SECTION 9:

ENVIRONMENTAL PRINCIPLES

Summary

1 For the purposes of implementing the Fisheries Act 1996, the Ministry of Fisheries considers that all fisheries management decisions made under the Act should be assessed against the environmental principles set out in section 9.

2 The three environmental principles are not mutually exclusive; for example, action to protect habitats of particular significance for fisheries management will also promote and protect the biological diversity of the aquatic environment.

3 The environmental principles should guide proactive fisheries management and research, including proposals for fisheries development. They should also serve as a basis for guiding reviews of existing fishery management regimes. For example, the environmental principles should be used to guide:

- The Minister's decisions
- Priority decisions for fisheries research
- Development of fisheries plans
- Review of fisheries in the Adaptive Management Programme
- Proposals for development of new fisheries
- Continuous improvement in the management of existing fisheries.

4 Consideration of the environmental principles should be explicit, and:

- Occur when a fisheries management issue is first discussed and when there is a real choice between various management options
- Be an integral part of any decision-making process through to the actual implementation of a management response
- Decision-makers should aim to achieve consistency of approach by using evaluation criteria to assess the environmental impacts of current and future fisheries management
- Be supported by the best available information, and drive the collection of further information commensurate to the likely environmental consequences of the action.

Purpose of this Policy Definition

5 The purpose of this Fisheries Act 1996 policy definition is to provide guidance on the application of the environmental principles that should be taken into account by all persons exercising or performing functions, duties, or powers under the Act.

Background and scope of legislative provisions

6 The purpose of the Fisheries Act 1996, as set out in section 8, is "to provide for the utilisation of fisheries resources while ensuring sustainability". Section 9 states that:

> All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability shall take into account the following environmental principles:
>
> *(a) Associated or dependent species should be maintained above a level that ensures their long-term viability*
> *(b) Biological diversity of the aquatic environment should be maintained*
> *(c) Habitat of particular significance for fisheries management should be protected.*

7 The Fisheries Act relates to the utilisation of fisheries resources, provided such use occurs within sustainable limits. The Act contains tools to manage fisheries resources in order to provide for extractive uses. Control and management of fisheries resources for purposes other than extractive use is provided for under other legislation (e.g. Marine Reserves Act 1971, Marine Mammals Protection Act 1978, Wildlife Act 1953, Conservation Act 1987 and Resource Management Act 1991 (RMA)).

8 The environmental principles of the Fisheries Act are derived from New Zealand's international obligations under the United Nations Convention of the Law of the Sea, 1982 (UNCLOS) and the Convention on Biological Diversity, 1992. A brief description of these international environmental instruments is provided in Appendix A of this paper and they are covered in detail in the policy definition for section 5 (international obligations).

Discretion

Applying the environmental principles

9 For the purposes of implementing the Fisheries Act 1996, the Ministry of Fisheries considers that all fisheries management decisions made under the Act should be assessed against the environmental principles set out in section 9.

10 Consideration of all fisheries management issues should explicitly take into account the environmental principles. This means that a conscious and systematic effort should be made to assess the environmental consequences of choosing between various management options. The environmental principles must be considered at the inception of a new proposal, and at the outset of any review of current management regimes, when there is a real choice between various courses of action. Consideration of the environmental principles should then be an integral part of the decision-making process through to the actual implementation of a management response.

11 This need not be overly complicated or require excessive amounts of research. The amount of effort required should be commensurate with the likely environmental impacts. For example, consideration of the environmental principles should be more rigorous and drive the collection of more information in the case of an application for a new fishery or fishing technique than for relatively minor adjustments to fishing in an existing fishery where there are no known adverse

effects[1]. That is, the environmental principles should drive the collection of further information commensurate to the likely environmental consequences of the decision.

12 The requirement the decision-maker "shall take into account" the environmental principles of section 9 means "to take into consideration or to allow for a particular matter in the actual decision"[2]. The decision-maker is required to provide for the matters outlined rather than simply turn their minds to the matter (as required by the words "have regard to"). Every decision made in relation to the utilisation or sustainability of fisheries should strive to ensure compliance with the environmental principles.

