OASIS

Oceanic Seamounts: An Integrated Study
A project funded by the European Commission
Contract No. EVK3-CT-2002-00073-OASIS

No. 5 Sep 2005

OASIS newsletter

Editorial

The third and last year of OASIS is nearly over now, and the last months will certainly be very busy analysing data, preparing manuscripts and completing the final report. A couple of promising results have already been presented this year on scientific meetings like the ASLO summer meeting in Santiago de Compostela and the European Marine Biology Symposium (EMBS) in Vienna, and the final OASIS project meeting in Horta will give us another opportunity to discuss our findings, and how they are interconnected to each other. A second OASIS stakeholder workshop will be held in conjunction with the project meeting, presenting the draft management plan for Sedlo Seamount which considers the discussions from the first stakeholder workshop (see page 4) and the recent OASIS scientific results.

The "OASIS ship": R.V. *Poseidon*. Top: scientific crew of cruise P322 (page 2)

The preliminary results from OASIS certainly support the hypothesis that seamount systems are very diverse, and that each seamount is unique. In this light, seamount research in Europe should have a future after OASIS, and maybe the newly established Census of Marine Life programme CenSeam (see page 6) can provide a framework to apply for further European seamount projects.

The last year brought some developments regarding the access rights to the fisheries zones arount the Azores and Madeira (see page 5). Although the worst scenario, an unregulated free access to the 50-100 nm zones for the EU fleet, could be averted, it is still a long way to go before the seamounts (and other sensitive ecosystems) in the area will be effectively protected and managed.
Late-breaker news: The European Councel just adopted a measure prohibiting the use of any gillnet, entangling net or trammel net at depths greater than 200 m and any bottom trawl or similar towed nets operating in contact with the bottom of the sea for the waters around the Azores, Madeira and the Canary Islands.

Contact: Dr. Bernd Christiansen bchristiansen@uni-hamburg.de
Universität Hamburg,
Institut für Hydrobiologie und Fischereiwissenschaft
Zeiseweg 9, D-22765 Hamburg, Germany
Tel. +49 40 42838-6670, Fax +49 40 42838-6696

The last OASIS cruise on R.V. *Poseidon*

During the last 3 years, the *Poseidon* has become kind of the "OASIS ship", and the crew already felt as part of the OASIS team. In total three OASIS cruises have been made to Seine Seamount on *Poseidon*. The last cruise P322 in May 2005 was supposed to close some gaps in the datasets, and focused on benthic and benthopelagic sampling, but included also CTD casts and water sampling for phytoplankton and biogeochemistry. And for the first time we visited a seamount outside the OASIS study sites proper, namely Ampère Seamount, which is located ca 100 nm to the northeast of Seine Seamount.

Photo by M. Kaufmann

The cruise started in Funchal on 14 May 2005 with a total scientific crew of 10. Our first research area was Seine Seamount. Thanks to fair weather conditions, the sampling programme could be performed as planned. In particular, we used an 80 ft demersal ottertrawl on the summit plateau, which, together with a 2 m beamtrawl, yielded some nice samples of megafauna and fish. Unfortunately, the beamtrawl was heavily damaged during the third haul when it hit a rock, and it was not possible to repair it with shipboard means. The one-woman team from Erlangen was also successful in sampling sediment with a VanVeen grab, even from greater depths, although many of the grabs came back empty, which was always very frustrating, but is not unusual for seamounts. Near-botton zooplankton sampling was a further task, and the sea conditions made it possible to fish the MOCNESS at only a few metres above the bottom.

After 5 days of sampling at Seine Seamount we sailed to Ampère Seamount, which has a similar shape to Seine, but reaches well into the euphotic zone with a minimum summit depth of 55 m. Apart from a hydrographic characterization of the area by means of a grid of CTD casts, we again focused on benthic sampling with the VanVeen grab and performed a couple of photographic transects in various areas of the seamount. Unfortunately, bottom trawling was not possible. Additionally, the MOCNESS was used for zooplankton samples, and water was sampled for phytoplankton, plant pigments and organic matter.

Photo by M. Kaufmann

On 24 May 2005 *Poseidon* left the area and sailed to Lisbon, where part of the scientific crew left the ship. Poseidon finally arrived in Kiel on 1 June 2005. We want to thank the *Poseidon* crew for their support during all cruises and hope to join them again in future seamount - or other - projects.

