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TECHNICAL CONSULTATION ON THE INTERNATIONAL GUIDELINES FOR THE MANAGEMENT OF DEEP-SEA FISHERIES IN THE HIGH SEAS

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DRAFT INTERNATIONAL GUIDELINES FOR THE MANAGEMENT OF DEEP-SEA FISHERIES IN THE HIGH SEAS

DRAFT DOCUMENT

TABLE OF CONTENTS

Acronyms and Abbreviations

COFI	FAO Committee on Fisheries
CBD	Convention on Biological Diversity
Compliance Agreement	Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas
DSF	Deep sea fisheries (as defined by paragraph 6)
EAF	Ecosystem Approach to Fisheries
FAO	Food and Agriculture Organization of the United Nations
IPOA	FAO International Plan of Action
IUCN	The World Conservation Union
IUU	Illegal, unreported and unregulated fishing
MCS	Monitoring, control and surveillance
MPA	Marine protected area
RFMOs/As	Regional fisheries management organizations and arrangements
NGO	Non-governmental organization
The Code	1995 FAO Code of Conduct for Responsible Fisheries
UNEP	United Nations Environment Programme
UNGA	United Nations General Assembly
VME	Vulnerable marine ecosystem
VMS	Vessel monitoring systems
1982 UN Convention	1982 United Nations Convention on the Law of the Sea
1995 UN Fish Stocks Agreement	The 1995 UN Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks

1 – PREAMBLE

1. These International Guidelines for the Management of Deep-sea Fisheries in the High Seas were developed at the request of the Food and Agriculture Organization of the United Nations (FAO) Committee on Fisheries (COFI) at its twenty-seventh session (March 2007) in order to assist States and regional fisheries management organizations and arrangements (RFMOs/As) in sustainably managing deep-sea fisheries and in implementing the United Nations General Assembly (UNGA) Resolution 61/105 chapter 10, concerning responsible fisheries in the marine ecosystems.

2. COFI also agreed that the Guidelines "should include standards and criteria for identifying vulnerable marine ecosystems in areas beyond national jurisdiction and identify the potential impacts of fishing activities on such ecosystems, in order to facilitate the adoption and the implementation of conservation and management measures by RFMO/As and flag States (pursuant to paragraphs 83 to 86 of the Resolution)".

3. In addition to the convening of an Expert Consultation on Deep-sea Fisheries in the High Seas (Bangkok, Thailand, from 21 to 23 November 2006), which provided important inputs, successive steps to develop the Guidelines were as follows: (i) an Expert Consultation (Bangkok, Thailand, from 11 to 14 September 2007), to proceed to an initial and technical review of a first draft of the Guidelines, (ii) a Technical Consultation in early 2008, to discuss the Guidelines from a policy perspective and finalize the document, and (iii) the submission of the Guidelines to the twenty-eighth session of COFI for discussion and endorsement.

4. Workshops on Vulnerable Marine Ecosystems and Destructive Fishing (Rome, Italy, from 26 to 29 June 2007) and on Knowledge and Data on Deep-sea Fisheries in the High Seas (Rome, Italy, 5 to 7 November 2007) have also been held and provided insight on important issues.

5. The role of the Guidelines is to provide tools and guidance on their application to facilitate and encourage the efforts of RFMOs/As and States towards sustainable use of marine living resources exploited by deep-sea fisheries, the prevention of significant adverse impacts to deep-sea vulnerable marine ecosystems (VMEs) and the protection of marine biodiversity that these ecosystems contain.

5bis. These Guidelines are to be interpreted and applied in conformity with the relevant rules of international law, as reflected in the United Nations Convention on the Law of the Sea, 1982. Nothing in this Code prejudices the rights, jurisdiction and duties of States under international law as reflected in the Convention.

2 – BACKGROUND CONSIDERATIONS

6. The development of deep-sea fisheries, in many cases, has not been sustainable. Even short-term deep-sea fishing can result in significant impacts on the target species, bycatch and habitats. Although not all deep-sea fishing operations necessarily have adverse impacts on vulnerable marine habitats and species, the need for urgent management action is clear.

7. Many marine living resources exploited by deep-sea fisheries in the high seas have biological characteristics that make their sustainable utilization and exploitation problematic. These include: maturation at relatively old ages; slow growth; long life expectancies; low natural mortality rates; intermittent recruitment of successful year classes; and spawning that may not occur every year. As a result, many deep-sea marine living resources have low productivity and are able to sustain only very low exploitation rates. Also, when these resources are depleted, recovery is expected to be long and is not assured. The great depths at which marine living resources are caught by deep-sea fisheries in the high seas pose additional scientific and technical challenges in providing scientific support for management. Together these factors mean that assessment and management have higher costs and are subjected greater uncertainty.

8. Deep-sea fisheries in the high seas are also a source of concern regarding the protection of deep-sea ecosystems and marine biodiversity. Particular concerns include: the sensitivity and vulnerability of some species, communities and habitats to direct and indirect impacts of fishing; the extreme longevity (100s to > 1 000 years) of individuals of some types of organisms or the long times over which some habitats develop; the low resilience of species, communities and habitats; a high proportion of endemic species with risk of loss of biodiversity, including extinctions; distribution of some vulnerable seafloor communities as spatially discrete units often within a small area of the seabed so that small perturbations may have significant consequences; fragmentation and risk of loss of source populations; and poor current knowledge of the ecosystem components and their relationships.

9. The gaps and shortcomings in the current legal and institutional regimes constitute major challenges in the management of deep-sea fisheries in the high seas; these include inadequate systems of management of many deep-sea fisheries in the high seas and the absence of competent RFMOs/As in many of the world's oceans.

10. The issues described above make the need for effort and vigilance greater than that needed for fisheries on the continental shelves and within national jurisdiction to ensure sustainable use of the marine living resources, the prevention of significant adverse impacts on VMEs and the protection of marine biodiversity.

11. Few data are available for many deep-sea fisheries in the high seas. The problem of deficient and unavailable data has been exacerbated by insufficient flag State control, deficiencies in reporting of activities of their fleets and the lack of appropriate incentives.

12. Another element to take into consideration is the fact that the number of users of non-fish marine resources in the deep seas is significant and increasing.

3 – SCOPE AND PRINCIPLES

13. These Guidelines have been developed for fisheries that occur in areas beyond the limits of national jurisdiction and have the following characteristics:

- **i) the total catch (everything brought up by the gear) includes species that can only sustain low exploitation rates; and**
- **ii) that fishing gear is likely to contact the seafloor during the normal course of fishing operations.**

Elements of these Guidelines should also be applied, as appropriate, by States and RFMOs/As to similar fisheries in areas beyond national jurisdiction, including those targeting medium productivity species.

14. For the purpose of these Guidelines, the fisheries described above shall be referred to as "deep-sea fisheries" (DSF).

15. Coastal states may apply these Guidelines within their national jurisdiction, as appropriate.

16. The main objectives of the management of DSF are to promote responsible fisheries that provide economic opportunities while ensuring the conservation of living marine resources and the protection of marine biodiversity, by:

- **i) ensuring the long-term conservation and sustainable use of marine living resources in the deep seas; and**
- **ii) preventing significant adverse impacts on VMEs.**

17. In order to achieve these objectives, States, and RFMO/As should:

- **i) adopt and implement measures in accordance with the precautionary approach and an ecosystem approach to fisheries (EAF), and in conformity with the relevant rules of international law, in particular as reflected in the 1982 United Nations Convention on the Law of the Sea (1982 UN Convention), and in a manner consistent with other relevant international instruments.**
- **ii) identify areas where VMEs are known or likely to occur; and**
- **iii) take action using the best information available.**

~~**18.** In light of the above-mentioned objectives and considerations, flag States and RFMOs/As need to consider the potential for gear contact and its impact in all DSF, as all gears, depending on how they are used, may contact the bottom or benthic communities, whether intended or not.~~

4 – DESCRIPTIONS OF KEY CONCEPTS

4.A Vulnerable Marine Ecosystems

19. Vulnerability is related to the likelihood that a population, community, or habitat will experience substantial alteration from short-term or chronic disturbance, and to the likelihood that it would recover and in what time frame. These are, in turn, related to the characteristics of the ecosystems themselves, especially biological and structural aspects. Vulnerable Marine Ecosystems features may be physically or functionally fragile. The most vulnerable ecosystems are those that are both easily disturbed and are very slow to recover, or may never recover.

20. The vulnerabilities of populations, communities and habitats must be assessed relative to specific threats. Some features, particularly ones that are physically fragile or inherently rare may be vulnerable to most forms of disturbance, but the

vulnerability of some populations, communities and habitats may vary greatly depending on the type of fishing gear used or the kind of disturbance experienced.

20bis. The risks to a marine ecosystem are determined by its vulnerability, the probability of a threat occurring and the mitigation means applied to the threat.

4.B Significant Adverse Impacts

21. Significant adverse impacts are those that compromise ecosystem integrity (i.e. ecosystem structure or function) in a manner that impairs the ability of affected populations to replace themselves and that degrades the long-term natural productivity of habitats, or causes on more than a temporary basis significant loss of species richness, habitat or community types. Impacts should be evaluated individually, in combination and cumulatively.

When determining the scale and significance of an impact, the following six factors should be considered:

i. **The intensity or severity of the impact at the specific site being affected;**
ii. **The spatial extent of the impact relative to the availability of the habitat type affected;**
iii. **The sensitivity/vulnerability of the ecosystem to the impact;**
iv. **The ability of an ecosystem to recover from harm, and the rate of such recovery;**
v. **The extent to which ecosystem functions may be altered by the impact; and**
vi. **The timing and duration of the impact relative to the period in which a species needs the habitat during one or more life-history stages.**

22. Temporary impacts are those that are limited in duration and that allow the particular ecosystem to recover over an acceptable timeframe. Such timeframes should be decided on a case-by-case basis and should be on the order of 5-20 years, taking into account the specific features of the populations and ecosystems.

22bis. In determining whether an impact is temporary, both the duration and the frequency with which an impact is repeated should be considered. If the interval between expected disturbance of a habitat is shorter than the recovery time, the impact should be considered more than temporary. [In circumstances of limited information, States and RFMOs should be precautionary in their determinations regarding the nature and duration of impacts.]

5 – GOVERNANCE AND MANAGEMENT

5.A General management considerations

23. In addition to the considerations in paragraph 17, States and RFMO/As should also recognise the need, in managing DSF, to do so in a manner consistent with the

Code and the general principles set forth in 1995 UN Fish Stocks Agreement and to, *inter alia*: [1]

i) adopt measures necessary to ensure the conservation of target and non-target species, including relevant reference points as referred to in the Code under Article 7.5.3, as well as measures for the prevention of significant adverse impacts on VMEs and the protection of the marine biodiversity they contain;

ii) identify areas or features where VMEs are known or likely to occur, and the location of fisheries in relation to these areas and features;

iii) develop data collection and research programmes to assess the impact of fishing on target and non-target species and their environment;

iv) base the management of DSF on the best scientific and technical information available taking into account fisher's knowledge, where appropriate;

v) develop and use selective and cost-effective fishing methods and promote efforts to further improve such selectivity, recognizing the difficulties of managing fisheries with mixed species or high bycatch;

vi) implement and enforce conservation and management measures through effective monitoring, control and surveillance (MCS);

vii) take appropriate measures to address the problems of over-capacity, overfishing and illegal, unreported, and unregulated (IUU) fishing, particularly in accordance with the FAO International Plans of Action (IPOAs) on Capacity and IUU fishing.

viii) ensure transparency, public dissemination of information, in accordance with appropriate standards for confidentiality, and enable participation of relevant stakeholders.

23. States and RFMOs should ensure that measures for the sustainable conservation and management of DSF, the prevention of significant adverse impacts on VMEs and protection of the marine biodiversity these ecosystems contain are adopted and implemented consistent with the precautionary approach as [reflected in Article 6 of the 1995 UN Fish Stocks Agreement and] set out in Articles 6 and 7 of the FAO Code of Conduct.

24. DSF should be rigorously managed throughout all the stages of their development: experimental, exploratory, and established. In recognition of the potential vulnerability of deep-sea resources and their ecosystems, conservation and management measures for

[1] Argentina declared it would not oppose the consensus but would have to introduce in the text of the report of the Technical Consultation, as follows: "La Argentina se une al consenso para aprobar el proyecto de directrices. No obstante, desea advertir, nuevamente, que ninguna de las recomendacions de dicha resolución puede ser interpretada en el sentido de considerar que las disposiciones contenidas en el "Acuerdo sobre la aplicación de las disposiciones de la Convención de las Naciones Unidas sobre el Derecho del Mar relatives a la conservación y ordenación de las poblaciones de peces transzonales y las poblaciones de peces altamente migratorias" adoptado en Nueva York en 1995, pueden ser consideradas como obligatorias para los Estados que no hayan manifestado expresamente su consentimiento en obligarse pore se tratado."

DSF should ensure that, while knowledge is low, harvest rates are kept low enough to minimise risk to sustainability, and harvests only increase as knowledge, management capacity, and MCS increases.

25bis. [Strategies that have been applied to manage DSF need to be evaluated in light of their performance to date, particularly for low-productivity species. [*Annex II of the 1995 UNFSA specifies that the "fishing mortality rate which generates maximum sustainable yield should be regarded as a minimum standard for limit reference points" (paragraph 7)*]. Target reference points for the management of DSF need to be set in a precautionary manner below maximum sustainable yield (MSY) based reference points. Appropriate reference points for stock assessment and management need to be determined on a case-by-case basis, taking into account the different target species, fishery characteristics, and the state of knowledge about the species and fishery. For low productivity species, fishing mortality rate should not exceed the natural mortality rate of the target or main bycatch species.]

5.B Governance framework

26. **States acting in their capacity as flag States, port States, importing or exporting [market] States or when exercising jurisdiction over their nationals, should contribute to the attainment of the objectives stated in paragraph 16.**[2]

27. ~~States should ensure that activities under their jurisdiction or control do not cause damage to the marine environment of other States or areas beyond the limits of national jurisdiction.~~

27bis. Nothing in these guidelines pertaining to the management of deep sea fisheries in the high seas above the continental shelves by States and RFMO/As is to prejudice the sovereign rights of the coastal State over that shelf and the exercise of the coastal State jurisdiction with regard to that shelf, under international law as reflected in UNCLOS.

28. [States should establish and implement national policy, legal and institutional frameworks for the effective management of DSF and to prevent adverse impacts on VMEs.]

29. [States should strengthen existing RFMOs/As with the competence to manage and regulate DSF and their impacts on VMEs.]

29Bis [States should urgently cooperate in the establishment of new RFMOs/As with such competence to manage DSF where no such RFMO/A exists. Prior to the establishment of such a new RFMO/A States participating in the relevant DSF [and other interested states] should cooperate to develop interim conservation and management measures to ensure the long-term sustainable use of the fisheries resources and prevent significant adverse impacts to VMEs.]

29Ter [States should effectively implement the measures adopted by RFMOs/As of which they are members or cooperating non-members.]

[2] Turkey declared that it would not oppose the consensus but would have to introduce a general statement in the report of the Technical Consultation with respect to this provision as well as other related provisions in the Guidelines.

30. RFMOs/As should develop mechanisms for communication, cooperation, and coordination among themselves, as well as with relevant regional and international organizations, and scientific bodies. In addition, RFMOs/As should cooperate with industry and non-governmental organizations (NGOs), as appropriate.

6 – MANAGEMENT AND CONSERVATION STEPS

6.A Data, reporting and assessment

Data collection and reporting

31. States and competent RFMOs/As should develop and implement data collection plans to allow for the orderly and sustainable development of current and planned DSF. These should take into account stage-specific information, as well as ecosystem protection information requirements. Monitoring of fishing activity through the collection of fine-scale resolution data is required for the assessment of stock status and impacts on VMEs. In addition, fishery-independent research surveys should also be conducted, in particular to provide relevant information on VMEs and how they are affected by anthropogenic activities. Annex 1 provides further guidance on data collection and reporting.

32. Where a competent RFMO/A exists, States should submit the data they collect on DSF at the finest resolution to that RFMO/A, which in turn should submit aggregated data to FAO. Where such a RFMO/A does not exist, States should submit their fine-scale resolution data directly to FAO.

33. National legislation or regulations should not prohibit the submission of the data mentioned above to the competent RFMO/A or to FAO. Where appropriate, RFMOs/As and FAO should implement the relevant confidentiality rules.

Stock assessment

34. Appropriate assessment techniques are needed when the harvested species possess the characteristics described in paragraph 7 of the Guidelines. In light of data limitations regarding many deep-sea species, lower cost or innovative methods based on simpler forms of monitoring and evaluation need to be developed.

35. *(possibly to be included in 25bis)* Appropriate biological reference points for stock assessment and management need to be determined on a case-by-case basis, in light of the different target species, fishery characteristics, and the state of knowledge about the species and fishery. For low productivity species, fishing mortality should not exceed natural mortality of the target or main bycatch species.

36. Coastal States and competent RFMOs/As should collaborate in assessing stocks that occur in areas beyond national jurisdiction, but extend inside the boundaries of national jurisdiction.

6.B Identifying Vulnerable Marine Ecosystems and Assessing Significant Adverse Impacts

37. A marine ecosystem should be classified as "vulnerable" based on the characteristics that it possesses. The following list of characteristics should be used as criteria in the identification of VMEs:

- **i) uniqueness or rarity- an area or ecosystem that is unique or that contains rare species whose loss could not be compensated for by other similar areas. These include:**
  - **a. habitats that contain endemic species;**
  - **b. habitats of rare, threatened or endangered species that occur only in discrete areas;**
  - **c. nurseries or discrete feeding, breeding, or spawning areas]**
- **ii) the functional significance of the habitat – discrete areas or habitats that are necessary for the survival, function, spawning/reproduction or recovery of fish stocks, particular life-history stages (e.g. nursery grounds or rearing areas), or of rare, threatened or endangered marine species.**
- **iii) fragility – an ecosystem that is highly susceptible to degradation by anthropogenic activities**
- **iv) life-history traits of component species that make recovery difficult – ecosystems that are characterized by populations or assemblages of species with one or more of the following characteristics:**
  - **a. slow growth rates;**
  - **b. late age of maturity;**
  - **c. low or unpredictable recruitment;**
  - **d. long-lived.**
- **v) structural complexity – an ecosystem that is characterized by complex physical structures created by significant concentrations of biotic and abiotic features. In these ecosystems, ecological processes are usually highly dependent on these structured systems. Further, such ecosystems often have high diversity, which is dependent on the structuring organisms.**

Examples of potential vulnerable species, and habitats and features are contained in Annex 1.A.

38. These criteria should be adapted and additional criteria should be developed as experience and knowledge accumulates, or to address particular local or regional needs.

39. States and RFMOs/As, and as appropriate the FAO, should assemble and analyse relevant information on areas under the competence of such RFMOs/As or where vessels the jurisdiction of such States are engaged in deep-sea fisheries or where new or expanded deep-sea fisheries are contemplated, as a necessary step toward the identification of VMEs.

40. Where site-specific information is lacking, other information that is relevant to inferring the likely presence of vulnerable populations, communities and habitats should be used.

41. In designating an ecosystem as vulnerable, the decision should evaluate habitats and ecosystems against the criteria presented in para 37, individually or in combination using the best available scientific and technical information. Characteristics should be weighed according to their relative contribution to an ecosystem's vulnerability.

~~**42.** The identification of VMEs should be precautionary. Precaution applied in management should reflect the quantity and quality of data available; few or poor quality data require more precaution.~~

43. Flag States and RFMO/As should conduct assessments to establish if deep-sea fishing activities are likely to produce significant adverse impacts in a given area. Such an impact assessment should address, *inter alia*:

- **i) the type(s) of fishing conducted or contemplated, including vessels, and gear-types, fishing areas, target and potential bycatch species, fishing effort levels and duration of fishing (harvesting plan);**
- **ii) best available scientific and technical information on the current state of fishery resources, and baseline information on the ecosystems, habitats and communities in the fishing area, against which future changes are to be compared;**
- **iii) identification, description and mapping of VMEs known or likely to occur in the fishing area;**
- **iv) The data and methods used to identify, describe and assess the impacts of the activity, identification of gaps in knowledge, and an evaluation of uncertainties in the information presented in the assessment;**
- **v) identification, description and evaluation of the occurrence, scale and duration of likely impacts, including cumulative impacts of activities covered by the assessment on VMEs and low-productivity fishery resources in the fishing area;**
- **vi) risk assessment of likely impacts by the fishing operations to determine which impacts are likely to be significant adverse impacts, particularly impacts on VMEs and low productivity fishery resources;**
- **vii) the proposed mitigation and management measures to be used to prevent significant adverse impacts on VMEs and ensure long-term conservation and sustainable utilization of low-productivity fishery resources, and the measures to be used to monitor effects of the fishing operations.**

43bis. Risk assessments referred to in paragraph 43 (vi) above should take into account, as appropriate, differing conditions prevailing in areas where DSF are well established and in areas where DSF have not taken place or only occur occasionally.

44. In conducting impact assessments, States and RFMO/As should consider, as appropriate, the information referred to in Annex 1, as well as relevant information from similar or related fisheries, species and ecosystem. Notwithstanding paragraph 32,

it should be recognised that there may be circumstances in which States may have to rely on information and data obtained only from vessels flying their flags or their own research activities when assessing DSF that take place in areas where not RFMO/As is in place.

~~45. Flag States should take all feasible measures to make data relevant to the above-mentioned assessments available to the competent RFMO/A, or where there is no such RFMO/A to FAO. The fishing industry should cooperate fully in this exercise.~~

45new. [RFMOs/As should develop an appropriate mechanism for reviewing assessments, determinations and management measures, including evaluation and advice by a Scientific Committee, other appropriate body, or, as appropriate, a relevant multilateral body, including on whether the deep-sea fishing activity would have significant adverse impacts on vulnerable marine ecosystems and, if so, whether the proposed or additional mitigation measures would prevent such impacts. States and RFMOs/As should increase their capacity to acquire and interpret such information.]

~~46. Flag States and RFMOs/As should evaluate information relevant to assessing the impact of DSF on VMEs and marine biodiversity and, where necessary, increase their capacity to acquire and interpret such information.~~

46new. States, in accordance with domestic laws, and RFMOs should make publicly available the impact assessments (as described in paragraph 43), existing and proposed conservation and management measures, and advice and recommendations provided by the appropriate RFMO scientific or technical committee, or other relevant body.

46bis. For areas not regulated by an RFMO/A, States should, on an annual basis, submit their impact assessments, and any existing or proposed conservation and management measures to FAO, which shall make them publicly available.

47. Where an assessment concludes that the area does not contain VMEs or that significant adverse impacts are not likely, such assessments should be repeated when there have been significant changes to the fishery or other activities in the area, or when natural processes are thought to have undergone significant changes.

6.C Enforcement and compliance

48. Flag States are responsible for ensuring compliance by vessels flying their flag engaged in DSF for all applicable conservation and management measures and for enforcement of such measures. Well-developed and implemented national MCS frameworks should be developed and implemented as vital components for global, regional and national conservation and management regimes. States should cooperate, through competent RFMOs/As, where they exist, in order to establish effective MCS regimes. States should also participate in the International Monitoring, Control and Surveillance Network for Fisheries Related Activities.

49. Coastal States and RFMOs/As should ensure compliance with applicable conservation and management measures through strong MCS programmes, including independent on-board observers and through promoting and encouraging a strong ethic of co-management and stewardship.

50. Satellite-based vessel monitoring systems (VMS) should be used to provide information on the location of fishing vessels engaged in DSF. In order to better assess fishing effort by gear, improve compliance with closed area regulations and provide sufficient evidence to detect infractions, VMS should be integrated into the overall MCS framework and used in association with the establishment of temporal and spatial management measures, including marine protected areas (MPAs).

51. Port States and market States should consider taking measures such as catch certification and trade documentation schemes in order to enhance their ability to identify vessels and their catch harvested outside or in contravention of the applicable conservation and management measures.

52. National or international observer or cooperative programmes should be implemented for DSF. One hundred percent coverage should be implemented for experimental and exploratory stages of a fishery's development and in the areas where there is no competent RFMO/A.

53. In regard to the monitoring of fisheries, vessel register data should be regularly updated to identify changes in the fleet composition, fishing power and gear types (see Annex 1 for detailed information on vessel registers).

54. States should make publicly available, through FAO, a list of those vessels flying their flag authorized to conduct DSF, and the measures they have adopted to regulate the activities of such vessels.

55. Flag States and port States should adopt and implement national legislation and measures aimed at preventing, deterring and eliminating IUU fishing in DSF, including using the 2005 FAO Model Scheme on Port State Measures to Combat Illegal, Unreported and Unregulated Fishing and subsequent binding instruments.

56. Flag States, port States and RFMOs/As should cooperate to prevent, deter and eliminate IUU fishing in DSF, and on actions related to IUU vessels and their listing.

57. Market States should, individually or through international cooperation, adopt and implement catch documentation schemes and market-related measures. In particular, they should take measures consistent with international law to deny market access to products from IUU fishing in DSF.

6.D Application of management and conservation tools

~~58. A functioning regulatory framework for DSF will involve regular impact assessments, as well as regulations and measures to address the sustainable utilization of marine resources, the protection of VMEs and the conservation of marine biodiversity for all the development stages of a fishery. Specific fisheries management plans may complement this framework, as required.~~

59. Flag States should adopt specific conservation and management measures, for all DSF, in pursuance of these Guidelines and particularly the provisions of Annex 2,

irrespective of whether a competent RFMO/A exists or not and whether a functioning and effective regulatory framework has been developed.

60. Where a functioning regulatory framework has not yet been developed, management and conservation measures should include, at a minimum, (i) closing of areas where VMEs occur or are likely to occur until conservation and management measures have been adopted to prevent significant adverse impacts; (ii) freezing the current effort of vessels significantly involved in DSF and areas exploited (i.e. "freezing the footprint"); (iii) reducing the current effort in specific fisheries to the nominal levels needed to provide information for assessing the fishery and obtaining relevant habitat and ecosystem information; and (iv) closing a specific fishery if the risk of significant adverse impact on unique habitat, ecosystem or species is assessed as high given the available information.

61. States involved in DSF should proceed to mapping existing fishing areas for all fishing gear before the end of 2008 at the latest. Mapping of trawl footprints should be considered a priority because of the expected greater impact of trawling on VMEs. Identifying the footprint of existing fisheries, will require defining:

i) a clear reference period for the measurement of vessel involvement in DSF and areas covered;

ii) "significant" involvement;

iii) whether involvement and the footprint should be measured in catch or in effort units by types of boat and gear; and

iv) the relevant spatial resolution for data collection and submission.

62. Mapping should be based on haul-by-haul information and expressed at an appropriate spatial and temporal resolution (e.g. as grid blocks with 'fished' blocks being defined over a reference period in relation to trawl tracks/tows for trawling and in relation to days fished for other gear). Comprehensive footprint maps should be compiled by RFMOs/As, before the end of 2009 at the latest. For areas not covered by RFMOs/As, each flag State should develop such footprint maps and cooperate with other States concerned and FAO in developing joint maps for relevant areas.

63. A functioning regulatory framework should include an appropriate set of rules and regulations for the management of existing fisheries, as well as for the opening of new areas to exploratory fishing consistent with these Guidelines and other relevant instruments. Such a framework should also include regulations to protect vulnerable populations, communities and habitats.

64. Highly restrictive catch and effort controls are essential during the exploratory phase of DSF, and should be a major component of the management of established DSF. They should, as a rule, be accompanied by additional measures to manage the impact of the fishery on low productivity species and sensitive habitat features.

65. Flag States should establish legal pre-requisites for entry into a DSF and conditions applicable to participants in a DSF after entry, taking into account the provisions of Annexes 1 and 2. In particular, flag States should exercise precaution in allowing vessels flying their flag to expand operations into new areas or for new target species.

66. When a vessel unexpectedly encounters features likely to be associated with VMEs, fishing by all vessels should cease in this area.

67. Flag States and RFMOs/As should have an appropriate protocol identified in advance for how vessels in DSF should respond to unexpected encounters with a VME or features associated with a VME. As a minimum, vessels should cease bottom fishing activities at the site and the encounter should be immediately recorded and reported, in accordance with paragraph 83(d) of the UNGA Resolution (61/105).

68. When an encounter of a vessel with a VME or features likely to be associated with a VME is reported, the RFMO/A or flag State should, in light of this report, adopt or modify management measures in that area as needed to ensure the protection of the VME.

69. The spatial scale at which these measures will be adopted and implemented should be established on a case-by-case basis, appropriate for the fishery concerned and the likely scale of the VMEs.

70. For VMEs that have been designated on the basis of features of the seabed, habitat, non-utilized species, or community properties, effort controls and catch controls will not be sufficient to protect the VMEs. States and RFMOs/As should adopt additional measures as described in Annex 2.

71. To protect a VME, a specific combination of conservation and management measures should be developed and tailored on a case-by-case basis.

72. As further described in Annex 2, these measures may include :

i) closed areas;

ii) closed areas to bottom-contact fisheries or other specific gears;

iii) temporal restrictions or closures (only for protection of species that are migratory);

iv) changes in gear design and/or deployment to prevent or reduce adverse impacts, including:

- elimination or minimization of the contact between the fishing gear and the seabed;
- full use of effective bycatch reduction devices appropriate for the features of the VME; and
- full use of technical measures to eliminate or minimize ghost fishing.

v) operational measures, including:

- master and skipper certification for responsible and skilful fishing in deep seas, particularly for aimed trawling (i.e. fishing on specifically identified grounds and fish aggregations);
- use of electronic mensuration equipment for gear control and positioning;
- horsepower and winch control systems appropriate for DSF;
- use of modern echosounders and technologies for collecting required bathymetric and habitat information;

- use of accurate charts and habitat maps of the area being fished; and
- presence on the fishing vessels of individuals trained to collect biological information on catch and bycatch.

6.E Processes for the Application of Management Tools

Environmental assessments and harvesting plans

73. States should exercise effective jurisdiction and control over vessels flying their flag and only authorize them to engage in DSF after conducting an impact assessment in accordance with Section 6B of these Guidelines. If the result of such an assessment indicates that activities under the harvesting plans are likely to produce significant adverse impacts, authorizations should not be issued.

73bis *(to replace last para of 41 and all of 42)* [If after assessing all available scientific and technical information, there is substantial uncertainty with regard to the presence of VMEs, or regarding the likelihood that individual DSF activities would cause significant adverse impacts on VMEs, States should only authorize individual DSF activities to proceed in accordance with:

(i) precautionary, conservation and management measures to prevent significant adverse impacts;
(ii) measures to address unexpected encounters with VMEs in the course of fishing operations; and
(iii) measures to reduce the uncertainty.]

74. RFMOs/As should establish processes to regularly review the implementation by States of the provision of the above paragraph and evaluate the cumulative impact of fishing by all States in their the respective area of competence of that RFMO.

75. (brought forward to 46alt) ~~For areas not regulated by an RFMO/A, flag States should submit their impact assessments and harvesting plans to FAO on an annual basis. With appropriate financial support from those States, FAO should organize an annual meeting of an independent working group to review the plans and make recommendations accordingly, also taking into account the cumulative effects of all fishing activities concerned in each region. Flag States should act on those recommendations for amending their plans.~~

~~76.~~ (Alt text moved 46alt2) ~~The information regarding the processes carried out in the application of 73-75 should be made publicly available and should include the following elements:~~

~~i) mapping and a description of proposed fishing areas;~~

~~ii) an evaluation of expected interactions with VMEs and ecosystem impacts;~~

~~iii) information on the status of stocks to be fished;~~

~~iv) proposed management measures aimed at preventing significant adverse impacts on VMEs and the long-term sustainability of targeted marine living resources;~~

~~v) monitoring system to be used;~~

~~vi) MCS, compliance and enforcement measures; and~~

~~vii) an overall environment impact assessment.~~

Fishery management plans

77. Flag States and RFMOs/As should develop and adopt fishery management plans for specific DSF when a comprehensive set of measures with defined long-term/multi-annual management objectives is needed. They should be tailored on a case-by-case basis to the characteristics of each fishery, making use of relevant management tools consistent with these Guidelines and with the objectives states in paragraph 16.

78. In developing or revising fisheries management plans, flag States and RFMOs/As should consider all the information referred to in Annex 1, as well as relevant information from similar or related fisheries, species, and ecosystems. Appropriate procedures should be put in place to verify that the fishery management plans achieve sustainable fisheries and protect VMEs and marine biodiversity. In particular, fishery management plans should promote the use of low impact fishing technology and fishing practices.

79. Fisheries management plans should be adopted on the basis of a transparent process. Information on the intended management objectives and the integration of operational elements of the proposed plan should be made publicly available in order to ensure that interested parties are afforded the opportunity to make comments. In adopting the plans, due account should be taken of these comments and feedback provided to contributors through publicly available information.

80. Fishery management plans should be reviewed at regular intervals and, if appropriate, revised following such reviews. The revision process should also be based on a transparent, participatory process.

6.F Assessment and Review of Effectiveness of Measures/Adjustment of Measures

81. States and RFMOs/As should establish a system for monitoring the implementation of conservation and management measures and the operation of fisheries on a continual basis. Using information obtained from such a system, the effectiveness of the measures should be reviewed and assessed for the purpose of making adjustments, when necessary, to the conservation and management measures. This adaptive feedback system should form an integral part of the management plans for DSF.

82. Data and information collected according to Annex 1 through the monitoring system should include information necessary for the assessment of harvested marine living resources, VMEs and the state of the ecosystem. States and RFMOs/As should work to develop rules-based management approaches based on selected indicators and benchmarks.

83. States and RFMOs/As should regularly review the best scientific information available on the known or likely locations of VMEs and the impacts of bottom fishing on VMEs and marine biodiversity, and revise conservation and management measures accordingly.

84. Independent reviews of the data, impact assessments and the effectiveness of conservation and management measures for DSF should be conducted periodically.

85. The FAO should periodically review best practices for quantifying the impact of DSF on VMEs.

7 – SPECIAL REQUIREMENTS OF DEVELOPING STATES

85bis. These guidelines give due recognition to the special requirements of developing States, in relation to management of deep-sea fisheries and the protection of vulnerable marine ecosystems. To this end States, organisations such as the United Nations Development Programme, the FAO, and other appropriate organisations and bodies should assist developing States in implementing these guidelines and the actions called for in paragraphs 83-91 of the UNGA Resolution A61/105, taking into account the forms of cooperation as set out in Article 24 and 25 of the UN Fish Stocks Agreement, Article 5 of the FAO Code of Conduct for Responsible Fisheries and Chapter XI of UNGA resolution 61/177 concerning capacity building.

85ter. In implementing these guidelines, consideration should be given to address the needs of developing States, including in the areas of financial and technical assistance, technology transfer, training and scientific cooperation, and in enhancing their ability to develop their own fisheries, as well as to participate in the high seas fisheries, including access to such fisheries, in conformity with International law, in particular the UNCLOS and the UN Fish Stocks Agreement and taking into account article 5 of the Code of Conduct for Responsible Fisheries.

8 – ADDITIONAL CONSIDERATIONS ON IMPLEMENTATION

86. In accordance with Article 5 of the Code and in view of the special requirements of developing countries as well as those of countries in transition, States and relevant intergovernmental and non-governmental organizations and financial institutions should collaborate in providing these countries with the assistance they require to develop and maintain appropriate arrangements for the management of the DSF activities carried out under their jurisdiction, including by vessels flying their flag, or for the implementation of measures related to these activities, including MCS and Port State Measures.

87. States and RFMOs/As should collaborate through FAO, CBD and other relevant organizations to address common issues such as the development of compatible standards, tools and information aimed at facilitating the implementation of these Guidelines.

88. Pursuant to UNGA Resolution 61/105 and the agreement reached at the twenty-seventh session of COFI, States should provide appropriate support for FAO to develop a global database on VMEs in areas beyond national jurisdiction, in cooperation with other relevant organizations such as the World Conservation Union (IUCN).

89. States and RFMOs/As should report every two years to FAO and, as appropriate, to other relevant organizations or arrangements, such as CBD, on progress made in the implementation of these Guidelines.

90. In implementing these Guidelines consideration should be given to, *inter alia*, accountability, adaptability, effectiveness, practicability, socio-economic aspects, timeliness and transparency.

ANNEX 1.A - EXAMPLES OF POTENTIAL VULNERABLE SPECIES, AND HABITATS AND FEATURES

Examples of vulnerable species and habitats forming species that are documented or considered sensitive and potentially vulnerable to deep-sea fisheries in the high-seas:

a. coldwater corals of various types e.g., reef builders and coral forest including: stony corals (scleractinia), alcyonaceans and gorgonians (octocorallia), black corals (antipatharia), and hydrocorals (stylasteridae),
b. sponge grounds (e.g., sponge dominated communities),

c. communities composed of dense emergent fauna where large sessile protozoans (xenophyophores) and invertebrates (e.g., hydroids and bryozoans) form an important structural component of habitat, and
d. seep and vent communities comprised of invertebrate and microbial species found nowhere else (i.e., endemic).

Examples of areas (mega-habitats) which are topographical, hydrophysical or geological features (including fragile geologic structures) known to support vulnerable species, communities, or habitats as above:

a. edges and slopes of oceanic islands and continental shelves (e.g., corals and sponges),
b. summits and flanks of seamounts, guyots, banks, knolls, and hills (e.g., corals, sponges, xenophyphores),
c. canyons and trenches (e.g., burrowed clay outcrops, corals),

d. hydrothermal vents (e.g., microbial communities and endemic invertebrates), and

e. cold seeps (e.g., mud volcanoes, microbes, hard substrates for sessile invertebrates).

ANNEX 1 – DATA COLLECTION AND REPORTING

Data collection

1. Data required to successfully manage DSF include:

   i) Registers of vessels authorised to fish - They should contain detailed information on each vessel including length, tonnage, types of gear, and the areas, fisheries and species for which the vessels are authorized to fish, and whether the vessels are active in DSF. Flag states should continuously update this information and submit it on an annual basis to relevant RFMOs/As and FAO. Flag States should ensure that all vessels conducting DSF have a permanent ID (e.g. International Maritime Organization [IMO] number) to assist in collecting high quality data and information on the activities of the vessel.

   ii) Monitoring of fishing activity:

   - Catch and effort reports by fishing operation - These data should be collected according to the operational characteristics of each fishing method (e.g. each individual tow for trawlers, each set for long-liners) and in sufficient detail to facilitate effective stock assessment and assess impacts on VMEs. Such data should include: catch by species (both target and non-target, retained and discarded); effort statistics appropriate to each fishing method; fishing location; depth of fishing; and date and time fished. Fine-scale spatial reporting is required.
   - Samples of biological characteristics of catch (e.g. length, weight, sex, gonadal maturity stage of fish, collection of hard structures for growth and age studies) - They should be collected by commercial fishers, scientific observers, or by port or market sampling.
   - Vessel's position and movements through a satellite-based VMS.
   - Details of each fishing operation – information on vessel type, fishing gear characteristics and fishing methods should be collected to assess and identify potential impacts on VMEs. In addition, gear location and tow tracks should be collected and the location of lost or damaged gear should be reported.

   iii) Surveys

   - Scientific fishing surveys (e.g. trawl and acoustic surveys) - consideration should be given to using commercial fishing vessels to conduct these surveys, given the limited resources likely to be available in offshore fisheries, and the urgent need for immediate management.
   - Benthic habitat surveys – Data should be collected on all aspects of the biology and ecology of VMEs and deep-sea marine species, habitats, and ecosystems. This information is needed to (a) identify areas where VMEs occur or are likely to occur, (b) assess the capacity of deep-sea marine living resources, habitats and communities to recover from perturbations, (c) to assess the effect of fishing activities on the ecosystem, and (d) the effectiveness of conservation and management measures.

iv) Socio-economic data – This type of data should be collected for DSF. Guidelines for the collection of socio-economic data for DSF should be developed.

2. States and competent RFMOs/As should develop, adopt and publish standardised and consistent data collection procedures and protocols, including standardised logbooks and survey methodologies. In developing data collection procedures and protocols, States should examine existing successful examples.

3. Flag States, in collaboration with competent RFMOs/As, where they exist, should monitor and report the location and activities of vessels flying their flag on as close to real-time as possible. It is highly desirable that electronic data collection and reporting systems be used.

4. National and international training programmes for fishers and scientific observers should be used to improve catch identification and biological data collection, including the use of existing FAO material for the identification of commercial species, and the development of field manuals for the identification of non-commercial species, particularly for benthic invertebrates. FAO should provide support to the development and coordination of such programmes.

5. Historical data should be obtained from both fisheries and non-fisheries sources (e.g. scientific research surveys). These data are essential to determine the current status of demersal and bentho-pelagic fish stocks on the high seas and assess the cumulative impact and/or "footprint" on VMEs.

6. States and competent RFMOs/As should undertake survey activities to determine impacts of various types of fishing gear on VMEs to complement the information generated by commercial fishing vessels, in particular, in cases where inferring impacts on VMEs from information from commercial operations is difficult.

7. States and RFMOs should collate biogeographic information and oceanographic parameters used for predictive mapping of VMEs.

8. States and competent RFMOs/As should specify and address the information required for adaptive management to prevent significant adverse impacts on VMEs, including the use of indicators and benchmarks.

Data quality

9. Data should be collected and reported at the finest possible spatial and temporal resolution and be made available for the purpose of agreed scientific analyses.

10. Data should be complete and accurate. All reasonable measures should be taken by industry, States and competent RFMOs/As to ensure that high quality data is available to manage DSF.

11. Data should be verified by comparing information from different sources such as:

i) VMS;

ii) scientific observer programmes (to monitor catch, effort, catch composition, impacts on VMEs and other details of fishing operations);

iii) vessel trip, landing and transshipment reports;

iv) catch/trade documentation schemes, and import/export statistics; and

v) port sampling.

12. Data should be validated through mechanisms such as:

i) comparisons between data types that should be equivalent;

ii) checks for impossible or highly improbable data values; and

iii) catch profiling (i.e. comparison of catch composition).

Data reporting

13. All data collected should be reported and reviewed.

14. Data reporting and analysis should be as transparent as possible to allow all interested parties to review the effectiveness of the management of DSF and the conservation of VMEs.

15. Data should be provided to the competent RFMO/A in a timely manner to ensure regular analysis and monitoring of fisheries. The frequency of reporting would depend upon the management regime and the duration of high-seas fishing trips. Data should be centralized in a single database on a regional basis in order to facilitate monitoring and analysis. Issues concerning access to data, data sharing, and confidentiality of data are to be resolved by the regional bodies, arrangements, and national authorities.

16. Flag States and competent RFMOs/As should tailor the list of data they require vessels flying their flag to report to the features likely to be associated with VMEs that are potentially present in the region.

ANNEX 2 - MANAGEMENT TOOLS

Characteristics

1. Management should be implemented on a case-by-case basis, taking a precautionary approach and an ecosystem approach consistent with paragraph 17 of the Guidelines. The tools and options for management presented in this Annex are not intended to be prescriptive or exhaustive.

Gear controls

2. In order to better manage the impact of fishing gear on both the harvested marine living resources and the ecosystem, the gear should be modified, deployed differently or a different gear should be used. In doing so it should be considered that current VMS are better at monitoring the use of some gear (trawl) than others (long-line, static nets and traps) and that controls on mesh size (selectivity) are more difficult or costly to enforce in trawl fisheries than other gears.

Effort controls

3. Effort management should be considered when the operations of the fishery are consistent across a fleet and over time, and there is some form of effective MCS. It should be kept in mind that effort management is less effective when the fleet can modify fishing operations to increase efficiency of effort, or when there are opportunities to fish without the effort being counted in the management system.

4. A biological basis should be established for determining the amount of effort management to be allowed, either through a precautionary and restrictive approach to prevent rapid expansion of new fisheries, or through a reliable history of effort, catch and stock status for established fisheries, in order to determine the effort that is sustainable.

5. Effort controls in managing DSF need to be combined with other measures to manage the impact of the fishery on VMEs and on marine biodiversity.

6. In managing experimental, exploratory and established fisheries, effort should be kept very low until sufficient information is collected to provide a basis to manage the impact of the fisheries on VMEs and marine biodiversity.

