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MARINE AND COASTAL BIOLOGICAL DIVERSITY

Options for preventing and mitigating the impacts of some activities to selected seabed habitats, and ecological criteria and biogeographic classification systems for marine areas in need of protection

Note by the Executive Secretary

EXECUTIVE SUMMARY

The present note was prepared in response to paragraph 7 of decision VIII/21 (Marine and coastal biological diversity: conservation and sustainable use of deep seabed genetic resources beyond the limits of national jurisdiction) and paragraphs 44 (b) and 46 of decision VIII/24 (under the section "Options for cooperation for the establishment of marine protected areas in marine areas beyond the limits of national jurisdiction"). These decisions requested the Executive Secretary: (i) in collaboration with the United Nations Division for Ocean Affairs and the Law of the Sea (UNDOALOS) to further analyse and explore options for preventing and mitigating the impacts of some activities to selected seabed habitats, and (ii) to organize an expert workshop on ecological criteria and biogeographic classification systems for marine areas in need of protection.

Options for preventing and mitigating the impacts of human activities particularly on hydrothermal vent, cold-seep, seamount, cold-water coral and sponge reef ecosystems, each of which contains high levels of endemism and biodiversity, are described and further analysed in section II C of the note, including: (i) codes of conduct, guidelines and principles; (ii) permits and environmental impact assessments; (iii) area-based management of uses, including through the establishment of marine protected areas, and management measures developed by regional fisheries management organizations; and (iv) ecosystem-based and integrated management approach.

With regard to the ecological criteria and biogeographic classification systems for marine areas in need of protection beyond the limits of national jurisdiction, the Expert Workshop on Ecological Criteria and Biogeographic Classification Systems for Marine Areas in Need of Protection developed:

(a) A consolidated set of scientific criteria for identifying ecologically or biologically significant marine areas in need of protection, in open ocean waters and deep sea habitats, consisting of seven criteria:

* UNEP/CBD/SBSTTA/13/1.

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(i) Uniqueness or rarity;

(ii) Special importance for life history stages of species;

(iii) Importance for threatened, endangered or declining species and/or habitats;

(iv) Vulnerability, fragility, sensitivity or slow recovery;

(v) Biological productivity;

(vi) Biological diversity; and

(vii) Naturalness; and

(b) A consolidated set of scientific criteria for representative networks of marine protected areas, including in open ocean waters and deep-sea habitats, consisting of five criteria:

(i) Ecologically and biologically significant areas;

(ii) Representativity;

(iii) Connectivity;

(iv) Replicated ecological features; and

(v) Adequate and viable sites.

The Expert Workshop described also four initial steps to be taken in the development of such networks. The Expert Workshop reviewed biogeographical and ecological classification systems for delineating ocean regions and ecosystems, including the preliminary result of the Scientific Experts' Workshop on Biogeographic Classification Systems in Open Ocean and Deep Seabed Areas beyond National Jurisdiction, held from 22 to 24 January 2007, in Mexico City, and put forward recommendations for further work.

SUGGESTED RECOMMENDATIONS

1. The Subsidiary Body on Scientific, Technical and Technological Advice may wish to:

(a) *Invite* the Scientific Experts' Workshop on Biogeographic Classification Systems in Open Ocean and Deep Seabed Areas Beyond National Jurisdiction, held from 22 to 24 January 2007, in Mexico City to complete the Global Open Oceans and Deep Sea-habitats bioregionalization (GOODS bioregionalization) and make its workshop report available at the ninth meeting of the Conference of the Parties;

(b) *Request* the Executive Secretary, in collaboration with relevant organizations and experts, to further develop principles for the global bioregionalization of ocean regions, building upon principles developed by the Expert Workshop and listed in annex III to this note, and submit them to the Conference of the Parties at its ninth meeting, and to compile information on aligning and nesting regional and subregional bioregionalizations, which are currently available or under development, within a global context, and make the information available at future meetings of the SBSTTA.

2. The Subsidiary Body on Scientific, Technical and Technological Advice may also wish to recommend that the Conference of the Parties at its ninth meeting:

Options for preventing and mitigating the impacts of some activities to selected seabed habitats in areas beyond the limits of national jurisdiction

(a) *Welcome* the synthesis and review of the best available scientific studies on priority areas for biodiversity conservation in marine areas beyond the limits of national jurisdiction, **1**/ and r*equest* the Executive Secretary to disseminate the synthesis as widely as possible, as a contribution to the work of the General Assembly with regard to marine protected areas beyond the limits of national jurisdiction, and, in collaboration with relevant organizations and experts, to compile and synthesize available scientific information on ocean acidification and its impacts on marine biodiversity, which is identified as a potentially serious threat to cold-water corals and other deep-water biodiversity in the synthesis, and make such information available at future meetings of SBSTTA prior to the tenth meeting of the Conference of the Parties;

(b) *Welcome* the review of spatial databases containing information on marine areas beyond the limits of national jurisdiction and the development of an Interactive Map (IMap), 2/ which was prepared in collaboration with the United Nations Environment Programme - World Conservation Monitoring Centre (UNEP - WCMC), and *request* the Executive Secretary, in collaboration with the UNEP – WCMC, International Maritime Organization and other relevant organizations, to promote wide use of Interactive Map (IMap), including its integration into nautical charts and the World Database on Protected Areas, and continue to update relevant information and enhance its functions through developing linkages with ongoing research initiatives;

(c) *Take note of* the various options, 3/ which are being applied and/or under development to prevent and mitigate the adverse impacts of human activities to selected seabed habitats, including:

