Address to Resource Management Law Association Conference
4-7 October 2001, Wellington.
Session 3 Plenary "Land: Bioinvasions, Biodiversity, Biotic Holocaust."

By Eugenie Sage, Royal Forest and Bird Protection Society

"*A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."* (Aldo Leopold 1949).

1. THE BIOTIC HOLOCAUST

At this time of year, tui establish their territories prior to nesting and sing from high perches. You cannot hear their melodious notes in or around Christchurch, where I live, or around Banks Peninsula because the tui is extinct there. The nectar and fruit bearing plants they need for food have been destroyed, as indigenous forests and shrublands on the Peninsula have been burnt and cleared for farmland, timber and settlement. Since human settlement, virtually all of Banks Peninsula's original old growth forest has been destroyed with the extinction of at least 50 bird species and around 25 plants (Wilson, 1992). Today, only half of the bird species present in pre human times survive and intensive management is needed for several of these because of the risk of local extinction. It is a pattern, which is repeated throughout many lowland areas.

Our clean, green image relates more to the vivid green paddocks of the Waikato and the tidy patchwork of cropping and grazing on the Canterbury Plains than to protection of indigenous habitats.

The reality, as even a brief reading of the 1997 report on "*The State of New Zealand's Environment"* shows, is that we have little to be proud of. New Zealand has escaped the gross pollution of some industrialised countries. Our pastoral farming history and the large size of our livestock populations, however, have magnified human impacts on natural environments and led to substantially modified landscapes and ecosystems.

Before human settlement New Zealand's only native mammals were bats. Now our environment is dominated by 34 introduced mammals including *Homo sapiens*. "*Because mammals are bigger, hungrier and more active than most other animals, their effect has been immense."* (MfE, 1997 at p9.31).

As the State of New Zealand Environment Report concluded:
"Biodiversity decline is New Zealand's most pervasive environmental issue, with 85 percent of lowland forests and wetlands now gone, and at least 800 species and 200 subspecies of animals, fungi and plants considered threatened." (MfE, 1997 at p 10.6)

At least 85 % of wetlands have been destroyed, including 95 % of fertile lowland wetlands. Around 90 % of tall tussocklands have been destroyed. In 650-750 years (20-30 generations) humans have reduced indigenous forest cover from around 85 % of land area (23 million ha.) to around 23 % of land area (6.2 million ha). (MfE, 1997).

New Zealand has the dubious distinction of having a greater percentage of indigenous bird species on extinction's doorstep than any other country (42 % of our birds compared with 35 % in Philippines). Birdlife International has identified New Zealand, Brazil, Indonesia, West Africa, China, and the Philippines as "extinction hotspots".

A biotic holocaust accurately describes what has happened in these islands since humans arrived. As the Ministerial Advisory Committee on Private Land observed, *"we find it difficult to deny that humans have turned a unique ecological site into an industrial estate"*. (MAC August 2000).

On the habitat balance sheet, New Zealand is very much in the red, when compared to other countries. Nearly two thirds of the New Zealand landscape is now ecologically hostile to many native species. A much higher proportion of our land area (62% of total land area and 90 % of lowland New Zealand) has been domesticated through clearance for farming, urban settlement, cropping and horticulture than the world average (50%). Some 72 % of our indigenous ecosystems have been replaced or disturbed by farmland, settlement, logging, mining and roads compared to the world average of 52%. (MfE, 1997).

We have gone too far in converting wild nature to a production environment. It is time to stop and give the highest priority to the protection of what remains. Goal three in the New Zealand Biodiversity Strategy is to halt the decline in indigenous biodiversity, while noting that this does not preclude protecting or maintaining biodiversity to higher levels in some environments (eg wetlands) or for particular areas or species.

> ***"Halt the decline in New Zealand's indigenous biodiversity***
> *Maintain and restore a full range of remaining natural habitats and ecosystems to a healthy functioning state, enhance critically scarce habitats, and sustain the more modified ecosystems in production and urban environments; and to do what else is necessary to maintain and restore viable populations of all indigenous species and subspecies across their natural range and maintain their genetic diversity*."(DoC and MfE February 2000).

