Vierros, M. and D. Pauly. 2004. Assessing biodiversity loss in the oceans: a collaborative effort between the Convention on Biological Diversity and the Sea Around Us Project. *Sea Around Us Project Newsletter* May/June (23): 1-4.

Sea Around Us

Assessing biodiversity loss in the oceans: a collaborative effort between the Convention on Biological Diversity and the *Sea Around Us* project

by
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The *Sea Around Us* project (SAUP) and the Secretariat of the Convention on Biological Diversity (CBD) will collaborate on assessing trends in biodiversity in the world's oceans. This collaborative effort between the Montreal-based CBD Secretariat and the SAUP, based at the Fisheries Centre, UBC, Vancouver, has its origin in the CBD's need for reliable information on the state of marine biodiversity worldwide, and on how it is impacted by fisheries. The CBD, for example, needs to know what has happened to biodiversity in the oceans during the past 50 years, and what is likely to happen if present trends continue. Such information can then be used to support global policy decisions addressing the current biodiversity crisis. It is important that such policy decisions are supported by the best available science. However, in many cases, the required scientific information is only available piecemeal, if at all, and its accuracy cannot be verified. The SAUP, in constructing its global databases, offering access to a wide range of marine fisheries and ecosystem-related data (see www.seaaroundus.org), is in the process of addressing this problem.

The CBD was adopted in 1992 at the Earth Summit in Rio de Janeiro. For the first time in history, the global community decided to address biodiversity issues through a comprehensive, international treaty, and in so doing, explicitly stated that the conservation of biodiversity is a common concern to humankind. The Convention establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from the utilization of genetic resources. The CBD adopts a holistic approach to the conservation and sustainable use of the Earth's entire wealth of living organisms, covering all ecosystems and species,

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as well as the diversity within species. Because of this approach, the Convention is broad and ambitious in scope. It is now the largest environment convention, with 188 Parties, and its coverage is almost universal.

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After some twelve years, the CBD is gradually making the transition from policy to implementation. Thus, the Parties to the Convention have set themselves the difficult target of achieving by 2010 a "significant reduction of the current rate of biodiversity loss". This target, the "2010 biodiversity challenge", is meant to inspire practical action resulting in measurable benefits to biodiversity. Although the CBD has yet to define what "significant reduction" means, there is now increasing momentum towards putting in place measures that will lead to reduction in biodiversity loss. This implies that global indicators are needed to measure progress made towards achieving the 2010 target.

It is this need for science-based indicators which catalyzed the collaboration between the CBD and the SAUP. The difficulties of measuring the achievement of a largely inspirational target with real and measurable indicators are considerable. But in an attempt to do just this, the CBD's highest body, the Conference of the Parties, adopted in February 2004 a number of global indicators[1] (Box 1). One of these is the change in trophic level in marine fisheries catches, or in CBD's parlance, the "marine trophic index". This indicator was included as a measure of ecosystem integrity and sustainability of fisheries, and was selected because of its proven relevance and reliability as a measure of human impact on exploited marine ecosystems, i.e., of "fishing down marine food webs".[2] The Parties to the CBD envisioned that this indicator would be calculated globally and regionally from fisheries data, and would be presented as a time series, which would start as far back in time as possible, and forward to 2010.

The calculation of this indicator will require reliable time series of fisheries catch data at global and regional scales. National level data will also be required, as it is likely that countries will use the indicator for their own monitoring efforts. The separation of high seas catches from those obtained within countries' EEZs is also important, given current international efforts to protect high seas biodiversity. Here, the SAUP's database of geo-referenced fisheries catches will be crucial, as it provides data at each of the required scales for calculation of trophic level changes. The other SAUP databases, such as those on marine biodiversity and biomass trends, will provide a context for assessing marine biodiversity in a more general sense. With this in mind, the Executive Secretary of the Convention on Biological Diversity has formally invited the SAUP to help the CBD in assessing trends in marine biodiversity up to the year 2010.

The SAUP will also contribute to another important global assessment need of the CBD, on the status of marine protected areas (MPAs). As described in a previous issue of the SAUP Newsletter, the PhD project carried out, with the support of WWF and the UNEP World Conservation Monitoring Centre (WCMC), by Ms Louisa Wood at the Fisheries Centre, devoted to a global assessment of MPAs,[3]

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The ***Sea Around Us*** project newsletter is published by the Fisheries Centre at the University of British Columbia. Included with the Fisheries Centre's newsletter *FishBytes*, six issues of this newsletter are published annually. Subscriptions are free of charge.

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The *Sea Around Us* website may be found at saup.fisheries.ubc.ca and contains up-to-date information on the project.

The *Sea Around Us* project is a Fisheries Centre partnership with the Pew Charitable Trusts of Philadelphia, USA. The Trusts support nonprofit activities in the areas of culture, education, the environment, health and human services, public policy and religion. Based in Philadelphia, the Trusts make strategic investments to help organisations and citizens develop practical solutions to difficult problems. In 2000, with approximately $4.8 billion in assets, the Trusts committed over $235 million to 302 nonprofit organisations.