B. Christiansen

Benthopelagic fish from Seine Seamount

OASIS used different types of trawls to sample benthopelagic fish and megafauna on the summit plateau of Seine Seamount: epibenthic sledge, ottertrawl and beamtrawl. In total 17 fish species were caught which belonged to 15 families. The most abundant species were the snipefish, *Macroramphosus sp*., the boarfish, *Capros aper*, the curled picarel, *Centracanthus cirrus*, and the seaperches *Anthias anthias* and *Callanthias ruber*. The total standing stock of benthopelagic fishes on top of Seine Seamount appears to be rather small.

Below is a selection of fishes from Seine Seamount.

Macroramphosus sp.
Photo: B. Christiansen

Anthias anthias.
Photo: B. Christiansen

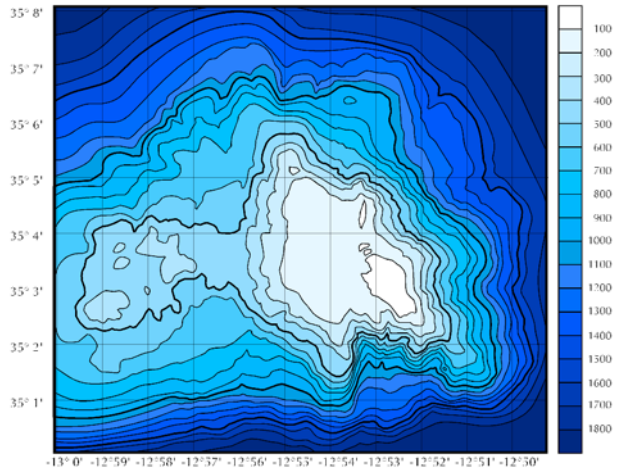
Torpedo nobiliana.
In situ at 500 m (photo: B. Christiansen) and from trawl (photo: M. Kaufmann)

Zenopsis conchifer
Photo: S. Werk

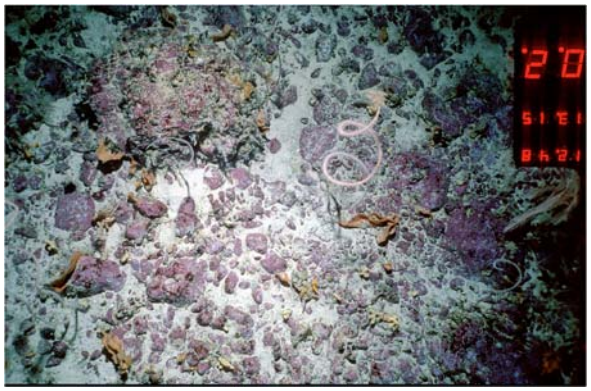
Another OASIS study site: Ampère Seamount

OASIS has basically studied two seamounts, Seine Seamount and Sedlo Seamount. However, on cruise Poseidon 322 we took the opportunity to have a look at another seamount in the same region. Ampère is a near-circular seamount located between Madeira and the Portuguese mainland. It rises to a minimum depth of less than 60 m, thus reaching into the euphotic zone and facilitating growth of macro algae. By contrast to Seine, it is not flat-topped, but features a complex topographic structure on the summit with several smaller peaks and troughs. Although Ampère is rather close to Seine, it appears to be much more productive. A first look on some of the images from Ampère indicates a much higher abundance of sessile megafauna.

B. Christiansen



Topography of Ampère Seamount. After Marova and Yevsyukov (1987)



Ampère Seamount, depth 128 m.
Photo by B. Christiansen

Ampère Seamount, depth 129 m. Photo by B. Christiansen

New reports

Seamount management case study

In 2004, WWF commissioned a report reviewing existing and proposed management measures for seamounts, including recommendations on management measures for the protection of habitats and communities associated with seamounts in the North-East Atlantic.
The recommendations for further measures given in the report explicitely name the designation of marine protected areas as one way to ensure the sustainability of these vulnerable ecosystems, next to general supportive measures and direct fisheries management measures. It is advised that

