United Nations
Educational, Scientific and
Cultural Organization

Intergovernmental
Oceanographic
Commission

Workshop Report No. 226

# OBIS (Ocean Biogeographic Information System) Strategy and Work plan Meeting

IOC Project Office for IODE, Oostende, Belgium
18-20 November 2009

UNESCO 2010

IOC Workshop Report No. 226
Oostende, 4 February 2010
English

For bibliographic purposes this document should be cited as follows:

OBIS (Ocean Biogeographic Information System) Strategy and Work plan Meeting, IOC Project Office for IODE, Oostende, Belgium, 18-20 November 2009
Paris, UNESCO, 4 February 2010 (IOC Workshop Report No. 226) (English)

**TABLE OF CONTENTS**



**ANNEXES**

# 1. OPENING OF THE MEETING

Mr Peter Pissierssens, Head of the IOC Project Office for IODE and IODE programme coordinator, welcomed the participants. He expressed the IOC's and his personal enthusiasm regarding the decision of the IOC Assembly to accept OBIS within the IODE Programme.

Dr Edward Vanden Berghe then introduced the objectives of the meeting. He recalled the adoption, by the 25th Session of the IOC Assembly, of Resolution XXV.4 on OBIS. (see **Annex III**). He noted in particular the decision of the IOC Assembly to " accept OBIS within the IODE Programme and start its integration on a schedule that will ensure a smooth transition of OBIS into IOC as its responsibilities and funding under the CoML are completed". The Assembly had also requested the OBIS Governing Board to continue oversight of OBIS until the completion of the CoML 2010 Synthesis, in an advisory capacity, in consultation with the IODE Officers. The Assembly had furthermore decided to maintain the identity and visibility of OBIS within IOC, taking into account the interest and commitment built up within the ocean biodiversity research community over the last decade, including the ability to interact with other relevant intergovernmental and international bodies.

Dr Vanden Berghe summarized the expected outcome of the strategy meeting as follows:

- OBIS strategy
  - Review mission statement, placing more emphasis on intergovernmental activities that benefit society
  - Priorities need to be established for OBIS and should include clear statement of how to measure those priorities
  - OBIS activities should be developed as a follow on to the mission statement.
- Funding
  - Develop a series of concept papers, which can be used to solicit funding from donor agencies through the UNESCO/IOC mechanisms
  - Resources needed are roughly US$500K/yr (including 3 staff members, staff travel, support for the hosting organisation (overheads), commissioned work, and meetings for Governing Board and RON Managers Meeting
  - Resources available for 2010 are not sufficient to run OBIS at its present level. The IT manager will leave the project early 2010; the data manager is only secured because part of her time is sold to related projects (EOL and CenSeam).

Dr Vanden Berghe further noted that the OBIS governance structure will have to change to fit into the IODE/IOC governance. There is also a need to re-orient the OBIS strategy to fit IODE. OBIS began as a tool for scientists – the Mora et al (2007)[1] paper is a good example of how OBIS data can be utilized for scientific analysis. But OBIS data also has been used to inform environmental/fisheries management, e.g. to determine impact of Global Climate Change on fisheries. The primary question is how can OBIS transform to support management decisions and fit better into an intergovernmental context. This should be the focus of the meeting.

Sloan funding will end completely at the end of 2010. Even for 2010, only partial support is available. Several project proposals were developed to complement the Sloan Foundation support, but so far

[1] Mora, C.; D.P. Tittensor & R.A. Myers 2007. The completeness of taxonomic inventories for describing the global diversity and distribution of marine fishes. Proc. R. Soc. B doi:10.1098/rspb.2007.1315 (Published online).

none of these was successful (the decision on some of them is still pending). We need to consider projects and proposals to support OBIS in the new context.

The meeting adopted the Agenda (attached as **Annex I**). The list of participants of the meeting is attached as **Annex II**.

# 2. CENSUS OF MARINE LIFE

Dr Ron O'Dor provided a presentation on the Census of Marine Life. He explained that the Census of Marine Life (http://www.coml.org) is a global network of researchers in more than 80 nations engaged in a 10-year scientific initiative to assess and explain the diversity, distribution, and abundance of life in the oceans. The world's first comprehensive Census of Marine Life-past, present, and future-will be released in 2010. OBIS was created as the data integration component of the Census. Many of the activities of the field projects are funded through national mechanisms, but the Sloan Foundation provides support to create synergies between the projects.

# 3. OBIS: STATUS REPORT

## 3.1 Summary of the 7th Session of the OBIS Managers Committee

The 7th meeting of the OBIS Managers Committee was held in Rutgers University, New Brunswick, New Jersey, USA, from 28 to 29 February 2008. Nodes of New Zealand, USA, Africa and Chile were not represented. Observers from aspiring nodes in Philippines and Oman were present for the first time.

All nodes present gave an overview of the present situation, using a template that was circulated before the meeting.

The normal agenda of collaborative activities was discussed. A large part of the meeting was devoted to the planned change in Governance of OBIS, and the plans to join the IOC. In consultation with members of the Governing Board, a discussion was held on priorities for future activities for OBIS as a network; it are these priorities that were further discussed during the 8th meeting of the MC, and during the present Strategy meeting.

## 3.2 Activities of OBIS: CBD, GEO-BON

In recent years, OBIS has become more actively involved in several international/intergovernmental initiatives. This increased activity fits with the perceived priorities, and will lead to a stronger societal relevance of OBIS, both as a data system and as a community of practice.

The international OBIS secretariat is now involved in the steering committee of GEO-BON. Fred Grassle is one of the members of the Marine Working Group of GEO-BON; Edward Vanden Berghe is member of the Steering Committee of GEO-BON, and member of the data working group.

The Census of Marine Life is collaborating with IUCN and others to provide scientific input in the processes of the CBD. Several meetings were held to formulate guidelines for the identification of Ecological and Biological Significant Areas (EBSAs) in areas beyond national jurisdiction. OBIS-Seamap, the OBIS thematic node responsible for information on mammals, birds and turtles, takes the lead in analysis and visualisation, and runs the web site on behalf of this IUCN-led initiative. The international OBIS Secretariat provides support in interpreting and accessing OBIS data.

## 3.3 Interactions with other organizations (GBIF, IUCN, UNEP, WCMC)

The IUCN has formed an alliance with several other players to streamline its contribution to CBD outlined above. This alliance, the Global Ocean Biodiversity Initiative (GOBI) consists of, inter alia, Duke Laboratory (running the OBIS-SEAMAP portal), UNEP-WCMC and OBIS.

