

# **Sustaining New Zealand's Biodiversity – a Progress Report**

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## SUMMARY

The launch of the New Zealand Biodiversity Strategy (the “Strategy”) in 2000 was an important milestone in the nation’s efforts to protect its valued species, places and ecosystems, the taonga that make New Zealand unique and special. This paper summarises the 2005 independent review of progress after the first five years. The review went beyond the programmes that were funded by the Biodiversity Package (an extra \$184 million over 5 years) and looked across all ten themes at the progress made so far. Package programmes have led to several important outcomes. The Package programmes have funded major successes in rodent eradication, especially on off-shore islands, while pest and weed control programmes covered greater areas with much better coordination between agencies than previously. Intensive management has benefited at-risk taonga species, such as kiwi, kakapo and kokako.

The Package funded the development of important ‘building blocks’, such as marine and freshwater classification systems, which will help in setting targets for completing representative networks of protected areas in marine, freshwater and terrestrial environments. Three new funds were created: Biodiversity Condition Fund, Biodiversity Advice Fund and the Mātauranga Māori fund. Along with increased allocations to the three existing acquisition and protection funds,<sup>1</sup> the new funds have contributed to protection gains on private land and provided a valuable boost, often with additional support from councils, for iwi, community and landowner efforts to restore habitats and control pests and weeds. Community involvement in conservation and restoration initiatives is undoubtedly at an all-time high.

Coordination of biosecurity management has improved, following completion of the Biosecurity Strategy, and marine biosecurity initiatives have provided the first surveys of ports and harbours for exotic species. Also in the marine area there has been the development of the Marine Protected Areas policy and the Strategy for Managing the Environmental Effects of Fishing. These should lead to additions to the marine protected areas network and help move fisheries management away from the pressures that lead to over-fishing to a more ecosystem-based approach.

While these gains should be acknowledged and welcomed, the remaining 15 years of the Strategy still have significant policy, management and conservation challenges to tackle. Management of marine resources will remain confused, complicated, uncoordinated and with poor accountability until an effective Ocean Policy is completed and implemented. Policy directions for indigenous biodiversity under the RMA, for the management of New Zealand’s genetic resources, for bioprospecting, an overdue review of the 1986 Wetlands Policy and a biosecurity research strategy have yet to emerge.

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<sup>1</sup> The three existing funds are: Nga Whenua Rahui, Queen Elizabeth II National Trust, Nature Heritage Fund.

Despite the gains for protected areas, including the halting of logging of indigenous forests on Crown land, the best evidence for the country as a whole is that the annual loss of cover by indigenous ecosystems was about 4,500 ha per year between 1996/7 and 2001/2. Although information is poor at the national level, it is highly likely that this trend has accelerated and an area of indigenous vegetation roughly equivalent to the size of Abel Tasman National Park has been lost in the past 5 years. Ecosystems are being lost most rapidly from regions where the level of legal protection is lowest. This is a significant concern because a high proportion of the most threatened species are now only found in threatened environments on private land where the ecosystems have already been depleted and highly modified. Habitats most at risk are in coastal, lowland and montane environments. Many wetlands have also been degraded and lost, largely through agricultural intensification. At the same time as species and habitats are being lost or degraded, so also are ecosystem functions being compromised and diminished. This has wider implications for other sectors, such as agriculture, that depend on the 'free' ecosystem services provided by healthy environments.

Funding limits will always mean that priorities have to be set for what is managed and what is not. The Department of Conservation (DOC), for example, can afford to target less than 3% of the 8 million ha it administers with intensive management regimes whereas about 55% of those lands where some management by DOC may be appropriate receive only limited or no management. Consequently, the range of many threatened species continues to decline and the quality of some ecosystems is degrading. Weed problems continue to overwhelm budget allocations and from the naturalized plants now in New Zealand 1-3 species are added to the list of weeds each year.

The core questions remain unanswered: (1) have we got the priorities right? (2) how, and at what cost can we best achieve them? Management for conservation in New Zealand is uniquely associated with the control of introduced pests and therefore with control technologies. There has been a disappointing failure to increase the research funding for pest control technologies which are a major factor in the cost and effectiveness of conservation management. This could well prove to be a serious failure. Investment in this type of research can take many years to reach the stage of management application and by that time some threatened species may already be extinct.

There is a generic problem with the lack of a national system of environmental indicators to track trends and monitor the state of the environment. This need was identified over a decade ago, but the Environmental Performance Indicators Programme was halted in 2002, before the draft environmental indicators were finalised and implemented across the country. Biodiversity monitoring remains extremely uneven across the country and with a lack of comparable, consistent data for assessing trends there is a corresponding issue of accountability for performance. The review recommended that this issue receive urgent attention.

Another generic problem related to the delivery of the Strategy has been the insufficient involvement of other key players. Therefore the review recommended that a greater effort is made by central government to strengthen the collaboration with all levels of local

government and to increase its level of support and involvement with communities. What is specifically needed is the integration of inter-agency, inter-community efforts on biodiversity management and protection at regional scales. For example, regional-level, long-term planning by councils and by agencies such as DOC is driven by different statutory obligations, but there would be many mutual benefits if this planning was done in more collaborative ways.

The review also identified two other important linkages that would strengthen the impact and relevance of the Strategy. First, *there clearly needs to be a new objective on the impact of climate change on biodiversity*, to include introduced as well as indigenous biodiversity, along with related research and monitoring programmes. Climate change has become a much more important issue in recent years but connections between adaptation and mitigation policies and biodiversity have not been adequately explored. Secondly, there are opportunities to make stronger connections between the Strategy and sustainable development initiatives. This would involve broadening the Strategy to recognise concepts such as ecosystem services and their direct relevance to achieving economic and social goals. The review also makes recommendations on governance issues, the importance of developing time-linked quantifiable targets within the Strategy's objectives, and the need for ongoing support for various funds along with recommendations on specific themes.

Whether the vision of the Strategy is finally realised will depend on many factors. A wider and more meaningful engagement of other sectors and players in its implementation will be critical to its future success.

# 1. INTRODUCTION

The report “Creating Our Future. Sustainable Development in New Zealand” (PCE 2002) was released 2 years after the Government launched the New Zealand Biodiversity Strategy “Our Chance to Turn the Tide. Whakakohukihukitia Te Tai Roroku Ki Te Tai Oranga” (hereafter “the Strategy”)(DOC & MfE 2000). The Parliamentary Commissioner for the Environment’s (PCE) “Creating Our Future” report noted that the Strategy “...provides the necessary framework, combined with the Biosecurity Strategy [completed August 2003], to significantly advance priorities for, and better integration of, the protection and enhancement of biodiversity.” (PCE 2002, p143). The PCE’s 2002 report noted that the Strategy was not explicitly positioned within a sustainable development context, but rather had a broad focus on conservation and sustainable use of (introduced) biodiversity. Given it has a 20-year time-frame, it was too early in 2002 for the PCE to comment on the progress in implementing the Strategy.

