



## *The Earth Summit 25 Years on: Why is biodiversity continuing to decline?*

The opening years of the 1990s brought great promise and hope for biodiversity.

The United Nations Conference on Environment and Development, the "Earth Summit", was held in Brazil in 1992, following a worldwide outcry at the loss of species and habitats in the 1980s, symbolised by alarming rates of destruction in the Amazonian rainforest.

It seemed that the same collective will that had brought about the Montreal Protocol in 1987 (The Montreal Protocol on Substances that Deplete the Ozone Layer (agreed on 16 September 1987 and entered into force on 1 January 1989)) to phase out ozone-depleting substances would now move to protect life on earth.

In this article, we set out how New Zealand has responded over the last quarter of a century to the Convention on Biological Diversity (CBD), which arose from the Earth Summit.

We consider these responses in light of the alarming findings on the state of our coasts and oceans in Our marine environment 2016 (Ministry for the Environment and Statistics New Zealand Our marine environment 2016 (October 2016)). This is the first environmental domain report required under the Environmental Reporting Act 2015.

We examine whether the policy framework developed since the Earth Summit to maintain biological diversity



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("biodiversity") is adequate to prevent the ongoing loss and degradation of marine habitats and consequent decline in biodiversity, or whether the decline can be more fully attributed to a systemic implementation failure.

We conclude there is a comprehensive policy framework in place, but this is poorly implemented. We set out a number of key reasons for the systemic failure to protect and maintain biodiversity, and suggest some urgent solutions.

## THE 1990s — THE PROMISE OF A NEW ERA

Five important documents emerged from the Earth Summit, including the Rio Declaration on Environment and Development (Report of the United Nations Conference on Environment and Development A/CONF.151/26 (Vol. I) (1992)) (Rio Declaration), and the United Nations Convention on Biological Diversity (CBD) (opened for signature on 5 June 1992, entered into force on 29 December 1993).

Here in New Zealand, the Resource Management Act 1991 (RMA) was passed in 1991. Its inspiration was the World Commission on Environment and Development's "Our Common Future" report in 1987 (Geoffrey Palmer "Ruminations on the problems with the Resource Management Act" (keynote address to the Local Government Environmental Compliance Conference, Auckland, November 2015)).

The RMA's purpose anticipated the important and necessary agreements that would emerge from the Earth Summit, and reflected the lengthy UN working group processes that formulated the Rio texts. Its purpose included environmental protection as an integral part of sustainable management, along with acknowledging the need for equity between present and future generations.

The statutory framework for maintaining biodiversity continued to develop in the 1990s with the first New Zealand Coastal Policy Statement (NZCPS 1994) (Department of Conservation, New Zealand Coastal Policy Statement 1994 (May 1994)) required under the RMA in 1994. Policy 1.1.4 made it a national priority to protect the integrity, functioning and resilience of the coastal environment in terms of biodiversity, productivity and biotic patterns, and the intrinsic values of ecosystems.

NZCPS 1994 also acknowledged the international agreements that affect the coastal environment, and the Government's intention to issue guidelines on how best to meet our collective obligations.

Along with the CBD, these include the United Nations Convention on the Law of the Sea in 1982 (UNCLOS), which identified four responsibilities of sovereign rights: Explore, Exploit, Conserve, Manage [Article 56]. UNCLOS also requires NZ to not over-exploit living resources through ensuring that proper conservation and management measures are in place [Article 61].

The Fisheries Act 1996 (FA) was enacted five years after the RMA, and included a definition of biodiversity. There is an important difference in the definition of biodiversity between the FA and the RMA. The FA omits the words "and the ecological complexes of which they are a part". This is also a departure from the definition in the CBD, which New Zealand had already ratified in 1993 (Table 1).

Section 9 of FA stated that, although biological diversity of the aquatic environment should be maintained, it is only a matter to be taken into account, along with protecting habitats of particular significance, for fisheries management. The purpose of maintaining biodiversity is only for sustaining future take and not for ecological function — this is at odds with our RMA and CBD responsibilities.

The inconsistency between RMA/CBD and FA definitions of biodiversity has had, we suggest, profound consequences for marine biodiversity, which we discuss in a companion article (this issue). This is because ecological complexes provide vital ecological functions and services for sustaining the life-supporting capacity of ecosystems, as biodiversity is inseparable from ecological function.