Protecting the full suite of New Zealand's indigenous biodiversity (including icon species such as kiwi and cabbage tree) cannot be done simply by relying on the Department of Conservation and its management of the 30 % of New Zealand (7.976 million ha) that is protected as conservation land. Nature does not respect cadastral boundaries and wildlife needs to move across the landscape. Lowland ecosystems, particularly forests (including coastal forest), dunelands, wetlands and peat bogs, shrublands, tussock lands and braided rivers are also not well represented on the public conservation estate. (DoC, Dec.1999).

Private lands also contain some of our most threatened habitats because they encompass fertile soils and flatter lands where vegetation clearance and development have been the most extensive. Some 1.5 million ha of indigenous forest and 0.5 million ha of freshwater wetlands occur on private, Maori and pastoral lease land. Covenants and similar legal mechanisms are known to protect only about 8.2 % (205,000 ha) of this. (MAC, August 2000).

Forest and Bird regards both the Resource Management Act and the work of local authorities as vital in achieving the changes in land, water, and coastal use and management required to halt the decline. Using the RMA to seek to protect nature on private land, in waterways and the coastal marine area is one of Forest and Bird's key campaigns.

The Resource Management Act is also the only opportunity for the public to be involved in decisions on how indigenous habitats beyond the conservation estate are to be managed. Some 2.3 million hectares of pastoral lease land in the eastern South Island high country are administered under the Land Act 1949 and the Crown Pastoral Lands Act

1996. Neither of these two Acts has the promotion of sustainable management as its purpose, (though the tenure review process is intended to promote "ecologically sustainable management"). There is no opportunity for public submissions (or review of decisions) when the Commissioner of Crown Lands considers applications to burn tussock and shrublands or cultivate red tussock wetlands. Nor is there any provision for public comment or involvement (or review of decisions) under the Forests Act as amended in 1993 when the Secretary of Forests approves "sustainable management" plans or permits to log indigenous forest on private land.

2. PROGRESS TO DATE AND SOME OBVIOUS OBSTACLES

Conservationists had high hopes for the RMA. This was partly because of its encouragement of public participation in planning and the inspired wording of Part II - with its references to "the needs" (rather than wants) "of future generations", "safeguarding the life –supporting capacity of air, water, soil and ecosystems" (s5(2)), providing for the "recognition and protection" of the "natural character of the coastal environment" (s6(a)), "outstanding natural features and landscapes" (s6(b)), "significant indigenous vegetation and habitats" (s6(c)), "maintenance and enhancement of the quality of the environment" (s7(f)), and the "intrinsic values of ecosystems" (s7(d)).

At the end of the RMA's first decade, we have yet to realise the Act's full potential as a tool for conserving our indigenous biodiversity and safeguarding healthy ecosystem functioning. The actuality has fallen well short of the promise contained in the words of Part II. I will comment on some of the reasons for this before suggesting some ways of improving the future prospects for indigenous biodiversity on private land.

2.1 Widespread ecological illiteracy

New Zealand has been described as one of the world's biological prizes. New Zealand has a remarkable level of endemism (species that are found nowhere else in the world). This is the result of around 80 million years of isolated evolution since these islands split from the prehistoric super-continent of Gondawana, and the diversity of our land and seascapes. We are stewards, for example, to around 1500 endemic land snail species when in the whole of Great Britain and Europe there are only 50 species of endemic, native, and naturalised land snails.

Around 80 % of New Zealand's vascular plants, more than 90 % of insects and a similar percentage of marine molluscs, 25 % of all bird species, and all reptiles, amphibians and land mammals (bats) are found nowhere else on earth.

> *"In contrast, Great Britain, which separated from continental Europe only 10,000 years ago, has only two endemic species: one plant and one animal. Half a dozen islands in the Hauraki Gulf have a greater level of endemism than the whole of Britain.*
>
> *"The ecosystems in which these species live are also highly distinctive. The kauri forests of the northern North Island, the braided river systems of the eastern South Island, and our geothermal ecosystems are some examples.*
>
> *"The uniqueness of much of New Zealand's indigenous biodiversity means that responsibility for its continued existence is entirely ours; it cannot be conserved in nature elsewhere in the world."* (DoC and MfE, February 2000).

Yet there is a failure by the public to appreciate the international importance of our indigenous biodiversity, what has been lost, and the seriousness of the biodiversity crisis. Related to this is a reluctance to acknowledge the impacts of human activities such as forest logging or allowing stock access to waterways on downstream water quality or healthy ecosystem functioning.