The Strategy included an obligation to monitor and report on actions and achievements on an annual basis. It also called for a “comprehensive review” of the Strategy five years after its adoption (p91). As a result, the author and Dr Bruce Clarkson, Director of the Centre for Biodiversity and Ecology Research, University of Waikato, were commissioned to undertake an independent review of progress and report to Government. We carried out this review during 2005 and wrote two reports. One report provides our detailed assessment of what had been achieved against each of the 147 actions within the ten themes (Green and Clarkson 2005a). Each theme chapter includes a ‘Stocktake of progress’ summary section as well as a summary table that ranks each action for progress to date and our ranking as to its future priority. The second, shorter synthesis report draws on the first report, summarises key findings, adds a number of recommendations, and concludes with some proposed ‘course corrections’ (Green and Clarkson 2005b). We noted that the review process did have shortcomings with respect to resourcing and our inability to obtain all the information that would have been appropriate for a truly “comprehensive” review. There was very little budget for travel and little opportunity for wider organized consultations beyond the few meetings we held with research providers.

# 2. PURPOSE OF THIS PAPER

This paper first provides the reader with a brief description of the nature of the Strategy and the Government’s approach to its implementation before highlighting the key findings of the review. This will necessarily be a condensed account of the extensive material contained in the two review reports. The paper then summarises the recommendations and comments on the potential for the Strategy to contribute to the efforts that are underway to create a sustainable development future for New Zealand.

### 3. STRUCTURE OF THE STRATEGY

The Strategy has a vision and four goals (refer to Annex). It derives its overall approach from the Convention on Biological Diversity which has three objectives:

- the conservation of biological diversity;
- the sustainable use of its components; and
- the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

The Strategy's four goals are supported by ten themes that are to be achieved by implementing 147 actions. For the review, we saw the relationship between the themes as follows. The first four themes of the Strategy<sup>2</sup> form the 'core' of the Strategy that is collectively focused on what we called '*sustaining environmental systems*'. These themes provide the driving force to achieve Goal Three "*Halt the decline in New Zealand's indigenous biodiversity*". These themes also identify the actions needed to sustain the three levels of biodiversity – genetic, species and ecosystem diversity.

We grouped five of the six remaining themes as either "*enabling*" or "*engaging*" themes. These are the themes that collectively play a critical role as support themes to achieving the four core themes of the Strategy. The three enabling themes are: biosecurity (Theme Five); information, knowledge and capacity (Theme Nine); and governance (Theme Six). In theory, governance should have an overall role across all the themes, providing the leadership, coordination, resources and accountability that enable the other themes to achieve successful outcomes. The two engaging themes are: Maori and biodiversity (Theme Seven); and community participation and awareness (Theme Eight). By using the term 'engaging', we wanted to signify the essential roles that Maori and communities have to play in implementing the Strategy at a number of different levels. To effectively contribute to Goal Three – halting the decline – people need access to the systems, information and knowledge that can be made available through two enabling themes, Five (Biosecurity) and Nine (Information). Their input should be facilitated and encouraged by good governance.

Theme Ten – international responsibilities – should act as a two-way bridge, contributing New Zealanders' expertise and assistance to international initiatives, while feeding back new knowledge from overseas developments that can benefit domestic activities.

### 4. GOVERNMENT SUPPORT FOR THE STRATEGY

At the time of the Strategy's launch, Government committed an extra \$187 million<sup>3</sup> over 5 years towards meeting priority actions. The extra allocation was an acknowledgement

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<sup>2</sup> Theme 1 – biodiversity on land; 2 – freshwater biodiversity; 3 – coastal and marine biodiversity; 4 – conservation and use of genetic resources.

<sup>3</sup> \$3 million of this allocation was for the Oceans Policy programme that was subsequently reported on separately from the remaining Biodiversity Package programmes.

that ‘turning the tide’ on biodiversity losses could not be achieved from existing departmental funding levels. This money became known as the “Biodiversity Package” and was targeted at some of the 43 actions (out of the 147 total) that were identified as “priority actions” in the Strategy.<sup>4</sup> Implementation of the 27 Biodiversity Package projects were subsequently reported on annually, with the Third Annual Report 2002/03 being the most comprehensive and informative (DOC 2003). Governance issues were the responsibility of the Central Government Coordinating Group of Biodiversity Chief Executives (CGCG), serviced by DOC.

Figure 1 (reprinted from Green and Clarkson 2005b, Fig.2, p15) shows the allocation of the Biodiversity Package by (A) theme and (B) agency or fund. Terrestrial programmes received the bulk of the allocation by theme, although it must be stressed that this segment includes almost \$48 million (26% of the total Biodiversity package) for funds and activities that mostly targeted protection of biodiversity on private lands. These funds are detailed in Fig 1 (B) as follows: NWR – Nga Whenua Rahui; NHF – Nature Heritage Fund; QEII – Queen Elizabeth II National Trust; TFBIS – Terrestrial and Freshwater Biodiversity Information System; Condition & Advice – Biodiversity Condition Fund & Biodiversity Advice Fund. TFBIS and the Condition/Advice funds were all new initiatives within the Biodiversity Package.<sup>5</sup> Fig. 1 (B) also shows that DOC was the government agency that benefited most from Biodiversity Package funding, consistent with the focus on strengthening existing DOC programmes for work on threatened species management, weed and animal pest control.

## 5. KEY FINDINGS

As reviewers we were mindful that the Strategy has a 20-year time line and only 5 years had elapsed. It was therefore more appropriate to review what had been done by way of laying the groundwork for the next phase, rather than expecting achievements across the board. At the same time there were urgent, on-going challenges in areas such as threatened species work, as well as weed and pest control, which needed to be addressed. It is also important to note that the review was not able to examine in depth the work done by regional councils and other local government agencies to implement the Strategy. The review may therefore under-estimate their contributions to biodiversity management. The following summaries of outcomes are based on the detailed findings in the review reports and were current at the time that the review was completed, i.e. November 2005.

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<sup>4</sup> “Priority actions” were identified in the Strategy on two criteria: (1) Contribute most in the first five years to achieving the goals; or (2) Need to occur first, before other actions can be implemented (NZBS, p 30)

<sup>5</sup> Information on these funds can be found at: [www.biodiversity.govt.nz](http://www.biodiversity.govt.nz)

## **5.1 Systemic information issues**

What difference has the Strategy made to core priorities such as protecting species or restoring degraded or scarce habitats that are priorities for indigenous biodiversity, especially on private land? Regrettably, there was no baseline data for accurately comparing country-wide gains or losses over the first 5 years of the Strategy. No national 'stocktake' was attempted in 2000 to provide a baseline for measuring future progress. This 'paucity of knowledge' had already been identified in the Strategy as an issue as it had been in New Zealand's first and only comprehensive report on the state of the environment in 1997 (MfE 1997). The best information on changes in landcover for use in the review came from comparisons between 1996/7 and 2001/2 data by Walker et al (2004), using information from the Land Cover Data Base 1 and LCDB2.

At present, economic and social indicators provide essential information for the development of government policy and management responses. Ecological indicators should be providing equally relevant information on environmental trends upon which our economic and social development ultimately depends. Without nationally agreed environmental indicators for all environments it is difficult to monitor impacts and trends relating to the Strategy objectives.