13 This requirement provides an appropriate level of discretion for the decision-maker while clearly setting out their responsibility. There is no obligation on fisheries managers to undertake vast amounts of research to meet the environmental principles. Decision-makers should aim to achieve consistency of approach when assessing the environmental impacts of current and future fisheries management. The objective is to apply the environmental principles consistently, using the best available information, to "provide for utilisation … while ensuring sustainability".

14 "Information" is defined in the Fisheries Act to include scientific, customary Maori, social or economic information. And "best available information" is defined to mean the best information that, in the particular circumstances, is available without unreasonable cost, effort or time. The information principles set out in section 10 of the Act require that decisions are made on the basis of the "best available information" and the precautionary principle is used in cases of uncertainty.[3]

15 It will always be difficult to assess future adverse impacts in the face of scientific uncertainty however fisheries managers must make decisions based on the current state of knowledge. These decisions will be robust to the extent that each decision is subject to consistent evaluation and supported by the best available information. The precautionary approach and the information principles are discussed more fully in the policy definition for s10, which should be read in conjunction with this paper.

Information to support application of the environment principles

16 The environmental principles should help guide the direction of fisheries research. Research should be directed to developing and applying methods to determine the impacts of fishing on associated or dependent species, aquatic biodiversity and habitat of particular significance for fisheries management. This information can then be used to develop options to avoid, remedy or mitigate any adverse effects of fishing on the aquatic environment.

---

[1] Under the Fisheries Act 1996: ``Effect'' means the direct or indirect effect of fishing; and includes—
(a) Any positive or adverse effect; and
(b) Any temporary or permanent effect; and
(c) Any past, present, or future effect; and
(d) Any cumulative effect which arises over time or in combination with other effects—
regardless of the scale, intensity, duration, or frequency of the effect; and also includes—
(e) Any potential effect of high probability; and
(f) Any potential effect of low probability which has a high potential impact:

[2] Legal Opinion P96255, K Taylor pp. 9

[3] The precautionary principle is drawn from Principle 15 of the Rio Declaration on Environment and Development, and states that: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

17 The strategic goals and objectives of the Ministry's aquatic environment research programme sets out the scope of research activities that address the environmental principles.

18 The goal for this programme is:

- " To determine the nature and extent of the impacts of fishing on the aquatic environment and of diseases and exotic organisms on fisheries resources to provide for the sustainable utilisation of New Zealand's fishery resources"[4].

19 The strategic objective for research in this area is:

- To determine the impacts of fishing on associated or dependent species, protected species, and biodiversity and to assess options to avoid, remedy or mitigate any adverse impacts.

20 More detailed elements of such research might include work to:

- Identify the nature and geographic extent of aquatic ecosystems of particular significance for fisheries management
- Describe the roles and level of association of species within particular ecosystems
- Develop indices of ecosystem health and factors that influence them, including external drivers (eg. Water quality, disease, environmental changes)
- Identify the impacts of fishing and recovery times for species, ecosystems and habitats
- Develop options for remedying or mitigating any adverse impacts of fishing.

Relevant policy Issues and proposed principles

21 To date fisheries management in New Zealand has largely been conducted on a species by species basis. The environmental principles, together with the purpose of the Fisheries Act 1996 (to provide for the utilisation of fisheries while ensuring sustainability), require a move towards a more ecosystem-based approach to managing fisheries.

22 In effect, section 9 requires fisheries managers to take into account the direct and indirect effects of fishing on the stock and the associated ecosystem (including habitat). Fisheries managers must strive to ensure that fishing does not cause adverse effects on the integrity and productivity of aquatic ecosystems. In particular, the long-term viability of associated or dependent species should be maintained aquatic biodiversity maintained, and habitats of particular significance for fisheries management protected.

23 The following sections analyse each of the environmental principles. However, it is important to recognise that the three environmental principles are not mutually exclusive; for example, action to protect habitats of particular significance for fisheries management will also promote and protect biodiversity.

[4] In addition, there are two national initiatives that will contribute to building an information base for managing aquatic ecosystems; the New Zealand Biodiversity Strategy and the Environmental Performance Indicators Programme. The Ministry of Fisheries is working with the Department of Conservation and the Ministry of Environment and other agencies on both of these initiatives.

Associated or dependent species should be maintained above a level that ensures their long-term viability

24 There are two approaches to interpreting section 9 (a) can be defined. However, both approaches result in the same interpretation and the same outcome (policy definition) as to what the term "associated or dependent species" actually means.

