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Ensuring Conservation and Sustainable Use of Marine Genetic Resources: Current and Future Challenges

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Ensuring Conservation and Sustainable Use of Marine Genetic Resources
Current and Future Challenges

The conservation and sustainable and equitable use of marine genetic resources faces challenges today that were not foreseeable at the time that the United Nations Convention on the Law of the Sea (UNCLOS) was adopted. New technologies allow exploration and exploitation of once-inaccessible deep ocean resources and facilitate DNA analysis of the rich array of microbes that was then unknown in the water column.

Though the current challenge is to ensure that any use of genetic material from marine living resources is sustainable and equitable, future pressures will arise both from growing human activities and from climate change. To provide ocean life with the resilience to survive and adapt, a precautionary approach requires consideration and assessment of the potential effects of all significant human activities in the oceans.

It may be helpful to consider examples of current practices from marine areas within national jurisdiction. Some national authorities regulate access to biological resources through a permitting system, sometimes distinguishing between collection for commercial and for non-commercial purposes. The goals of such regulations are to promote conservation and ecologically sustainable use of the resources, provide certainty of access and minimize administrative costs to potential users; they ensure that the social, economic and environmental benefits of such resources accrue to the society as a whole.

The United Nations Convention on the Law of the Sea provides guidance. Article 117 provides that states have a duty to adopt with respect to their nationals measures for the conservation of the living resources of the high seas. States are to cooperate to conserver and manage the living resources of the high seas. Under Part XII of UNCLOS states have the obligation to protect and preserve the marine environment.

We can look to examples from national practice to identify some common-sense practices that will assist states in the conservation and sustainable use of marine genetic resources consistent with the obligation to conserve and manage these resources while protecting and preserving the marine environment. For example, States may wish to consider requiring their nationals and residents, or owners or operators of their flag vessels, to provide advance notification of expeditions or operations to collect marine genetic resources in areas beyond national jurisdiction and brief reports on the results and findings of these expeditions. States could consider a common minimum set of data to be included in these notifications and reports, elaborating on UNCLOS provisions on international cooperation in marine scientific research and drawing on examples from national practice.

From examples from Australia and the Philippines, and I am grateful to Douglas Harper of NOAA for drawing my attention to these examples, several common-sense practices from areas within national jurisdiction might be applied in areas beyond. These include advance notification of activities, prior assessment of possible environmental impacts, publication of results and findings, and benefit-sharing, for example through capacity building.

With respect to advance notification, required information could include name and contact information of the operator; details of the proposed itinerary or route; information as known on resources and quantity planned for collection; a brief description of any likely impact of the collection of this quantity of the materials from a proposed area; the purpose of the collection, including whether for commercial or non-commercial purposes; information on the labeling of collected materials and disposition of ownership of samples, including any proposed transmission to third parties; details of any proposals to benefit biodiversity conservation in the area of collection; plans to share data and make scientific information publicly available; and, if commercial use is foreseen, plans to share benefits with others, as appropriate.

With respect to prior assessment of possible environmental impacts, the Antarctic Treaty and its Protocol on Environmental Protection could serve as a model. States could require a national procedure of their nationals or vessels, with assessments widely and publicly available when more serious potential impacts are identified. This, too, could build on UNCLOS provisions.

Looking at the Antarctic Treaty and its Protocol, with respect to the exchange of information on scientific investigations and results, there is an obligation on the part of each state party to provide advance notification to other parties of expeditions on the part of its ships or nationals and of expeditions organized in or proceeding from its territory. Scientific observations and results are to be made freely available to others.

In addition, the 1991 Protocol to the Antarctic Treaty includes a requirement for prior assessment of possible environmental impacts of proposed activities, undertaken in accordance with Protocol provisions and appropriate national procedures. For example, if a proposed activity is likely to have an impact that is less than minor or transitory, then parties as part of their national procedures may require a simple preliminary document, for example a one-page concise description of the activity and location, with a statement that the impact is expected to be less than minor or transitory. If a proposed activity is likely to be minor or transitory, then an Initial Environmental Evaluation (IEE) is to be prepared and is to include a description of the proposed activity, including its purpose, location, duration and intensity; consideration of alternatives to the proposed activity, and consideration of any impacts that the activity may have, including cumulative impacts. If an activity is likely to have an impact that is more than minor or transitory, then a Comprehensive Environmental Evaluation (CEE) is to be prepared. These documents are often lengthy and include a fuller consideration of impacts, alternatives, monitoring and notification. Parties provide an annual list of all IEEs to others and must make an IEE available upon request. In the case of a CEE, the party must make the document publicly available and circulate it to other parties who are also to make it publicly available for comment. In the case of a CEE, the document must be provided in advance to allow for review by parties at an annual treaty meeting.

In a resolution adopted in 2005, the Antarctic Treaty parties reaffirmed these provisions in regard to “scientific activities relating to biological prospecting”. The decision draws attention to the Protocol’s provisions to limit adverse environmental impacts. At the same time, it appears that under the Antarctic Treaty no proposed marine scientific activities have as yet been considered to require a CEE.

With respect to sharing of information, we have heard from scientists that this promotes science. If researchers know in advance of the work of others, they can build on that work, or look to new fields of knowledge, thus avoiding duplication of work or the collection of specimens that are already known. Such publication and dissemination of knowledge, including the location by coordinates of the site at which the sample was collected, would also assist states with fulfilling this obligation found in Part XIII (article 244).

With respect to benefit-sharing, several examples have been mentioned at this meeting. These include invitations from a research institution in one state to scientists from a research institution in another, particularly from developing countries, to participate on research cruises. Benefit-sharing could also be through the publication of information with full and open exchange of information as promoted through the Intergovernmental Oceanographic Commission. For expensive deep sea exploration, states may wish to consider the establishment of a cooperative arrangement based on CERN, whereby states that are able collaborate to support the capital structure while the scientific community welcomes contributions from scientists from all countries.