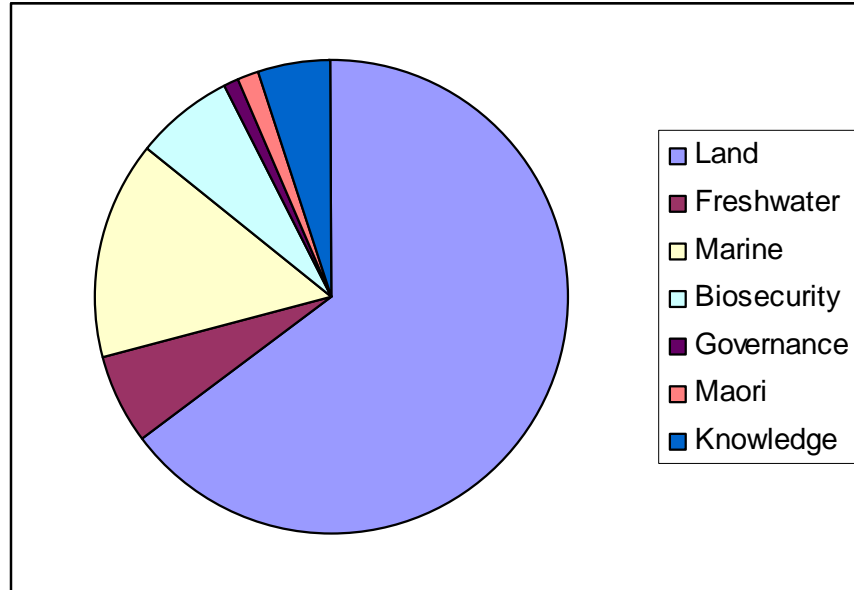
## **5.2 Is the Strategy comprehensive?**

While the Strategy provides an adequate platform for tackling the decline of indigenous biodiversity the review identified two important areas where additions are appropriate. Like many other national biodiversity strategies, the New Zealand strategy is strong on vision, but weak on identifying quantifiable targets within each theme. Developing quantifiable targets in the next phase, through a transparent and consultative process, was one of the governance initiatives recommended by the review. This process could increase future 'buy-in' for the Strategy which needs wider public support and involvement. Targets need to be time-linked, as to whether they are 10-, 15-, or 20-year targets. Setting targets can be a difficult and somewhat arbitrary exercise. Yet setting realistic targets through a transparent process can be a reality check and help to temper high expectations that society may have. It can also stimulate thinking about more innovative ways to achieve the targets, such as community or private sector partnerships.

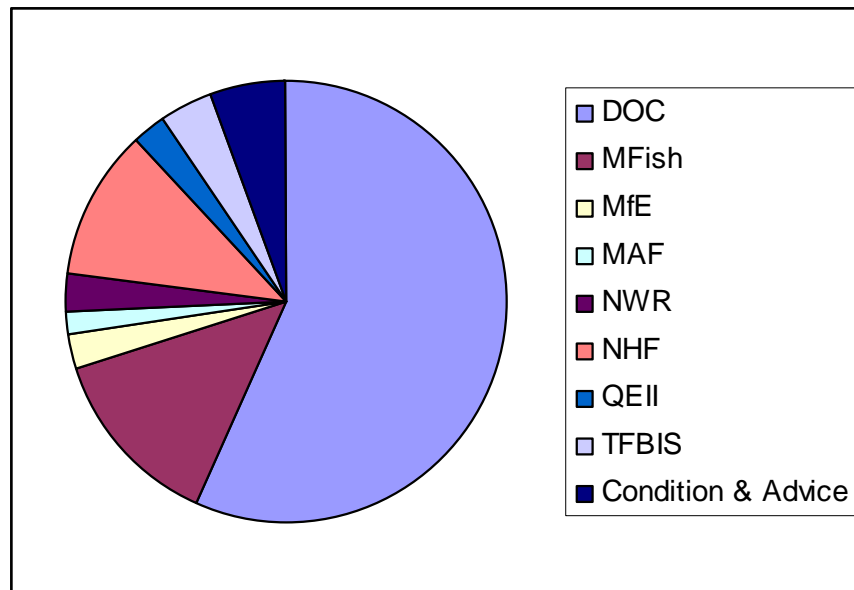
It should be a high priority to add a new objective and actions to the Strategy to consider the impacts of climate change on biodiversity, both indigenous and introduced. Over the past 5 years the global evidence for impacts on biodiversity from climate change has grown considerably. For a developed country, New Zealand has an unusually high economic dependence on primary production sectors and tourism, all of which rely on the well-being of natural systems. Hence the importance of developing a good understanding of likely impacts on all biodiversity in the context of adaptation and mitigation options

**Figure 1. Allocation of Biodiversity Package Funds**

**A. By theme**



**B. By agency and fund**



for New Zealand. This point is made in the review in relation to the four core themes that focus on sustaining environmental systems.

### **5.3 Establishing “building blocks”**

Priority actions in the Strategy included several that needed to occur before other actions could be implemented. A number of these can be considered as the “building blocks” for implementing other objectives and can be grouped as follows:

- classification and monitoring systems;
- policy and strategy initiatives; and
- creation of new funds and information systems.

There has been significant progress in advancing several of these although other key priority actions have not yet been completed. The main outcomes are summarised below.

### **5.4 Building blocks: classification and monitoring systems**

There has been significant progress over the past 5 years in developing classification systems for terrestrial, freshwater and marine environments. Developments in computing power and satellite data have played, and continue to play, a significant role in these initiatives. Terrestrial classification systems have been aided by development of the Land Environments of New Zealand (LENZ) classification (Leathwick et al. 2003). LENZ provides a spatial framework to help identify places of significance, but it still needs adequate and up-to-date ecological data layers for decision making by managers. In this context, we considered further Protected Natural Area Programme (PNAP) surveys are a priority for about one-third of New Zealand’s ecological districts.<sup>6</sup> The PNAP surveys are also a key source of information for the regional protection strategies that are used by the Nature Heritage Fund when setting its priorities for purchasing or covenanting critical threatened habitats.

Two river classification systems have been developed – the River Environment Classification (REC) that is being used by several regional councils, and the Freshwater Environments of New Zealand (FWENZ) as applied to rivers. There is also a classification system for wetland types in New Zealand (Johnson and Gerbeaux 2004), while the Estuary Environment Classification (EEC) is still under development. Classification systems underpin efforts to identify priorities for protecting representative examples of freshwater ecosystems and nationally important ecosystems.

New Zealand’s marine environment is huge, relative to its land area, and poorly known. A priority action, the development of marine classification systems, made good progress with the launch of the Marine Environment Classification (MEC) system in July 2005.

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<sup>6</sup> Survey work under the PNAP has stalled with very few new surveys instigated since 2001. Yet PNAP reports often provide the only published regional scale inventory of ecosystems within a region.

The MEC, like LENZ, uses physical information to define different marine environments and is being complemented by other biologically-based classification systems. These include the Near-Shore Marine Classification and Inventory (NMCI) and a classification for shallow subtidal reef communities. While they still require further refining, these classification systems can now be used to guide priority-setting for marine biodiversity surveys and can help in identifying what would constitute a representative network of marine protected areas (Objective 3.6).

Despite the substantial progress that has been made in developing classification and mapping tools there is an important caveat. Future efforts should be focused on the applications and uses of these systems, rather than continuing the debates in search of the perfect method. Providers and users of these systems need to agree on specific classification tools and then managers need to use them for priority-setting and decision making. Building blocks for monitoring activities are not in place nationally and much needs to be done in conjunction with indicator programmes (refer section 5.1).

