



Contribution of the CDB Secretariat regarding the impacts of ocean acidification on marine and coastal biodiversity

1. The tenth meeting of the Conference of the Parties to the Convention on Biological Diversity, in decision X/29, welcomed the compilation and synthesis of available scientific information on ocean acidification and its impacts on marine biodiversity and habitats (UNEP/CBD/SBSTTA/14/INF/8; which was prepared in collaboration with the United Nations Environment Programme-World Conservation Monitoring Centre, in pursuance of paragraph 4 of decision IX/20. The English version of this report is available at <http://www.cbd.int/doc/publications/cbd-ts-46-en.pdf>, and the French version at <http://www.cbd.int/doc/publications/cbd-ts-46-fr.pdf>.
2. In the same decision, COP 10 expressed its serious concern that increasing ocean acidification, as a direct consequence of increased carbon dioxide concentration in the atmosphere, reduces the availability of carbonate minerals in seawater, important building blocks for marine plants and animals. For example by 2100 it has been predicted that 70 per cent of cold-water corals, key refuges and feeding grounds for commercial fish species, will be exposed to corrosive waters. COP 10 also noted that under a business-as-usual scenario, given current emission rates, it is predicted that 10 per cent of the surface waters of the highly productive Arctic Ocean will become under-saturated with respect to essential carbonate minerals by the year 2032, and the Southern Ocean will begin to become under-saturated with respect to essential carbonate minerals by 2050, with potential disruptions to large components of the marine food web.
3. Likewise, COP 10 took note that many concerns exist regarding the biological and biogeochemical consequences of ocean acidification for marine and coastal biodiversity and ecosystems, and the impacts of these changes on oceanic ecosystems and the services they provide, for example, in fisheries, coastal protection, tourism, carbon sequestration and climate regulation, and that the ecological effects of ocean acidification must be considered in conjunction with the impacts of global climate change.
4. COP 10 requested the Executive Secretary to develop, in collaboration with the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC/UNESCO), the Food and Agriculture Organization of the United Nations (FAO), the Secretariat of the United Nations Framework Convention of Climate Change (UNFCCC), the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP-WCMC), the International Coral Reef Initiative (ICRI), Ramsar Convention, Antarctic Treaty, the Arctic Council, and other relevant organizations and scientific groups, subject to the availability of financial resources, a series of joint expert review processes to monitor and assess the impacts of ocean acidification on marine and coastal biodiversity and widely disseminate the results of this assessment in order to raise awareness of Parties, other Governments and organizations, and *also requests* the Executive Secretary, given the relationship between atmospheric carbon dioxide concentration and ocean acidification, to transmit the results of these assessments to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC).
5. COP 10 also called on Parties, other Governments and organizations to take into account emerging knowledge on ocean acidification and to incorporate it into national biodiversity strategies and action plans (NBSAPs), national and local plans on integrated marine and coastal area management, and the design and management plans for marine and coastal protected areas.



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6. Pursuant to above request by COP 10, the Expert Meeting to Develop a Series of Joint Expert Review Processes to Monitor and Assess the Impacts of Ocean Acidification on Marine and Coastal Biodiversity was convened by the Executive Secretary, in collaboration with the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization, in Montreal, Canada, from 19 to 20 October 2011. The report (UNEP/CBD/SBSTTA/16/INF/14, available at <http://www.cbd.int/doc/?meeting=EMIOAMCB-01>) of this Expert Meeting was considered and welcomed by the Conference of the Parties to the Convention at its eleventh meeting (decision XI/18).

7. In particular, COP 11 took note of the elements in annex III to document UNEP/CBD/SBSTTA/16/6 (see appendix below) as guidance for practical responses to the impacts of ocean acidification on marine and coastal biodiversity, and encouraged Parties, other Governments and relevant organizations to make use of this guidance, as appropriate, to reduce various threats from ocean acidification to vulnerable ecosystems and to enhance the resilience of ecosystems through a range of area-based or other management measures, in addition to measures to reduce CO₂ emissions.

8. In the same decision, COP 11 requested the Executive Secretary to collaborate with the Intergovernmental Oceanographic Commission-UNESCO, relevant scientific groups, other relevant organizations, and indigenous and local communities on the preparation of a systematic review document on the impacts of ocean acidification on biodiversity and ecosystem functions, which will provide a targeted synthesis of the biodiversity implications of ocean acidification for marine and coastal systems, including information on the less-reported paleo-oceanographic research, building upon the synthesis provided in CBD Technical Series No. 46 (referred to in above paragraph 1), and make it available for consideration by a meeting of the Subsidiary Body prior to the twelfth meeting of the Conference of the Parties, with a view to forwarding it to Parties, other Governments and relevant organizations and transmitting it to the Secretariat of the United Nations Framework Convention on Climate Change.

9. The CBD Secretariat is currently collaborating with experts from Parties and relevant organizations to prepare the above-mentioned systematic review document on the impacts of ocean acidification on biodiversity and ecosystem functions.