- more resources should be dedicated to supporting research on seamounts, including mapping and modelling;
- the three-dimensional protection of seamounts through MPA zoning is thought to be an effective tool for the management of nature values as well as sustainable fisheries, and should be encouraged;
- provisions for seamount protection should be integrated into national and regional MPA networks, including under the EU Habitats Directive, ensuring adequate representation of seamount habitat and species;
- time effectiveness is an important factor in the protection of seamounts, and the use of emergency measures may be necessary to protect previously untrawled seamounts; and MPAs and relevant legislation should be developed for the protection outside national jurisdiction, consistent with UNCLOS and other international agreements.

http://www.ngo.grida.no/wwfneap/Publication/Submissions/OSPAR2004/IEEP_WWF_seamnt_case_study.pdf

"The Offshore MPA Toolbox" Implementing Marine Protected Areas in the North-East Atlantic Offshore: Seamounts – A Case Study

The "Offshore MPA Toolbox" seeks to compile the most important information relevant for the selection, designation and in particular management of protected areas at seamounts in the North-East Atlantic, including a summary of legal issues. It is aimed primarily at planners and managers of offshore MPAs in the region, however it may also be useful for practitioners elsewhere.We hope that it will contribute to enhance the establishment of well-managed marine protected areas offshore, especially for seamounts and offshore banks which face similar problems.

Currently, there are 346 seamounts under protection in 84 marine protected areas worldwide, all located in areas under the sovereignty of a coastal State. This corresponds to only a small fraction of the estimated 10,000-50,000 seamounts rising higher than 1,000 m from the seafloor (estimated by Kitchingman & Lay 2004). In the Atlantic, only two seamounts have been designated up to now, both in Azorean waters.

http://www.rrz.uni-hamburg.de/OASIS/Pages/publications/Offshore_Toolbox.pdf

An online webversion of the report is available at:
http://www.grida.no/wwfneap/Toolbox/Toolbox_Entry.html

The first OASIS stakeholder workshop in Horta (Azores), April 2004: executive summary

This report mirrors the presentations and discussions which took place during the first OASIS stakeholder workshop, April 1-2, 2004 in Horta, Faial, Azores.

OASIS (Oceanic Seamounts: An Integrated Study) is an EU-funded integrated seamount research project (2002-2005) aiming to describe the functional interaction of all seamount ecosystem compartments, except for the highly migratory visitors. OASIS also wants to improve knowledge which is required for taking management decisions. The research focuses on two model seamounts of different summit depth, topography and fishing pressure, the Sedlo seamount 100 nm north of the Azores and the Seine seamount 100 nm northeast of Madeira.

The results from these in-depth studies shall be generalized as far as possible, driving conceptual and numerical models for enabling the extrapolation to less well studied areas. As a first step with regard to conservation, a more generic management plan for a seamount conservation area was developed, the "Offshore MPA toolbox". In a second step, a model site-specific management plan will be developed for the Sedlo seamount which will be presented to all stakeholders for discussion in fall 2005. Ultimately, more general conclusions on seamount management shall be drawn.

The workshop was attended by some 40 regional, national and foreign participants from fisheries, government, advisory, NGOs and science. The first day of the workshop was an integral part of the annual Azores Fisheries Week, a major international meeting involving scientists, economists, politicians, lawyers, fishermen and fisheries representatives.

The presentations

- introduced the OASIS project (Ana Martins, University of the Azores, DOP),
- reviewed the knowledge on seamounts and seamount ecology in the North East Atlantic (Susan Gubbay, Consultant),
- gave a scientific perspective on global and regional seamount fisheries (Telmo Morato, Gui Menezes, University of the Azores, DOP),
- shed light on the ecological relationship between seamounts and visiting turtles (Thomas Dellinger, University of Madeira),
- described the process of MPA designation on the example of Bowie Seamount (Kevin Conley, Fisheries and Oceans Canada),
- and reviewed past, present and future marine conservation scientific efforts in the Azores (Ricardo Serrão Santos, University of the Azores, DOP).

The second day of the workshop was dedicated to discussing the following issues:

- Seamount fisheries in the context of regional and European Fisheries legislation
- Management measures required for protecting seamounts (including MPAs)
- The knowledge base on Atlantic seamounts: trying to fill the gaps.