## ***5.5 Building blocks: policy and strategy initiatives***

An important priority during this period that was independent of, but relevant to the Strategy, was the completion of the Biosecurity Strategy. It was completed and released by the Biosecurity Council in August 2003 and the Government then implemented its recommendations as the basis for improving the biosecurity system. It addressed the central issue of improving co-ordination across the biosecurity agencies. Government accepted the recommendation for a single agency to be accountable for the biosecurity system. Re-organisation within the Ministry of Agriculture and Forestry (MAF) led to the creation, in November 2004, of Biosecurity New Zealand. How much these developments will improve the effectiveness of New Zealand's biosecurity system remains to be seen over the next few years.

Two important policy and strategy building blocks were completed to help advance marine objectives. One was the Marine Protected Areas (MPA) policy which provides a wider range of protection tools in a new approach to marine protection. Coupled with the new marine classification systems, it should create a more defensible, and one hopes, a more acceptable basis for identifying and establishing representative areas for protection. The other new building block was the development of the Strategy for Managing the Environmental Effects of Fishing (SMEEF) by the Ministry of Fisheries (MFish). In theory, the SMEEF could go a long way to moving the management of fisheries towards a more ecosystem-based approach, reducing over-fishing and destructive fishing methods, while cutting down on 'by-catch' impacts. But these future gains rest, in large part, on the quality and effectiveness of the 'environmental standards' that have yet to be set as part of the SMEEF and how much it is able to consider ecosystem conditions as a whole.

## **5.6 Building blocks: new funds and information systems**

As was noted Section 4, a considerable investment was made through the Biodiversity Package programmes in efforts to assist landowners with the management of indigenous biodiversity on private land. Additional funds (16.3% of the total Biodiversity Package) were allocated to three existing funds associated with protecting biodiversity values on private land – Nga Whenua Rahui, Queen Elizabeth II National Trust and the Nature Heritage Fund – with many positive outcomes. As well, three new funds were created.

The Biodiversity Advice and Biodiversity Condition Funds were set up to assist landowners and communities with management information and also to contribute to costs associated with restoration, fencing, and weed and pest control on private land. Similar amounts (about \$4 million) were available from most regional councils and unitary authorities to landowners through contestable funds. Together, these funds have benefited many community-based initiatives throughout the country and contributed to the considerable growth of local conservation initiatives. The Maturanga Kura Taiao contestable fund was established to support initiatives that retain and promote traditional Maori knowledge and its use in biodiversity management. The fund also provides an opportunity for tangata whenua to participate in biodiversity management in their rohe.

Almost \$10 million over 5 years was allocated to the development and implementation of the Terrestrial and Freshwater Biodiversity Information System (TFBIS) Programme. TFBIS is intended to improve awareness of, and access to, fundamental data and information on terrestrial and freshwater biodiversity held by government agencies and other organisations. A large amount of such information has since been made available. To improve the system further the review proposed more involvement by potential users over the choice of information to make available via TFBIS. In 2004, the Ministry of Fisheries launched the National Aquatic Biodiversity Information System (NABIS). It is intended that NABIS will make information about the spatial distribution of organisms in the marine environment more accessible to decision makers and the general public.

## **5.7 Building blocks not yet completed**

Some key policy and strategy initiatives did not make the expected progress during the past 5 years. One that should remain a high priority is the Oceans Policy for New Zealand (see NZBS, p65). This initiative started in July 2000 and was intended to address a wide range of marine management issues that were canvassed in an earlier PCE investigation (PCE 1999). Clarifying and coordinating management responsibilities for the marine environment, within a clear strategic framework and a sustainable development context, is central to resolving major issues that have confused and handicapped marine management for decades.

Another priority action, underway since 2001, has been the development of a National Policy Statement on indigenous biodiversity under the Resource Management Act (RMA). The draft statement has yet to be released and it is likely to be considerably

modified from the original proposals for a comprehensive set of policies including criteria to identify significant vegetation and wildlife habitat. In the intervening years several councils have developed and applied their own guidelines. The review considered that this action should now be regarded as a low priority, given the progress that has been made, at least by some councils. Nonetheless, this topic still needs national leadership to assist with capacity building and monitoring of key ecosystem indicators (see below). Council performance in biodiversity management remains highly variable.

Theme Four (Conservation and use of genetic resources) received no Biodiversity Package money and only one objective has priority actions (NZBS, p76). The main priority was to develop a collaborative strategy to manage New Zealand's genetic resources, which would identify how key players (government, industry, research institutions) would collaborate and where responsibilities for maintaining New Zealand's genetic resources should lie. There has been little progress so far. A lead agency has yet to be identified, although the review suggested MAF would be the appropriate lead agency. This should remain a high priority action. Without an overarching strategy important aspects of indigenous and introduced genetic diversity may be compromised by competing sectoral interests. There has been slow progress on the related objective of developing an integrated policy and legislative framework for managing bioprospecting in New Zealand due, in part, to issues surrounding unresolved Treaty of Waitangi claims. The current approach to bioprospecting is essentially ad hoc.

The other strategy still uncompleted is the biosecurity research strategy (NZBS, p86). This research strategy was also called for in the Biosecurity Strategy (p26).

In Theme Nine the Strategy emphasises that adequate information and knowledge “...*underpin the effective implementation of all biodiversity management actions proposed in this Strategy.*” (NZBS, p105). The same message was the primary conclusion of New Zealand's first State of the Environment report (MfE 1997). Consequently there were two priority actions in the Strategy (under Objective 9.3 & 9.4) focused on monitoring trends (including use of indicators) for tracking change, reporting and adaptive management. The PCE had similarly called for environmental monitoring and reporting in a number of reports (PCE 1998, 1999, 2002, 2004a). The review therefore noted with concern that the Environmental Performance Indicators (EPI) Programme that started 5 years *prior* to the Strategy had been effectively suspended in 2002 when the draft biodiversity indicators were not advanced past the point of being made available as ‘guidelines’ to regional councils. Biodiversity monitoring efforts remain extremely uneven across the country. There are no national systems or frameworks in place for adequately reporting on biodiversity trends at any broad regional or national scale, nor for the marine environment. Progress requires national leadership. There also needs to be a government commitment to regularly updating key databases such as the Land Cover Data Base. The cost of doing so is minor and the trend information it provides is nationally important. Advancing monitoring and indicators work for all environments should remain a high priority.

## 5.8 Outcomes for terrestrial biodiversity

This theme received 67% of the Biodiversity Package allocations, including the allocations to national funds to assist biodiversity protection on private land. Outcomes can be summarised under four headings:

- protecting indigenous habitats and ecosystems;
- sympathetic management;
- managing animal pests and weeds; and
- restoring species and habitats.

With respect to *protection initiatives*, there has been substantial progress in key areas, including the halting of logging of indigenous forests on Crown land. Extra allocations to the funds (NWR, QEII and NHF) led to significant increases to the network of protected lands while some councils provided further assistance and resources for landowners. It is worth noting that all three funds have helped raise individual, iwi and community support for wider conservation initiatives and added to what has been called a ‘green renaissance’ at the community level as more and more groups get involved in restoration and environmental projects. These initiatives have even been called ‘eco-recreation’ – an enjoyable and positive outdoor activity.

But regrettably, the success of voluntary and financial incentive mechanisms has been offset by losses of indigenous ecosystems. The rate of loss was about 4,500 ha per year between 1996/7 and 2001/2 (Walker et al 2004), a rate of loss that has probably intensified since then given reliable anecdotal information as well as the pressures of agricultural intensification (PCE 2004b). The greatest losses have occurred in regions where biodiversity has the least legal protection. These are often regions with a large land area and considerable biodiversity values, but a low rating base for regional or district councils to fund the necessary conservation programmes. Many of New Zealand’s threatened species face a tenuous future in the most modified and least protected environments – the coastal, lowland and montane areas. The fact that many of these threatened species are often found in highly modified and depleted environments can be overlooked when areas are being identified for protection. But protection of highly modified habitats is essential to prevent the extinction of many species ((Walker et al 2006).The tenure review process in the South Island high country, despite the creation of new, upper-altitude conservation areas, has yet to achieve much protection for the vulnerable, lower-altitude environments with their high proportions of threatened species.

The objective in the Strategy that calls for “*sympathetic management*” (Objective 1.2, p42) provides an important opportunity to bridge some of the artificial divide between how indigenous species are perceived in connection to production lands and conservation lands (PCE 2001). The review calls for this objective to be widened to incorporate ‘ecosystem services concepts’ and to develop greater linkages between biodiversity concepts and sustainable land management activities. The Sustainable Management Fund (SMF) and the Sustainable Farming Fund (SFF) could play much greater roles in this regard than they do at present.

The management of *animal pests and weeds* as an integral part of protecting species and ecosystems was an important priority in the Biodiversity Package (\$34M for animal pests, \$22M for weeds). Substantial progress was made for weed control. This has benefited from three developments: the DOC weed strategy; the extra funding (now covering 60% of DOC's weed control on 770,000 ha); and from the 2003 launch of the very effective Weedbusters programme. Weedbusters integrates weed activities of central and local government agencies and community groups across public and private lands. Unfortunately, the 2,200+ naturalised plant species<sup>7</sup> contribute 1-3 species to the list of weeds every year. More than 2 million ha (27.5%) of the 8 million ha of DOC-administered lands receive some form of pest animal control. Better control techniques and the extra funding has been behind impressive success in pest eradication, especially on islands, including eradicating rodents from Campbell island (11,000 ha) with subsequent benefits for threatened species. Intensive management in sanctuaries has helped several iconic species, such as kiwi, kakapo and kokako, but over their natural range many threatened species are continuing to decline, mainly under predation pressure.

While these gains should be applauded, it was difficult to assess the overall outcome for indigenous biodiversity given the patchy nature of monitoring across agencies. The scale of the task remains formidable and there have been losses. Intensively managed areas represent about 2.7% (213,000 ha) of the lands administered by DOC. A further 32% of these lands received less intensive management and about 55% of DOC-administered land where some management may be beneficial received limited, or no management. (The remaining 10% are largely rock and snow areas.) A significant increase in funding for developing new control tools and technologies, which did not occur in the past 5 years, will be needed to achieve any major advances in pest control. But even early breakthroughs are likely to take years before they are available to managers.

## **5.9 Outcomes for freshwater biodiversity**

Biodiversity Package money for freshwater biodiversity (about \$11 million) went primarily for wetlands protection and managing pest species. Another priority action was the development of classification systems for freshwater ecosystems as an aid to help identify protection priorities. Since the work on classification systems is now well advanced (Section 5.4) the priority is now to reach a national consensus on their use and application by management agencies. New funding for the first national survey of pest fish suggested that most pest fish are now more widely distributed than they were 5 years ago. A successful eradication campaign of mosquito fish (*Gambusia*) and koi carp from Nelson removed the only known South Island populations of these species, thus highlighting the value of surveillance and eradication efforts to keep pests from crossing the Cook Strait barrier. The native eels continue to be at risk, especially the long-finned eel, for which stronger conservation measures are justified. Freshwater weeds have continued to spread in several regions with only modest expenditures to raise public

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<sup>7</sup> This is similar to the number of species of indigenous vascular plants.

awareness of the problems. Comparative data for 2000 and 2005 is poor, but the most evident trends are of growing problems with pest fish and weeds, continuing risks to threatened freshwater species and deterioration of lakes and other freshwater systems. Freshwater weeds and pest fish generally benefit from a decline in water quality and quantity.

Despite some valuable gains for wetland protection through QEII covenanting and NHF purchases, the national picture is one of further losses and degradation of wetlands, particularly under the pressures from agricultural intensification. The patchy performance of regional councils, some of which operate innovative projects for wetland and riparian protection, underscores two important priorities. First, an urgent and overdue review of the 1986 Wetlands Policy (Objective 2.1) and secondly, clearer agency accountabilities with stronger leadership from the centre to help address demands for more water while responding to conservation needs. The government's "Water Programme of Action" could provide a useful vehicle for doing so, and for underscoring the importance of ecosystem services from freshwater systems for the sustainable development of the primary production sectors.

### ***5.10 Outcomes for marine biodiversity***

Marine programmes in the Biodiversity Package were focused on addressing knowledge gaps, marine biosecurity initiatives and the promotion of marine reserves. In addition to the progress on marine 'building blocks' (Sections 5.4 & 5.5), and the need to complete the Oceans Policy (Section 5.7), it was clear that progress towards sustainable management of marine resources depends on the critical task of acquiring sufficient ecological knowledge to do so. Funding the necessary research is well beyond the scope of Biodiversity Package funding. It will require greater FRST investment which should also include increased funds for research on seabirds and marine mammals.

Overall, there have been valuable additions to the marine protected areas system. The major boosts came from the creation of the Auckland Islands Marine Reserve and eight new reserves in Fiordland as part of a larger management and use regime. These reserves were the result of a 10-year community initiative, using a different approach from that usually followed under the Marine Reserves Act 1971. The review of the Marine Reserves Act led to the Marine Reserves Bill, which will streamline the process of creating reserves and focus more on protecting biodiversity. The Bill has now been with a Select Committee since June 2002 and, regrettably, has yet to be reported back to Parliament. The synergies from the eventual passage of this Bill, coupled with the new Marine Protected Areas (MPA) Policy and marine classification systems, should lead to a smoother, more representative, and more widely supported system of marine protected areas. To date, progress has been slow and the percentage of protection around New Zealand's mainland coastal waters remains well short of the 10% target (Objective 3.6). The government's closure of 19 seamounts and part of Spirits Bay to trawling was a positive move, but protected less than 4% of the seamounts in New Zealand's EEZ. More

extensive protection of these habitats of rich biodiversity from the destructive impacts of bottom trawling is warranted.

Priority actions to reduce the adverse effects of fishing (Objective 3.4) should benefit from the development of the SMEEF (Section 5.5) and from the proposed moves by MFish to replace the present stock strategies by fisheries plans. These plans are intended to represent an ‘integrated approach’ to fisheries management. A test of the integrated approach will be how well these plans address the significant harm done to marine species and habitats through ‘by-catch’ impacts and how they will weigh environmental factors when setting the total allowable catch (TAC) for quota species. More research is needed that targets environmental aspects of fishing practices.

The Strategy also emphasised the need to plug gaps in our understanding of threats from invasive marine species. Marine biosecurity programmes funded the first harbour and port surveys that identified over 170 new species. How many of these species might become economic or environmental pests is unknown, but there are clear risks associated with the potential arrival of known marine pests. Focusing current work on ballast water and hull fouling as the major pathways is appropriate. It needs to be pursued through more effective management of hull fouling and further research collaboration with other countries on ways to reduce risks from ballast water. Although regional councils have responsibilities for coastal and marine biosecurity, few have the necessary expertise, finances and political support to meet their obligations (Vaughan 2004).

This last point links to our concern that coastal aspects in the Strategy need to be more coherent with more specific and measurable objectives for the coastal environment. More actions are needed that connect coastal and inshore marine processes. Given the very limited monitoring of environmental outcomes that is done, it was not possible to assess trends in the state of biodiversity in coastal environments. The strong pressures on coastal development suggest that fragile and rare coastal habitats have been under increased pressure.

## **5.11 Progress in ‘enabling’ themes**

### **Biosecurity**

While there are specific aspects of biosecurity management in each of the first three themes (terrestrial, freshwater, coastal & marine) biosecurity management and related aspects, such as assessing and managing biosecurity risks and border control, were specifically addressed in Theme Five. Progress in coordinating biosecurity management has already been discussed (Section 5.5). Border control work has been strengthened with new surveillance programmes now in place. Growing trade and tourist numbers will require new detection technologies and improved coordination of surveillance regardless of recent border control initiatives. The 25,000+ exotic plant species that are already present in New Zealand will continue to provide new weed species as naturalized species ‘go nasty’ regardless of any restrictions on the import of new plant species. Climate change may hasten this process as warmer, wetter conditions are likely to favour sub-

tropical plants now cultivated in Auckland and Northland. For these and other reasons the priority actions on biodiversity are still ranked as ‘high’ in the review.

### **Information**

The second ‘enabling’ theme was information, knowledge and capacity (Theme Nine), which included objectives on research, monitoring, reporting, information sharing and building capacity. The reviewers’ concerns about the unsatisfactory state of monitoring and reporting were discussed in Section 5.7 and should be a high priority in the next phase of the Strategy. The major funder of environmental research is, and is likely to continue to be, the Foundation for Research, Science and Technology (FRST). Unfortunately, funding for biodiversity research across all environments is largely uncoordinated between agencies and is inadequate. FRST funding for environmental research has been declining in real terms since 1998 which is a particular problem for basic marine and freshwater sciences. In addition, solution-oriented, applied research remains seriously under-funded. This situation is likely to continue as long as this expenditure is perceived as a cost and not an investment for social and economic development. A wider appreciation of the dependence of primary production on sustaining ecosystem services, for example, might help to change this mindset. Further deferrals in research funding need to recognise that there are often long time lags between research results and actual applications – especially in areas such as pest control technologies.

The Biodiversity Package funded the development and implementation of TFBIS (Section 5.6) which has now made a significant amount of data and information available to people and organisations involved in maintaining and restoring indigenous ecosystems. There have also been other positive initiatives, including through the Sustainable Management Fund, but our impression was of one-off, un-integrated projects. The long-term objective of embedding best practice, cost-effective techniques and capacity building to improve biodiversity management requires more sustained and coordinated initiatives working to a strategic plan. Leadership responsibilities for these tasks need to be clarified.

### **Governance**

The third and most central ‘enabling’ theme was governance (Theme Six). Although the Central Government Coordinating Group of Biodiversity Chief Executives (CGCG) met its responsibilities to review Package priorities and report annually on Biodiversity Package programmes, the review identified a number of shortcomings in governance. The expectation that the actions to implement the Strategy would be widely incorporated across government and departmental planning has yet to be realized. Apart from DOC, few references to the Strategy appear in departmental business plans and Statements of Intent. Hence the Strategy is not yet integrated effectively across central government, let alone at local government levels. Monitoring and reporting on progress with implementing the Strategy needs to be much wider than just reporting on the Biodiversity Package programmes. This is not easy for two reasons. First, there are a very limited number of actions with quantifiable targets against timelines. Secondly, monitoring and

reporting systems have been patchy and uncoordinated within a number of themes. The Strategy lacked even coarse baseline information for its first year (2000) and information currently collected by regional councils and central government agencies is difficult to aggregate. This made it particularly difficult for the reviewers to produce an overview report that clearly showed what differences the Strategy had made during its first 5 years. Improving monitoring information is also necessary for measuring accountabilities and agency performance. Another governance issue was the importance of leadership to develop whole-of-government coordination on cross-cutting issues such as indicator and monitoring programmes and to deliver the much-needed partnerships with local government, the private sector and non-governmental organisations.

Two other aspects of governance need careful consideration. At present, there are no further requirements for any future comprehensive, independent reviews of the Strategy's achievements over the next 15 years. The review argued that this is an important function and a valuable check on accountabilities on the public's behalf. Reviews also provide opportunities to re-invigorate the process and to reassess priorities and directions. External review and audit functions should be continued. The review urged assigning these functions to either the Office of the Controller and Auditor-General or to the Parliamentary Commissioner for the Environment. The other governance recommendation was that there should be an 'overall lead agency' responsible for coordinating the implementation of the Strategy across central government departments.

## ***5.12 Progress in 'engaging' themes***

Theme Seven focused on Maori and biodiversity. The highlight has been the ongoing success of Nga Whenua Rahui (NWR) in covenanting Maori-owned forests and lands for their biodiversity values. With the help of the additional funds, the area of covenanted Maori-owned lands under formal protection rose to 210,000 ha. There has been a significant rise in interest by iwi in NWR protection which has led to more pest control and even reintroductions of threatened species. In addition, the NWR protected status has encouraged some regional councils to contribute funding to assist with pest control over covenanted forests. The new fund, Matauranga Kura Taiao, is helping to capture and promote matauranga Maori but it is too early to assess how much it is contributing to biodiversity management and partnerships between Maori and agencies. Capturing matauranga knowledge should be a priority as time is getting shorter for elderly kuia and kaumatua to pass it on to a new generation of Maori.

A paucity of information made it difficult to assess the advances in the number and effectiveness of arrangements for iwi and hapu to manage specific habitats or particular species (Objective 7.1). A related statistic, the engagement and participation by Maori with government agencies and local authorities, showed little change over the past 5 years. The quality of those relationships and their influence on biodiversity outcomes was unclear from the data. Progress has been slow in progressing Treaty claims involving indigenous flora and fauna. Similarly, the patchy information we received suggested that there has been limited progress on approaches for customary use of biodiversity

(Objective 7.5). Further progress is also likely to be slow until there is a meaningful national dialogue around what are perceived to be conflicting value systems. Promoting the biodiversity gains that have been achieved through iwi/hapu partnerships with government agencies, such as the restoration of Motatau Forest, could help to break down these barriers.

The other ‘engaging’ theme was community participation and awareness (Theme Eight). For a number of reasons, the degree of community involvement in conservation, restoration and management of biodiversity is at an all-time high in New Zealand. Total numbers are unclear; estimates are of 3,000 to 5,000 community-led or private projects for the protection, management or restoration of indigenous biodiversity. The Biodiversity Advice and Condition Fund have contributed to, and supported this growth with practical financial assistance. The information available through TFBIS is also helping. Some of the growth is also attributable to the growth in partnerships between groups and agencies and the availability of council-supported voluntary and financial mechanisms. These positive initiatives can be extended by:

- better sharing of ‘lessons learned’ between groups engaged in similar activities;
- facilitation of benefit sharing by central government;
- linking private and public programmes at regional scales;
- emphasising priority setting to protect and restore important or critically endangered places; and
- strengthening the integration of biodiversity protection into sustainable production landscapes.