## THE TURN OF THE MILLENNIUM AND THE TURN OF THE TIDE?

The New Zealand Biodiversity Strategy 2000 (NZBS) set the stage at the start of the new millennium for a concerted national effort to 'turn the tide'; with that spirit captured neatly in then-Prime Minister Helen Clark's foreword:

*Biodiversity is everyone's business. It extends into all our backyards and neighbourhoods and is affected by nearly all our activities. Nearly two-thirds of our land area, and over 99% of our vast marine environment, lies outside protected areas. We need to manage our working landscapes well and look after the scarce ecosystems in those areas. Similarly, we need to put our marine fisheries on an ecologically sustainable basis and protect more of the dazzling array of habitats and marine communities in our oceans.*

The policy work continued apace in the early 2000s with the insertion of s 30(1)(ga) into the RMA in 2003, which required regional councils to maintain indigenous biodiversity by establishing, implementing and reviewing objectives, policies and methods and s 30(1)(b)(iii), which

required territorial authorities to control effects on land for the maintenance of biodiversity.

Guidance on safeguarding marine biodiversity was given to regional councils through the Department of Conservation's New Zealand Coastal Policy Statement 2010 (December 2010) [Objective 1 and Policy 11], along with ensuring that management has to recognise and continue to provide for New Zealand's international obligations (Objective 7).

New Zealand sustained its international commitment to biodiversity by accepting the CBD's 2010–2020 Aichi biodiversity targets, and has produced a Biodiversity Action Plan for 2016–2020 ("BAP"): (Department of Conservation CBD strategic goals and Aichi biodiversity targets <[www.doc.govt.nz/nature/biodiversity/nz-biodiversity-strategy-and-action-plan/new-zealand-biodiversity-action-plan/cbd-strategic-goals-and-aichi-biodiversity-targets/](http://www.doc.govt.nz/nature/biodiversity/nz-biodiversity-strategy-and-action-plan/new-zealand-biodiversity-action-plan/cbd-strategic-goals-and-aichi-biodiversity-targets/)>).

The BAP updated the original action plan within the NZBS (New Zealand Government New Zealand's Fifth National Report to the United Nations Convention on Biological Diversity 2009-2013). The BAP also stated that Goal Three of the NZBS ("Halt the decline in New Zealand's indigenous biodiversity") remains relevant, and implicitly so do the NZBS's 13 Principles for conserving and sustainably managing biodiversity (Table 2).

In 2015, New Zealand committed to the United Nations' Sustainable Development Goals (UNSDG), which include several goals relevant to biodiversity: Goal 13 — Climate Action; Goal 14 — Life below Water; and Goal 15 — Life on Land (United Nations Sustainable Development Goals (2016)) (Table 2). To help nations give effect to Goal 14, the UN General Assembly resolved in December 2017 to proclaim a "Decade of Ocean Science" from 2021–2030 (United Nations Decade of Ocean Science for Sustainable Development (2021-2030) <[www.en.unesco.org/ocean-decade/](http://www.en.unesco.org/ocean-decade/)>).

The critical implication of this overview is that we have a solid foundation of international policy agreements and responsibilities, along with concordant national policies and statute amendments. However, Our marine environment 2016 provides evidence that our biodiversity, the very nature we have been seeking to protect, has declined.

This points to a failure of actions that integrate and implement existing policy in a strategically effective and coordinated manner.

Meanwhile, the policy work continues. In 2017 development began on a National Policy Statement for indigenous biodiversity (NPS) to guide national implementation of RMA, s 30(1)(ga) for terrestrial and freshwater biodiversity on public and private land (Ministry for the Environment "Developing a national policy for indigenous biodiversity" (23 August 2017) <[www.mfe.govt.nz/more/biodiversity/national-policy-statement-biodiversity/about-national-policy-statement/](http://www.mfe.govt.nz/more/biodiversity/national-policy-statement-biodiversity/about-national-policy-statement/)>).

This is being done by an Iwi and stakeholder-led collaborative process, with the Ministry for the Environment (MfE) deciding to be an observer, along with other regulatory agencies, rather than providing direct leadership. This could run counter to Principle One of the NZBS, which requires Government leadership and direction (Table 2), given competing groups may attempt to negotiate policy to protect their interests at the expense of biodiversity (Örjan Bodin "Collaborative environmental governance: achieving action in social-ecological systems" (2017) 357 *Science* 659).

Moreover, the Terms of Reference (ToR) for the process state the: "Government will give due consideration to proposals but will not be bound by the advice, options, proposals and/or recommendations of the group" (Biodiversity Collaborative Group "BCG Terms of Reference" (June 2017) <[www.biodiversitynz.org/](http://www.biodiversitynz.org/)>). There is a risk that this could echo the failure and subsequent recriminations of the Land and Water Forum.

The successful development of the NPS will need to explicitly give effect to, and be guided by, our international obligations, as these apply to all levels of government in New Zealand. Otherwise the result will be open to challenge, which may further delay the implementation of the Earth Summit outcomes and worsen the prognosis for biodiversity.