(i) Codes of conduct, guidelines and principles;

(ii) Permits and environmental impact assessments;

(iii) Area-based management of uses, including through the establishment of marine protected areas, and management measures developed by regional fisheries management organizations; and

(iv) Ecosystem-based and integrated management approach, and some lessons for their further application;

(d) *Invite* Parties, other Governments and relevant organizations, including, *inter alia*, regional fisheries management organizations and regional seas organizations, to cooperate in further developing and applying effective options for preventing and mitigating the adverse impacts of human activities to selected seabed habitats, and make available information on their experiences and case-studies on and lessons learned from developing and applying options, and *request* the Executive Secretary, in collaboration with relevant international and regional organizations, to compile and disseminate such information through the clearing-house mechanism and/or other means of communication;

Ecological criteria for marine areas in need of protection beyond the limits of national jurisdiction

(e) *Express its gratitude* to the Government of Portugal for hosting and providing financial support for the Expert Workshop on Ecological Criteria and Biogeographic Classification Systems for Marine Areas in Need of Protection, held from 2 to 4 October 2007, in the Azores, Portugal, and to other Governments and organizations for sponsoring the participation of their representatives;

1/ UNEP/CBD/SBSTTA/13/INF/11.

2/ UNEP/CBD/SBSTTA/13/INF/12.

3/ UNEP/CBD/SBSTTA/13/INF/13.

(f) *Endorse* scientific criteria for identifying ecologically or biologically significant marine areas in need of protection (annex II below), in open ocean waters and deep sea habitats, as well as for representative networks of marine protected areas (annex IV below), together with the four initial steps to be taken in the development of such networks (described in paragraph 28 of this note), as recommended by the Expert Workshop on Ecological Criteria and Biogeographic Classification Systems for Marine Areas in Need of Protection; and

(g) *Invite* Parties, other Governments and organizations, including, *inter alia*, regional seas organizations, to cooperate in applying the criteria, referred to in paragraph 12 below, in accordance with international law, including the United Nations Convention on the Law of the Sea.

I. INTRODUCTION

1. In its decision VIII/21, the Conference of the Parties noted that deep seabed ecosystems beyond the limits of national jurisdiction contain genetic resources of great interest for their biodiversity value and for scientific research, as well as for present and future sustainable development and commercial applications. In paragraph 7 of the same decision, the Conference of the Parties raised concerns about the present and emerging threats to deep seabed habitats beyond the limits of national jurisdiction, and requested the Executive Secretary, in collaboration with the United Nations Division for Ocean Affairs and the Law at Sea, and other relevant international organizations, to further analyse and explore options for preventing and mitigating the impacts of some activities on selected seabed habitats and report the findings to future meetings of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA).

2. In paragraph 44 (b) of decision VIII/24, the Conference of the Parties also requested the Executive Secretary to work actively with, and to take into account scientific information available from, the range of relevant expertise available in governmental, intergovernmental, non-governmental, regional and scientific institutions, expert scientific processes and workshops, and, indigenous and local communities, where appropriate, to refine, consolidate and, where necessary, develop further scientific and ecological criteria for the identification of marine areas in need of protection, and biogeographical and other ecological classification systems, drawing on expertise and experience at the national and regional scale. In this regard, the Conference of Parties decided to convene a scientific expert workshop, and requested the Executive Secretary to provide the results of this workshop to the SBSTTA prior to its ninth meeting, as well as to the Secretary-General of the United Nations for the purpose of informing the process under the General Assembly of the United Nations (paragraph 46 of decision VIII/24, under the section "Options for cooperation for the establishment of marine protected areas in marine areas beyond the limits of national jurisdiction").

3. In response to these requests, the Executive Secretary has: (a) prepared, in collaboration with the United Nations Division for Ocean Affairs and the Law of the Sea, an information document on the options for preventing and mitigating the impacts of some activities to selected seabed habitats (UNEP/CBD/SBSTTA/13/INF/13). Review comments were provided by a number of international organizations and experts in response to the notification dated 26 October 2007; and (b) organized an Expert Workshop on Ecological Criteria and Biogeographic Classification Systems for Marine Areas in Need of Protection, with financial support from the Government of Portugal, from 2 to 4 October 2007, in Azores, Portugal, with the terms of reference of the Workshop as described in annex II of decision VIII/24. The report of the workshop is contained in document UNEP/CBD/SBSTTA/13/INF/14.

4. The findings from information document UNEP/CBD/SBSTTA/13/INF/13 are summarized in section II of this note. Section III draws on the report of the above-mentioned Expert Workshop in Portugal. The present note takes into consideration comments submitted by Governments and organizations from 5 to 19 October, during which time the note was posted on the Convention website for peer review (notification 2007-113).

II. OPTIONS FOR PREVENTING AND MITIGATING THE IMPACTS OF SOME ACTIVITIES TO SELECTED SEABED HABITATS

A. Existing and potential threats to selected seabed habitats

5. Hydrothermal vent, cold-seep, seamount, and cold-water coral and sponge reef ecosystems were identified by the Conference of the Parties, at its eighth meeting (paragraph 1, decision VIII/21), as

important for their value as genetic resources of great interest for their biodiversity value and for scientific research as well as for present and future sustainable development and commercial applications. These habitats are also important for their: (i) high level of endemism, (ii) high diversity, (iii) potential to facilitate the understanding of evolution and global climate change, and (iv) vulnerability.

