers were secured the tensioning wires were attached and tensioned ready for installing

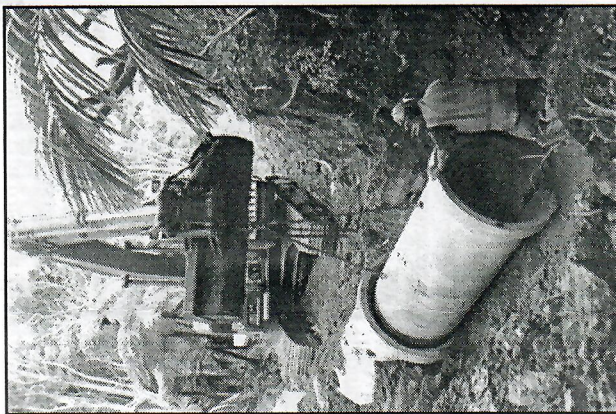
the capping channel and battens. During the week all the materials required for the Port FitzRoy end of the fence were trucked round to Glenfern. The pad for the vehicle gate on the top of the Orama hill was prepared and cut-outs and sumps for runoff and sediment control were dug. The fence platform was continued with installation of culverts below the volcanic outcrop known as Three Kings (where OPC take their students for abseiling) as well as over on the Orama side.

The following week the platform was formed down the FitzRoy hill to just above the stream, and the fence erection began in earnest with battens and capping channel installed up the hill from Arthur's Bay (Orama). On the FitzRoy side wet ground allowed only work to the platform through to the FitzRoy House front gate. Erection of the fence continued up the Telecom hill but rain again stopped work until the 1st May.

The prospect of fine weather saw a team of seven arrive from Xcluder on the 6th. Solid progress was made with the team working from dawn to dark installing mesh and capping on the Orama section.

On the 9th and 10th it rained again with some heavy downpours but the team managed to get the posts bored and rammed at the bottom of the FitzRoy hill and sediment control fences installed above the stream culvert and below the cut-off bunds.

Fine weather returned again on the 11th, drying the ground and with 7 men working steady progress was made. The first few days saw the remaining post-holes



On the FitzRoy side - installing a culvert for a small stream. Photo: T. Bouzaid

bored below Three Kings and the finishing of the remaining sections above and below the Orama stock gate. By mid-week the ground was dry enough to work up the Telecom line to the top of the FitzRoy hill. Because of the steep south-facing slope and the high trees adjacent it was not dry enough to work down the FitzRoy side till the end of the week.

Even then the steepness of the slope combined with a greasy clay surface to make for interesting manoeuvres. The Unimog and the post-ramming tractor were connected by wire hawser across the top of the hill. So counterweighted, the tractor was lowered down the hill. The Unimog had to be driven down the other side to pull the tractor up again. After a while it became necessary to use the combined weight and traction of

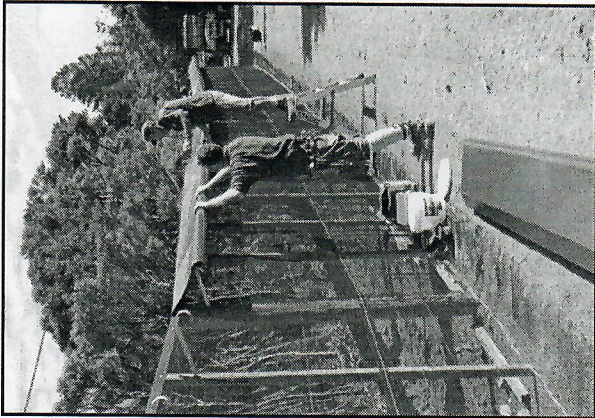
the Orama tractor and the Unimog to get the ramming tractor back up the last steep section. Skillful teamwork allowed the posts to be positioned successfully on the steepest section without incident.

Meanwhile the last fence section to the shoreline at Arthur's Bay was completed and the concrete pad for the pedestrian gate laid. With rain forecast for the 19th or 20th the team worked right through the weekend to get the remaining posts down the FitzRoy hill bored and rammed.

It rained briefly Sunday night just enough to make it too slippery to use the ramming tractor or the Unimog. Rain began in earnest Monday morning but didn't last long so the tractor was able to ram the last few posts at the top of the Telecom line. This section was then meshed up during the week. With the Telecom line too slippery to extract the Unimog or the tractor, work began on finishing the fence along the flat to the front gate at Fitzroy.

The last culvert was installed beside the FitzRoy gate and geotextile laid over the mud from the drive most of the way to the next culvert. Metal was laid over the top by the FitzRoy farm tractor to make the track to the stream culvert accessible. The team continued to work until washed out by rain on Friday afternoon.

The rain restricted what could be done during the week. Four workers continued on finishing the capping on the incomplete sections and further work was done at the front gate at FitzRoy. By the end of the week the posts were installed, some wired and meshed, the culvert beside the



Capping installation – the last stage of the fence construction. Photo: Bouzaid

gate installed and the concrete for the gate base was poured.

The first week of June was unseasonably dry allowing the fence to be capped and completed down the FitzRoy hill to the last drop off to the stream. The fence around the front gate was capped and completed to the bridge; the low rat fence along the shoreline including the retaining wall was completed and the vehicular gate was hung. The pedestrian gate frame is in place but the gate not installed as we need to use this as quad access until the concrete ramp before and after the gate can be built.

The week of the 9–14th June saw work on the final section of the fence down to the stream completed. The steep slope is just manageable with crampons

Continued on rear cover

Introduction to Carbon Credits Workshop

BY LIZ WESTBROOKE

About twenty five or thirty people attended this workshop hosted by the Trust and the Community Board. Mr John Dentice from Kyoto Forests NZ spoke very clearly about the current state of emissions trading schemes and the politics that surround them.

He started by outlining some facts about global climate change – that it is now scientifically proven and that human activities are producing 60% more gas than the earth can absorb. With global population growth at 79 million per year and with higher standards of living in developing countries, the situation is continuing to escalate.

The Kyoto Agreement binds the OECD nations, including New Zealand, to 100% of their 1990 levels. Any emissions in excess of this means purchasing carbon credits (and our nation is not in credit – the current level is about 74m with the 1990 level 60m tonnes).

Almost 50% of New Zealand's emissions are from agriculture (methane and nitrous oxide rather than carbon dioxide). A Carbon Credit is a piece of paper representing the offset to one tonne of gas. So we need to purchase about 14 million of these.

There are two methods of participation for a landowner:

- Growing production forests: these result in New Zealand units (NZU) and can only be traded domestically. They have to be offset when the timber is harvested if the forest is not replanted.

- Covenanted permanent forests: These earn internationally tradeable units (AAU) and may be differentially priced from those above.

Kyoto Forests NZ, the company John represents, is taking an innovative approach. They propose to combine small landowner credits (minimum of 50ha) and work with them on possible replanting, pest management, and / or manuka honey production. Depending on the suitability of the land for carbon credits (and its status in 1990), this can provide a good return.

John emphasised that it is early days, and that the situation is still evolving at the government and political levels. It was a worthwhile learning experience for us all with far more detail than can be represented here. The workshop was followed by a practical and informative site visit to the regenerating slopes of Ben Sanderson's farm.

MEMBERSHIP WELCOME

We distribute our newsletter freely to all post boxes on the Barrier and mail out to all off-island ratepayers. Annual membership is completely separate to the newsletter and is an important part of the fundraising of the Great Barrier Island Charitable Trust. We have a list on the back page indicating the types of membership available and we appreciate any new members. At present we have over a 100 members who support us.