25 The two approaches are presented here as:

- Approach One: retaining the status quo in which the wording of section 9 (a) and ancillary definitions in Section 2, of the Fisheries Act 1996 are left unchanged

- Approach Two: to consider amending the Act to better reflect the policy definition of associated or dependent species.

26 The Ministry will need to give further consideration as to which approach should be adopted.

Approach One

27 A pragmatic approach to ensuring a consistent interpretation of associated or dependent species (in the absence of an amendment to the Act – as per option two).

28 MFish is of the view that the intent of this principle is to:

- provide a strategy to manage all species taken or affected by the taking[5] of other species for which an authority to take can be issued under the Fisheries Act
- encompass the fishing activities of commercial, recreational and customary fishers.

Interpretation

29 The Fisheries Act 1996 defines the term "associated or dependent species" as meaning any *non-harvested species* taken or otherwise affected by the taking of any *harvested species*.

30 The term *harvested species* is also defined in the Act and means any fish, aquatic life, or seaweed that may for the time being be taken with *lawful authority*. This definition of harvested species is the key to interpreting the definition of *associated or dependent species*. However, some care needs to be taken in the interpretation of *lawful authority* as it appears to be based on the commercial authority to fish for particular species.

31 The Act specifies which fisheries resources can be lawfully taken. The harvesting of fisheries resources is authorised by way of fishing permits, special permits, customary authorisations, amateur fishing regulations, etc.

32 The taking of some species, such as seabirds and marine mammals, is unlawful (prohibited) for all fishers (commercial, recreational and customary) and in all areas. These species are listed under the Wildlife and Marine Mammal Protection Acts.

33 For customary and recreational fishers there are no species they are prohibited from lawfully taking under fisheries legislation (other than prohibited species such as seabirds and marine mammals). The exception is toheroa, which recreational fishers are prohibited from taking unless

[5] Section 2 of the Fisheries Act 1996 states that: "Taking" means fishing; and "to take" and "taken" have a corresponding meaning.

MFish declares an open season. Typically, the recreational regulations specify daily bag limits for certain key species, but for all other species there is either a generic bag limit or no limit.

34 For commercial fishers there are species that are totally prohibited as target species and therefore no lawful authority to target can be given. However, it is important to note that fisheries legislation provides a complete defence for the taking of prohibited target species when a commercial fisher takes reasonable precautions and exercises due diligence and the taking of these species is:

- an inevitable consequence of a lawful fishing operation
- due to the act or default of another person
- due to an accident or some other cause beyond the fisher's control.

35 The commercial fishing regulations for each fishery management area specifies the species which, in that area, can be targeted, and those species that are totally prohibited as target species.

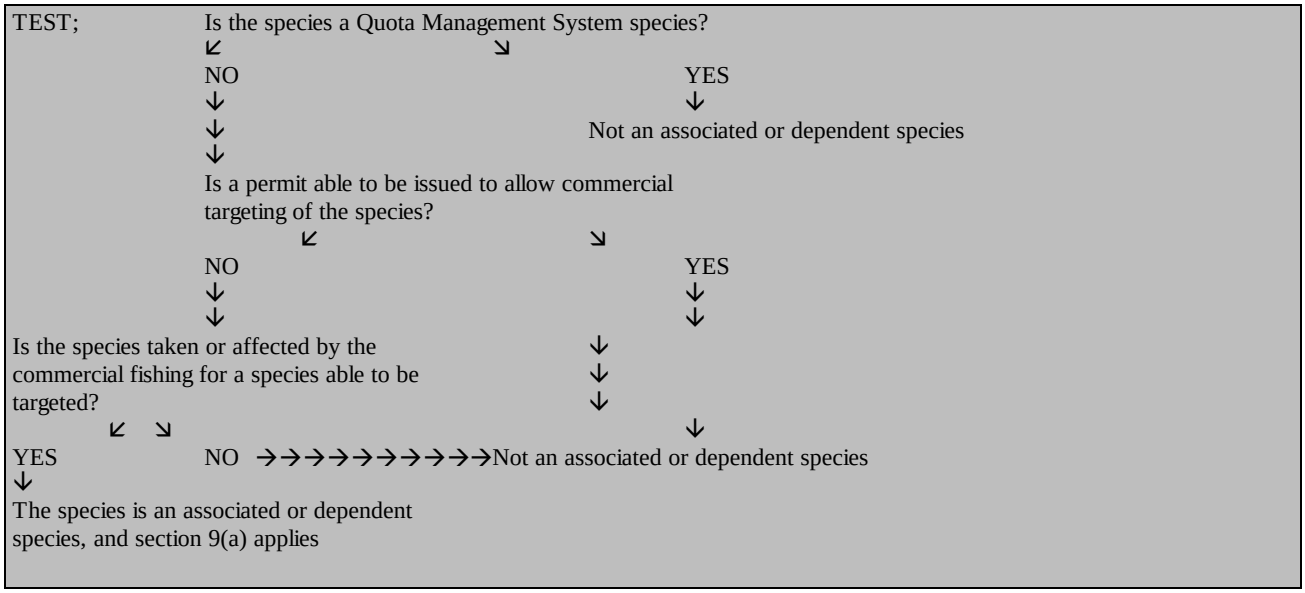
36 The term *lawful authority* appears wide enough to cover an authorisation given under the Act to take fish (e.g. a fishing permit, a special permit, a customary authorisation, etc); and, a situation where no prior authority is required (e.g. taking in accordance with the Fisheries (Amateur Fishing) Regulations).