As Dr David Norton and Dr Judith Roper Lindsay have noted:

> *"The New Zealand community in general does not have a good understanding of ecology. The science of ecology is often confused with conservation advocacy. The RMA has placed a large amount of responsibility on local authorities to deal with a topic that they have never had to address before in such detail, and many lack the staff expertise or financial resources to carry out that responsibility. This has led to approaches to Section 6 (c) assessment which lack ecological rigor, and an acceptance of poor quality assessments of significance in both planning and consents areas. A similar lack of ecological understanding in the general public and hence in many elected members means that management decisions have been made without full recognition of their consequences (or of the consequences of inaction*)." (Norton Jan 1999).

When 2000 people were asked last year to compare the state of New Zealand's environment with that of other developed countries, more than three quarters of those surveyed thought it was either "good" or "very good". As Dr Ken Hughey has said, *"The response should be somewhat disturbing to environmental policy makers. In terms of native land and freshwater species it is well known among conservation and environmental interests that New Zealand faces a biodiversity crisis, but clearly this is not perceived to be the case by the public." (Hughey et al, 2001)*

Widespread ecological illiteracy and the lack of awareness of the need for urgent action has been a major obstacle to effective implementation of Part II of the RMA. It has contributed to strong landholder opposition to the identification of significant natural areas in district plans and rules to control further habitat loss and destruction. It also appears to have constrained the resources that Councils have been prepared to devote to implementing their section 6 and 7 responsibilities.

Consequently there is a lack of staff capacity and technical expertise on ecological issues and a lack of baseline information on the existence, significance, and condition of indigenous habitats on private land.

The lack of staff capacity means that councils may not be well resourced to evaluate critically the research and ecological information presented by applicants at consent hearings. The current deluge of consent applications for marine farming has highlighted the small number of coastal and marine scientists in regional councils (compared to hydrologists for example).

2.2 Inadequate information

A perception has also existed that information and issues about "indigenous biodiversity" are "DoC's problem". There has been an over reliance on the Department of Conservation for information and advice, for example on how section 6 (c) should be interpreted, and the location and extent of significant natural areas. This has led to Councils relying on older information provided by the Department of Conservation (such as Sites of Special Wildlife Interest and Protected Natural Area Programme surveys) and inevitable claims of inaccuracies when this has not been updated through field checks by Councils. In some areas DoC has been unjustly targeted for criticism by landholders.

Too few plans have included effective monitoring strategies and state of the environment monitoring is in its infancy. The result is that no one has a good understanding of the rate of continued indigenous habitat loss, or of the condition of areas and whether they are deteriorating from the impacts of pests and weeds.

It would be helpful if the National Policy Statement on Biodiversity included detailed methods on monitoring standards, techniques and criteria, as well as policies requiring monitoring of habitat condition and threats. This could avoid duplication of effort in drafting and designing such strategies and promote consistency in the type and level of information, which is collected.

2.3 Absence of national guidelines

The absence of national policy statements and guidance to Councils on how to implement section 6(c) has resulted in much "re-invention of the wheel" resulting in more time, resources and energy being devoted to plan preparation than necessary, resources that could be better spent on incentives, enforcement, and monitoring.

The development of criteria for ecological significance is one example. There have also been repeated debates, district by district and often involving litigation, about the merits or otherwise of plan rules and the content of such rules, even where these target similar habitats and vegetation communities. The methods councils have used to provide for protection of indigenous biodiversity are extremely variable and, often, are neither monitored nor enforced.

This lack of national guidance is belatedly being addressed, in part, with the preparation of a national policy statement on biodiversity. It is a real opportunity to provide a clear directive to councils about the best way to meet their obligations in relation to indigenous biodiversity under the RMA, and promote greater consistency and effectiveness at council level.

Schedule 1 of the New Zealand Coastal Policy Statement describes the circumstances in which activities have significant or irreversible adverse effects on the Coastal Marine Area. A similar schedule in the national biodiversity policy statement could usefully describe the circumstances and types of activities that have a significant or irreversible adverse effect on different types of indigenous habitat. This schedule could guide councils in developing district and regional rules for controlling such activities.

