

September 2008



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

**This document is the Final Version of the International Guidelines as
adopted by the Technical Consultation on August 29th 2008.**

International Guidelines for the Management of Deep-sea Fisheries in the High Seas¹

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¹ Annex F of the Report of the Technical Consultation on International Guidelines for the Management of Deep-sea Fisheries in the High Seas. Rome, 4–8 February and 25–29 August 2008.

ACRONYMS AND ABBREVIATIONS

COFI	FAO Committee on Fisheries
Compliance Agreement	Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas
DSFs	Deep-sea fisheries (as defined by paragraph 8)
EAF	Ecosystem Approach to Fisheries
FAO	Food and Agriculture Organization of the United Nations
IPOA	FAO International Plan of Action
IUU	Illegal, unreported and unregulated fishing
MCS	Monitoring, control and surveillance
RFMO/As	Regional fisheries management organizations and arrangements
NGO	Non-governmental organization
The Code	1995 FAO Code of Conduct for Responsible Fisheries
UNGA	United Nations General Assembly
VME	Vulnerable marine ecosystem
VMS	Vessel monitoring systems
1982 UN Convention	United Nations Convention on the Law of the Sea Of 10 December 1982
1995 UN Fish Stocks Agreement	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 Committee on Fisheries (COFI) of the Food and Agriculture Organization of the United Nations (FAO), at its twenty-seventh session (March 2007), in order to assist States and regional fisheries management organizations and arrangements (RFMO/As) in sustainably managing deep-sea fisheries and in implementing the United Nations General Assembly (UNGA) Resolution 61/105, paragraphs 76-95, concerning responsible fisheries in the marine ecosystem.

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, 21 to 23 November 2006), which provided important inputs, successive steps to develop the Guidelines were as follows: (i) an Expert Consultation (Bangkok, Thailand, 11 to 14 September 2007), to proceed to an initial and technical review of a first draft of the Guidelines and (ii) a Technical Consultation held in February and August 2008, to discuss the Guidelines from a policy perspective and finalize the document.

4. Workshops on Vulnerable Ecosystems and Destructive Fishing in Deep-sea Fisheries (Rome, Italy, 26 to 29 June 2007) and on Data and Knowledge in 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. These Guidelines have been developed for fisheries exploiting deep-sea fish stocks, in a targeted or incidental manner, in areas beyond national jurisdiction, including fisheries with the potential to have significant adverse impacts on vulnerable marine ecosystems (VMEs).

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

7. 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 of 10 December 1982 (1982 UN Convention)². Nothing in these Guidelines prejudices the rights, jurisdiction and duties of States under international law as reflected in the Convention.

2 SCOPE AND PRINCIPLES

8. These Guidelines have been developed for fisheries that occur in areas beyond 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

² References in these guidelines to the 1982 UN Convention, the 1995 UN Fish Stocks Agreement and other international treaties do not prejudice the position of any State with respect to signature, ratification or accession to those instruments.

- ii. the fishing gear is likely to contact the seafloor during the normal course of fishing operations.

States and RFMO/As should consider, as appropriate, the application of elements of these Guidelines to similar fisheries in areas beyond national jurisdiction, including those targeting medium productivity species.

9. For the purpose of these Guidelines, the fisheries described in paragraph 8 shall be referred to as “deep-sea fisheries” (DSFs).

10. Coastal States may apply these Guidelines within their national jurisdiction, as appropriate.

11. The main objectives of the management of DSFs are to promote responsible fisheries that provide economic opportunities while ensuring the conservation of marine living 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.

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

- i. adopt and implement measures:
 - in accordance with the precautionary approach, as reflected in Article 6 of the 1995 UN Fish Stock Agreement and set out in Article 6.5 and 7.5 of the 1995 FAO Code of Conduct for Responsible Fisheries (the Code);
 - in accordance with an ecosystem approach to fisheries (EAF);
 - in conformity with the relevant rules of international law, in particular as reflected in the 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.

3 DESCRIPTION OF KEY CONCEPTS

3.1 Characteristics of species exploited by deep-sea fisheries

13. Many marine living resources exploited by DSFs in the high seas have biological characteristics that create specific challenges for their sustainable utilization and exploitation. These include: (i) maturation at relatively old ages; (ii) slow growth; (iii) long life expectancies; (iv) low natural mortality rates; (v) intermittent recruitment of successful year classes; and (vi) spawning that may not occur every year. As a result, many deep-sea marine living resources have low productivity and are only able to sustain 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 DSFs 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 subject to greater uncertainty.