37 However this approach leads to an anomalous result in that no species would meet the definition of associated and dependent as there will always be a class of people who can take any species with the authority given by section 89(2) of the 1996 Act. MFish is of the view that this was not the intent of the legislation. The definition of associated or dependent species needs to be interpreted in such a way that makes sense, and is in line with the purpose of the provision and the Act as a whole.

38 As noted in above, MFish believes that the intent of section 9(a) is to provide a management strategy for those species that can not be commercially targeted, but which are actually affected by the taking of other species. In light of this, MFish is of the view that the words *may for the time being be taken with lawful authority* in the definition of harvested species must be read so that they relate only to those species for which a permission to harvest can be issued. Therefore, *non-harvested* or *associated or dependent species* are those that are specifically prohibited from being targeted commercially.

39 Figure 1 provides a simple way of determining whether or not a species is associated or dependent.

Figure 1. Determining whether a species is "associated or dependent"



40 The species defined as being associated or dependent will vary according to the commercial fishing regulations that apply to each fisheries management area. The exceptions are those species protected under the Wildlife and Marine Mammal Protection Acts, which cover all areas.

41 Table 1 provides an example of how different species within an area may be defined as harvested and associated or dependent. The example uses snapper in area 1 as the target species.

Table 1. Defining "associated or dependent species": Snapper in Area 1

	Species	Management Target Level
Commercial Target Stock	Snapper	Maintain stock at or above a level that can produce the maximum sustainable yield (s13 of the Fisheries Act 1996).
Commercial Non-target Stocks Caught as Bycatch	Trevally John Dory Tarakihi Barracouta Kahawai Kingfish etc	Maintain stocks at or above a level that can produce the maximum sustainable yield (s13 of the Fisheries Act 1996).*
Associated or Dependent Species Caught as Bycatch**	Bryzoans Sponges Skates and rays Conger eel Leatherjacket Parore Giant boarfish Marblefish Splendid perch etc Petrels and other seabirds	Maintain above a level that ensures their long-term viability (s9(a) of the Fisheries Act 1996). Setting of a maximum allowable fishing-related mortality level (s15 of the Fisheries Act 1996).

*Note that if one of these stocks met the criteria set out under s14(a) of the 1996 Fisheries Act then it could be managed at a level below that which can produce MSY, but above a level that ensures its long-term viability.

**As defined in the Wildlife and Marine Mammal Protection Acts, and Part B of R 20C of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986. Note that fisheries legislation provides a legal defence to the incidental capture of associated or dependent species. Note also that associated and dependent species include marine mammals.

Management target level

42 Before considering the issue of management target levels for associated or dependent species it is important to note that these are species for which no direct management controls (eg catch limits) have been set. Instead, these species are managed by applying controls to the target fisheries they are associated with, or to the fishing methods they are affected by.

43 The table above shows the management target levels specified in legislation for harvested and associated or dependent species. Section 9(a) requires associated or dependent species to be maintained above a level that ensures their long-term viability.