2.4 Aversion to rules

Many rural councils have relied heavily on a voluntary approach and been reluctant to use rules. In a 1997 review of local authorities, only half of all councils used or proposed to use some form of general rule for controlling the clearance of indigenous vegetation or forests. (Froude 1997).

The dramatic changes to New Zealand's natural environment show the extent to which a voluntary, largely non-regulatory approach has failed in the past. Vegetation has been cleared, streams burdened with sediment, wetlands drained, forests converted to pasture, and kanuka and manuka shrublands roller crushed to plant pine trees. When there is a conflict between using land to earn an income through pastoral farming, forestry or subdivision, and allowing natural processes such as shrubland regeneration to continue undisturbed, nature is frequently the loser.

Voluntary initiatives by landholders to protect ecologically important have proceeded slowly. It has been estimated that at current rate of uptake of a Landcare Trust project it would take 400 years to fence all streams in the Waikato. (Salmon, 1999). Despite the sterling work of the Queen Elizabeth II National Trust over the 23 years, only 54,500 ha has been protected under 1,450 open space covenants.[1] The covenanted areas have an average size of 36 ha. [2]

Initiation of National Trust covenants appears to require a high degree of environmental awareness among landholders. In the Far North District 55% of the district's 60 QE II National Trust covenants were initiated by landholders who were members of Forest and Bird or other environmental organisations. (Conning, pers.comm)

Given the urgency of New Zealand's situation, regulation is as vital as education. Serious damage to indigenous vegetation and habitats continues. The population of our national icon, the kiwi has declined from an estimated 12 million prior to human arrival to around 70,000 birds, declining at overall rate of about 6 % per year. Predation and habitat loss are the major threats to kiwi.

All habitats where threatened species, such as North Island brown kiwi, occur should be key sites for their recovery. Yet in Northland more than 2000 ha of kiwi habitat has been cleared in the last six years with no control or oversight by Council or the public because of the absence of vegetation clearance rules in the Far North District Plan.

Some degree of human induced change within any landscape is inevitable. Rules which trigger a resource consent process are the only certain way in which Councils and members of the public can assess (and if necessary modify or stop) the impacts of further habitat destruction and biodiversity loss.

Rules are also needed because major changes in land use in developed landscapes which have unforeseen effects. Dairying conversions in Canterbury regularly involve the felling and clearance of all shelterbelts and hedgerows to accommodate large pivot irrigators. Areas of rough, uncultivated ground with weeds and long grass, on the edge of paddocks and under shelterbelts are lost as every possible sq. cm is sown in grass. Such rough ground often provides important refugee or "beetle banks" for invertebrates, both native and introduced. The insects are often useful to help control plant eating pests, in both agriculture and horticulture. Yet their habitats are destroyed unwittingly.

2.5 Preference for non-notification

Even where Plan rules trigger effects assessments through a resource consent procedure, it can still be difficult to get a public voice in major land management decisions because of a preference for non-notification.

Councils consider around 48,000 resource consents annually. On average, only 5 % of all consent applications are notified and less than 1% of applications are declined. (MfE, June 2000). Non-notification of applications affecting indigenous habitats has reduced

---

[1] Queen Elizabeth II National Trust web site: http://www.nationaltrust.org.nz/about/index/html

[2] The National Trust was established by the Queen Elizabeth the Second National Trust Act 1977, *"to encourage and promote the provision, protection and enhancement of open space for the benefit and enjoyment of the people of New Zealand."* The Act defines "open space" as *"Any area of land or body of water that services to preserve or facilitate the preservation of ant landscape of aesthetic, cultural, recreational, scenic, scientific, or social interest or value."* In return for covenants, landowners may receive rating relief, a 50 % grant towards fencing and/or pest control costs, and a 100 % grant covering the survey and legal costs of registering the covenant

transparency in and accountability for decisions and limited the information available to decision-makers. It is a particular problem given pervasive ecological illiteracy.