Box 1. Provisional indicators for assessing progress towards the CBD 2010 biodiversity target. The 'marine trophic index' is the CBD name for mean trophic level, as used by SAUP to document fisheries impacts on ocean ecosystems.

A: Focal area	B: Indicator for immediate testing	C: Possible indicators for development by SBSTTA or Working Groups
Status and trends of the components of biological diversity	Trends in extent of selected biomes, ecosystems and habitats	
	Trends in abundance and distribution of selected species	
		Change in status of threatened species (Red List indicator under development)
		Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance
	Coverage of protected areas	
Sustainable use		Area of forest, agricultural and aquaculture ecosystems under sustainable management
		Proportion of products derived from sustainable sources
Ecosystem integrity and ecosystem goods and services	Marine trophic index	Application to freshwater and possibly other ecosystems
		Connectivity/fragmentation of ecosystems
		Incidence of human-induced ecosystem failure
		Health and well-being of people living in biodiversity-based-resource dependent communities
	Water quality in aquatic ecosystems	
		Biodiversity used in food and medicine
Status of traditional knowledge, innovations and practices	Status and trends of linguistic diversity and numbers of speakers of indigenous languages	Further indicators to be identified by WG-8j
Threats to biodiversity	Nitrogen deposition	
		Numbers and cost of alien invasions
Status of access and benefit-sharing		Indicator to be identified by WG-ABS
Status of resource transfers	Official development assistance provided in support of the Convention (OECD-DAC-Statistics Committee)	
		Indicator for technology transfer

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Reconstruction of coral reef fisheries catches for U.S.-associated islands in the Western Pacific Region

by Dirk Zeller

Reconstructing historic catches, especially for the generally unreported small-scale coral reef fisheries, is crucial for establishing baselines for fisheries management and conservation

Fisheries resources have played a fundamental role in shaping Pacific island communities for centuries. While pelagic fisheries are the commercially most important fisheries in the U.S.-associated islands managed by the Western Pacific Fishery Management Council (WPFMC, see Figure 1), inshore coral reef fisheries are generally of more fundamental social and cultural importance. However, while catches for the large-scale pelagic fisheries tend to be documented, catches for the small-scale, artisanal fisheries often are not, or are incompletely reported. Hence, extractions of these marine resources usually remain unaccounted for in regional and global statistics (Pauly, 1998).

Reconstruction of historic catch time series often requires interpolation and bold assumptions, justified by the unacceptable nature of the alternative, i.e., accepting catches of fisheries known to exist to be zero (Pauly, 1998, Zeller et al., 2001). Without accounting for fisheries catches for all sectors, we cannot obtain a measure of the true value of these resources to the communities, or of the risks their loss through overfishing may represent for Pacific island societies. This is especially a concern, given that human population growth rates in some areas of the Pacific (e.g., American Samoa) are among the highest in the world and natural resources in the small Pacific islands are limited and declining (Craig, 1995). It is thus evident that reconstructing historic catches, especially for the generally unreported small-scale coral reef fisheries, is crucial for establishing baselines for fisheries management and conservation, and the maintenance of the livelihoods and cultures of island societies.

Hence, following a visit to Honolulu and presentation by

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will not only provide information towards another indicator identified by the CBD (coverage of protected areas, see Box 1), but also fulfills a direct mandate of the CBD to improve available data on MPAs globally. This mandate originates from the last meeting of the Conference of the Parties in Kuala Lumpur, Malaysia, which recognized that the documentation of existing MPAs was insufficient, and that a new global MPA database should be developed.[4]

We anticipate that other areas of overlap between the CBD and the SAUP will emerge, leading, in the future, to an even closer collaboration between the CBD and the SAUP.

Footnotes

[1] Decision VII/30 of the Conference of the Parties to the Convention on Biological Diversity (http://www.biodiv.org/decisions/default.aspx)

[2] Pauly, D., Christensen, V., Dalsgaard, J., Froese, R. & Torres Jr., F. 1998. Fishing Down Marine Food Webs. Science 279: 860-863.

[3] Wood, L. 2004. A Global Assessment of Marine Protected Areas: A New Sea Around Us Initiative. Sea Around Us Newsletter Issue No. 21 (January/February 2004)

[4] Decision VII/5 of the Conference of the Parties to the Convention on Biological Diversity (www.biodiv.org/decisions/default.aspx).

Erratum: Sea Snakes

In a recent article (*'The marine reptile database', Sea Around Us* Issue 21, p. 6), we stated that there are 175 species of sea snakes. Actually, two of these are freshwater species, even though they are commonly referred to as sea snakes (*Hydrophis semperi* and *Laticauda crockeri*). *L. crockeri* is the IUCN red listed species mentioned in the article.