OBIS is still one of the largest providers of data to GBIF, and with well over 20 million records represents about 10% of GBIF's holdings. OBIS actively collaborates with GBIF on several technical issues, such as developing standards for data exchange, maintenance of discovery metadata registers, and development of tools. Maintaining compatibility with GBIF is of primary importance to OBIS, as this will offer end-users a one-stop shop for biogeographic data, be they marine, freshwater or terrestrial. OBIS sees itself as the intersection between IOC and GBIF – IOC being interested in all marine/oceanographic data, GBIF in all biogeographic data, OBIS in marine biogeographic data.

# 4. OUTCOME OF THE 8TH SESSION OF THE OBIS MANAGERS COMMITTEE

The 8th meeting of the MC was held in Oostende, Belgium, from 16 to 17 November 2009. No representatives from Korea or China were present; also Philippines and Oman, who had participated in the 7th meeting, were not able to join. Mary Kennedy who works closely with the Manager of OBIS Canada represented Canada. There were also several observers from the IODE, and one from GBIF. The composition of the Strategy meeting overlapped with the participants of the 8th MC meeting.

As in the 7th MC, a large part of the meeting was devoted to a discussion on how OBIS governance and priorities should be re-organised to fit in the IOC, under the latter's IODE programme. A number of presentations were included to assist OBIS MC to better understand the operations and governance of IODE. Peter Pissierssens gave a general overview of IODE. Greg Reed introduced the IODE Ocean Data Portal and Ocean Data Standards. Mary Kennedy introduced the IODE GE-BICH. Peter Pissierssens made a presentation, on behalf of Geoff Holland, outlining the different steps that had been taken in the process of integration of OBIS within IOC, a summary of the present situation, and outlined the next steps.

The presentations by the IODE representatives formed the basis for a discussion on possible governance models for OBIS, and how the existing governance structure of OBIS could be integrated in IOC/IODE. The suggested structure is further elaborated in section 8 of this report.

# 5. DISCUSSIONS ON PRIORITIES

## 5.1 Identifying potential elements for work plan, on different timelines

Elements of, and notes on a work plan, including priorities as identified by MC7, and different priorities as listed in the OBIS 'Business Plan' drafted by Dr Geoff Holland (IOC Consultant) were presented by Dr Vanden Berghe (http://www.iobis.org/download/Meetings/Strategy/workplan.ppt). The OBIS Business Plan outlined the different targets, which could realistically be aimed at under different levels of funding. One of the priority activities under any level of funding is to achieve an integration of the old OBIS governance and priorities in the IOC/IODE structure. In order to attract funding from IOC Member States and other donor organizations, a series of concept papers is needed. These concept papers will be circulated to potential donor agencies and IOC Member States.

## 5.2 Concept Papers

One of the main objectives of the meeting was to develop a series of Concept Papers, which later can be turned into full proposals.

The proposed structure of a concept paper was defined as follows:

- Title
- Preamble
  - Sketching the problem, the need for a solution
- Main text
  - Description of the solution
  - What activities need to be done?
    - E.g. quality control, targeted campaigns of data acquisition…
  - Who carries out these activities?
    - Resource (staff time) needs at iOBIS and OBIS RONs
    - Including external partners like GBIF, IUCN, WCMC…
- Deliverables, milestones, performance indicators
- Time line
- Indicative budget
- Potential interested sponsors

It was recalled that the concept papers were being developed to attract funding to OBIS. The approach taken was to identify strategic applications, which would at the same time enable information management, and demonstrate the societal benefits of the information management activity. It was recognized that Information Management is not a fundable activity in its own right, so must be a component of larger projects that address societal issues. An important element of these larger projects is the interagency collaboration, and the appropriate coalitions should be addressed in the concept papers.

In the concept papers, the role of OBIS should be clear, and it should also be clear that OBIS is the most likely organisation to take the lead in the project. Data integration, and publishing data from other sources for re-use, was seen as the main selling point for OBIS.

# 6. SESSIONAL WORKING GROUPS

## 6.1 Drafting of a set of concept papers

Following the introduction as summarized in 5.2 the meeting split into sessional working groups, each dealing with the drafting of a concept paper.

Five concept papers were created during the workshop:

- Predicting shifts in marine species diversity and distribution for the African Ecosystems in response to global warming. Lead: Francisco Hernandez, Luis Valdes, Greg Reed.
- Marine protected areas assessment for seascape mammals within tropical-temperate margins of South America. Lead: Éamonn Ó Tuama, Mirtha Lewis, Fabio Silveira.
- Invasive species. Lead: Fred Grassle.
- OBIS Data Portal for identifying important Ecologically and Biologically Significant Areas (EBSAs). Lead Mary Kennedy, Mark Fornwall, Patrick Halpin
- Differentiating climate and fishing effects in ecosystem-based management. Lead Ronald O'Dor.

A sixth one was developed immediately after the workshop and listed here for completeness

- Mangroves of South America assessment for shifting species distribution in response to global change. Lead: Fabio Silveira

Two more ideas for concept papers were floated, but were not developed during the workshop:

- Using OBIS data in the construction of 2020 indicators
- Gap analysis, and the use of OBIS data in assisting countries with their reporting obligations to the Convention of Biological Diversity, UNESCO Assessment of Assessments and other international treaties

At the end of the workshop, the different concept papers were in various states, and all of them needed work before they are more widely circulated. It was left to the OBIS Secretariat to do this.

A synopsis of the concept papers is attached as **Annex V**.

# 7. OBIS FUNDING

Core funding of OBIS requires approximately US$500K/yr. For 2009, full support was available – mostly from the Sloan Foundation (staff, operations, Governing Board meeting), and partly through IOC/IODE (8th meeting of the Managers Committee, MC8). For 2010, support from the Sloan Foundation will only cover salaries of the Executive Director and one Data Manager, and a last meeting of the Governing Board (coinciding with the Census celebrations in October 2010 in London). This means funding still has to be identified to organise MC9 (approx. US$20K), and for salary of the IT manager (approx US$120K).

Through IOC Resolution XXV.4, the IOC Executive Secretary was requested to set up a multi-source trust fund within the IOC Trust Fund for the support of OBIS. Member states were requested to consider contributing to this trust fund. The IOC Assembly also adopted the IODE budget (from the UNESCO Regular Programme 2010-2011) including US$5K/yr in support of OBIS.

As the contribution from the UNESCO regular Programme (at least for the biennium 2010-2011) is very limited, it will be necessary to mobilize extra-budgetary funding as soon as possible to ensure core funding is available.