Forest and Bird has experienced councils defining very broadly what constitutes "minor" adverse effects for the purpose of decisions on non-notification under section 94 RMA. At the same time who qualifies as "affected party" in terms of section 94 can be defined very narrowly. Council practice is at odds with encouraging and progressive case law, which has confirmed the public participation, thrust in the RMA (*Murray & Ors v Whakatane District Council CP 20/96; Bayley v Manukau City Council 1999 NZLR 568).*

At sea, the situation is much better with councils generally notifying marine farming applications. This may be because they involve occupation of a public resource – the coastal marine area. If this is the case, then similar reasoning should apply on land for any applications potentially affecting the habitat of indigenous wildlife. The Crown, under the Wildlife Act, holds the control and "ownership" of indigenous fauna. Kiwi, kereru and giant land snails are all a public resource. Society's interest in species managed under the Wildlife Act can be acknowledged by notifying all applications affecting their habitat.

Current political proposals to seek to amend the RMA and pursue some of the former Government's limited notification proposals are disturbing. Their proponents seem unaware of the many examples of important indigenous habitats being destroyed or severely compromised when Council staff have not notified consent applications.

Just recently, beech forest close to the State Highway as one approaches the Lewis Pass from Springs Junction has been cleared for conversion to yet another dairying paddock. This follows the clearance by the same landowner of an extensive area of ancient matagouri, New Zealand's only thorn woodland, on the banks of the Maruia River. Matagouri a prickly grey/green shrub characteristic of Canterbury river valleys is rare on the west of the Main Divide. The area was potentially significant under section 6(c) because the height of the shrubs meant they may have been more than 100 years old and because they contained a rare *Coprosma* species. The matagouri was adjacent and easily visible from the State Highway and was a significant part of what many would regard as an outstanding landscape. Buller District Council failed to notify that consent application.

Frivolous and vexatious submitters are claimed as a justification for limiting notification. If people get involved in applications close to home, they are accused of "NIMBYism" (Not In My Backyard), while if they take a stand on more distant places they are portrayed as interfering busy bodies. This ignores the fact that many people cherish places far from where they live, for many reasons as varied as memories of childhood holidays to a deep ethical concern about the health and survival of wild nature wherever it exists. The fact that people make submissions on issues and places beyond their immediate environs is a heartening demonstration of both a holistic world view, and a healthy participatory democracy in action.

In my experience, few members of the public have either the time or the energy to get involved in submission writing on environmental issues for reasons other than to express a legitimate and heartfelt concern about a proposed activity. Despite the many helpful guides seeking to explain and demystify the RMA, it takes considerable perseverance and commitment for members of the public to grapple with the content, meaning, and procedures of the RMA and determine how to engage with it. For new submitters, it is a daunting process to present evidence to a Council hearing panel, let alone a file an appeal or a Plan reference.

The Local Government and Environment select committee's recommendation to amend the RMA to allow decisions not to notify to be appealed to the Environment Court is welcome. Forest and Bird regards the Environment Court as more accessible and less costly than judicial review proceedings in the High Court. Given the expenditure and technical resources required to undertake any Court action and the liability for costs, such cases are unlikely to be pursued frivolously.

2.6 Traditional uses continue habitat degradation

The inability of Plan rules to prevent or control traditional uses such as grazing means pastoral farming continues to degrade wetlands, waterways and forests in particular. Allowing stock access to forest areas for shelter and grazing causes trampling of the under-storey and impedes forest regeneration; allowing cattle to graze red tussock wetlands causes gradual drying out of the wetland, loss of the tussocks and incursion of exotic grasses; while allowing stock, especially cattle and deer, access to waterways, degrades water quality, contributes to bank erosion and sedimentation and can spread weeds such as broom.

Such losses and deterioration in the integrity and quality of indigenous habitats are much less dramatic and obvious than the damage done by taking a chainsaw to tall rimu or beech trees and so get less attention. The gradual nature of such decline means that by the time impacts are obvious they can be difficult or impossible to reverse (eg mob stocking reduces a red tussock wetland to sporadic red tussocks in a predominant groundcover of exotic grasses).

The protection which section 10 of the RMA gives to existing use rights means that major new economic incentive schemes are required to achieve the substantial changes in land management required to protect biodiversity.

3. IMPROVING THE PROSPECTS

As others have observed, resource management is more about managing human behaviour and dealing with human actions and inaction, than about managing resources. Signs of optimism that we can stabilise the current downward trajectory for biodiversity include the surge of public support for and involvement in habitat restoration projects such as on Tiritiri Matangi in the Hauraki Gulf, Mana and Matiu/Somes Islands near Wellington, Travis Wetland and Quail Island in Lyttelton Harbour, and the many projects where volunteers set and clear predator trap lines on public and private land.