44 The Fisheries Act 1996 defines long term viability (in relation to a biomass level of a stock or species) as meaning there is a low risk of collapse of the stock or species, and the stock or species has the potential to recover to a higher biomass level.

45 This defined level could be expressed in terms of absolute population size, relative size, density, size structure, or biomass relative to a target level such as the biomass level that can produce maximum sustainable yield. There may also be a need to consider the spatial distribution and extent of such species.

46 The question of long-term viability requires consideration of the natural dynamics of populations. At one level the concept implies the need to ensure the continuing existence of species in the sense of maintaining populations in a condition that ensures a particular level of reproductive success. At another level, viability implies an ability to maintain populations at a level that ensures the maintenance of biodiversity.

47 Viability could be ensured in some circumstances by the establishment of closed areas. Consideration should also be given to the fact that viability could be achieved at very low levels of population size, depending on the risks associated with, for example, recruitment failure at low population sizes.

48 The concept of long-term viability also needs to be considered with respect to utilisation by different sector groups. For example, a species targeted by recreational fishers may only be an incidental bycatch of commercial fishing operations. To satisfy the needs of recreational fishers consideration will need to be given to a target management level that best achieves section 8 of the 1996 Act.

49 The establishment of acceptable management levels for each species should be determined, as far as possible, in relation to appropriate reference points. These would need to be chosen, provided that they can be measured appropriately, to reflect an acceptable level of risk of loss of viability at different levels of population, density, size-age structure, or distribution.

Approach Two

50 This involves amending the definition of "harvested species" to provide a more common sense interpretation of associated or dependent species, while securing the same outcome as presented in Approach One. Such an amendment would need to take into account the activities of customary and recreational fishers as well as commercial fishers. This means that the impact on associated or dependent species by any harvester (whoever they are) would be managed in the same way.

51 Under this approach the definition of "harvested species" in section 2 of the Fisheries Act 1996 would be amended to something like:

> *"Harvested species" means any fish, aquatic life, or seaweed that may for the time being be taken under the authority of a permit or authority issued under this Act.*

Biological diversity of the aquatic environment should be maintained

52 Section 2 of the Act defines biological diversity as "the variability among living organisms, including diversity within species, between species, and of ecosystems"; and, "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. [6]

53 The principle that the biological diversity of the aquatic environment should be maintained is derived from the Convention on Biological Diversity, 1992. Article 2 of the Convention defines biodiversity as " 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 a part; this includes diversity within species, between species and of ecosystems". This reflects the common definition for biological diversity as consideration of biodiversity at the level of *ecosystems, species,* and *genes.*

54 Some New Zealand examples of biodiversity at the three levels are:

- ecosystem biodiversity
  - the Kermadec Islands have a rich and unique mix of tropical and temperate cold water species because they straddle two major climatic regions
- species biodiversity
  - bryozoan species in Spirits Bay form one of the most diverse communities of species in the world
  - green lipped mussel (*Perna canaliculus*) is only found in New Zealand
- genetic biodiversity
  - the genetically distinct North and South Island populations of Hector's dolphins
  - recent NIWA research has identified two genetically distinct stocks of toothfish (circum- Antartic and South American continental shelf) and there may be a distinct New Zealand stock.

[6] Other relevant definitions in the Act are:
"Aquatic ecosystem" means any system of interacting aquatic life within its natural and physical environment.
"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).[6]
(c)

55 Three additional dimensions that are commonly used to characterise genetic, species and ecosystem diversity are:

- Composition – this relates to the identity and variety of elements in a region, for example, measures of species diversity and genetic diversity
- Structure – this is the physical organisation or pattern of a system and includes habitat complexity as measured within communities and patterns of habitats and other biodiversity elements at an ecosystem level
- Function – this involves ecological and evolutionary processes such as gene flow, disturbance processes and energy flows.

56 Fisheries managers should take ecological, species and genetic diversity into account. In practice this means managing fisheries resources in a way that maintains the compositional, structural and functional integrity of the aquatic environment.

57 This means:

- maintaining the variety and health of marine communities, habitats and ecosystems
- sustaining viable populations of marine organisms throughout their natural range
- maintaining the variation of genes with aquatic organisms.

58 The practical implications of maintaining biodiversity are difficult to address at a generic level and often issues will be able to be resolved only in the context of fisheries decisions.

59 In considering an operational definition of biodiversity, the dynamic nature of ecosystems, species and genes must be taken into account.

60 Questions arise about:

- fishery independent trends in genetic diversity
- the need to maintain all the diversity within a species or whether some components are more important
- the impact of any reductions in biodiversity of species with fragmented distribution or reduced range
- the relationship between species biodiversity and spatial distribution
- the relationship between indigenous biodiversity and exotic biodiversity in the marine environment
- spatial aspects of the requirement to maintain biodiversity (ie. on what scale should biodiversity issues be considered).

61 An important task is to identify threats to aquatic biodiversity so that steps can be taken to avoid, remedy or mitigate the likely impacts from these threats. The major direct threats to aquatic and coastal biodiversity can be divided into five interrelated categories: pollution (from land based and other sources), over-exploitation of marine living resources, introduction of alien species, coastal development and its attendant side-effects and global climate change.[7] The Ministry will be undertaking work on identifying threats to aquatic and coastal biodiversity as part of the new initiative biodiversity package[8].

[7] *Biodiversity in the Seas: Implementing the Convention of Biological Diversity in Marine and Coastal Habitats*, ICUN Environmental Policy and Law Paper No 32, p 6.

[8] The NZ Biodiversity Strategy Funding Package 2000-2005. This work will be undertaken jointly with the Ministry of Environment and Department of Conservation.

62 An operational definition of biodiversity is difficult to develop because our understanding of the nature of, and operation, of aquatic ecosystems is very limited. But this does not mean that we cannot take steps now to maintain the biological diversity of the aquatic environment:

> "… gaps in knowledge of the magnitude and extent of marine biodiversity have real consequences. Inadequate knowledge of the species present in a given marine community or ecosystem limits understanding of ecosystem function and understanding of how human alterations impact that function. [But] this does not mean that every species in a system must be described in order to understand that system. Rather, *sufficient* knowledge of the breadth and depth of the diversity of animals, plants, microbes, and other life present at a site or in a region is needed to understand the ecological roles of abundant and critical species and the functioning of the ecosystem."[9]

63 In the absence of good information, a useful way forward is to set clear targets for fisheries management and then work towards these goals, with the aim of continually improving the way we manage aquatic biodiversity.

64 The New Zealand Biodiversity Strategy proposes a number of desired outcomes for marine biodiversity for 2020[10].

65 Briefly, these are:

- natural marine habitats and ecosystems are maintained in a healthy functioning state
- a full range of marine habitats and ecosystems represented of indigenous biodiversity is protected
- there are no human induced extinctions of marine species
- marine biodiversity is appreciated, and any harvesting or marine development is done in an informed, controlled and ecologically sustainable manner

66 Actions in the NZ Biodiversity Strategy to support these goals include:

- integrating marine biodiversity protection priorities into programmes for sustainable fisheries use, such as fisheries plans, using an ecosystem approach
- identifying species and habitats sensitive to harvesting and put in place measures to avoid, remedy or mitigate adverse effects from commercial, recreational, and Maori customary fishing activities
- using the precautionary principle when setting sustainability measures in the absence of information or where there is uncertainty
- integrating environmental impact assessment into fisheries decision-making processes
- avoid, remedy or mitigate the adverse impacts of human activities on marine biodiversity and develop habitat restoration programmes where appropriate
- achieve a target of protecting 10% of New Zealand's marine environment by 2010 with a view to establishing a network of representative protected marine areas
- protect and enhance marine species threatened with extinction.

67 These goals and actions should guide fisheries management decisions to maintain the biological diversity of the aquatic environment. Research is needed to establish indices of ecosystem health,

[9] *Understanding Marine Biodiversity: a research agenda for the nation*, Committee on Biological Diversity in Marine Systems, Washington, 1995,p 10

[10] Other tools for improving management of the aquatic environment include the Environmental Indicators Programme and the National Agenda for Sustainable Water Management. Both pieces of work are lead by the Ministry for the Environment.

including biodiversity of the aquatic environment, as targets for management. The Ministry will be undertaking this work as part of the new initiative biodiversity package.

Habitat of particular significance for fisheries management should be protected

68 Habitat can be defined as "the place or type of area in which an organism naturally occurs"(NZ Biodiversity Strategy). The spatial distribution and extent of habitats is important. Life history stages are also important as many species have specific habitat requirements at different life history stages, for example, for spawning, early juvenile growth and feeding.

69 A useful starting point for defining habitat of particular significance for fisheries management is the Magnuson-Stevens Fishery Conservation and Management Act (USA). This defines "essential fish habitat" to mean:

> "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity".

70 "Essential fish habitat" is not necessarily the same thing as "habitat of particular significance for fisheries management". However, in practice this principle is likely to mean taking into account the waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity.

71 Habitats of "particular significance for fisheries management" should be interpreted in the light of the purpose of the Fisheries Act 1996 to mean those habitats where failure to provide for their explicit management is likely to result in failure to provide for the utilisation of fisheries resources while ensuring sustainability.

72 The Oxford English Dictionary defines "significance" as being "of considerable amount or effect, not insignificant or negligible"; and "particular" as "worth notice, special, more than ordinary". This suggests that habitats of particular significance will be those that are worth notice, special, not ordinary and of considerable effect (not negligible) for fisheries management.

73 The requirement to "protect" significant habitats refers to active management measures to avoid, remedy or mitigate adverse effects on these habitats. The method of protection used to avoid, remedy or mitigate adverse effects on these habitats should be commensurate with the nature and magnitude of the risk posed to the habitat.

74 In general, habitat protection has not been included in traditional fisheries management, which has tended to focus on fishing activities. However habitat is essential to healthy fish stocks. Pollution, freshwater influx, some fishing methods (eg. dredging and trawling), and other human activities can degrade marine habitats. The maintenance of healthy fish stocks requires the mitigation of these threats to fish habitat. Effective management of habitats of particular significance for fisheries management requires fisheries managers to collect information on those habitats and identify the factors that might pose risks to them.

75 There is currently a research project on habitats of significance to fisheries management for the inshore area, and the Ministry will be commissioning a further project to extend this work to the offshore area next year.

76 This information, together with other available information, will be used to:

- Identify habitats of significance to fisheries management
- Identify threats or risks to these habitats (from fishing or other activities)
- Manage the threats or risks to significant fish habitats, using
    - Fisheries management measures where the impact is caused by fishing
    - Joint management measures with the local authority where the impact is caused by non-fishing / land based activities.

77 There are a number of management measures that could be adopted to protect habitats of particular significance for fisheries management from the adverse effects of fishing.

78 These include:

- Fishing method restrictions (eg. limit bottom disturbing methods)
- Seasonal and/or area restrictions on fishing
- Water column restrictions (eg. limit bottom trawling but not mid water trawling).

79 A further example comes from the United States, where each fishery management plan must identify the essential fish habitat of a fishery, the activities adversely impacting this habitat and the actions needed to ensure that this habitat is conserved or enhanced. Existing tools under which specific measures for protection of fisheries habitat can be developed include fisheries plans, adaptive management, and protected areas.

Proposed evaluation criteria for applying the environmental principles

80 The following principles have guided the development of the proposed evaluation criteria:

- Practicality and ease of use
- Consistency across each of the three environmental principles
- Compatibility with the purpose of the Fisheries Act 1996
- Interpretation in relation to other relevant New Zealand legislation.

81 Each environmental principle should be considered with the aim of:

- Characterising the ecosystem/s related to the particular fishery or area under discussion
- Establishing the impact or environmental effect[11] of the proposal
- Identifying the possibility of avoiding, remedying or mitigating any adverse effect on the environment.

82 It is proposed that the evaluation criteria serve as an "information check list" for assessing the effectiveness of current and future fisheries management in meeting the environmental principles. They should also assist in determining appropriate management responses. In cases of uncertainty

[11] Under the Fisheries Act 1996: ``Effect'' means the direct or indirect effect of fishing; and includes—
(a) Any positive or adverse effect; and
(b) Any temporary or permanent effect; and
(c) Any past, present, or future effect; and
(d) Any cumulative effect which arises over time or in combination with other effects—
regardless of the scale, intensity, duration, or frequency of the effect; and also includes—
(e) Any potential effect of high probability; and
(f) Any potential effect of low probability which has a high potential impact:

or lack of information then the evaluation criteria should be interpreted in a manner consistent with the information principles set out in section 10 of the Fisheries Act.