3.2 Vulnerable marine ecosystems

14. Vulnerability is related to the likelihood that a population, community, or habitat will experience substantial alteration from short-term or chronic disturbance, and 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. VME features may be physically or functionally fragile.

The most vulnerable ecosystems are those that are both easily disturbed and very slow to recover, or may never recover.

15. The vulnerability of populations, communities and habitats must be assessed relative to specific threats. Some features, particularly those 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.

16. 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.

3.3 Significant adverse impacts

17. Significant adverse impacts are those that compromise ecosystem integrity (i.e. ecosystem structure or function) in a manner that: (i) impairs the ability of affected populations to replace themselves; (ii) degrades the long-term natural productivity of habitats; or (iii) 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.

18. 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 of its life-history stages.

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

20. In determining whether an impact is temporary, both the duration and the frequency at which an impact is repeated should be considered. If the interval between the 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 RFMO/As should apply the precautionary approach in their determinations regarding the nature and duration of impacts.

4 GOVERNANCE AND MANAGEMENT

4.1 General management considerations

21. In addition to the considerations in paragraph 12, States and RFMO/As should also recognise the need, in managing DSFs, to do so in a manner consistent with the Code and the general principles set forth in the 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 (1995 UN Fish Stocks Agreement) and to, *inter alia*:

- 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 that these ecosystems 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 DSFs on the best scientific and technical information available taking into account fishers 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 overcapacity, overfishing and illegal, unreported, and unregulated (IUU) fishing, in accordance with the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA – IUU) and the International Plan of Action for the Management of Fishing Capacity (IPOA – Capacity) ; and
- viii. ensure transparency and public dissemination of information, in accordance with appropriate standards for confidentiality, as well as enable participation of relevant stakeholders.

22. States and RFMO/As should ensure that measures for the sustainable conservation and management of DSFs, the prevention of significant adverse impacts on VMEs and protection of the marine biodiversity that these ecosystems contain are adopted and implemented consistent with the precautionary approach.

23. DSFs 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 DSFs 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 increase.

4.2 Governance framework

24. 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 11.

25. Nothing in these Guidelines pertaining to the management of DSFs in the high seas above the continental shelf 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 1982 UN Convention.

26. States should establish and implement national policy, legal and institutional frameworks for the effective management of DSFs, including the prevention of significant adverse impacts on VMEs and in order to be able to implement measures agreed by RFMO/As in which they participate.

27. States should strengthen existing RFMO/As which have the competence to manage and regulate DSFs and their impacts on VMEs, including through incorporating established principles of relevant international law and related instruments into the mandates of such organizations or arrangements.

28. Where no such organization or arrangement exists, States should urgently cooperate to establish new RFMO/As, where necessary and appropriate, with the competence to manage and regulate DSFs and their impacts on VMEs. Prior to the establishment of such a new RFMO/A, States participating in the negotiations should cooperate to adopt and implement interim conservation and management measures to ensure sustainable management of DSFs in the long-term and to prevent significant adverse impacts on VMEs, taking full account of these Guidelines.

29. RFMO/As should develop mechanisms for communication, cooperation and coordination among themselves, as well as with relevant international organizations and scientific bodies.

5 MANAGEMENT AND CONSERVATION STEPS

5.1 Data, reporting and assessment

30. States, RFMO/As and FAO should implement these Guidelines in accordance with their relevant protocols governing data confidentiality.

Data collection and reporting

31. States and RFMO/As should, where necessary, develop, adopt and publish standardized and consistent data collection procedures and protocols, including standardized logbooks and survey methodologies.

32. Data collection programmes developed by States and competent RFMO/As should cover all stages of fishery development and should include, as far as practicable, data on historical stages of the fishery or on past fisheries in the area. Sufficiently fine-scaled data are required as a basis for the assessment of stock status and impacts on VMEs. In addition, fishery-independent research surveys are encouraged, in particular to provide relevant information on VMEs and how they are affected by anthropogenic activities.

33. Data collection programmes should also include socio-economic surveys on, *inter alia*, catches, value of landings and employment in the harvesting and processing sectors in DSFs, in order to facilitate analyses such as value-added and multiplier impacts on investment and employment as well as economic impacts of regulatory measures. Guidelines for the collection of such data should be developed.

34. Where a RFMO/A exists, States should submit the data they collect on DSFs to that RFMO/A at the appropriate resolution for stock assessment and evaluation of impacts of fisheries on VMEs, which in turn should submit aggregated data to FAO. Where a RFMO/A does not exist, States should submit such data directly to FAO.

35. States individually, or collaboratively through RFMO/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.

36. 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.

37. States and RFMO/As should cooperate in international efforts to collate biogeographic information, including oceanographic parameters, and make use of this information, as appropriate, in their assessment and management of DSFs.

38. States and RFMO/As should specify, obtain and apply the information required for adaptive management to prevent significant adverse impacts on VMEs, including the use of indicators and benchmarks, where appropriate.

39. States and RFMO/As should ensure that data reporting and analysis is as transparent as possible to facilitate review of the effectiveness of management of DSFs and protection of VMEs.

Stock assessment

40. Appropriate monitoring and assessment techniques are needed to reliably determine the status of stocks of low-productivity species which possess the characteristics described in paragraph 13 of these Guidelines. In light of data limitations regarding many deep-sea species, lower cost or innovative methods based on simpler forms of monitoring and assessment need to be developed. Such techniques should quantify uncertainty in stock assessments, including that resulting from such data limitations and simplified approaches.

41. States and RFMO/As should, as appropriate, collaborate in assessing deep-sea stocks throughout their range of distribution.

5.2 Identifying vulnerable marine ecosystems and assessing significant adverse impacts

42. 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 similar areas or ecosystems. These include:
 - habitats that contain endemic species;
 - habitats of rare, threatened or endangered species that occur only in discrete areas; or
 - nurseries or discrete feeding, breeding, or spawning areas.
- ii. 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:
 - slow growth rates;
 - late age of maturity;
 - low or unpredictable recruitment; or
 - 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 potentially vulnerable species groups, communities and habitats, as well as features that potentially support them are contained in Annex 1.

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

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

45. 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.

46. When designating an ecosystem as vulnerable, habitats and ecosystems should be evaluated against the criteria presented in paragraph 42, individually or in combination, using the best available scientific and technical information. Characteristics should be weighted according to their relative contribution to an ecosystem's vulnerability.

47. 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. 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. data and methods used to identify, describe and assess the impacts of the activity, the 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; and
- 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.

48. Risk assessments referred to in paragraph 47 (vi) above should take into account, as appropriate, differing conditions prevailing in areas where DSFs are well established and in areas where DSFs have not taken place or only occur occasionally.

49. In conducting impact assessments, States and RFMO/As should consider, as appropriate, the information referred to in these Guidelines, as well as relevant information from similar or related fisheries, species and ecosystems. Notwithstanding paragraph 34, 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 DSFs that take place in areas where no competent RFMO/A is in place.

50. RFMO/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 multi-lateral body, including on whether the deep-sea fishing activity would have significant adverse impacts on VMEs and, if so, whether proposed or additional mitigation measures would prevent such impacts.

51. States, in accordance with domestic laws, and RFMO/As should make publicly available: (i) impact assessments as described in paragraph 47; (ii) existing and proposed conservation and management measures; and (iii) advice and recommendations provided by the appropriate RFMO/A scientific or technical committee, or other relevant body.

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

53. 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.

5.3 Enforcement and compliance

54. MCS frameworks should be developed and implemented as vital components for regional and national conservation and management measures for DSFs. States, both individually and cooperatively through RFMO/As, should work to implement effective MCS frameworks. States and RFMO/As should ensure compliance with conservation and management measures for DSFs through effective MCS programmes, which may include, *inter alia*, on-board observers, electronic monitoring and satellite-based vessel monitoring systems (VMS) in order to provide information on the location of fishing vessels engaged in DSFs, better assess fishing effort by gear, verify catch data, improve compliance with temporal and spatial management measures and provide sufficient evidence to document infractions. Such frameworks should ensure that all DSFs fishing operations are effectively monitored. States are encouraged to participate in the voluntary International Monitoring, Control and Surveillance Network for Fisheries-Related Activities.

55. National or international cooperative observer programmes should be implemented for all DSFs. Observer coverage for established fisheries, at levels adequate to ensure effective monitoring and assessment and in combination with other MCS tools, should be determined by RFMO/As with competence over those fisheries. Higher levels of coverage are required, in particular for experimental and exploratory stages of a fishery's development under a RFMO/A and for fisheries outside of a RFMO/A. In the latter case, levels of coverage should remain high until measures in place to manage these fisheries and prevent significant adverse impacts are evaluated and determined to be effective.