Another, is the world class expertise of Department of Conservation staff in developing effective techniques to create pest free islands, and control pests as diverse as wasps and stoats over extensive areas.

3.1 RMA Amendment Bill

The likelihood of the RMA being a more effective tool for indigenous biodiversity conservation over the next decade would be enhanced by the implementation of several important clauses in the reported back Resource Management Amendment Bill. These include: specifying biodiversity functions for local authorities (clauses 10A and 10B), including the precautionary principle in section 32 (clause 11), improving the monitoring duties of councils (clause 14), and strengthening national environmental standards (clause 17).

3.2 Increase ecological capacity.

Through the Annual Plan and budget process, Councils must increase their staff resources and technical expertise and capacity to identify and assess adverse effects on ecosystems. Employing more terrestrial, aquatic and marine ecologists would be a welcome start. The Tasman District Council, which straddles New Zealand's most important biological cross-roads, still has no terrestrial or marine biologist on staff.

Having such expertise in-house has the added benefit of being able to ensure Councils' operational work better recognises and protects biodiversity values. (For example, ecologists are able to advise river protection engineers on the presence and significance of riparian wetlands so that these are not obliterated by new stopbanks; and prepare guidelines for roading crews to avoid the spraying and loss of indigenous vegetation remnants in roadside maintenance. In highly modified environments such as the Canterbury Plains, roadsides and railway margins can be important habitats for indigenous species.)

3.3 Increase information gathering and sharing about habitat condition

More Councils are now tackling this task of preparing inventories of significant natural areas in terms of section 6(c). These generally represent the best areas. Focusing only on "significant natural areas" and controlling land uses here risks having "museum pieces" as scattered islands in a hostile sea of intensively managed land. Each is vulnerable to the effects of fragmentation and a progressive decline of their capacity to support the same range and abundance of species that occur today. Fragmentation hastens the extinction process. As the Ministry for the Environment has noted, *"fragmented ecosystems are death traps for most species, including those that survive the actual period of habitat destruction"* (MfE, 1997 at p 9.36).[3]

More consideration needs to be given to how to make the wider countryside more accommodating of indigenous biodiversity. Local authorities and the Department of Conservation could identify and promote more appropriate land management (eg forest and wetland protection, corridors for wildlife movement and links between protected areas) to slow further habitat fragmentation.

In all of the ecological investigation and information gathering, greater co-ordination and information sharing between Councils and interested agencies parties would be desirable. Research on the condition and functioning of terrestrial habitats can be integrated with state of the environment monitoring. This needs to include trend analysis on whether water quality is declining or improving at sites monitored and possible reasons for this.

3.4 Continue the Environmental Legal Aid Scheme.

Despite the generosity of some legal counsel and expert witnesses in providing their services on a pro bono basis, limited financial and people resources have severely constrained the ability of Forest and Bird and other environmental organisations to either take or mount adequate cases in the Environment Court. The environmental legal aid scheme with its grants of up to $20,000 has been a very welcome initiative. It has enabled

[3] This is because fragmented habitats can only sustain small populations which are vulnerable to chance events such as disease outbreaks which can tip a species into the extinction crevasse. The small size and isolation of fragmented habitats makes replenishment of falling populations from outside areas difficult, and means only a limited number of species can share the habitat before crowding and competition occur (MfE, 1997 p9.36).

us to use counsel and expert witnesses when these were previously unaffordable, and we hope is improving the level of analysis and legal arguments presented to the Court.

3.5 Education and advisory service

There was a frequent call in public submissions on both the draft Biodiversity Strategy and the *Bio-what?* report for a biodiversity advisory or extension service to give practical advice to interested landholders on matters such as; the species to use in habitat restoration, or riparian plantings and the most effective pest trapping or poisoning techniques. How the government's new biodiversity advisory service is to operate and who is to deliver it, has yet to be announced. Given its modest funding of $3.6 million over four years, it is hoped that there is a mechanism for leveraging contributions from councils to expand its capacity.

Projects to better understand and protect indigenous biodiversity seem to have low priority for expenditure in annual plans and budgets for many local authorities. Councils appear reluctant to use general rates to fund increased activity here. This is despite the very positive public response to projects such as Christchurch City Council's waterway revegetation and restoration work, which has seen a major increase in population of native scaup and other birds on the Avon and Heathcote/Opawa Rivers.