6. This section builds on the note by the Executive Secretary on the status and trends of, and threats to, deep seabed genetic resources beyond national jurisdiction, and identification of technical options for their conservation and sustainable use prepared for the eleventh meeting of SBSTTA (UNEP/CBD/SBSTTA/11/11). It also draws on findings of the information documents prepared by the Executive Secretary on synthesis and review of the best available scientific studies on priority areas for biodiversity conservation in marine areas beyond the limits of national jurisdiction (UNEP/CBD/SBSTTA/13/INF/11) and on options for preventing and mitigating impacts of some activities on selected seabed habitats (UNEP/CBD/SBSTTA/11/INF/13). These documents provide details on the global distribution, status and trends, ecological functioning, and value and importance of seabed habitats. Annex I to the present note summarizes the existing and potential threats to selected seabed habitats. There is clear evidence of detrimental human impacts to cold-water coral, sponge reef, hydrothermal vents, and seamounts, supporting the need for undertaking conservation action even if our scientific understanding of these ecosystems is still imperfect. Major existing and potential anthropogenic threats are posed by destructive fishing practices and illegal, unregulated and unreported (IUU) fishing, as well as mining, marine scientific research and bioprospecting with destructive impacts. Ocean acidification was identified as a potentially serious threat to cold-water corals and other deep water biodiversity.

B. Review of previous analysis of options for preventing and mitigating impacts to seabed habitats

7. The note by the Executive Secretary on the status and trends of, and threats to, deep seabed genetic resources beyond national jurisdiction, and identification of technical options for their conservation and sustainable use (UNEP/CBD/SBSTTA/11/11), prepared in response to paragraph 54 of decision VII/5 and considered by the eleventh meeting of SBSSTA and, subsequently, by the eighth meeting of the Conference of the Parties, leading to decision VIII/21, provides a technical description and policy framework for the options identified for protection of deep seabed genetic resources beyond the limits of national jurisdiction, including: (i) the use of codes of conduct, guidelines and principles; (ii) management of threats through permits and environmental impact assessments; and (iii) area-based management of uses, including through establishment of marine protected areas.

8. The fourth and fifth meetings of the United Nations Open-ended Informal Consultative Process on Oceans and Law of the Sea considered, *inter alia*, issues relating to the protection of vulnerable marine ecosystems and the conservation and management of the biological diversity of the seabed in areas beyond the limits of national jurisdiction (the reports of the meetings are contained in documents A/58/95 and A/59/122). The fifth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and Law of the Sea recommended that the United Nations General Assembly welcome decision VII/5 of the Conference of the Parties to the Convention on Biological Diversity. The United Nations General Assembly, at its fifty-ninth session, reaffirmed the need for States and competent international organizations to urgently consider ways to integrate and improve, on a scientific basis and in accordance with the United Nations Convention on the Law of the Sea and related agreements and instruments, the management of risks to the marine biodiversity of seamounts, cold-water corals, hydrothermal vents and certain other underwater features. At the fifty-ninth and sixty-first sessions of the United Nations General Assembly, States and international organizations were also called upon to urgently take action to address, in accordance with international law, destructive practices that have adverse impacts on marine biodiversity and ecosystems, including seamounts, hydrothermal vents and cold-water corals (resolution 59/24, paras. 68 and 70). In particular, in its sustainable fisheries resolution 61/105, the United Nations General Assembly called upon States and regional fisheries-management

organizations or arrangements to regulate bottom fisheries and prevent significant adverse impacts on vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold-water corals, by no later than 31 December 2008. These measures include a commitment to assess whether bottom-fishing activities would have significant adverse impacts on vulnerable marine ecosystems and then manage to prevent such impacts or not authorize fishing to proceed.

9. At its fifty-ninth session, the General Assembly also established the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. Delegations at the first meeting of the Working Group, in February 2006, reaffirmed that the United Nations Convention on the Law of the Sea (UNCLOS) sets out the legal framework for all activities in the oceans and seas and that any action relating to the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction should be consistent with its legal framework (A/61/65). Another meeting of the Working Group will be held in 2008 to discuss the issues listed in paragraph 91 of resolution 61/222.

C. Further analysis and exploration of options for preventing and mitigating impacts to seabed habitats

10. This section focuses on scientific and technical aspects of management options, which are being used and/or under development in preventing and mitigating impacts to seabed habitats arising from existing and potential uses. In particular, it builds upon the information provided in document the above-mentioned note by the Executive Secretary on the status and trends of, and threats to, deep seabed genetic resources beyond national jurisdiction, and identification of technical options for their conservation and sustainable use (UNEP/CBD/SBSTTA/11/11), bearing in mind the preliminary range of options noted by the Conference of the Parties to the Convention on Biological Diversity, including: (i) the use of codes of conduct, guidelines and principles, and (ii) reduction and management of threats, including through permits and environmental impact assessments, establishment of marine protected areas, prohibition of detrimental and destructive practices in vulnerable areas (decision VIII/21, paragraph 5). Annex I to the present note provides a summary of the analysis.

1. Codes of conduct, guidelines, and principles

11. Some activities can be managed by codes of conduct, guidelines, or principles in the absence of regulatory measures. Codes of conduct, guidelines, or principles are often developed by the industries or sectors concerned, such as in the case of marine scientific research, or by the international community, as in the case of the Code of Conduct for Responsible Fisheries of the Food and Agriculture Organization of the United Nations (FAO). Codes of conduct may also be used to enhance the implementation of an existing legal framework or used as self-regulatory measures, operationalizing relevant principles and guidelines. Annex I to this note describes some examples of codes of conduct currently in use or under development. There are also codes of conduct of potential application for high-end ship-borne tourism in the deep sea environment, which are currently directed at tourists (e.g., Code of Conduct for Arctic Tourists) or tourist operators (e.g., Code of Conduct for Tour Operators in the Arctic) on the Arctic or Antarctic continents.