Appendix

PRACTICAL RESPONSES TO ADDRESS OCEAN ACIDIFICATION (annex III to document UNEP/CBD/SBSTTA/16/6)

1. The following are edited elements, suggested by the Expert Meeting to Develop a Series of Joint Expert Review Processes to Monitor and Assess the Impacts of Ocean Acidification on Marine and Coastal Biodiversity (Montreal, 19-20 October 2011), as guidance to support Parties to the Convention in the realization of practical responses to ocean acidification impacts on marine and coastal biodiversity. These suggested elements are in recognition of Aichi Biodiversity Target 10: *by 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimised, so as to maintain their integrity and functioning.*

CO₂ emission reductions

2. Chemical changes associated with anthropogenic ocean acidification are irreversible on timeframes of at least hundreds of years and biological changes could last even longer. Substantial damage to ocean ecosystems can only be avoided through urgent and rapid reductions in global emissions of CO₂.

3. Parties to the Convention are encouraged to work towards effective CO₂ emission reductions; and to facilitate the participations of relevant biodiversity-related expertise in UNFCCC, IPCC and other related processes.

Maintaining and restoring ecosystem resilience

4. Multiple stressors affect marine biodiversity, often through additive impacts. In addition to significant reductions in emissions, adaptation-based measures will be required to respond to acidification. While mitigation involves a global commitment, adaptation actions can be adopted at the local, national and international levels as part of broader efforts to preserve and maintain marine ecosystems, and support the communities and peoples who depend on those ecosystems and the services they provide. Decreasing the impacts of other stressors is critical to maintain ecosystem resilience. Local, subnational or national laws in many countries may already be in place to address many stressors that drive or exacerbate acidification conditions.

5. Parties are encouraged to adopt and enforce national level policies to facilitate ecosystem resilience, such as:

(a) Effective watershed and coastal management to reduce runoff with associated organic matter and pollutants (including storm water surge prevention, maintaining intact wetlands, improved water treatment facilities) to limit the exacerbating impacts of eutrophication on localized acidification;

(b) Control of coastal erosion to reduce nutrient and sediment loading of water and protect physical integrity of habitats (including increasing vegetation cover, coordination among local and municipal governments for watershed-scale action);

(c) Land-use management through local and regional planning, zoning and permitting to reduce direct and indirect carbon dioxide emissions, runoff and other threats;

(d) Reduction of local pollutants through source control of persistent pollutants and enforcement of existing emissions limits for non-persistent pollutants;

(e) Identify and protect resilient ecosystems through effectively and actively managed marine and coastal protected areas;

(f) Prevent the further loss and degradation of coastal ecosystems and catalyse their recovery through restoration and management;

(g) Implement ecosystem-based fisheries management to limit the impacts of destructive fishing practices (e.g. bottom-trawling) and other physical pressures and disturbances to ecosystems, and avoid overfishing;

(h) Recognize the roles of indigenous and local communities in maintaining and restoring ecosystem resilience, and provide resources and tools to support adaptation that maintains essential ecosystem services upon which societies depend.

6. Parties are also encouraged to incorporate emerging scientific knowledge on ocean acidification into national biodiversity strategies and action plans (NBSAPs) as well as strategies and action plans for mitigation of and adaptation to climate change, national and local plans on integrated marine and coastal area management, and the design and management of marine and coastal protected areas, and to include with NBSAPs, specific measures to deal with ocean acidification. Related capacity-development needs should be communicated to the Secretariat of the Convention.

Communications and outreach

7. Effective communication is one important tool to encourage the design and implementation of plausible solutions to ocean acidification. To date – outside of the ocean acidification scientific community, – the ocean acidification issue has not been adequately communicated in a manner to warrant significant action by impacted sectors and stakeholders.

8. Parties are encouraged to:

(a) Facilitate communication of ocean acidification issues at the local, national, and international levels;

(b) Coordinate at regional levels for information and knowledge sharing and convene relevant stakeholders to consider this issue;

(c) Support capacity-building and training for communication of ocean acidification across key sectors;

(d) Share case-studies of where ocean acidification impacts are already observed and can be confidently attributed (natural and anthropogenically induced acidification).

Contributing to scientific knowledge generation

9. The global scale of ocean acidification means that concerned Parties need to work together to address knowledge gaps. Careful coordination of knowledge requirements with the future national research plans will help reduce redundancy and improve coverage of under-represented ecosystems. Important networks already exist which seek to coordinate international research efforts, synthesize available knowledge, and enable inter-comparison of scientific data. Parties to the Convention are encouraged to:

(a) Engage actively in existing networks and platforms to share data and observations related to ocean acidification;

(b) Apply global best practices in the monitoring and assessment of ocean acidification;

(c) Inform the Secretariat of the Convention on Biological Diversity of existing ocean acidification activities and research to support improved understanding of capacities, resources and under-represented geographies.