Market research or other surveys might yield interesting results on the public's willingness to pay through rates, for work to identify the presence of threatened wildlife, assess the condition of forest remnants, control environmental pests and assist landholders with predator control. Such surveys could help provide a political mandate for Councils to levy and use a higher rates take to help halt the decline.

3.6 More incentives for landholders to engage in active conservation management

More economic incentives are needed to encourage landholders to engage in active conservation management such as pest control or fencing stock out of wetlands and forests. Recent progress is encouraging with Environment Bay of Plenty's generous $1.25 million Environmental Enhancement Fund ($500,000 for public and landowner projects and $750,000 for district council projects). Other councils such as Environment Canterbury are following suit, albeit more modestly. Government's new "biodiversity condition fund" ($6.5 million over four years) will be a much needed boost to assist fencing, pest and weed control, fencing and restoration projects on private land.

Australia, Canada, the United Kingdom and the United States have a range of incentive schemes, which also provide an element of compensation for the income foregone by private landholders from conserving. Many are essentially contractual, securing the farmer's commitment to conservation for an agreed payment period. Accordingly the long-term gains are uncertain and rely on continued funding. Britain's Countryside Stewardship Scheme offers a menu of standardised payments for specific conservation works (so much per kilometre of hedgerow maintained to a certain standard) as part of a 10-year contract with selected landholders (Clough 2000). The Conservation Reserve Program in the United States is a federal scheme for removing land from agricultural production and restoring grassland or forest cover. Annual payments made under 10 year contracts cover both restoration costs and income foregone. (Clough 2000).

Further investigation and public debate is needed before any similar schemes are introduced here. Providing compensation for income foregone is not appropriate. Substantial financial benefits have accrued to past and present generations of landholders

from converting indigenous habitats to production environments, with no direct compensation to the environment or the public.

3.7 Better recognise impacts of pests on indigenous biodiversity

Introduced pests are as significant a threat to indigenous biodiversity as the effects of land use. Mustelids, feral cats, and possums threaten wildlife, the combined effects of deer and possums can cause forest collapse, while Himalayan thar browse and trample rare alpine plants and contribute to erosion of thin alpine soils.

It is somewhat illogical then that the Biosecurity Act 1993, as the major piece of legislation governing unwanted organisms and pest control, does not recognise indigenous biodiversity in a similar way to the RMA. The Biosecurity Act contains no mandatory obligations for agencies or individuals to carry out pest control. Pest control responses are co-ordinated through pest management strategies (PMS) prepared under the Act and approved nationally (by MAF, DoC or MinFish) or regionally (by regional councils). Individual agencies have discretion about whether to prepare a pest management strategy to control or eradicate a particular organism/s.

A pest management strategy can address the impacts of pests on biodiversity. The philosophy of the Biosecurity Act, however, is that such a PMS may only be prepared when it is necessary, efficient and complies with defined cost-benefit criteria (ie the benefits of intervention outweigh the costs). Until a strategy is in place an organism is not a "pest." Monitoring is only required where a strategy is in place. (MAC, February 2000).

Regional councils can assist indigenous biodiversity by comprehensive and effective pest management strategies. This would require a broader focus on environmental pests and not just traditional agricultural pests such as rabbits, possums, gorse, and broom. Environment Canterbury's move to recognise feral deer and wilding conifers as pests in a new section of the Canterbury regional pest management strategy is welcome.

Improving performance across the board may require changes to the Biosecurity Act. These would include clarifying the Act's purpose to refer to the protection and enhancement of indigenous biodiversity, requiring regional councils to recognise and address the effects of pests on indigenous biodiversity when preparing regional pest management strategies and making such strategies mandatory.

There is currently no pest management strategy for the South Island's West Coast. This is despite that region's internationally outstanding biodiversity values and the fact that failure to control and eradicate existing small scale weed and pest infestations now (eg wild ginger close to Paparoa National Park) risks major control problems in future.

The *Bio-What?* report suggested legislative change to make it clear that councils may take into account, or rely on their pest management strategies in respect of their RMA functions, powers and duties. (MAC, Feb.2000). This could help clarify the relationship between the Biosecurity Act and the RMA.