12. Guidelines and principles underpin the guidance provided in codes of conduct. In marine areas beyond the limits of national jurisdiction, several international legal instruments 4/ provide guiding principles, such as on sustainable use of marine biodiversity/resources; equitable and efficient utilization of ocean resources and conservation and management of marine living resources; precautionary

4/ For example, the 1979 Convention on the Conservation of Migratory Species and Wild Animals (Bonn Convention); the 1982 the United Nations Convention on the Law of the Sea; the 1986 Convention for the Protection of the Natural Resources and Environment of the South Pacific Region and Related Protocols (Noumea Convention); the 1992 Convention on Biological Diversity; and the 1994 Agreement relating to Part XI of UNCLOS; 1995 Fish Stocks Agreement

approach; ecosystem approach; duty not to cause damage to the environment beyond the limits of national jurisdiction, including rare/fragile ecosystems; prior environmental impact assessment (EIA); transparency and accountability; stakeholder participation; and international cooperation. Noteworthy example includes the current initiatives by Food and Agriculture Organization of the United Nations to develop guidelines for deep-sea fisheries in the high seas.

13. The analysis, which is being circulated as an information document (UNEP/CBD/SBSTTA/13/INF/13), identifies some key elements for the successful application of code of conducts, including: (i) the provision of training, e.g., training provided by the Food and Agriculture Organization of the United Nations on the use of the Code of Conduct for Responsible Fisheries; (ii) the provision of job aids, e.g., the Micro-Organisms Sustainable Use and Access Regulation International Code of Conduct (MOSAICC) flowchart and sample forms; (iii) a clear statement of the benefits to be derived from the use of the code, e.g., benefit-sharing terms in the brochure of the MOSAICC; (iv) wide dissemination of the code among their target users; and (v) the participatory approach, as adopted in development of the InterRidge code for hydrothermal vent research and the MOSAICC.

2. Permits and environmental impact assessment

14. Permits are authorizations given to conduct a specific activity if it meets an established set of criteria as required by appropriate legal framework. Permit systems are among the techniques that work on the basis of cooperation, reciprocity, and mutual trust. The application of permit system in combination of environmental impact assessment can provide an effective way to address human activities with adverse impacts on seabed habitats. Certain international instruments already require environmental impact assessment before permitting a particular activity in marine areas, including: the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Convention) and its 1996 Protocol; the 1982 United Nations Convention on the Law of the Sea; the 1991 Antarctic Environment Protocol; the 1992 Convention on Biological Diversity; the 1994 Agreement relating to Part XI of United Nations Convention on the Law of the Sea; the 1995 Fish Stocks Agreement; the 2000 International Seabed Authority regulations for exploration and exploitation for polymetallic nodules in the Area; 5/ and the 2004 International Convention for the Control and Management of Ship's Ballast Water and Sediments.

15. Despite its widespread adoption within national jurisdiction, the usefulness and feasibility of environmental impact assessment in promoting biodiversity conservation remains to be further explored, particularly in marine areas beyond the limits of national jurisdiction. Habitat loss and fragmentation, the major threats to biodiversity, could possibly be addressed by a combination of environmental impact assessment and strategic environmental assessment. 6/ The Voluntary Guidelines on Biodiversity-Inclusive Environmental Impact Assessment (UNEP/CBD/COP/8/27/Add.2) are one of a few well-developed methods and guidelines in place. These guidelines describe the stages in the environmental impact assessment process and provide details on the biodiversity issues that may have to be addressed at each stage of the process. They also include an indicative set of criteria for further elaboration by nations and an indicative list of ecosystem services.

5/ "Area" means the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction (Article 1 of the UNCLOS).

6/ Strategic environmental assessment is the formalized, systematic and comprehensive process of identifying and evaluating the environmental consequences of proposed policies, plans or programmes to ensure that they are fully included and appropriately addressed at the earliest possible stage of decision-making on a par with economic and social considerations, while environmental impact assessment is a process of evaluating the likely environmental impacts of a proposed project or development (decision VI/7).

3. Area-based management tools, including establishment of marine protected areas

16. Area-based management of marine areas entails spatially dividing the marine environment for a variety of compatible uses and accounting for individual or cumulative stressors on the ecosystem. It accommodates various types of uses while controlling the adverse impacts of those uses on the marine environment and on the ecosystems and resources found therein. A number of regional seas conventions and action plans 7/ provide measures for area-based management of uses such as nature reserves, marine parks, and protected areas.

17. The information note by the Executive Secretary on options for preventing and mitigating impacts of some activities on selected seabed habitats (UNEP/CBD/SBSTTA/13/INF/13) lists a number of lessons drawn from experiences in marine protected areas within national jurisdiction, which may be applicable to the establishment of marine protected areas in areas beyond the limits of national jurisdiction. Among them, of particular concern are achieving compliance and enforcement of rules and regulations for marine protected areas, particularly those governing destructive fishing practices. Concerted efforts are thus required for: (i) addressing the economic drivers that make illegal, unreported, and unregulated (IUU) fishing attractive; (ii) reinforcing the duties of flag States; and (iii) strict vessel monitoring, control and enforcement. Likewise, in order to establish and implement marine protected areas using existing regional bodies, such as regional fisheries management organizations (RFMOs) and regional seas organizations, broadening of existing mandates and strengthening capacities of RFMOs and regional seas organizations as well as enhancing cooperation between RFMOs and regional seas organizations would be necessary, in particular regarding the application of an ecosystem approach to fisheries management.