It is at the discretion of the IOC Assembly, during its twenty-sixth Session in 2011, to increase the allocation for OBIS as from 2012. Of course such a decision will depend on results obtained during the biennium 2010-2011.

While it is still hoped that the request for Extra-Budgetary Funds, and contributions to the trust fund will result in substantial support to OBIS, it is clear that full support to OBIS will have to come at least partially through project support. The Concept Papers are a key element for OBIS to develop a strong set of proposals to execute directed activities. Overheads on these proposals will assist in supporting OBIS core activities.

Several of IODE's projects are relatively well funded (eg ODINAFRICA, OceanTeacher Academy) and more particularly by the Government of Flanders, through the UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science (FUST). In addition IODE has also established regional capacity building platforms (Ocean Data and Information Networks – ODINs) in other (than Africa) regions such as Latin America and the Caribbean (ODINCARSA), Eastern Europe (ODINECET), Western Pacifc (ODINWESTPAC), Pacific small island states (ODINPIMRIS), Black Sea (ODINBlackSea). OBIS' participation in, and contribution to these projects should be investigated. In this regard Dr Vanden Berghe was invited to participate in the upcoming "ODINCARSA Latin America Strategic Planning Meeting", to be held in Ensenada, Mexico between 7-10 December 2009.

As part of the administrative steps to set up the OBIS Project Office, Rutgers will have to be contacted to negotiate a Hosting Agreement. Part of the operations of the international OBIS Secretariat will be funded through support from Rutgers University; there is already a commitment that the University will provide continued logistic support (including office space, administrative support and internet connectivity) at no cost.

# 8. INTEGRATING OBIS GOVERNANCE WITH IOC/IODE

A diagram outlining the incorporation of OBIS in the IODE structure was developed during MC8, and revisited during the Strategy meeting; 'OBIS' bodies are included in red.

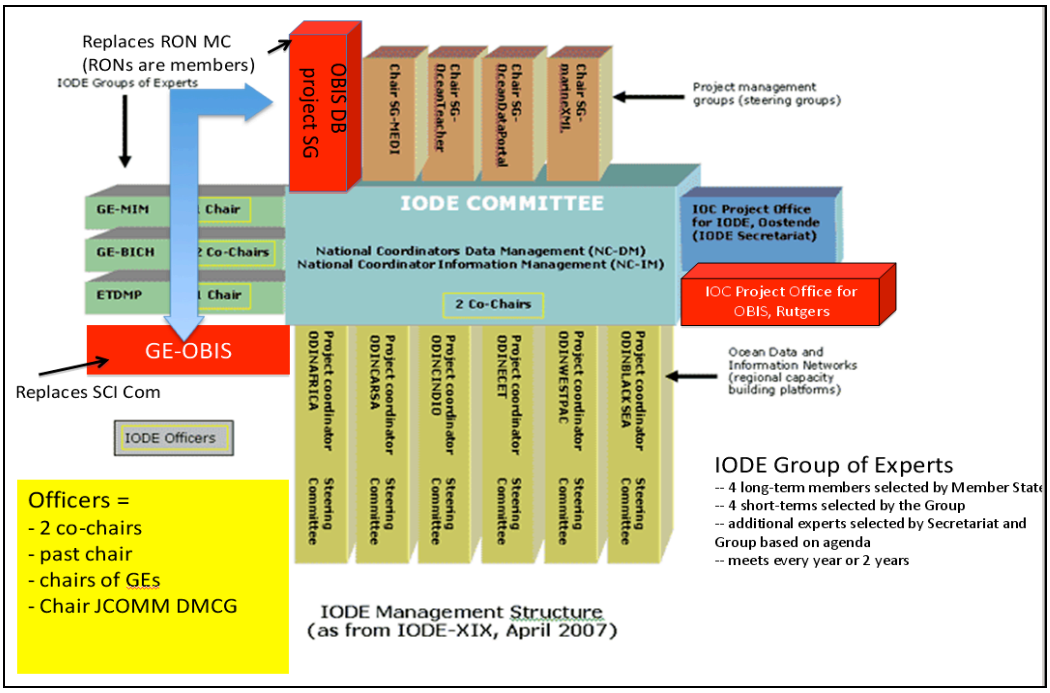



**Figure: Structural Diagram of IODE incorporating OBIS**

An '**IOC Project Office for OBIS'** will need to be established, as well as the post of "Head of the IOC Project Office for OBIS", equivalent to the present position of OBIS Executive Director. The Head of the IOC Project Office for OBIS will be an IOC staff member.

Rutgers University will be asked to investigate further under which modalities the hosting can be done at Rutgers University Institute of Marine and Coastal Sciences. A Memorandum of Understanding will need to be established between UNESCO/IOC and the hosting institution. The equivalent documents that were used to set up the IODE Project Office at Oostende can serve as templates. Additional formal agreements may be required that need to be further discussed with the IOC action address (Dr Jack Dunnigan). Mr Pissierssens and Dr Vanden Berghe were requested to investigate this matter further.

The '**OBIS DB Project' Steering Group** would replace the Regional OBIS Nodes Managers Committee. Terms of reference have to be developed, based on the present 'RON Roles and Responsibilities' document. The chair of the Steering Group will be an officer of IODE. There was some discussion over the name of the 'OBIS DB Project'. It was pointed out that OBIS is a community of practice, with a data system as its most visible product, not just a database. Also, the term 'Project' might be interpreted as indicating a limited time span for this group; 'OBIS Programme' or 'OBIS Programme Activity' were offered as alternatives. IOC will need to investigate whether a 'Steering Group', which is normally associated with a 'Project' can be maintained under this name. Elements of the Terms of Reference for the Steering Group were discussed but not

finalised; it was left to the IODE and OBIS Secretariats to coordinate the drafting the ToRs (in close consultation with the OBIS Governing Board, the Regional OBIS Node (RON) Management Group and IODE Officers). The OBIS Governing Board will be consulted on these Terms of Reference before they are presented to the 2010 Session of the IOC Executive Council.

Mr Pissierssens briefed the meeting on formal requirements for Groups of Experts and their Terms of Reference, and on the specific Terms of Reference of the GE-BICH. The ToR of the latter will have to be changed to accommodate the new OBIS group and other bodies. The role and composition of IODE Groups of Experts is defined in IODE-XIX.2, 'Strategy and Structure of IODE Groups of Experts'.