Until today, the seamount fisheries of the Azores and Madeira employ fishing techniques which are basically low-tech, small scale and labour-intensive. Due to the recently changed access regime to the former exclusive 200 nm fisheries zone of the Azores and Madeira (Western Waters Regulation, November 2003), a large part of the workshop discussions focussed on the fate of the island fisheries. The regional management system in place until now was considered to come quite close to a sustainable fishery taking account of the longterm health of the ecosystems supporting it. The EU Western Waters Regulation was seen as a top-down non-participatory, and scientifically not sound decision prioritizing the principle of equal access over the precautionary principle also inherent in the Common Fisheries Policy. Participants expressed their concern over the high probability of overfishing due to industrial fishing techniques and increasing fishing effort, resulting in significant consequences for the local Azorean economy.

Management measures regulating seamount fisheries were recommended to include effort and gear control in very specific, small-scale management units, rather than the statistical rectangles used at present. Pelagic fishing techniques were highlighted to cause high mortality rates of visiting sea turtles, cetaceans and seabirds. The pelagic fishing effort should also be quantified.

The existing gaps in knowledge on Atlantic seamounts were seen to call for more immediate measures being taken on a precautionary basis, since management failures would be more severe in a deep-sea environment. Most speakers regarded MPAs as tools that deliver risk reduction for species and habitats and offer integrated management of restricted resources, including fishes. However, surveillance problems were highlighted. A representative network of MPAs could resemble an investor's portfolio. The Azores, as the first European Region to have concluded a Management Sectorial Plan for the Natura 2000 network, are now involved in the preparation of new dossiers leading to the inclusion of deep-sea sites as SCIs under Natura 2000, some of which are individual seamounts. In view of this, seamount management should, from the beginning, be developed in close cooperation with stakeholders.

S. Christiansen

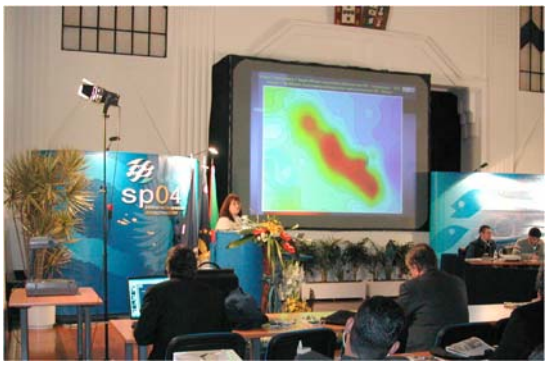


Photo: S. Christiansen

The full report is available at:
http://www.rrz.uni-hamburg.de/OASIS/publications/Stakeholder1.pdf

Announcement: 2nd OASIS stakeholder workshop in Horta, Azores, on 14 Oct 2005

The second OASIS stakeholder workshop will be held in Horta, Azores, on 14 October 2005, giving stakeholders and experts the opportunity to discuss the first draft of the management plan for Sedlo Seamount. The draft management plan has been compiled by Susan Gubbay and considers the discussions from the first workshop.

New developments in the protection of NE Atlantic seamounts

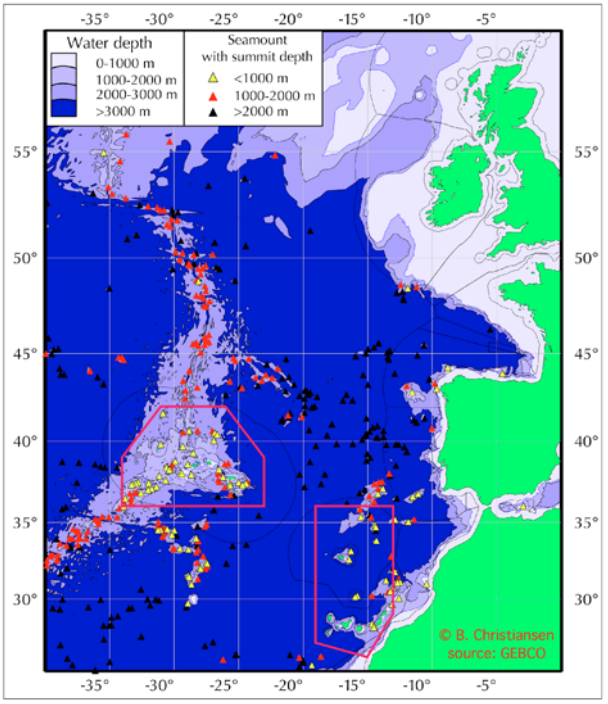
Closure of 12 deep-sea sites to active fishing gear
Twelve vulnerable deep-water sites (cold-water coral reefs and/or seamounts) have so far been permanently or temporarily closed to active fishing gear interacting with the sea-floor in the North-East Atlantic: five cold-water coral reefs in Norwegian waters, the Darwin Mounds off Scotland and most of the Azores EEZ within EU waters, as well as five seamount sites near the mid-Atlantic Ridge in international waters. None of these sites was established as an MPA. The measures applied are gear closures under fisheries legislation in Norway, the EU Common Fisheries Policy (CFP) and the respective Regional Fisheries Management Organisations. The process was enhanced by recent commitments and agreements to protect deep-water habitats under OSPAR the Regional Seas Convention (RSC).

Azores case
The battle to safeguard deep-water fish stocks and habitats around the Azores, Madeira and Canary Islands is still on with many ups and downs: the first good news came in late October 2004 when the Council of European Fisheries Ministers adopted a temporary bottom trawling ban which then was extended to December 2005. However, a decision on the European Commission's proposal for a permanent bottom trawling ban is still pending and the 2005 regulations adopted in Council for deep-water fishing are insufficient hence the future of the Azores deep-water treasures remains at stake. In the light of this, the Government of the Azores Autonomous Region (Portugal) continues to apply, at the European Court of Justice, for suspension of the EU Western Waters Regulation which provides all EU fleets (including deep-water fleets of new Member States) access to their waters since August 2004. In February 2005, the Court gave three environmental NGOs (WWF, Greenpeace, Seas At Risk) leave to intervene in support of the Azores application, an important signal and unprecedented in EU case law history.

Update: The European Council has just adopted a permanent measure prohibiting the use of any gillnet, entangling net or trammel net at depths greater than 200 m and any bottom trawl or similar towed nets operating in contact with the bottom of the sea for the waters around the Azores, Madeira and the Canary Islands (see map in opposite column, red-framed areas).

NEAFC closes seamounts to fishing
In the wake of the debate on a global moratorium on high seas bottom trawling new opportunities arose to foster specific actions at regional level: already in summer 2004, the OSPAR Commission had called on the North-East Atlantic Fisheries Commission (NEAFC) to take measures to protect cold-water coral reefs on the western slopes of the Rockall Bank from fishing impact. At the 23rd annual meeting of NEAFC in November 2004, the Norwegian government, supported by WWF and other ENGO observers, successfully tabled a proposal to close parts of the Hatton Bank and Reykjanes Ridge, as well as four seamounts to bottom trawling and bottom set nets subject to review after a period of three years. For the first time ever, a RFMO adopted measures to close deep-water habitats to certain fishing practices on the high seas even though the proposals for Rockall and Hatton Bank were put on hold under pressure from big fishing nations. NEAFC sent a request to ICES to evaluate the situation on these important fishing grounds. In February 2005 WWF submitted a review of cold-water coral protection measures to the OSPAR Biodiversity Committee (BDC), including a detailed proposal to combine gear closures and MPAs for the protection of Rockall Bank, and gear closures on Hatton Bank. This was based on an updated version of WWF's reefs inventory of 2001 including site data sheets. WWF's data were also analysed at a meeting of the ICES Working Group on Deep-water Ecology (WG DEC) in March 2005 where they corroborated the recommendation to take further measures.

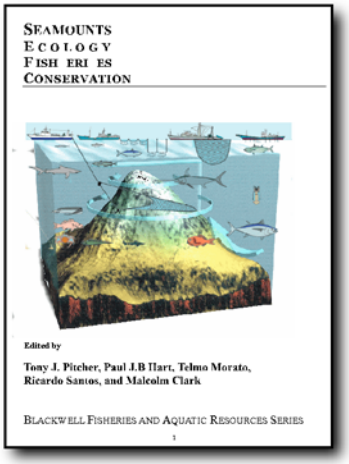
Stefan Lutter



Map of NE Atlantic Seamounts; the trawling ban is effective within the areas marked with a red frame. Seamount locations after Kitchingman and Lay 2004.

New book on seamounts

A new book about seamounts is in preparation and will be published in 2006. The book is called Seamounts - Ecology, Fisheries and Conservation, and is edited by Tony J. Pitcher, Paul J.B Hart, Telmo Morato, Ricardo Santos, and Malcolm Clark. A couple of OASIS members are authors or co-authors of the book which will compile up-to-date information on various aspects of seamounts, including geology, geography, physics, biology, fisheries and conservation.



CenSeam - new CoML project

Census of Marine Life on Seamounts: A global study of seamount ecosystems, to determine their role in the biogeography, biodiversity, productivity, and evolution of marine organisms, and to evaluate the effects of human exploitation.

Project Leaders: Malcolm Clark, Ashley Rowden, Karen Stocks

CenSeam is a CoML programme launched in 2005. It is intended to provide the framework needed to prioritize, integrate, expand, and facilitate seamount research efforts to significantly reduce the unknown, and build toward a global understanding of seamount ecosystems, and the roles they have in the biogeography, biodiversity, productivity, and evolution of marine organisms. The science plan focuses on three questions that will help to increase our knowledge and understanding of these important but little known ecosystems: (1) What factors drive seamount community structure, diversity, and endemism, both at the scale of whole seamounts and individual habitats within seamounts? (2) What key processes operate to cause differences between seamounts, and between seamount and non-seamount regions? (3) What are the impacts of fisheries on seamount community structure and function?

For a project description see:
http://www.coml.org/descrip/censeam.htm

New OASIS publications

Seamounts: a review of physical processes and their influence on seamount ecosystems. An OASIS report by Martin White and Christian Mohn.
http://www.rrz.uni-hamburg.de/OASIS/Pages/publications/Oceanography.pdf

The Offshore Toolbox. Implementing Marine Protected Areas in the North-East Atlantic Offshore: Seamounts – A Case Study. An OASIS/WWF report by Stefanie Schmidt and Sabine Christiansen.
http://www.rrz.uni-hamburg.de/OASIS/Pages/publications/Offshore_Toolbox.pdf

also available as interactive online version at:
http://ngo.grida.no/wwfneap/Toolbox/Toolbox_Entry.html

RRS Discovery Cruise 282, 30 Jun - 01 Aug 2004. The environment and ecology of Seine and Sedlo Seamounts, NE Atlantic. A report by Brian Bett and collaborators.
http://www.rrz.uni-hamburg.de/OASIS/Pages/publications/D282_Cruise_Report.pdf

OASIS on tour: scientific symposia

The ASLO summer meeting 2005 took place in Santiago de Compostela, Spain. With more than 2000 participants it was one of the largest meetings of this kind. A special session on Seamount and Island Oceanography gave OASIS scientists the opportunity to present and discuss their results. With 5 oral presentations and 5 posters covering aspects of physical oceanography, biogeochemistry and biology, OASIS was the main contributor to the session.

Another special session on the ecology of seamounts was held during the 40th European Marine Biology Symposium in Vienna, Austria. Close to the mountains, but far away from seamounts, three OASIS scientists presented results on the flow field around seamounts, on zooplankton and on benthopelagic fish.

Upcoming events

OASIS final project meeting
Horta, Azores, 12-13 Oct 2005

OASIS second Stakeholder Workshop
Horta, Azores, 14 Oct 2005

Exhibition "Communicating Research 2005"
Brussels 14-15 November 2005
OASIS will be present on the stand of the Azores.

11th Deep-Sea Biology Symposium
Southampton, 9-14 July 2006

Sunset at Ampère Seamount.
Photo by M. Kaufmann

Participating institutions in OASIS

Universidad de Las Palmas de Gran Canaria, Spain (ULPGC)

National Environmental Research Council, Southampton Oceanography Centre, UK (NERC)

Universität Hamburg, Germany (UHH)

Instituto do Mar/Departamento de Oceanografia e Pescas, Universidade dos Açores, Portugal (IMAR/DOP)

Friedrich-Alexander Universität Erlangen, Germany (FAU)

Universität Rostock, Germany (URO)

National University of Ireland, Galway, Ireland (NUIG)

World Wide Fund for Nature, North East Atlantic Programme (WWF)

University of Liverpool, UK (ULIV)