18. The information note by the Executive Secretary on development of an interactive map (IMap) and review of spatial databases containing information on marine areas beyond the limits of national jurisdiction (UNEP/CBD/SBSTTA/13/INF/12) describes an interactive map (IMap) containing information on marine areas under the regional fisheries management organizations, regional seas conventions, and marine mammal sanctuaries. More detailed discussion and recommendations relevant to marine protected areas are provided in section III below.

4. Ecosystem-based and integrated management approaches

19. Ecosystem-based management aims to maintain the integrity of the ecosystem not only for its value in providing human needs and wants, but also for its intrinsic value. The Conference of the Parties to the Convention on Biological Diversity, at its fifth meeting, endorsed the description of the ecosystem approach 8/ and operational guidance, and recommended the application of the principles and other guidance on the ecosystem approach (decision V/6). The Conference of the Parties, at its seventh meeting, adopted additional guidelines to this effect (decision VII/11). SBSTTA, at its twelfth meeting, recommended that the Conference of the Parties, at its ninth meeting, further promote the use of the ecosystem approach in all sectors and enhance inter-sectoral cooperation, as well as promote the establishment of concrete national and/or regional initiatives and pilot projects (recommendation XII/1). The General Assembly, in resolution 61/222, invited States to consider the agreed consensual elements

7/ The 1940 Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere; the 1948 International Convention for the Regulation of Whaling; the 1968 African Convention on the Conservation of Nature and Natural Resources; the 1985 ASEAN Agreement on the Conservation of Nature and Natural Resources; the 1986 Convention for the Protection of the Natural Resources and Environment of the South Pacific Region; the 1990 Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region; the 1991 Antarctic Environment Protocol; the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic; and the 1995 Protocol Concerning Mediterranean Specially Protected Areas (SPA Protocol)

8/ The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (decision V/6).

relating to ecosystem approaches and oceans contained in the report of the seventh meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea in 2006 (document A/61/156), in particular, the proposed elements of an ecosystem approach, means to achieve implementation of an ecosystem approach and requirements for improved application of an ecosystem approach to ocean management (General Assembly resolution 61/222, para. 119).

20. The integrated management approach has been widely applied to the management of coastal areas. Key to integrated management is to build a management framework and processes that facilitate the involvement of relevant sectors and stakeholders in planning and implementation of management measures. Integrated management therefore further enhances existing sectoral management, by enhancing cross-sectoral and inter-agency coordination and synergies. Strengthening public appreciation of the value and contributions of organisms and ecosystems in marine areas beyond the limits of national jurisdiction will be essential to increasing engaged and empowered constituencies supportive of the conservation of seabed habitat in these areas. Existing and potential actors for the implementation of options for preventing and mitigating adverse impacts to seabed habitats are thus identified in annex I to this note.

III. ECOLOGICAL CRITERIA AND BIOGEOGRAPHIC CLASSIFICATION SYSTEMS FOR MARINE AREAS IN NEED OF PROTECTION

21. Pursuant to paragraph 46 of decision VIII/24, the Executive Secretary, with the generous financial support from the Government of Portugal, organized an Expert Workshop on Ecological Criteria and Biogeographic Classification Systems for Marine Areas in Need of Protection from 2 to 4 October 2007 in the Azores, Portugal.

A. A consolidated set of scientific criteria for identifying ecologically or biologically significant marine areas in need of protection, in open ocean waters and deep sea habitats

22. A consolidated set of scientific criteria for identifying ecologically or biologically significant marine areas in need of protection was developed, building upon previous work, as described in documents UNEP/CBD/COP/8/INF/16 (Protected areas: consideration of the recommendations of the Ad Hoc Open-ended Working Group on Protected Areas) and UNEP/CBD/COP/8/INF/39 (Report of the scientific experts' workshop on criteria for identifying ecologically or biologically significant areas beyond national jurisdiction, held in Ottawa from 6 to 8 December 2005). The set consists of seven criteria: (i) uniqueness or rarity, (ii) special importance for life history stages of species, (iii) importance for threatened, endangered or declining species and/or habitats, (iv) vulnerability, fragility, sensitivity or slow recovery, (v) biological productivity, (vi) biological diversity, and (vii) naturalness. The definition and rationale for each of these criteria are provided in annex II to this note. Additional details can be found in annex II to the report of the Expert Workshop on Ecological Criteria and Biogeographic Classification systems for marine areas in need of protection (UNEP/CBD/SBSTTA/13/INF/14).

B. Biogeographic and ecological classification systems for delineating ocean regions and ecosystems, including more detailed subregional classification systems and recommendations for further work 9/

23. In discussing the role of biogeographic and ecological classification systems for delineating ocean regions and ecosystems, the workshop adopted the use of the term "bioregionalization" to cover all existing systems for ease of communication. Participants in the Workshop considered biogeographic

9/ This section is a modification of annex IV of the report of the Expert Workshop on Ecological Criteria and Biogeographic Classification Systems for Marine Areas in Need of Protection, held from 2 to 4 October 2007, in Azores, Portugal.

classification and bioregionalization systems that are currently in use, under development or have been developed in the past, including several novel methods being undertaken at regional and sub-regional levels, and their outputs. 10/ They were also updated on the ongoing work on a Global Open Oceans and Deep Sea-habitats bioregionalization (GOODS bioregionalization) as an output from the Scientific Experts' Workshop on Biogeographic Classification Systems in Open Ocean and Deep Seabed Areas Beyond National Jurisdiction, held from 22 to 24 January 2007, in Mexico City (under the auspices of a joint expert effort under the co-sponsorship of the United Nations Educational, Scientific and Cultural Organization (UNESCO), its Intergovernmental Oceanographic Commission (IOC), IUCN, Australia, Canada, Mexico and the J.M. Kaplan Fund).