A "**Group of Experts for OBIS**" will need to be established. GE-OBIS will take over the roles of the Science Board and International Committee. Terms of Reference were discussed but not finalised; this will be done by the OBIS and IODE Secretariats. Input will be requested from the OBIS Governing Board. It was recommended to draft the terms of reference prior to the 2010 IODE Officers Meeting (which will meet in March 2010). They will then submit a draft resolution to the June 2010 Session of the IOC Executive Council as part of the Working Document that needs to be prepared for the Council.

There is no formal role for the present OBIS Governing Board in the new structure. Members of the Governing Board will be consulted on various issues during the transition period. It is envisaged that the final meeting of the OBIS Governing Board will coincide with the Census Celebrations in London, in October 2010. This might be a good opportunity to formally hand over governance from the OBIS Governing Board to IOC/IODE. It was recommended to invite the Executive Secretary IOC and IODE Co-Chairs to this meeting (as well as the IODE and IODE/OBIS Secretariats).

Some of the important steps to realise this integration were discussed in a break-out meeting. The timing of these steps were linked to important events and are listed in a table included as **Annex IV**.

# 9. OBIS STRATEGY, AND MEDIUM- AND LONG-TERM OBJECTIVES

Three versions of a possible **mission statement** were formulated, based on existing one-paragraph descriptions of OBIS:

- OBIS is a global knowledge broker involving gathering, transfer, dissemination and sharing of information, data, knowledge and best practices related to Oceanography with the main goals of enhancing marine research and management by providing free and accessible biogeographical distribution data.
- The Ocean Biogeographic Information System (OBIS) aims at absorbing, integrating, and assessing data about life in the oceans and to apply this knowledge to improve management practices and the decision-making process of its Member States, foster sustainable development and protect the marine environment.
- To enhance marine research and management by providing free, accessible biogeographical distribution data.

It was left to the OBIS secretariat to finalize the drafts of the mission statement, and seek input from the wide OBIS community, including the OBIS GB and MC, to reach a final decision.

Strategic Goals were discussed:

- Through its products and services OBIS contributes to [societal benefits]
- OBIS is a sophisticated and intuitive and comprehensive knowledge base for marine biodiversity resources
- OBIS is aimed at stimulating research generating new hypotheses concerning evolutionary processes and species distributions.
- OBIS integrates data from many sources, over a wide range of marine themes, from the poles to the equator, and from microbes to whales.
- OBIS aims at equitable participation of developing countries [rewording] [data repatriation, training, capacity development,…]

Again, this list will be added on and edited by the OBIS Secretariat, and circulated for comment to the wide OBIS Community before finalizing.

**Medium/Long-term objectives** and their timing were defined as follows:

- End of 2010:
  - Indicators, monitoring tools to check completeness for various taxonomic groups
  - Initial inventories of biodiversity for use by Member States
  - Make available through the OBIS portal all CoML project data
  - Integration of OBIS data in AMA and CMA started
  - Detailed work plan 2011-2013
- End 2011:
  - Gap analysis
  - QC tools (in collaboration with GE-OBIS, as this is an explicit element in the ToRs of this group)
- End 2015:
  - Tools provided to member states to assist them with the regular reporting and assessment of marine biodiversity (contribute to AoA and CBD reporting)
  - Gaps identified in geographic coverage of marine biodiversity data and recommendations to address these (establish new RONs: geographic and thematic; need for observations,…)
  - Integrated distributed data system and related portals incorporating all physical, chemical and biological data
  - Objectives extracted from the Concept Papers
- 2020
  - To be developed; should be in line with the CBD 2020 objectives: Integrated Marine and Coastal Management (IMCAM); Marine and Coastal Living Resources; Marine and Coastal Protected Areas; Mariculture; Invasive Alien Species

Short-term actions needed to realize the full integration of OBIS within IOC/IODE were discussed earlier, and appended to this report.

# 10. CLOSING OF THE MEETING

The meeting was closed on Friday 20 November 2009. The meeting requested the Secretariat (IODE and OBIS) to finalize the report and circulate it to all participants. The meeting also thanked IODE for financially supporting the meeting.

# ANNEX I

## AGENDA OF THE MEETING

1. OPENING OF THE MEETING

2. CENSUS OF MARINE LIFE

3. OBIS: STATUS REPORT
   - 3.1. Summary of MC7
   - 3.2. Activities of OBIS: CBD, GEO-BON
   - 3.3. Interactions with other organizations (GBIF, IUCN, UNEP, WCMC)

4. OUTCOME OF MC8

5. DISCUSSIONS ON PRIORITIES
   - 5.1. Identifying potential elements for work plan, on different timelines
   - 5.2. Concept papers

6. SESSIONAL WORKING GROUPS
   - 6.1. Drafting of a set of concept papers

7. OBIS FUNDING

8. INTEGRATING OBIS GOVERNANCE WITH IOC/IODE

9. OBIS STRATEGY, AND MEDIUM- AND LONG-TERM OBJECTIVES

10. CLOSING OF THE MEETING

## ANNEX II

## LIST OF PARTICIPANTS

Dr Fred GRASSLE
Rutgers University Institute of Marine and Coastal Sciences
71 Dudley Road, New Brunswick, NJ 098901
United States
Email: grassle@marine.rutgers.edu
Tel: 908-932-6555 ext.540
Fax: 908-932-8578

Dr. Mark FORNWALL
Director, Biological Resources Division, USGS (BRD/USGS)
OBIS-USA Node Manager
310 West Kaahumanu Avenue Kahului, HI 96732
United States
Tel: 1 808 984 3724
Fax: 1 808 242 1128
Email: mark_fornwall@usgs.gov
Website: http://obisusa.nbii.gov , http://nbii.gov

Dr. Patrick HALPIN
Professor
Duke University Marine Laboratory
A324 LSRC Building
135 Duke Marine Lab Road
Beaufort, North Carolina
United States
Tel: 1 919 613 8062
Email: phalpin@duke.edu

Francisco HERNANDEZ
Manager Datacentre
Flanders Marine Institute
Wandelaarkaai 7
8400 Oostende
Belgium
Tel: [32](59)34.21.30
Fax: [32](59)34.21.30
Email: francher@vliz.be

Mary KENNEDY
Zooplankton Research
Bedford Institute of Oceanography
P.O. Box 1006, Dartmouth
Nova Scotia B2Y 4A2
Canada
Tel: +1-902-426-3263
Email: KennedyM@mar.dfo-mpo.gc.ca

Dr. Mirtha LEWIS
Director
Centro Nacional Patagonico (CENPAT)
Boulevard Brown 2915-Puerto Madryn
Argentina
Tel: 54-2965-451024
Fax: 54-2965-451543
Email: lewis@cenpat.edu.ar

Dr Éamonn Ó TUAMA
Senior Programme Officer
Global biodiversity information facility (GBIF)
Universitetsparken 15, DK-2100, Copenhagen
Denmark
Tel: +45 35 32 14 94
Fax: +45 35 32 14 80
Email: eotuama@gbif.org

Dr. Ronald O'DOR
Professor
Dalhousie University (CIFT)
1360 Barrington St.
Halifax B3J 2X4
Canada
Tel: 1-202-448-1233
Fax: 1-202-332-9751
Email: rodor@oceanleadership.org

Mr Greg REED
Australian Ocean Data Centre Joint Facility
Fleet Headquarters Wylde Street Building 89
Garden Island Potts Point NSW 2011
Australia
Tel: +61 2 9359 3141
Fax: +61 2 9359 3120
Email: greg@metoc.gov.au

Dr. Fabio SILVEIRA
Professor
Universidade de São Paulo ( USP)
Av. Prof. Luciano Gualberto,

Travessa J, no.374 - Sala 256 –
05508.010 São Paulo
Brazil
Tel: 55 11 30917619
Fax: 55 11 30917802
Email: fldsilve@usp.br

**OBIS Secretariat**

Edward VANDEN BERGHE
Ocean Biogeographic Information System
(OBIS)
71 Dudley Road
New Brunswick, New Jersey 08901
Unites States
Tel: +1 732 932 6555 (x. 565)
Fax: +1 732 932 8578
e-mail: evberghe@iobis.org
WWW: http://www.iobis.org

**IOC Secretariat**

Mr Peter PISSIERSSENS
Head, IOC Project Office for IODE
UNESCO/IOC Project Office for IODE
Wandelaarkaai 7/61
B-8400 Oostende
Belgium
Tel: +32-59-340158
Fax: +32-59-340152
e-mail: p.pissierssens@unesco.org

Luis VALDES
Chief of Section for Ocean Science (IOC/OSS)
Intergovernmental Oceanographic Commission
of UNESCO
1 rue Miollis
75732 Paris cedex 15
France
Email: jl.valdes@unesco.org

# ANNEX III

## RESOLUTION XXV.4

## THE OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM (OBIS)

The Intergovernmental Oceanographic Commission,

**Noting** the great progress that has taken place under the Global Census of Marine Life (CoML) programme and that this ten-year initiative, to assess and explain the diversity, distribution, and abundance of marine life in the oceans, will conclude at the end of 2010,

**Gratefully acknowledging** the foresight shown and the support given to CoML by the Sloan Foundation,

**Recalling** the expression of support at the start of the CoML and its associated Ocean Biogeographic Information System (OBIS) from the 33rd Session of the Executive Council and the instruction to the IOC Secretariat to develop an appropriate mechanism for IOC involvement in the Census,

**Further Recalling** that subsequent IOC Executive Councils and Assemblies have welcomed the progress achieved and called for continued interaction with this activity, in particular IOC Resolution XXIII-3 that encouraged the integration of OBIS into IODE and the 39th Session of the IOC Executive Council that called for continued development of the interaction between the Commission and CoML,

**Appreciating** the Resolution of the UN General Assembly A/RES/63/111, that inter alia reiterates "… its serious concern over the current and projected adverse effects of climate change on the marine environment and marine biodiversity, and emphasizing the urgency of addressing this issue", and "encourages States, individually or in collaboration with relevant international organizations and bodies, to enhance their scientific activity to better understand the effects of climate change on the marine environment and marine biodiversity and develop ways and means of adaptation",

**Recognizing** that an OBIS Programme within the IOC will create a valuable source of information, inter alia, for DIVERSITAS, UNESCO/MAB Programme and UNESCO's Strategy for Action on Climate Change, as well as for a wide range of other users within and outside the United Nations,

**Recognizing also** that OBIS has an important role to play in contributing to external intergovernmental and international organizations dealing with global fisheries, environmental and biodiversity issues including, but not restricted to, the Food and Agricultural Organization of the United Nations, the Group on Earth Observations – Biodiversity Observations Network, the Global Biodiversity Information Facility, and the Convention on Biological Diversity, and that this role should be continued and expanded in the future,

**Recalling** the request from the OBIS Governing Board and the decision of the IOC Executive Council at its 41st Session to consider possible scenarios for a future home for OBIS within the IOC, by concentrating on the possibility of the creation of an IOC/OBIS Programme and an IOC/OBIS Programme Office,

**Acknowledging** that CoML, and the research, information and data it has generated, provides an important tool for the international community to use in the development of policies for ocean and coastal management and to address the critical issues related to climate change,

**Acknowledging also** that the commitment of IOC and UNEP with regard to the UN General Assembly Resolution A/RES/60/30 for an Assessment of Assessments, leading to a regular review of the state of the ocean environment, would not be feasible without access to the science, information and data on marine biodiversity, such as that accumulated under OBIS,

**Noting with appreciation** the agreement of the OBIS Governing Board, in April 2009, to the adoption of OBIS by IOC,

**Decides**:

(i) to accept OBIS within the IODE Programme and start its integration on a schedule that will ensure a smooth transition of OBIS into IOC as its responsibilities and funding under the CoML are completed;

(ii) to request the OBIS Governing Board to continue oversight of OBIS until the completion of the CoML 2010 Synthesis, in an advisory capacity, in consultation with the IODE Officers;

(iii) to maintain the identity and visibility of OBIS within IOC, taking into account the interest and commitment built up within the ocean biodiversity research community over the last decade, including the ability to interact with other relevant intergovernmental and international bodies;

13 **Requests** the IOC Executive Secretary:

(i) to undertake the administrative arrangements necessary for OBIS activities to continue under the auspices of IOC and its IODE Programme;

(ii) to set up a multi-source fund within the IOC Trust Fund for the support of OBIS and to keep the IOC Member States fully informed of the commitments made and the adequacy of the resources available;

(iii) to investigate and establish cooperation with, and support from relevant research organizations, marine research stations, networks and other stakeholders;

(iv) to take the necessary actions for the creation of an extra-budgetary OBIS Programme Officer position, and the preparation of documentation to the Director-General and the UNESCO Executive Board requesting a regular programme post for the OBIS Programme at the earliest opportunity;

(v) to explore a formal agreement for the hosting of an IOC Programme Office for OBIS with the current host institution of the OBIS Secretariat at Rutgers University, NJ, USA,

(vi) to draft, in close consultation with the OBIS Governing Board, the Regional OBIS Node (RON) Management Group and IODE Officers, terms of reference for an OBIS Group of Experts, to be established under IODE;

(vii) to draft, in close consultation with the IODE Officers, revised terms of reference for the IODE Committee, taking into account the extended mandate of the Committee through the adoption of OBIS;

(viii) to report on progress and submit the necessary items for consideration and decision to the next Session of the IOC Executive Council in 2010;

14 **Urges** Member States:

(i) to contribute to the OBIS multi-source fund within the IOC Trust Fund;

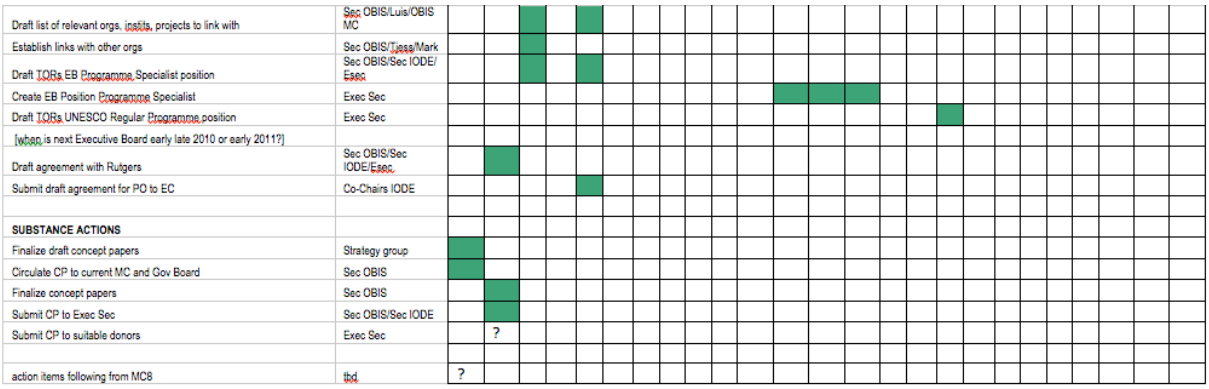
(ii) to consider other financial and/or in-kind support for OBIS to assist with its technical and research activities;

(iii) to facilitate the collaboration of RONs and other OBIS data providers in the intergovernmental framework of IOC and its IODE Programme.

# ANNEX IV

## OBIS-IODE TIMELINE

| | | 9 | 10 | | | | | | | | | | | | 11 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | d | j | f | m | a | m | j | j | a | s | o | n | d | j | f | m | a | m | j | j | a | s | o | n | d |
| TASK | To be done by | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| IMPORTANT EVENTS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IOC Executive Council | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IOC Assembly | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EVENTS IODE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IODE Officers Meeting | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IODE Committee Meeting | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EVENTS OBIS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Closing of CoML (London) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Final meeting Gov Board (London) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1st Meeting "OBIS DB project" steering group | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1st Meeting GE-OBIS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OTHER EVENTS (of relevance) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IMDIS 2010 (Paris, 29-31 March) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HAB ?? | Luis to check | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNESCO MAB? | Luis to check | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNESCO DIVERSITAS | Luis to check | | | | | | | | | | | | | | | | | | | | | | | | | |
| CBD | Luis to check | | | | | | | | | | | | | | | | | | | | | | | | | |
| ESF (Marine Board) marine biodiversity | Luis to check | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5th Global Conference on Oceans, Coasts, 3-7 May, HQ | Luis | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ODINCARSA planning workshop | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *-participation EVB to discuss activities* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ODINAFRICA Project Steering Committee | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *- participation EVB to discuss activities* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ODINWESTPAC ? | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ODINCINDIO? | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| INSTRUCTIONS FROM IOC ASSEMBLY 25 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (i) admin arrangements to continue under IOC & IODE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (ii) set up multi-source trust fund for OBIS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (iib) keep IOC MS fully informed of income and status | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (iii) establish cooperation... | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (iv) create EB OBIS programme officer position | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (ivb) prepare docs for UNESCO regular position | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (v) establish formal agreement with PO host | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (vi) create TORs for IODE GE-OBIS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (vii) draft revised TORs for IODE Committee | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (viii) submit necessary documents to EC | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (viiib) report to EC | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FORMAL ACTIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Agree on name for "OBIS DB project" | RON MC members | | | | | | | | | | | | | | | | | | | | | | | | | |
| Draft TORs of "OBIS database project" | Sec OBIS | | | | | | | | | | | | | | | | | | | | | | | | | |
| Submit TORs OBIS DB project to IODE Officers | Sec OBIS via IODE Sec | | | | | | | | | | | | | | | | | | | | | | | | | |
| Draft TORs GE-OBIS | Sec OBIS + Chair GEBICH | | | | | | | | | | | | | | | | | | | | | | | | | |
| Submit TORs GE-OBIS to IODE Officers | Sec OBIS via IODE Sec | | | | | | | | | | | | | | | | | | | | | | | | | |
| Submit TORs OBIS DB project + GE-OBIS to IOC EC | Co-Chairs IODE | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBIS Sec/IODE Sec: consult with possible donors to TF | Greg/IODE Sec/OBIS Sec | | | | | | | | | | | | | | | | | | | | | | | | | |
| Draft Revised TORs IODE Committee | Sec IODE/Sec OBIS/ CoC IODE | | | | | | | | | | | | | | | | | | | | | | | | | |
| Submit to IODE Officers | Sec IODE/Sec OBIS/ CoC IODE | | | | | | | | | | | | | | | | | | | | | | | | | |
| Submit to EC | IODE Co-Chairs | | | | | | | | | | | | | | | | | | | | | | | | | |
| Include CL on OBIS TF on agenda IOC Officers 1/2010 | Luis+PP+ KA | | | | | | | | | | | | | | | | | | | | | | | | | |
| Draft CL on OBIS TF | OBIS Sec/IODE Sec/KA | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inform MS of OBIS TF (after discussion in IOC Officers meeting( | Sec OBIS/Sec IODE | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |




Green indicates dates are fixes
Blue indicates dates are provisional

**ANNEX V**

**EXECUTIVE SUMMARIES OF CONCEPT PAPERS**

**Concept paper 1**

# Predicting shifts in marine species diversity and distributions for the African ecosystems in response to global change

**The project.** Global change will impact the distribution of species, shift migration routes, have an impact on local biodiversity and affect the location of fisheries stocks. Models can be built using existing species distribution records in OBIS and data from oceanographic databases like WDC, enabling prediction of species occurrences based on environmental parameters like temperature, salinity, acidity, oxygenation. When combined with global change models, the species occurrence models will allow to predict changes in species diversity and distribution. This tool will allow better planning of Marine Protected Areas, fisheries management, protection of endangered species and support nature preservation initiatives. Target areas for this project are African corals reefs, the Benguela Current, and areas around the Equator and in the Mediterranean. Data resulting from these activities will be integrated in OBIS and OBIS quality control procedures applied. The tools to analyse shifts in species distributions will be packaged and made available for users in Africa and elsewhere. The project will include a component of capacity building, to assist these users in the proper use of the tools.

**Resources needed.** The project will require a data manager, working closely with the staff of the African Regional OBIS Node, AfrOBIS, and with other relevant African institutes. Resources will be needed in AfrOBIS and these other institute to facilitate this collaboration. An ecological modeler will combine the species distribution information with the information on physical oceanography and climate prediction models. An outreach and education person will be responsible to communicate the results of the project, and to organize capacity building activities.

**Duration.** Four years.

**Main potential partners.** African fisheries agencies; African Regional OBIS Node; Mediterranean Action Plan of UNEP; International Coral Reefs Initiative (ICRI); Climate Change Impact on Top Predators (CLIOTOP).

**Deliverables.** Relevant data mobilized, quality controlled and integrated with other OBIS data. Data also made available to Ocean Data Portal, African Marine Atlas and other initiatives. Maps visualizing relevant global change model outputs for the selected regions. Tools to analyse and predict species distributions and patterns of biodiversity. Integrate tools and the associated documentation in the OceanTeacher, and use of this new content to support an active capacity building programme.

**Concept paper 2**

# Marine protected areas assessment for Seascape Mammals within tropical-temperate margins of South America

**The project.** Seascape species are charismatic top predators with restricted distribution, and thus vulnerable to human impacts, caused, e.g., by pollution and fisheries. Five of the 17 marine mammals resident along the Atlantic and Pacific margins of South America are endangered seascape species. Each of these five species characterize large marine seascapes, acting as indicators of the health of their ecosystems, and thus, within the Global Earth Observation System of Systems (GEOSS) framework, provide a practical means to address two of the nine GEOSS Societal Benefit Areas: managing ecosystems and conserving biodiversity. Monitoring the status of their populations also supports the Convention on Biological Diversity (CBD) guidelines that highlight the need to protect components of biodiversity and, in particular, to improve the status of threatened species. To do this, it is necessary to define suitable Marine Protected Areas (MPAs) that cover requirements for breeding, feeding and/or migration routes. This can be achieved by integrating a variety of already existing and newly produced data in order to determine the factors influencing the distribution of each species. The goal of the project is to define, based on scientific evidence, long term MPAs that will cover the needs of the five endangered species.

**Resources needed.** The main data requirements are for primary observational datasets and associated oceanographic conditions (e.g., temperature, salinity, bathymetry, currents, etc.) in order to understand the distribution of the five species. Discovery and mobilization of suitable datasets will require staff time, and resources at the relevant Regional OBIS Nodes (Chile, Argentina, Brazil). Ecological Niche Models will have to be developed, and will require input from staff with expertise in modelling.

**Duration.** Three years.

**Main potential partners.** GEOSS, WCMC Marine Protected areas programme, South American Regional OBIS Nodes

**Deliverables.** Reports on datasets, digitized and non-digitised, covering the target species' areas; integration of data through the three RONs; ENM for the five target species; integration of the predicted climate change models with the ENMs of the five target species; outreach activities (publications, conferences, web site) to communicate the results and the importance of this work, and to promote the conservation of the five target species.

**Concept paper 3**

# Invasive species

**The project.** Increased global transport has led to an increased rate of species migrations and invasions. Human disturbance has made natural ecosystems more vulnerable to invasions of exotic species. These migrations have to be studied on a global scale and need a global information system to support the necessary analysis. As by far the largest provider of primary biological data, OBIS is already in a very good position to support such analysis, Targeted campaigns of data acquisition will be held, concentrating on species that are known to be invasive in some part of the world. Known and newly acquired distributional information on invasive species will be combined with habitat suitability

models for those species. This will allow identification of areas at risk, and establishment of targeted monitoring and early warning systems. Barcoding of each species will be important in sorting out life history stages and ensuring correct species identifications. OBIS will continue to bring in data on all life history stages of species found in ballast water as well as those transported in currents.

**Resources needed.** Data on species' habitat suitability will have to be combined with oceanographic environmental data, and information on intensity of transport between different regions. This will require both specific biodiversity data management expertise, and physical oceanography.

**Duration.** Two years.

**Main potential partners.** IUCN, WCMC, Global Invasive Species Network (GISIN).

**Deliverables.** Data holdings of OBIS for invasive species will be vastly improved, and accessible through a separate portal. A gap analysis will be performed to identify data-poor regions and taxa. Links to Barcode of Life and other systems assisting in reliable identification of the target species. Analysis correlating the intensity of transport with probability of invasion.

**Concept paper 4**

# OBIS data portal for identifying important Ecologically and Biologically Significant Areas

**The project.** Many individual nations have access to data on marine biodiversity within the confines of their EEZ. Through its global mandate, the Ocean Biogeographic Information System is ideally suited to fill the data requirements for management of the environment in areas beyond national jurisdiction. The Convention on Biological Diversity (CBD) has adopted scientific criteria for the identification of Ecological and Biological Significant Areas (EBSAs) (COP Decision IX/20 Annex I) and guidance for designing representative networks of marine protected areas in open ocean waters and deep sea habitats (COP Decision IX/20 Annex II). The Global Ocean Biodiversity Initiative (GOBI) has emerged, to provide the CBD with guidance on the technical criteria and to develop illustrations on how to use scientific information to implement the evaluation of candidate EBSAs. Within this consortium, OBIS is responsible for data acquisition, integration and quality control. A pilot project is proposed to assemble all relevant data, and investigate the applications of the criteria, to the Asia Pacific Region.

**Resources needed.** The main requirement will be for personnel. A data manager will, under the guidance of the GOBI consortium, identify relevant existing datasets, and integrate them in the OBIS data holdings. A web GIS developer will create tools to visualise these data in the context of the CBD criteria. Towards the end of the project, analysis teams will develop tools to apply the criteria to the OBIS data holdings.

**Duration.** Two years.

**Main potential partners.** IUCN, UNEP-WCMC, Duke University (North Carolina, USA), Marine Biodiversity Conservation International, Birdlife International, University of Freiburg (Germany) and other future GOBI partners; Secretariat of the Convention on Biological Diversity; OBIS-USA.

**Deliverables.** Access to relevant methodology and definitions of the CBD EBSA process; improved access to raw and modelled biogeographic data; a gap analysis for OBIS, including both geospatial and taxonomic coverage.

**Concept paper 5**

# Differentiating climate and fishing effects in ecosystem-based management

**The project.** There are strong interactions among species and strong influences of physical and chemical parameters on the way ecosystems function and are in the process of adopting and testing some form of "ecosystem-based management" (EBM). Separating the effects of improved management on the one hand, and changing environmental conditions on the other, is a challenge that needs to be addressed. The Ocean Biogeographic Information System provides access to data that can help resolve this: historical and recent data from Census of Marine Life projects, and data from many national monitoring programmes. OBIS will provide a global platform for testing and comparing modelling approaches in different areas of the Oceans.

**Resources needed.** The primary requirement for funding would be for personnel to accelerate incorporation of data sets into the OBIS system, and expanding OBIS data types with relevant new information such as stomach content and abundances. Expertise in modelling, including modelling the effects of Ecosystem Based Management of fisheries, is also needed. Data analysis workshops will be organised towards the second half of the project.

**Duration.** Five years.

**Main potential partners.** HMAP, FMAP, POST, TOPP, OBIS SEAMAP and other relevant Census of Marine Life projects; Ocean Tracking Network; ICES, PICES, IMOS, SCOR

**Deliverables.** Relevant data available through OBIS, integrated and quality controlled. Results from model runs showing relative effects of improved management and environmental change. Visualisation of these results suitable for communication with decision makes and lay public.

**Concept paper 6**

# Mangroves of South America: assessment of shifting species distribution in response to global change.

**The project.** Mangrove ecosystems are well represented along the margins of Tropical-Subtropical South America in the Pacific, Caribbean and Atlantic. Mangroves support significant biodiversity, provide resources/environmental services to support economic activities and protect coastal areas from small and large scale disturbances. Mangroves are very vulnerable to the impact of man, including climate change. Despite their importance and fragility, they are relatively poorly studied, and results of

existing studies are not easily accessible. The objective of the work proposed here is to bring together all available information on South American mangroves – including historic and present extent of mangrove cover, and composition of associated biota – and the effects of sea level rise and global warming.

**Resources needed.** Targeted data acquisition for mangrove areas; GIS information on extent of mangrove forest cover to serve as baseline. This will need staff time for data management and GIS analysis. Modelling effects of sea level rise and global warming; this requires input from ecological modeller.

**Duration.** Three years

**Main potential partners.** South American Regional OBIS Nodes; Free University Brussels mangrove biodiversity programme; local government agencies, research institutes and conservation organizations.

**Deliverables.** Species distribution records for mangrove habitat biota included in OBIS. Portal combining point distribution information with mangrove habitat GIS information. Analysis of global change effects on mangroves, and visualizations of the results of model runs. Distribution of project results to scientific community trough peer-reviewed literature, and to managers of the environment.

# ANNEX VI

## LIST OF ACRONYMS

| | |
|---|---|
| AMA | African Marine Atlas |
| AfrOBIS | African OBIS node |
| AoA | Assessment of Assessments |
| CBD | Convention on Biological Diversity |
| CenSeam | Global Census of Marine Life on Seamounts |
| CLIOTOP | CLimate Impacts on Oceanic TOp Predators |
| CMA | Caribbean Marine Atlas |
| CoML | Census of Marine Life |
| COP | Conference of Parties |
| DB | Database |
| EBM | Ecosystem-based management |
| EBSA | Ecological and Biological Significant Area |
| EEZ | Exclusive Economic Zone |
| ENM | Ecological Niche Model or Modelling |
| EOL | Encyclopaedia of Life |
| FMAP | Future of Marine Animal Populations |
| FUST | UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science |
| GB | Governing Board (OBIS) |
| GBIF | Global Biodiversity Information Facility |
| GE-BICH | IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices |
| GE-OBIS | IODE Group of Experts on OBIS |
| GEO-BON | Group on Earth Observations Biodiversity Observation Network |
| GEOSS | Global Earth Observing System of Systems |
| GIS | Geographic Information System |
| GISIN | Global Invasive Species Network |
| GOBI | Global Ocean Biodiversity Initiative |
| HMAP | History of Marine Animal Populations |
| ICES | International Council for the Exploration of the Sea |
| ICRI | International Coral Reefs Initiative |
| IMCAM | Integrated Marine and Coastal Management |
| IMOS | Integrated Marine Observing System |
| IOC | Intergovernmental Oceanographic Commission (of UNESCO) |
| IT | Information Technology |
| IUCN | International Union for Conservation of Nature |
| MC | Managers Committee (OBIS) |
| MPA | Marine Protected Area |
| OBIS | Ocean Biogeographic Information System |
| ODIN | Ocean Data and Information Network |
| ODINAFRICA | Ocean Data and Information Network for Africa |
| ODINBlackSea | Ocean Data and Information Network for the Black Sea region |

| | |
|---|---|
| ODINCARSA | Ocean Data and Information Network for the Caribbean and Latin America region |
| ODINECET | Ocean Data and Information Network for European Countries in Economic Transition |
| ODINPIMRIS | Ocean Data and Information Network for Pacific Small Island States |
| ODINWESTPAC | Ocean Data and Information Network for the Western Pacific region |
| PICES | North Pacific Marine Science Organization |
| POST | Pacific Ocean Shelf Tracking System |
| QC | Quality Control |
| RON | Regional OBIS Node |
| SCOR | Scientific Committee on Oceanic Research |
| TOPP | Tagging of Pacific Predators |
| ToR | Terms of Reference |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| WCMC | World Conservation Monitoring Centre |

[end]

**Intergovernmental Oceanographic Commission (IOC)**

United Nations Educational, Scientific and Cultural Organization (UNESCO)
1, rue Miollis, 75732 Paris Cedex 15, France
Tel: +33 1 45 68 39 83
Fax: +33 1 45 68 58 12
http://ioc.unesco.org

IOC Project Office for IODE
Wandelaarkaai 7
8400 Oostende, Belgium
Tel: +32 59 34 21 34
Fax: + 32 59 34 01 52
http://www.iode.org