56. States should maintain and periodically update vessel registers or records to document changes in fleet characteristics. Registers or records of vessels authorised to fish should contain detailed information on each vessel including, at a minimum: length, tonnage, types of gear, and the areas, fisheries and species for which the vessels are authorized to fish, and whether the vessels are authorized for DSFs. Flag States should ensure that all vessels conducting DSFs have a permanent identification (such as an International Maritime Organization number).

57. States should submit vessel register or record data on at least an annual basis to RFMO/As, where applicable, or, for areas where RFMO/As do not exist, to FAO together with information on the measures they have adopted to regulate the activities of such vessels. RFMO/As and FAO should make such data and information publicly available by FAO Statistical Area.

58. States should adopt and implement national legislation and measures aimed at preventing, deterring and eliminating IUU fishing in DSFs, including using the IPOA – IUU, the 2005 FAO Model Scheme on Port State Measures to Combat Illegal, Unreported and Unregulated Fishing and other relevant instruments.

59. States and RFMO/As should cooperate to prevent, deter and eliminate IUU fishing in DSFs, and to take action related to IUU vessels and their listing.

60. States should adopt and implement, consistent with international law and in a transparent and non-discriminatory manner, trade-related measures, such as catch and trade documentation schemes, in order to:

- i. enhance their ability to identify vessels and their DSF catch harvested outside or in contravention of applicable conservation and management measures; and
- ii. adopt measures in respect of IUU vessels and catches from DSFs including, as appropriate, measures to prevent products from IUU DSFs from entering international trade.

States should actively promote wide international cooperation in order to attain such goals.

5.4 Management and conservation tools

61. 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.

62. States and RFMO/As should adopt specific conservation and management measures for all DSFs pursuant to these Guidelines. Where no competent RFMO/A exists, or where interim measures governing such fisheries have not been established, such measures should be developed and implemented by flag States.

63. Until a functioning regulatory framework is developed to prevent significant adverse impacts on VMEs and to ensure the long-term sustainability of DSFs, conservation and management measures should include, at a minimum:

- i. closing of areas to DSFs where VMEs are known or likely to occur, based on the best available scientific and technical information;
- ii. refraining from expanding the level or spatial extent of effort of vessels involved in DSFs; and
- iii. reducing the effort in specific fisheries, as necessary, to the nominal levels needed to provide information for assessing the fishery and obtaining relevant habitat and ecosystem information.

Such interim measures are without prejudice to future allocations and participatory rights in the fishery, in accordance with international law.

64. Comprehensive maps showing the spatial extent of existing fisheries should be compiled by RFMO/As. For areas not covered by RFMO/As, each flag State should develop such maps and cooperate with other States concerned and FAO in developing joint maps for relevant areas.

65. Precautionary conservation and management measures, including catch and effort controls, are essential during the exploratory phase of a DSF, and should be a major component of the management of an established DSF. They should include measures to manage the impact of the fishery on low-productivity species, non-target species and sensitive habitat features. Implementation of a precautionary approach to sustainable exploitation of DSFs should include the following measures:

- i. precautionary effort limits, particularly where reliable assessments of sustainable exploitation rates of target and main by-catch species are not available;
- ii. precautionary measures, including precautionary spatial catch limits where appropriate, to prevent serial depletion of low-productivity stocks;
- iii. regular review of appropriate indices of stock status and revision downwards of the limits listed above when significant declines are detected;
- iv. measures to prevent significant adverse impacts on vulnerable marine ecosystems; and
- v. comprehensive monitoring of all fishing effort, capture of all species and interactions with VMEs.

66. In areas where VMEs have been designated, or are known or likely to occur, based on seabed surveys and mapping or other best available information, States and RFMO/As should close such areas to DSFs until appropriate conservation and management measures have been established to prevent significant adverse impacts on VMEs and ensure long-term conservation and sustainable use of deep-sea fish stocks, in accordance with Section 5.2.

67. States and RFMO/As should have an appropriate protocol identified in advance for how fishing vessels in DSFs should respond to encounters in the course of fishing operations with a VME, including defining what constitutes evidence of an encounter. Such protocol should ensure that States require vessels flying their flag to cease DSFs fishing activities at the site and report the encounter, including the location and any available information on the type of ecosystem encountered, to the relevant RFMO/A and flag State.

68. In designing such protocols and defining what constitutes an encounter, States and RFMO/As should take into account best available information from detailed seabed surveys and mapping, other relevant information available for the site or area, and other conservation and management measures that have been adopted to protect VMEs pursuant to paragraphs 70 and 71.

69. States and RFMO/As should, in light of reports (as referred to in paragraph 67), and in accordance with developed protocols and Section 5.2, adopt or modify management measures, appropriate for the DSF concerned, in regard to the relevant site or area to prevent significant adverse impacts on the VME.

70. States and RFMO/As should, based on the results of assessments carried out pursuant to Section 5.2, adopt conservation and management measures to achieve long-term conservation and sustainable use of deep-sea fish stocks, ensure adequate protection and prevent significant adverse impacts on VMEs. These measures should be developed on a case-by-case basis and take into account the distribution ranges of the ecosystems concerned.

71. Conservation and management measures pursuant to paragraph 70, may include:

- i. effort controls and/or catch controls;
- ii. temporal and spatial restrictions or closures;
- iii. changes in gear design and/or deployment or operational measures (as discussed in the 2006 Bangkok Expert Consultation), including,
 - reduction of contact between the fishing gear and the seabed,
 - use of effective bycatch reduction devices, and
 - use of technical measures to eliminate or minimize ghost fishing; or
- iv. other relevant measures necessary to achieve the objective of paragraph 70.

The performance of each measure depends on many factors related to the particular fishery, ecosystem, and how these measures are implemented. Management measures for DSFs, where applicable, should take account of appropriate biological reference points. Such measures should be

accompanied by an effective set of MCS measures sufficient to ensure compliance with agreed measures.

72. Some of the above management measures for DSFs, such as effort, catch and temporal controls, may be limited in their effectiveness for the protection of some types of VMEs. Effective protection of such VMEs will usually require complementary measures, such as gear restrictions and spatial controls, as appropriate.

73. States and RFMO/As should assess, on the basis of the best available scientific and technical information, whether DSFs activities would have significant adverse impacts on VMEs. They should ensure that these activities are managed to prevent such impacts or not authorized to proceed, if it is assessed, in accordance with Section 5.2 of these Guidelines, that they would have significant adverse impacts.

74. If after assessing all available scientific and technical information, the presence of VMEs or the likelihood that individual DSFs activities would cause significant adverse impacts on VMEs cannot be adequately determined, States should only authorize individual DSFs activities to proceed in accordance with:

- i. precautionary conservation and management measures to prevent significant adverse impacts as described in paragraph 65;
- ii. a protocol for encounters with VMEs consistent with paragraphs 67-69; and
- iii. measures, including ongoing scientific research, monitoring and data collection, to reduce uncertainty.

Fishery management plans

75. States and RFMO/As should develop and adopt fishery management plans for specific DSFs, including a set of measures with defined long-term/multi-annual management objectives. Such plans should be tailored on a case-by-case basis to the characteristics of each fishery, making use of relevant management tools and consistent with paragraphs 11, 12, 21, and 22, and other relevant provisions of these Guidelines.

76. Fishery management plans for DSFs should include biological reference points set at levels that ensure, at a minimum, that fish stocks are harvested at levels that are sustainable in the long term. Appropriate biological reference points for stock assessment and management need to be set in a precautionary manner and determined on a case-by-case basis, taking into account the different target stocks, fishery characteristics, and the state of knowledge about the species and fishery.

77. In general, for low-productivity species, fishing mortality should not exceed the estimated or inferred natural mortality. Sustainable management strategies that would be robust to uncertainties are likely to require low exploitation rates.

78. In developing or revising fisheries management plans, flag States and RFMO/As should consider relevant available information from similar or related fisheries, species and ecosystems. Appropriate procedures should be put in place to verify that fishery management plans achieve sustainable fisheries and protect VMEs and the marine biodiversity that these ecosystems contain.

79. States should develop and adopt fisheries management plans for DSFs, on the basis of a transparent, inclusive and participatory process, consistent with national law. States should make such plans publicly available. RFMO/As should also develop and adopt their fishery management plans for DSFs using a transparent process.

80. States should encourage dialogue and collaboration with responsible DSF operators in the development of fishery management plans, recognising the value of industry information and

experience in resource assessment and fisheries management, identification of VMEs, responsible fishing techniques, gear development, and implementation methods to avoid or mitigate significant adverse impacts on VMEs.

5.5 Assessment and review of effectiveness of measures

81. States and RFMO/As should establish a transparent system for regular monitoring of the implementation of fishery management plans as well as conservation and management measures. Using information obtained from such a system, together with the best available scientific and technical information, the effectiveness of such plans and measures should be reviewed and assessed for the purpose of making adjustments as necessary. This adaptive management should form an integral part of the management plans for DSFs.

82. States and RFMO/As should regularly review the accumulating scientific information on deep-sea fish stocks, known or likely location of VMEs and the impacts of DSFs on VMEs and the marine biodiversity that these ecosystems contain. Where important uncertainties are identified, practical measures to reduce them should be pursued.

83. States and RFMO/As should ensure regular and independent reviews of the data and impact assessments, as well as the effectiveness of conservation and management measures for DSFs and other issues, as appropriate.

6 SPECIAL REQUIREMENTS OF DEVELOPING COUNTRIES

84. In the implementation of these Guidelines, States and RFMO/As should fully recognize the special requirements of developing countries, in relation to management of DSFs and the protection of VMEs. To this end States, RFMO/As, the United Nations system, including FAO, the United Nations Development Programme, and other relevant inter-governmental and non-governmental organizations, and financial institutions should assist developing countries in implementing these Guidelines and the actions called for in paragraphs 83-91 of UNGA Resolution 61/105, taking into account the forms of cooperation as set out in Article 5 of the Code, Article 24 and 25 of the 1995 UN Fish Stocks Agreement, and Chapter XI of UNGA Resolution 62/177 concerning capacity building.

85. In implementing these Guidelines, consideration should be given to address the needs of developing countries, including in the specific areas of financial and technical assistance, technology transfer, training and scientific cooperation, particularly in the early stages of the fishery, and in enhancing their ability to develop and manage their own DSFs, as well as to participate in high seas fisheries, including access to such fisheries, in conformity with international law and Article 5 of the Code.

7 ADDITIONAL CONSIDERATIONS ON IMPLEMENTATION

86. States and RFMO/As should collaborate through FAO 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.

87. Pursuant to UNGA Resolution 61/105 and the agreement reached at the twenty-seventh session of COFI, States and RFMO/As should provide appropriate assistance and support for FAO to develop a global database on VMEs in areas beyond national jurisdiction, in cooperation with other relevant organizations.

88. FAO should, based on biennial reports from States and RFMO/As, review the progress made in the implementation of these Guidelines.

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

ANNEX 1 EXAMPLES OF POTENTIALLY VULNERABLE SPECIES GROUPS, COMMUNITIES AND HABITATS, AS WELL AS FEATURES THAT POTENTIALLY SUPPORT THEM

The following examples of species groups, communities, habitats and features often display characteristics consistent with possible VMEs. Merely detecting the presence of an element itself is not sufficient to identify a VME. That identification should be made on a case-by-case basis through application of relevant provisions of these Guidelines, particularly Sections 3.2 and 5.2.

Examples of species groups, communities and habitat forming species that are documented or considered sensitive and potentially vulnerable to DSFs in the high-seas, and which may contribute to forming VMEs:

- i. certain coldwater corals and hydroids, e.g. reef builders and coral forest including: stony corals (Scleractinia), alcyonaceans and gorgonians (Octocorallia), black corals (Antipatharia) and hydrocorals (Stylasteridae);
- ii. some types of sponge dominated communities;
- iii. communities composed of dense emergent fauna where large sessile protozoans (xenophyphores) and invertebrates (e.g. hydroids and bryozoans) form an important structural component of habitat; and
- iv. seep and vent communities comprised of invertebrate and microbial species found nowhere else (i.e. endemic).

Examples of topographical, hydrophysical or geological features, including fragile geological structures, that potentially support the species groups or communities, referred to above:

- i. submerged edges and slopes (e.g. corals and sponges);
- ii. summits and flanks of seamounts, guyots, banks, knolls, and hills (e.g. corals, sponges, xenophyphores);
- iii. canyons and trenches (e.g. burrowed clay outcrops, corals);
- iv. hydrothermal vents (e.g. microbial communities and endemic invertebrates); and
- v. cold seeps (e.g. mud volcanoes for microbes, hard substrates for sessile invertebrates).