24. It was noted that: (a) a detailed paper on methodologies for the GOODS bioregionalization was required; (b) bioregionalizations at the global, regional and sub-regional levels are important as a key data layer in the identification and selection of components of a representative network of marine protected areas, including in open oceans and deep sea habitats; and (c) the Mexico City Workshop started developing a set of principles for the ongoing development and adoption of a global bioregionalization (see annex III to this note).

25. The following gaps in existing efforts were identified:

(a) Agreement on a unitary set of principles to underpin the ongoing development and adoption of a global bioregionalization;

(b) The need for further work to align and nest regional and sub-regional bioregionalizations, currently existing or under-development;

(c) A widely available mechanism to consolidate existing data, maps and coverage of bioregionalizations, biogeographic features, and geopolitical information;

(d) a broader understanding and dissemination of numerical classification methods at regional scales in relatively data rich regions;

(e) Consider the connectivity between the benthic and pelagic realms in a second step; and

(f) Wider adoption of emerging statistical prediction techniques for interpolating point biological data.

26. The participants in the Workshop therefore agreed:

(a) That there is an urgent need to complete the GOODS bioregionalization as one of the key base layers at the global level for the development of a representative network of marine protected areas beyond areas of national jurisdiction;

(b) To request that the GOODS Steering Committee make clear the date expected to deliver the final report and maps, and establish a clear process for delivery of products from the Mexico City Workshop;

(c) That the use of the global system allows more detailed sub-regional classification systems to be nested within any global system and utilized to provide greater understanding of biological patterns and processes at the regional and subregional level;

10/ Appendix A of Annex IV to the document UNEP/CBD/SBSTTA/13/INF/C provides a list of classifications that were considered in various level of detail.

(d) That the use of the global system be integrated effectively with biogeographic classification systems developed to cover areas within national jurisdictions; and

(e) To provide guidance in appendix 2 of annex IV to the report of the Expert Workshop on Ecological Criteria and Biogeographic Classification Systems for Marine Areas in Need of Protection (UNEP/CBD/SBSTTA/13/INF/13) to encourage an appropriate balance between scientific robustness and classification stability for management purposes.

C. Consolidated set of scientific criteria for representative networks of marine protected areas, including in open ocean waters and deep-sea habitats

27. The Workshop recognized that:

(a) Ecological and biological criteria are necessary in the identification and selection of areas to protect biological diversity of the open oceans and deep seas;

(b) Other criteria, such as social and economic ones, are likely also necessary, but were not considered by the Workshop;

(c) Effective protection of biological diversity in the open ocean and deep seas requires enhanced management throughout the marine environment; and

(d) Marine protected areas are a necessary component of such enhanced management, but the implementation of other management measures is also required.

28. The Workshop then recommended that the following four initial steps be taken in the development of representative networks of marine protected areas:

(a) *Scientific identification of an initial set of ecologically or biologically significant areas.* The criteria in annex IV of this note should be used, considering the best scientific information available, and applying the precautionary approach. This identification should focus on developing an initial set of sites already recognised for their ecological values, with the understanding that other sites could be added as more information becomes available;

(b) *Develop/choose a biogeographic, habitat, and/or community classification system.* This system should reflect the scale of the application and address the key ecological features within the area. This step will entail a separation of at least two realms –pelagic and benthic;

(c) *Drawing upon steps 1 and 2 above, iteratively use qualitative and/or quantitative techniques to identify sites to include in a network.* Their selection for consideration of enhanced management should reflect their recognised ecological importance or vulnerability, and address the requirements of ecological coherence through representativity, connectivity, and replication; and

(d) *Assess the adequacy and viability of the selected sites.* Consideration should be given to their size, shape, boundaries, buffering, and appropriateness of the site management regime.

Annex I

SUMMARY OF THREATS TO SELECTED SEABED HABITATS, AND OPTIONS AND RELEVANT ACTORS FOR PREVENTING AND MITIGATING IDENTIFIED THREATS

Existing and potential threats	Existing options	Options under development	Relevant actors
Hydrothermal vents			
Existing • Marine scientific research with destructive impacts • Bioprospecting *Potential* • Mining of polymetallic sulphide deposits associated with vent systems • Submarine-based marine tourism	• 2006 InterRidge statement of commitment to responsible research practices at deep sea hydrothermal vents • The Commitment to Responsible Marine Research of the Senate Commission on Oceanography of the German Research Foundation (DFG) and the German Marine Research Consortium (KDM) • CBD Voluntary guidelines on biodiversity-inclusive environmental impact assessment	• Code of conduct for marine protected areas in the Azores Triple Junction • International Seabed Authority (ISA) draft regulations on prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts in the Area 11/ • ISA exploration and mine site model to block selection for cobalt-rich ferromanganese crusts and polymetallic sulphides 12/ • OSPAR 13/ code of conduct for scientific research • FAO guidelines for deep-sea fisheries in the high seas	• Organizations undertaking marine scientific research, • Bioprospecting companies • High-end tourism operators and tourists • Deep sea mining companies • Energy development companies • Relevant UN organizations • Regional organizations including the regional seas organizations and regional fishery management organizations (RFMOs) • Developed and developing States • Environmental non-governmental organizations