83 The first step will be to gather information on the ecosystem related to the particular fishery or area under discussion. This will involve describing the:

- major species likely to be affected by fishing in the area
- significant habitat (including the seabed)
- any important associations between species, or between a species and its habitat
- relevant factors influencing the ecosystem, including external factors.

84 The next step will be to determine the effects of fishing and the likelihood of adverse environmental effects for each of the three environmental principles:

(a) Associated or dependent species should be maintained above a level that ensures their long-term viability
(b) Biological diversity of the aquatic environment should be maintained
(c) Habitat of particular significance for fisheries management should be protected.

85 The following evaluation criteria are recommended to determine the environmental effects of fishing each of the three environmental principles:

- What are the effects of fishing?
- What is the likelihood of any positive or adverse effect (including cumulative effects)?
- Are there any potential effects of high probability, or of low probability but with a high potential impact?
- What could be done to avoid, remedy or mitigate any adverse effect?

86 Each of these criteria should be considered with respect to the particular ecosystem under discussion, and the relevant environmental principle/s. This will assist fisheries managers to determine the effects of fishing on associated or dependent species, aquatic biodiversity and habitat of particular significance for fisheries management. This will facilitate informed management decisions that meet the environmental obligations of the Fisheries Act 1996.

Supporting initiatives

87 Effective application of the environmental principles is essential for all current and future fisheries management. There is a range of initiatives underway that will assist in interpreting and applying the environmental principles. These include the:

- development of an Environmental Management Strategy (Ministry of Fisheries)
- New Zealand biodiversity funding package for marine biodiversity and biosecurity (Ministry of Fisheries, Ministry for the Environment, Department of Conservation)
- development of an Oceans Policy (all relevant Government agencies).

88 Work completed under each of these initiatives will need to be incorporated into this policy definition and interpretation of the environmental principles.

Links to other parts of the Fisheries Act

89 All persons exercising or performing functions, duties or powers in relation to utilisation of fisheries resources or ensuring sustainability under the Fisheries Act 1996 are required to act in accordance with the overarching provisions of:

- section 5 - application of international and treaty settlement obligations
- section 8 - purpose of the Act
- section 9 - environmental principles
- section 10 - information principles.

90 Fisheries managers must sometimes undertake a deliberate balancing exercise between the various principles and obligations set out in these sections. They should not give effect to an obligation under one section to the exclusion of all other obligations.

91 Any interpretation of the environmental principles needs to be balanced against the purpose of the Act, international and treaty obligations, and the information principles (which encapsulate the precautionary approach). This paper should therefore be read in conjunction with the policy definitions for sections 5, 8 and 10.

Appendix A: International Environmental Instruments

New Zealand is a Party to the Law of the Sea Convention, which imposes binding obligations on Parties to adopt management measures to achieve a sustainable use of fisheries resources. In addition to the requirements to conserve the living resources of the sea, UNCLOS also imposes obligations on coastal States to protect the marine environment generally and to control the pollution of the sea. The broad objectives of UNCLOS have been incorporated in the Fisheries Act 1996.

The Convention on Biological Diversity is aimed at the conservation of biological diversity and to promote the sustainable use of its components. In 1995 the "Jakarta Mandate on Marine and Coastal Biodiversity" specifically addressed the relationships between conservation and fishing activities and established coastal and marine biodiversity as one of the first substantive sectors to be considered by the Convention.

The Jakarta Mandate specifically addresses the relationships between conservation, the use of biological diversity and fishing activities and establishes a new global consensus on the importance of marine and coastal biological diversity.

Article 61 of UNCLOS: Conservation of living resources

1. The coastal State shall determine the allowable catch of the living resources in its exclusive economic zone.
2. The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation. As appropriate, the coastal State and competent international organisations, whether subregional, regional or global, shall co-operate to this end.
3. Such measures shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global.
4. In taking such measures the coastal State shall take into consideration the effects on species associated with or dependant upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.
5. Available scientific information, catch and fishing effort statistics, and other available data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organisations, whether subregional, regional or global, where appropriate and with participation by all States concerned, including States whose nationals are allowed to fish in the exclusive economic zone

Appendix B: Pathway for applying the environmental principles

The approach set out in this paper to applying the environmental principles is illustrated in Figure 2.

Figure 2. Proposed approach to applying the environmental principles.