### ***5.13 Progress in international engagement***

Theme Ten objectives were low priority within the Strategy and tended to promote a continuation of current contributions to international conservation efforts with little linkage to the wider context of development assistance. The review drew attention to the clear linkages that have since been established between the deterioration of global ecosystems (MEA 2005) and how this is hampering efforts to achieve the United Nation’s Millennium Development Goals to reduce poverty, hunger and disease. The Ecosystem Assessment study underlined the essential linkages between the maintenance of environmental systems and human wellbeing. The review noted that New Zealand’s international expertise in conservation management and biosecurity systems are increasingly relevant to the international agendas that link development, livelihoods and environment. It would therefore be appropriate to give this theme a higher priority within the Strategy and make more use internationally of New Zealand’s expertise in conservation management and in biosecurity systems, and in a wider context than they currently enjoy.

## 6. BENEFITS FROM THE BIODIVERSITY PACKAGE

The Biodiversity Package funded 27 projects covering a number of the 43 actions that were identified as ‘priority’ in the Strategy. How did this funding influence progress within each of the themes over the past 5 years? A rough measure of the benefits of this targeted funding can be gained by comparing the scores of the ‘assessed progress’ of each activity that received Package funding against the progress made by activities that did not receive funding. The following summary table is derived from the individual summary tables for each theme in Green and Clarkson (2005a).<sup>8</sup>

<b>Assessed level of progress</b>	<b>Received Package funding</b>	<b>No Package funding</b>
Limited	31%	47%
Moderate	38%	31%
Substantial	31%	22%

This analysis indicates that the reviewers considered that about 31% of Package-funded activities had made ‘substantial’ progress during the past 5 years compared to 22% of those activities that received no extra allocation. At the other end, progress was more likely to be ranked as ‘limited’ where there was no extra allocation of funds. Since the actions varied enormously in their scope and difficulty, such comparisons need to be made with caution. There does seem however, to be a positive correlation between funding and progress as one would expect.

A similar analysis compared the reviewers’ ranking of future priorities of each action, again comparing those with and without Biodiversity Package funding. The results were as follows:

<b>Assessed future priority</b>	<b>Received Package funding</b>	<b>No Package funding</b>
Low	3%	15%
Medium	22%	41%
High	75%	44%

This indicates a good match between past priorities and future priorities. While that may be given a negative interpretation (actions have not been achieved despite being a priority) it often means that the priority is ongoing, such as for threatened species work or pest control.

<sup>8</sup> This analysis is based on 136 of the 147 actions. The other 11 were excluded because the results were not clear or there was insufficient data to reach a decision.

## 7. SUMMARY OF RECOMMENDATIONS

After traversing such a wide and disparate number of topics, the reviewers refrained from writing long lists of detailed recommendations. Limitations in the conduct of the review (refer to Introduction) also made detailed recommendations less appropriate. Nonetheless, the summary paragraphs that followed the discussion of each action general included suggestions on what could be done in the next phase of the Strategy to advance that particular issue (Green and Clarkson 2005a).

The most general recommendation from the review was that to improve on the delivery of the Strategy there will need to be much greater involvement of other key players, particularly the regional, unitary and district councils. The Strategy had already identified the central issue: “*The Strategy is government-led, but cannot be achieved by government alone.*” (NZBS, p11). Yet the focus so far, notwithstanding the significant community benefits from the various funds, has been too much on central government delivery and not enough on facilitating the involvement of other key players. Stronger linkages are therefore justified by (1) more collaboration with local government, and (2) increased involvement with communities. The former could start with collaborative work on environmental indicators (see below); the latter by changing the approach to how agencies do business.

The appropriate scale for this collaboration is at the regional level. What is needed is the integration of inter-agency, inter-community efforts for biodiversity management and protection. One such example, in 2004, was the production by all the key stakeholders in Northland of a regional biodiversity restoration strategy called “Whole of Northland Approach”. Their list of desired outcomes is consistent with the Strategy and reflects the collective interests of local government, communities and agencies such as DOC. Another example where more collaboration would be beneficial is between DOC and councils when the DOC Conservation Management Strategies are being reviewed. When government agencies act more as information providers, facilitators and partners, the outcomes can be more cost-effective and enduring, based on stronger community ownership and involvement.

The main recommendations from the synthesis report were as follows:

### **Climate change**

- Add an objective and actions that address the impact of climate change on biodiversity, including research needs and adaptation/mitigation options. Climate change impacts should also be accorded a higher priority in New Zealand’s climate change policy. There are cost-efficiency gains to be made in stronger linkages between the investments in monitoring climate change (e.g. carbon accounting system) and measuring changes and trends in biodiversity.

### **Environmental indicators and monitoring**

- Establish a multi-agency working group, including local government interests, to agree on and implement sets of key environmental indicators for terrestrial,

freshwater and marine environments that meet monitoring and reporting requirements for regional and national purposes.

### **Governance**

- Governance improvements are required to provide more leadership, strengthen accountabilities, set measurable targets, develop better monitoring and reporting systems, and strengthen collaborative partnerships with local government, the private sector and non-governmental organisations. Stronger audit and review functions should also be established.

### **Information, knowledge and capacity**

- Substantially increase government funding for research that underpins biodiversity objectives and related biosecurity objectives. Capacity building is recognised as a priority objective requiring a more structured, long-term approach that is developed and funded across central and local government agencies.

### **Funding for funds**

- Continue funding the biodiversity funds, namely the Nga Whenua Rahui, Nature Heritage Fund, Queen Elizabeth II National Trust, Matauranga Maori fund, and the Biodiversity Condition and Advice funds. Funding levels should be based on periodic assessments of needs and subjected to evaluations of performance.

There were also theme-specific recommendations. These included:

- Higher priority for the protection, restoration and sustainable management of freshwater ecosystems and indigenous species within the next phase of the Strategy;
- More explicit initiatives to sustain and enhance indigenous biodiversity and ecosystem services within the “Water Programme of Action”;
- Widen references to ‘sympathetic management’ to address the need for biodiversity conservation principles to be applied to all aspects of sustainable land management;
- An evaluation, initiated by MAF, of the need for a collaborative strategy to manage New Zealand’s genetic resources and related areas of risk;
- The benefits of early detection and eradication of key invasive species are maximized by giving greater priority to surveillance and the reduction of internal spread of such species;
- Early completion of the biosecurity research strategy, linking it to objectives for biodiversity and climate change research;
- Determine best practice for integrating private and public partnerships for biodiversity conservation at the regional scale; and
- Make greater use of New Zealand’s technical expertise in conservation management and biosecurity in development assistance programmes.