11/ ISBA/10/C/WP.1Rev.1; ISBA/13/LTC/WP.1

12/ ISBA/12/C/3

13/ The Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention)

Existing and potential threats	Existing options	Options under development	Relevant actors
Cold Seeps			
Existing • Prospecting by the petroleum industry • Destructive fishing practices • Scientific investigation with destructive impacts *Potential* • Direct harvest of seepage minerals	• Code of Conduct for Responsible Fisheries (FAO 1995) and its relevant international plans of action • General Assembly resolution 61/105, on sustainable fisheries, paras. 83-91 • Voluntary guidelines on biodiversity-inclusive environmental impact assessment • Micro-organisms sustainable use and access regulation international code of conduct (MOSAICC) • Code of practice for ocean mining (IMMS 2002) • Management measures developed by regional fisheries management organizations or arrangements, e.g. the South Pacific RFMO and the Northwest Atlantic Fisheries Organizations • The Commitment to Responsible Marine Research of the Senate Commission on Oceanography of the German Research Foundation (DFG) and the German Marine Research Consortium (KDM) •	• ISA draft regulations on prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts in the Area • Management measures in line with General Assembly resolution 61/105, on sustainable fisheries, bottom fisheries measures, paras.83-86, to be developed by regional fisheries management organizations or arrangements and flag States • OSPAR code of conduct for scientific research • FAO guidelines for deep-sea fisheries in the high seas	• Oil and gas companies • Organizations undertaking marine scientific research • Biotechnology companies • Deep sea mining companies • Fishers • Relevant UN organization/s including the International Seabed Authority, • Regional organizations including the regional seas organizations and RFMOs • Flag States • Non-governmental environmental organizations • Developed and developing states
Seamounts			
Existing • Overexploitation of high seas fishing on seamounts • Destructive fishing practices • Mining of deep-water corals associated with seamounts for the jewellery trade *Potential* • Mining of ferromanganese oxide and polymetallic sulphides • Bioprospecting	• Code of Conduct for Responsible Fisheries (UN FAO 1995) and its relevant international plans of action • General Assembly resolution 61/105, on sustainable fisheries, paras. 83-91 • Management measures developed by regional fisheries management organizations and arrangements, including pursuant to General Assembly resolution 61/105, on sustainable fisheries, e.g. the South Pacific RFMO and the Northwest Atlantic Fisheries Organizations • Cooperative agreements or arrangements of mutual assistance on a global, regional, sub-regional or bilateral basis • Code of practice for ocean mining (International Marine Minerals Society	• ISA International Seabed Authority draft regulations on prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts in the Area • Management measures in line with General Assembly resolution 61/105, on sustainable fisheries, bottom fisheries measures, paras.83-86, to be developed by regional fisheries management	• Fishers • Deep sea mining companies • Relevant UN organization/s • Regional organizations, including the regional seas organizations and RFMOs • Flag States • Non-governmental environmental organizations • Developed and developing countries

Existing and potential threats	Existing options	Options under development	Relevant actors
• Possible exploitation of methane gas hydrates • Climate change	2002) Voluntary guidelines on biodiversity-inclusive environmental impact assessment • The Commitment to Responsible Marine Research of the Senate Commission on Oceanography of the German Research Foundation (DFG) and the German Marine Research Consortium (KDM)	organizations or arrangements and flag States • OSPAR code of conduct for scientific research • FAO guidelines for deep-sea fisheries in the high seas	
Cold- water coral and sponge reefs			
Existing • Destructive fishing practices *Potential* • Hydrocarbon drilling and seabed mining • Ocean acidification • Placement of pipelines and cables • Pollution • Research activities • Dumping	• Code of conduct for responsible fisheries (FAO 1995) and its relevant international plans of action • General Assembly resolution 61/105, on sustainable fisheries, paragraphs 83-91 • Management measures developed by regional fisheries management organizations and arrangements, including pursuant to the sustainable fisheries resolution UNGA 61 • Cooperative agreements or arrangements of mutual assistance on a global, regional, subregional or bilateral basis • IMO Code for the Construction and Equipment of Mobile Offshore Drilling Units, 1989 (MODU Code) • Environmental impact assessment and mitigation measures adopted by oil and gas companies as stated in environmental impact statements • Code of practice for marine scientific research in cold water corals 14/ • Voluntary guidelines on biodiversity-inclusive environmental impact assessment • Good and best practices for offshore oil and gas operations 15/ • The Commitment to Responsible Marine Research of the Senate Commission on Oceanography of the German Research Foundation (DFG) and the German Marine Research	• Management measures in line with UNGA 61 sustainable fisheries resolution and bottom fisheries measures (OP83-86) to be developed by regional fisheries management organizations or arrangements and Flag States • Technical annex to the draft OSPAR code of conduct for scientific research • FAO guidelines for deep-sea fisheries in the high seas	• Fishers • Scientific researchers and bioprospectors • Biotechnology companies • Oil and gas companies, and end users of oil and gas • Relevant UN organization/s, • Regional organizations, including the regional seas organizations and RFMOs • Flag States • Companies that use cables and pipelines • Environmental non-governmental organizations • Developed and developing countries