The NPS purports to fill a gap around the consistent implementation of s 6c RMA to identify and protect habitats of significance to indigenous flora and fauna. In a companion article (this issue), we identify that maintaining biodiversity in the commons of our coastal marine environment must go beyond protecting habitats of significance to prevent further biodiversity decline.

The ToR state the group may also consider coastal ecosystems within the 12-nautical mile extent of the

territorial sea (emphasis added). If so, the NPS will therefore need to be consistent with Policy 11 NZCPS 2010. Marine biodiversity in the Exclusive Economic Zone is considered out of scope.

We now turn to the state of biodiversity in our marine environment.

### OUR MARINE ENVIRONMENT 2016 — AN UNFOLDING ENVIRONMENTAL CRISIS

Our marine environment 2016 confirmed what many marine scientists and communities have known for some time: that the ecologies of our coasts and oceans are under sustained pressure from our collective actions.

The report identified three major or 'top' issues: the first is that the chemical and physical properties of our oceans are changing, due to: increasing ocean acidification; higher sea-surface temperatures; rising sea-levels; and growing volumes of plastic.

Solutions to these problems will really challenge our kiwi ingenuity and there are some bright spots. But with global drivers of ecosystem change, we must reduce the stresses we can control to improve the adaptive capacity of our marine environments.

The second top issue identified in Our marine environment 2016 is that many marine mammal and seabird species are under avoidable threat of extinction; and the third top issue is that the causes of coastal degradation from excessive nutrients, marine pests, fine sediment, and seabed disturbance are also able to be substantively avoided, remedied or effectively mitigated in many instances.

We can, and should, address these deleterious issues if we are to meet our national and international policy responsibilities and reverse the biodiversity decline, especially in coastal marine environments, as set out in Goal Three of the NZBS. The CBD identified that "it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source."

We contend that the primary cause of the avoidable decline in marine biodiversity since the Earth Summit is a systemic failure of implementation, and not a lack of clear policy (c.f. Palmer (2015)).

We suggest that the failure of policy implementation has a number of interacting causes; including:

- confusion about what "maintain" means in an ecological context of maintaining biodiversity;
- conflating biodiversity with solely diversity within and between species, when it includes ecological complexes;
- the omission of a statutory definition of "ecological complex" in the RMA;
- a misconception that protecting significant habitats (RMA, s 6c), as done voluntarily on land, is also sufficient to maintain biodiversity in the commons that is our marine environment; and
- widespread lack of awareness of the ecological connectivity of our oceans.

We address these points in our companion article: "What it Means to "Maintain" Biodiversity in the Marine Environment" (this issue).

There are, of course, other factors that have contributed to the systemic failure to protect our oceans evident in Our marine environment. For example:

- institutional inertia in working together and with communities to maintain biodiversity;
- disputed institutional jurisdiction, resulting in sub-optimal outcomes for biodiversity (see Sally Gepp and Madeleine Wright "Marine biodiversity and taonga species: slipping through the cracks" (2017) RMJ 15);
- inconsistency in definitions of biodiversity between key pieces of environmental legislation, and in the weight that different decision makers are required to give to maintain biodiversity under different acts;
- lack of clear statutory accountability for implementing the Goals and Principles of the NZBS;
- lack of awareness at the regional level of our international biodiversity obligations;
- issues with implementation of Policy 11 NZCPS, including poorly resourced councils and demanding information requirements (Department of Conservation Review of the effect of the NZCPS 2010 on RMA decision-making (June 2017)).
- relatively little investment, particular for the size of our marine environment, in gathering underpinning scientific information on which to base sound management decisions or to inform the development of ecosystem-based management that sustains biodiversity;
- the burden of evidence to demonstrate adverse effects

falling mainly on regulatory authorities, counter to Principle Seven of the NZBS and Principle 16 of the Rio Declaration;

- empowered vested interests, disenfranchised communities; and
- political will.

We note that these issues are not new (Parliamentary Commissioner for the Environment Setting course for a sustainable future: the management of New Zealand's marine environment (November 1999)) and were to be addressed by the (failed) development of an Oceans Policy in the early-mid 2000s (Wren Green and Bruce

Clarkson "Turning the Tide? A Review of the New Zealand Biodiversity Strategy Themes, The Synthesis Report" (report to the Biodiversity Chief Executives 2005)).

We observe that the Environmental Reporting Act 2015 enables the Parliamentary Commissioner for the Environment to discuss the implications of Our marine environment 2016 and to recommend responses to the report's findings.

However, in New Zealand only a Royal Commission can be imbued with the power to make binding recommendations on the state and future of our estuaries, harbours, coasts, and oceans.

**Table 1: Definitions of key terms associated with biological diversity (biodiversity) in the RMA, NZBS, CBD and FA.**

Note: Ecological complex is not formally defined anywhere. "Sustainable use" is also not defined in the Fisheries Act, instead "sustainability measure" is defined as an action under Part 3 to ensure sustainability.