## 8. LINKS TO SUSTAINABLE DEVELOPMENT

The PCE's "Creating Our Future" report (PCE 2002, p101) included a 'wiring diagram' that showed the actual and potential linkages between different government strategies. The Biodiversity Strategy was shown with a possible link to a proposed sustainable development strategy. The language and focus within the Strategy were not couched within the broader considerations of sustainable development, however, despite the obvious relevance of healthy environments to sustaining social and economic development. Nonetheless, there is sufficient breadth and relevance in the Strategy for it to be incorporated as a central policy element of the 'third pillar' of sustainable development – the environment.

Part of the problem with the Strategy is its over-riding emphasis on indigenous biodiversity and the inadequate attention paid to promoting broader concepts relevant to *all* biodiversity. For example, concepts such as ecosystem services<sup>9</sup> and the resilience of ecosystems are both important for sustaining indigenous as well as introduced biodiversity, but are not explicitly identified in the Strategy. These ideas also provide a link between biological concepts and economic ones. As such, they provide additional rationale for decision makers to stop treating conservation as an external cost to the 'real' business of 'growing the economy'. This may require a seismic shift in those mindsets that assume biodiversity conservation is primarily about the protection of iconic species. In economic contexts biodiversity is much more about investing in the *maintenance* of natural systems, instead of paying the much more expensive bills of trying to *repair* them. This point was well made in Australia by the Prime Minister's Science, Engineering and Innovation Council<sup>10</sup> that warned that government programmes seemed to be directed too frequently towards costly repairs rather than to maintaining natural assets. The same logic that regards the maintenance of infra-structure assets as a national investment, and not just a cost, needs to be applied to the natural world. The estimated cost of 'fixing' water quality problems in Lake Taupo and the Rotorua lakes is a case in point.

For these reasons the review *identified another important future linkage* (in addition to strengthening those with local government and communities), namely the linkage between the Strategy and sustainable development initiatives. There are opportunities to bring more biodiversity considerations into future initiatives, particularly in the agricultural and land use sectors. The well-established Sustainable Management Fund and Sustainable Farming Fund both provide opportunities to strengthen the connections between 'sympathetic management' and broader concepts of ecosystem sustainability

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<sup>9</sup> 'Ecosystem services' refers to various 'services' provided by functioning ecosystems. They can be divided into *provisioning services* such as fresh water, timber, food, fibre and genetic resources; *regulating services* such as the regulation of floods, climate and pests, water purification and treating wastes; *supporting services* such as soil formation, pollination of crops, cycling of water and nutrients; and *cultural services* such as recreation, aesthetic enjoyment and spiritual fulfillment.

<sup>10</sup> "Sustaining our natural systems and biodiversity". Report of the Prime Minister's Science, Engineering and Innovation Council, May 2002.

that are relevant to sustainable land management. Only about 1% of the SFF projects funded since 2000 (over 300 projects) had a primary connection to biodiversity issues.

The recommendation from the review for making this strategic linkage to sustainable development initiatives should also be seen in conjunction with the new proposed linkage between the Strategy and climate change policy (Section 5.2). These issues are all interconnected in the real world. Climate change will mean, for example, more frequent storms, floods and droughts which will affect catchment management, ecosystem resilience, ecosystem services, agricultural productivity, export earnings, rural infrastructure and the wellbeing of rural communities. Biodiversity considerations need, therefore, to be part of a broader integration across several related and overlapping policy areas that have a bearing not only on climate change, but also on sustainable development policies.

## 9. CONCLUSIONS

The review of the first 5 years of implementing the New Zealand Biodiversity Strategy found that much had been achieved within specific areas and particularly when considering the need for 'building blocks' relevant to the next phase. Yet in the wider context of Goal Three – "*Halt the decline in New Zealand's indigenous biodiversity*" the remaining challenges are enormous. Achieving the desired outcomes, which are widely supported by New Zealanders, may or may not happen. Success will depend on the extent to which the whole country is involved in their realisation. To that end the next phase of implementation needs more leadership from the centre focused on making stronger linkages to local government and communities for tackling the variety of management, restoration, monitoring and reporting tasks. There are important policies that need to be completed in support of these initiatives, such as the Ocean Policy, as well as implementing a national system of environmental indicators together with improved reporting systems. These are needed for monitoring national environmental trends as well as for monitoring the implementation of the Strategy.

The political challenge for the next 5 years will therefore be to bring a wider and more inclusive approach to achieving the objectives of the Strategy. The Strategy can usefully serve as a vehicle for coordinating and integrating activities at appropriate scales to help improve the status of indigenous and introduced biodiversity. There is one other important challenge. That is to make the connections between healthy ecosystems and human well-being more central to the concerns and attention of policy makers and all New Zealanders. If this is done, the larger objectives of sustainable development will be well served.

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## **ANNEX. Vision and goals of the Biodiversity Strategy**

### **A Vision for Aotearoa – New Zealand**

New Zealanders value and better understand biodiversity;

We all work together to protect, sustain and restore our biodiversity, and enjoy and share in its benefits, as the foundation of a sustainable economy and society;

Iwi and hapu as kaitiaki are active partners in managing biodiversity;

The full range of New Zealand’s indigenous ecosystems and species thrive from the mountains to the ocean depths; and

The genetic resources of our imported introduced species are secure, and in turn support our indigenous biodiversity.

### **Goal One: Community and individual action, responsibility and benefits**

Enhance community and individual understanding about biodiversity, and inform, motivate and support widespread and coordinated community action to conserve and sustainably use biodiversity; and

Enable communities and individuals to equitably share responsibility for, and benefits from, conserving and sustainably using New Zealand’s biodiversity, including the benefits from the use of indigenous genetic resources.

### **Goal Two: Treaty of Waitangi**

Actively protect iwi and hapu interests in indigenous biodiversity, and build and strengthen partnerships between government agencies and iwi and hapu in conserving and sustainably using indigenous biodiversity.

### **Goal Three: 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 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.

### **Goal Four: Genetic resources of introduced species**

Maintain the genetic resources of introduced species that are important for economic, biological and cultural reasons by conserving their genetic diversity.

## ACRONYMS

CGCG	Central Government Coordinating Group of Biodiversity Chief Executives
DOC	Department of Conservation
EEC	Estuary Environment Classification
EEZ	Exclusive Economic Zone
EPI	Environmental Performance Indicators Programme
FRST	Foundation for Research, Science and Technology
FWENZ	Freshwater Environments of New Zealand
LCDB	Land Cover Data Base
LENZ	Land Environments of New Zealand
MAF	Ministry of Agriculture and Forestry
MEA	Millennium Ecosystem Assessment
MEC	Marine Environment Classification
MfE	Ministry for the Environment
MFish	Ministry of Fisheries
MoRST	Ministry of Research, Science and Technology
MPA	Marine Protected Areas policy
NABIS	National Aquatic Biodiversity Information System
NHF	Nature Heritage Fund
NMCI	Near-Shore Marine Classification and Inventory
NWR	Nga Whenua Rahui
NZBS	New Zealand Biodiversity Strategy
PCE	Parliamentary Commissioner for the Environment
PNAP	Protected Natural Areas Programme
QEII	Queen Elizabeth II National Trust
REC	River Environment Classification
RMA	Resource Management Act
SFF	Sustainable Farming Fund
SMEEF	Strategy for Managing the Environmental Effects of Fishing
SMF	Sustainable Management Fund
SOI	Statement of Intent
TAC	Total Allowable Catch
TFBIS	Terrestrial and Freshwater Biodiversity Information System