14/ Irish Department of the Environment, Heritage and Local Government 2006

15/ Energy and Biodiversity Initiative 2003

Existing and potential threats	Existing options	Options under development	Relevant actors
	Consortium (KDM)		

Annex II

SCIENTIFIC CRITERIA FOR IDENTIFYING ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS IN NEED OF PROTECTION, IN OPEN OCEAN WATERS AND DEEP-SEA HABITATS

Criteria	Definition	Rationale
Uniqueness or rarity	Areas containing either (i) unique ("the only one of its kind"), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features	These areas or species/population are irreplaceable, and their loss would mean the probable permanent disappearance of diversity/a feature or reduction of the diversity.
Special importance for life history stages of species	Areas required for a population to survive and thrive.	Various biotic and abiotic conditions coupled with species-specific physiological constraints and preferences tend to make some parts of marine regions more suitable to particular life-stages and functions than other parts.
Importance for threatened, endangered or declining species and/or habitats 16/	Areas (i) containing habitat(s) for the survival and recovery of endangered, threatened, declining species; or (ii) with significant assemblages of such species.	To ensure the restoration and recovery of such species and habitats.
Vulnerability, fragility, sensitivity or slow recovery	Areas containing a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.	The criteria indicate the degree of risk that will be incurred if human activities or natural events in the area or component cannot be managed effectively or are pursued at an unsustainable rate.
Biological productivity	Areas containing species, populations or communities with comparatively higher natural biological productivity.	Important role in increasing the growth rates of organisms and their capacity for reproduction, and providing surplus production to adjacent areas
Biological diversity	Areas (i) containing comparatively higher diversity of ecosystems, habitats, communities, or species, or (ii) with higher genetic diversity.	Important for evolution and maintaining the resilience of marine species and ecosystems
Naturalness	Areas with comparatively higher degree of naturalness as a result of the lack of, or low level of, human-induced disturbance or degradation.	Natural areas can be used as reference sites and will likely safeguard and enhance ecosystem resilience

16/ "Declining" defined accordingly with the OSPAR criteria.

Annex III

INITIAL SET OF PRINCIPLES FOR THE DEVELOPMENT AND ADOPTION OF A GLOBAL BIOREGIONALIZATION OF OCEANS DEVELOPED AT THE SCIENTIFIC EXPERTS' WORKSHOP ON BIOGEOGRAPHIC CLASSIFICATION SYSTEMS IN OPEN OCEAN AND DEEP SEABED AREAS BEYOND NATIONAL JURISDICTION (HELD IN MEXICO CITY FROM 22 TO 24 JANUARY 2007)

Overall:

- Approach benthic and pelagic systems separately;
- Use the province level;
- Try to reflect processes not just patterns; and
- Nest systems hierarchically

With regard to the pelagic realm:

- Use flexible and dynamic boundaries for each province;
- Consider the description of transition zones, boundary currents, upwelling systems as main features in the pelagic realm; and
- Recognize the importance of hotspots and migratory species.

With regard to the benthic realm:

- Start with a habitat/functional classification system and then overlay available species composition and distribution patterns;
- Consider the connectivity between the benthic and pelagic realms in a second step; and
- Focus on cores of provinces because boundaries are poorly known and controversial.

Annex IV

SCIENTIFIC CRITERIA AND GUIDANCE FOR SELECTING AREAS TO ESTABLISH A REPRESENTATIVE NETWORK OF MARINE PROTECTED AREAS, INCLUDING IN OPEN OCEAN WATERS AND DEEP-SEA HABITATS

Required network criteria	**Definition**	**Applicable site specific considerations (*inter alia)***
Ecologically and biologically significant areas	Ecologically and biologically significant areas are geographically or oceanographically discrete areas that provide important services to one or more species/populations of an ecosystem or to the ecosystem as a whole, compared to other surrounding areas or areas of similar ecological characteristics, or otherwise meet the criteria as identified in annex II.	• Uniqueness or rarity • Special importance for life history stages of species • Importance for threatened, endangered or declining species and/or habitats 17/ • Vulnerability, fragility, sensitivity or slow recovery • Biological productivity • Biological diversity • Naturalness
Representativity	Representativity is captured in a network when it consists of areas representing the different biogeographical subdivisions of the global oceans and regional seas that reasonably reflect the full range of ecosystems, including the biotic and habitat diversity of those marine ecosystems.	A full range of examples across a biogeographic habitat, or community classification; relative health of species and communities; relative intactness of habitat(s); naturalness
Connectivity	Connectivity in the design of a network allows for linkages whereby protected sites benefit from larval and/or species exchanges, and functional linkages from other network sites. In a connected network individual sites benefit one another.	Currents; gyres; physical bottlenecks; migration routes; species dispersal; detritus; functional linkages. Isolated sites, such as isolated seamount communities, may also be included.
Replicated ecological features	Replication of ecological features means that more than one site shall contain examples of a given feature in the given biogeographic area. The term "features" means "species, habitats and ecological processes" that naturally occur in the given biogeographic area.	Accounting for uncertainty, natural variation and the possibility of catastrophic events. Features that exhibit less natural variation or are precisely defined may require less replication than features that are inherently highly variable or are only very generally defined.
Adequate and viable sites	Adequate and viable sites indicate that all sites within a network should have size and protection sufficient to ensure the ecological viability and integrity of the feature(s) for which they were selected.	Adequacy and viability will depend on size; shape; buffers; persistence of features; threats; surrounding environment (context); physical constraints; scale of features / processes; spillover / compactness

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17/ "Declining" defined accordingly with the criteria of the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention).