

What's New with CoML? NOV/DEC 2004

- **All Program Meeting.**

The Second CoML All Program Meeting will be held 5-6 November 2005 in Frankfurt, Germany. It will be held in conjunction with the International Senckenberg Conference (30 October – 4 November) on marine biodiversity, organized by Pedro Martinez and Michael Turkay. The Senckenberg Conference will feature press conference and a scientific session on CoML. We encourage all CoML project teams to submit papers to the CoML session. More information is forthcoming.

- **Scientific Steering Committee (SSC).**

The Census of Marine Life (CoML) international Scientific Steering Committee (SSC) met 2-3 December in Paris, France, hosted by member Patricio Bernal of the UN Intergovernmental Oceanographic Commission based at UNESCO. The Chairs and designees of the CoML National and Regional Implementation Committees joined the SSC for discussions on project globalization and affiliation and positioning the program for its legacies beyond 2010, and made recommendations for large international workshops to advance CoML project approaches and to encourage regional ecosystem studies drawing on CoML frameworks and technologies around the globe. The group also met with representatives of the European Commission, European Science Foundation, ICES, and CIESM to advance the CoML program in Europe and in other countries bordering the Mediterranean. The SSC also welcomed the participation of Serge Garcia, chief of the fisheries division of the Food and Agricultural Organization of the UN and explored ways of deepening synergies between CoML and FAO. The SSC endorsed proposals to initiate two new Ocean Realm Field Projects on global seamounts and an Antarctic census of marine life.

The next SSC meeting will be held 26-27 April 2005 at Scripps Institution of Oceanography in La Jolla, CA, in conjunction with the *Future Known-Unknown-Unknowable* Conference.

- **Education and Outreach.**

The Education and Outreach team at URI launched a new website, *Investigating Marine Life*, to inform the public on the CoML approaches to and technologies for biodiversity research. The website can be found at <http://www.coml.org/edu/index.htm> or through the CoML Portal.

In December, the E&O team also released the first CoML Annual Highlights report, which serves as a 2004 calendar and a brief overview of the exciting scientific discoveries of the CoML projects over the past year. Project leaders will each be sent a set of reports. Anyone else who would like hardcopies should contact Sara Hickox (<mailto:sara@gso.uri.edu>) or the Secretariat (<mailto:coml@coreocean.org>). It can also be downloaded at: <http://www.coml.org/baseline/index.htm>.

CNN International is now showing Public Service Announcements about the Census of Marine Life. These 15-, 30- and 60-second spots began airing in late November and will continue for six months. This is a great opportunity for visibility for the program, as the PSA will air in 212 countries (excluding the U.S.). The BBC has also agreed to air the PSA on its domestic service. The E&O team at URI asks that anyone who sees the PSA contact them so they can get a sense of where and when they are shown. The PSA can also be viewed at <http://www.coml.org> under Images and Videos.

CoML is listed as an example of multinational work in the oceans in: *Introductory Oceanography tenth edition*, Harold V. Thurman and Alan P. Trujillo, Pearson Prentice Hall, 2004 p. 30.

The Outreach Liaison Network met 2-3 December in Paris, France in conjunction with the SSC meeting. On 1 December, the groups jointly hosted an evening seminar with the Paris natural history museum to highlight CoML activities in France. Filmmaker Jacques Perrin and his team from Galatee Films (*Winged Migrations*, *Microcosmos*) also presented their new film concept, *Ocean*, for which they seek the assistance of the CoML field projects. For more information, please speak to the projects' Outreach Liaisons (listed at <http://www.coml.org/medres/medres66.htm>).

- **Ocean Biogeographic Information System (OBIS).**

The newly established Canadian Regional OBIS Node, led by Bob Branton and his group at the Department of Fisheries and Oceans, is now contributing more than 300K records from 11 data sources to the OBIS Portal. Recently added to the OBIS family of data are the Ifremer BIOCEAN database (Deep Sea Benthic Fauna) from France and the National Benthic Inventory of NOAA/USA. OBIS is now serving over 5.6 million records.