Catch controls

7. Catch controls require a sound basis for setting the limits and compliance with the limit. This can be best achieved through an appropriate balance of MCS measures, co-management and stewardship. The benefits of catch controls can be increased if combined with catch documentation schemes, which ensure that markets can discriminate against fish harvested outside or in contravention of the management system.

8. In the case of mixed species DSF, particularly during the early years in which they are being conducted in a new area, or when flag States or RFMOs/As control of the fisheries is inadequate, catch controls need to be combined with other measures to manage the impact of the fishery on VMEs and marine biodiversity.

Spatial and temporal management

9. Spatial and temporal management should be considered in order to prevent fishing from affecting the population structure and genetic diversity of exploited populations, even if the biomass of the target species is maintained.

10. In the context of EAF, spatial and temporal management tools, including MPAs, may be particularly useful in data-poor situations such as those encountered in DSF. These tools could contribute to precautionary management and, if appropriately implemented, provide some protection for biodiversity, habitats and targeted species.

11. Long-term protected areas may also serve as scientific reference sites to assist in distinguishing between the effects of harvesting and other causes of ecosystem changes, and provide opportunities for understanding marine ecosystems not directly subject to human interference.

12. Enforcement issues should be considered in the application of management measures. Enforcement of spatial and temporal controls may be less costly and more effective than other management measures when coupled with tools such as VMS and completed by effective follow-up and effective sanctions to achieve compliance with the regulations.

Incentives

13. Measures based on incentives should be considered to strengthen the effectiveness of management and conservation measures. Such incentives may include secure and exclusive fishing entitlements, which would also protect fisheries data that are commercially sensitive because of the highly spatially-targeted nature of many of these fisheries. Preferential allocation of fishing entitlement may be used to encourage research, resource assessment, data provision and data gathering. Use of secure and exclusive entitlements as a management tool for DSF should be consistent with international law and involve existing RFMOs/As. Disincentives (e.g. taxes, fines) could also be introduced. The selection of incentives/disincentives requires a case-by-case approach. In addition, market-based measures (ecolabeling, certification programs) should be considered to encourage improved fishery management.

Effectiveness

14. In considering the utilization of the management tools examined in section 6D and 6E, States and RFMO/As should recognise that the potential effectiveness of each of them may vary and that it may be necessary to adopt a combination of tools to ensure the best results. The following paragraphs should be seen as guidance in considering the different degrees of effectiveness of different management tools in regard to target species, non-target species, habitats and biodiversity.

Target species

15. Different gears have different potential effects on target species. Size selectivity could be higher in long-line, gillnet/tangle and trap fisheries than in trawl fisheries. This would lead to higher discard rates of undersize target species in trawl fisheries. As the potential catch per fishing operation is higher in trawl fisheries than with the other gears, it would be easier to deplete limited concentrations of target species with trawls. A disadvantage of both long-lines and static nets is a high rate of catch being affected by seabed scavengers, leading to deterioration of fish that have been caught but not yet hauled

onto deck, thus potentially affecting the economic viability of the fishery. Gillnets are easily damaged and lost when used in deep water on rough grounds and may ghost fishing.

16. In order to achieve sustainable use and protection of target species, effort should be kept low until sufficient information has been collected on the productivity of the target and bycatch species, as well as the spatial distribution of vulnerable habitat and biodiversity features. Some form of effective and restrictive effort control is almost essential, particularly for experimental, exploratory and established fisheries, to ensure that the fishery does not expand so rapidly that sustainable exploitation rates are exceeded, and the target species depleted.

17. Catch controls can promote sustainable use and protect target species even if they form very dense aggregations but only if there is sufficient information to estimate stock status and productivity, if the limits are precautionary and account for uncertainties, and if there is effective compliance.

18. Spatial and temporal measures are especially effective in protecting target species of low mobility, aggregations of the target species at spawning times, feeding or nursery grounds, and potentially enhancing the recovery of target species.

Non-target species

19. In management of DSF, the following factors should be taken fully into account:

i) gears differ in their take of non-target species, dependent partly on the area fished and fishing practices;

ii) species selectivity of trawls may be low relative to other gear types;

iii) albatrosses and petrels (in their range of distribution) may collide lethally with trawl warps and net lines;

iv) long-lines may be damaging to seabird populations due to bycatch; and

v) gillnets are easily damaged and lost when used in deep water on rough grounds and may ghost fish.

20. Effort controls can be expected to contribute to protection of non-target species of the fishery whenever the biological productivity of the non-target species is similar to or higher than the target species in the fishery, but effort limits are not sufficient to protect non-target species of lower productivity than the target species. Both generalizations depend on the relative catchability of the target and non-target species, including the spatial overlap of their distributions and aggregation behaviour.

21. Catch controls can be expected to contribute to the protection of non-target species if “bycatch quotas” are used to restrict fisheries, and closures implemented when the bycatch allocation are fully taken, even if quotas of the target species remain uncaught.

22. Spatial and temporal management measures (MPAs or closures) also protect bycatch species and can provide further protection when bycatch species are more vulnerable to overexploitation than the target species or are poorly known.

Habitats

23. Trawl gears can have a relatively high seabed impact. Due to gear damage, trawlers normally attempt to avoid fishing in habitats with many structural features such as reefs and boulders. Long-line and traps can be deployed in areas where trawling cannot take place and have a lesser impact on the seabed. However, repeated operation of these gears in habitats with low recoverability (e.g. coral reefs), which will lead to degradation over time, should be avoided.

24. Effort and catch controls provide no direct protection to habitat features, beyond restricting the total amount of fishing that will occur in an area.

25. Spatial and temporal management measures should protect habitats by excluding fishing or specific gear types in areas they affect including important and vulnerable features of benthic habitats, even if they may displace fishing effort to other areas.

Biodiversity

26. Gear and effort limitation can provide some protection to those biodiversity components that are as productive as or more productive than the target species, but by themselves do not ensure that structural and functional properties of ecosystems are protected, particularly when key trophic roles such as dominant predators are occupied by species of low productivity and high catchability.

27. Except for special cases such as those described in paragraphs 20 and 21 of this Annex, effort and catch controls provide no direct protection to general biodiversity, beyond restricting the total amount of fishing that will occur in an area.

28. Spatial and temporal management measures can protect components of ecosystems: areas that are closed to fishing will gain from protection of species abundance and richness, population structure, and genetic and habitat diversity. Given the paucity of species-specific information for most DSF habitats, spatial management measures may be necessary to protect biodiversity in a region.