Councils could better appreciate the potential of the RMA to complement the Biosecurity Act and promote improved pest control. Few district plans have rules controlling the planting or farming of recognised pest species (eg chinchilla, deer, goats) which have the potential to escape and establish new feral populations or supplement existing ones on nearby conservation lands.

In *Royal Forest and Bird Protection Society v Northland Regional Council* (A33/98), the Environment Court confirmed that pest control was not the sole domain of the Biosecurity Act and that regional policy statements could include provisions about pest control. These could assist the regional council promote integrated management and were an appropriate means of controlling the effects of pests, including those on landscape values and those arising from land use. In *Minister of Conservation v Western Bay of Plenty* A71/2001 the Environment Court directed the inclusion of a new performance standard for fencing for goat farming (a permitted activity) to help prevent the escape of farmed goats.

On Banks Peninsula, the Department of Conservation has had to spend more than $100,000 in the last decade shooting goats, which escaped and spread from private land when the goat-farming boom of the late 1980s crashed. Their browsing was causing major damage to under-storey regeneration in small but biologically important reserves. District plan rules with stringent performance standards for fencing would help avoid similar expenditure and diversion of limited resources in future. Other regions could emulate DoC and Northland Regional Council's successful "Deer Watch" programme. Working with landholders has reduced escapes down to low levels and ensured effective follow up (capture or killing) where animals do escape.

4. CONCLUSION

Serious progress towards halting the decline in indigenous biodiversity requires a much greater reverence and respect than we have demonstrated so far, for the indigenous plants and wildlife with whom we share these islands, and the landscapes and seas they inhabit. The measures I have discussed address the most obvious causes of biodiversity loss - vegetation clearance and pest damage. The bigger challenge is to tackle its fundamental causes – population growth and an economy based on an ever-increasing consumption of resources.

Change here involves more attention to the quality of living (and the wellbeing of the whole biotic community, not just humans), rather than standard of living (the number of cars, TV sets, and computers, per household). And it requires substantially more of us to commit to an ethic of voluntary simplicity, consuming less but having more in terms of time, energy, enjoyment, and quality relationships with others and with nature. If we can do that, then the prospects are good for wild nature and our distinctive cargo of indigenous species and ecosystems.

ACKNOWLEDGEMENTS

Particular thanks to Kate Mitcalfe, and thanks also to Linda Conning, Andy Dennis, Basil Graeme, Eric Pyle, and Karli Thomas for comments on the draft of this paper. Responsibility for any errors is of course the author's.

REFERENCES

Clough P (2000) *Encouraging Private Biodiversity-Incentives for Biodiversity Conservation on Private Land,* Treasury Working Paper 00/25.
Department of Conservation (December 1999) *Conservation Briefing for the New Minister of Conservation.*
Department of Conservation and Ministry for the Environment (February 2000) *The New Zealand Biodiversity Strategy – Our Chance to Turn the Tide,* New Zealand Government.
Froude, V (1997) *Implementing the Biodiversity Protection Provisions in the Resource Management Act. A Review of Council Progress to Date*. Pacific Ecologic Resource Management Associate. Wellington.
Hughey KFD et al (2001) *Perceptions of the State of New Zealand's Environment*, Lincoln University.
Leopold, Aldo (1949) *A Sand County Almanac and Sketches Here and There*, Oxford University Press.
Ministerial Advisory Committee, (February 2000) *Bio-what? Addressing the effects of private land management on indigenous biodiversity, Preliminary report of the Ministerial Advisory Committee*, Ministry for the Environment.
Ministerial Advisory Committee (August 2000) *Biodiversity and private land, Final Report of the Ministerial Advisory Committee on Biodiversity and Private Land*, Ministry for the Environment.
Ministry for the Environment (June 2001) *Resource Management Act: Annual Survey of Local Authorities 1999/2000*, Ministry for the Environment.
Norton, D and Roper-Lindsay, J (January 1999) *Criteria for Assessing Ecological Significance under Section 6(c) of the Resource Management Act, 1991, Final Draft*. Unpublished report for the Ministry for the Environment.
Taylor, R, Smith I et al, (1997) *The State of New Zealand's Environment*, Ministry for the Environment, GP Publications.
Wilson, Hugh (1992) *Banks Ecological Region Survey Report for the Protected Natural Areas Programme*, Department of Conservation.