Resource Management Act 1991: (Section 2)	Convention on Biological Diversity 1992:	NZ Biodiversity Strategy 2000: Glossary	Fisheries Act 1996: (Section 2)
<p>Biological diversity means the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species, and of ecosystems</p> <p>Ecosystem — not defined — but see Intrinsic values</p> <p>Intrinsic values, in relation to ecosystems, means those aspects of ecosystems and their constituent parts which have value in their own right, including—</p> <p>(a) their biological and genetic diversity; and</p> <p>(b) the essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience</p> <p>Habitat — not defined</p> <p>Sustainable use — defined in section 5 RMA sustainable management</p>	<p>Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.</p> <p>Ecosystem means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.</p> <p>Habitat means the place or type of site where an organism or population naturally occurs.</p> <p>Sustainable use means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations</p>	<p>Biological diversity: (Same as the 1992 Convention on Biological Diversity)</p> <p>Also included are definitions of genetic diversity, species diversity, and ecological (ecosystem) diversity</p> <p>Ecosystem: An interacting system of living and non-living parts such as sunlight, air, water, minerals and nutrients. Ecosystems can be small and short-lived, for example, water-filled tree holes or rotting logs on a forest floor, or large and long-lived such as forests or lakes.</p> <p>Habitat: (Same as the Convention on Biological Diversity).</p> <p>Sustainable use: (Same as the 1992 Convention on Biological Diversity).</p>	<p>Biological diversity means the variability among living organisms, including diversity within species, between species, and of ecosystems.</p> <p>Aquatic ecosystem means any system of interacting aquatic life within its natural and physical environment</p> <p>Aquatic environment: (a) means the natural and biological resources comprising any aquatic ecosystem; and (b) includes all aquatic life and the oceans, seas, coastal areas, inter-tidal areas, estuaries, rivers, lakes, and other places where aquatic life exists</p> <p>Aquatic life: (a) means any species of plant or animal life that, at any stage in its life history, must inhabit water, whether living or dead; and (b) includes seabirds (whether or not in the aquatic environment)</p> <p>Habitat and Intrinsic values — not defined</p>

**Table 2: Selected goals, targets and implementation principles for international and national agreements.**

Although there is broad alignment, the New Zealand Biodiversity Action Plan does not clearly show how the proposed actions will effectively implement the NZBS and UNSDG in a coherent and integrated way (see text).

NZ Biodiversity Strategy	Convention on Biological Diversity Strategic Plan – Goals for 2010–2020 and selected targets in NZ’s Biodiversity Action Plan 2016–20	United Nations Sustainable Development Goals
<p>Goal One: Community and individual action, responsibility and benefits</p> <p>Goal Two: Treaty of Waitangi</p> <p>Goal Three: Halt the decline in NZ’s indigenous biodiversity</p> <p>Principle One: Governance</p> <p>The Government is responsible for direction and leadership</p> <p>Principle Three: Collective and Ethical Responsibilities</p> <p>All New Zealanders depend on biodiversity and have a responsibility for its conservation and sustainable use beyond their own needs</p> <p>Principle Four: Working Together</p> <p>The conservation and sustainable use of New Zealand’s biodiversity require individuals and public agencies to work together</p> <p>Principle Seven: Internalising Environmental Costs</p> <p>Where an activity imposes adverse effects on biodiversity, the costs of mitigating or remedying those impacts should be borne by those benefiting from the activity.</p> <p>Principle Ten: Sustainable Use</p> <p>Conserving biodiversity is a priority, but does not preclude its use, where this use is ecologically sustainable and does not result in the long-term decline of biodiversity.</p>	<p>Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society</p> <p>National Target 3: Biodiversity is integrated into national and local strategies, policies, plans and reporting.</p> <p>Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.</p> <p>National Target 5: Biodiversity is integrated into New Zealand’s fisheries management system.</p> <p>National Target 6: Improved understanding of the impacts of climate change on biodiversity informs better management of vulnerable ecosystems and indigenous species.</p> <p>Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity</p> <p>National Target 13: A growing nationwide network of marine protected areas, representing more of NZ’s marine ecosystems.</p> <p>Goal D: Enhance the benefits to all from biodiversity and ecosystem services.</p> <p>Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.</p>	<p>Goal 13: Climate Action: Take urgent action to combat climate change and its impacts.</p> <p>Goal 14: Life Below Water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>Target 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.</p> <p>Target 14.2: By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> <p>Target 14.4: By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices...</p> <p>Goal 15: Life on Land: Protect restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p>

*Note: the opinions expressed in this article are entirely those of the authors, and do not necessarily reflect those of their respective organisations.*