The OBIS Portal now also features a support contact (<mailto:obissupport@marine.rutgers.edu>) intended to assist OBIS end users.

In partnership with the Intergovernmental Oceanographic Commission of UNESCO - International Oceanographic Data and Information Exchange (IOC/IODE); International Council for the Exploration of the Sea (ICES); International Association for Biological Oceanography (IABO); Taxonomic Database Working Group (TDWG); Flanders Marine Institute (Vlaams Instituut voor de Zee - VLIZ); and the Marine Biodiversity and Ecosystem Functioning EU Network of Excellence (MarBEF), CoML/OBIS co-sponsored an Ocean Biodiversity Informatics International Conference on Marine Biodiversity Data Management. The conference was held in Hamburg, Germany on 29 November – 1 December, hosted by the Bundesamt für Seeschifffahrt und Hydrographie (BSH, Germany). Selected papers will be published in Marine Ecology Progress Series. The IOC and the Flanders Marine Institute will jointly publish full proceedings. For more information, visit <http://www.vliz.be/obi/>. 165 delegates from 42 countries attended the conference. Almost 100 presentations were given. The breadth and scope of the delegates and presentations shows that ocean biodiversity informatics is a new interdisciplinary scientific activity, involving marine biologists, information technologists, data managers, and oceanographers, in which OBIS is the lead program. A list of OBIS papers can be found at the end of this document.

The OBIS International Committee met formally in Hamburg, as did the OBIS Management Committee and Technology Committee in *ad hoc* sessions. Reports will be available shortly. Representatives from OBIS and ICES, IODE, GOOS, and IOC took advantage of travel to Hamburg and Paris for meetings and discussions.

- **History of Marine Animal Populations (HMAP).**

The HMAP Open Science Conference, *Oceans Past - Multidisciplinary Perspectives on the History of Marine Animal Populations*, will be held 24-27 October 2005 at Hotel Comwell in Kolding, Denmark. Oceans Past is a global conference dedicated to the history of the oceans and marine life. The conference format will be an open science forum where researchers from all relevant disciplines are welcome, both from the natural sciences and the humanities. The conference will present a large number of scientific papers in addition to discussions in open sessions about what we know, do not know, and may never know about past oceans, and how we can improve marine historical research on a global scale. The call for papers closes 15 February 2005 and can be found at <http://www.hmapcoml.org/Default.asp?ID=251>.

Future of Marine Animal Populations (FMAP).

FMAP Japan organized a synergy meeting with the NaGISA Scientific Steering Group, representing eight countries and four continents, at the University of Kyoto on 15-16 November 2004. Seven Japanese modelers met with five FMAP International representatives and identified key features of the NaGISA protocols that would allow hierarchical, replicated analyses of biodiversity gradients superior to any published studies. The group agreed to standards for NaGISA that would ensure best statistical practices and a made a plan to test them with the most advanced current NaGISA data sets from Alaska, Japan and Mexico. The special requirements for analyzing and, particularly, displaying the diversity gradients over a few ten to hundreds meters perpendicular to shore along hundreds to thousands of kilometers of shoreline were discussed.

Similar scaling requirements for POST alongshore migration data had been discussed earlier at a joint meeting of FMAP and the POST management board at the Vancouver Aquarium on 14-15 October, and FMAP recommended a workshop focused on optimizing displays of this type divergent scale data in OBIS.

In mid-December, Jesse Ausubel traveled to Halifax and met with RAM Myers, Boris Worm and other members of the FMAP headquarters team. Worm has been leading participation in a project on the value of

marine biodiversity that grew out of the 2nd Scripps KUU workshop (marine biodiversity of the past) coordinated by the U.S. National Center for Ecological Analysis and Synthesis; their report should be widely available in CoML. Several FMAP team members are now working on a world shark assessment that should draw on several CoML field projects. The shark assessment will involve several regional studies and culminate in about two years.

Ocean Realm Field Projects

- **Mid-Atlantic Ridge: MAR-ECO.**

MAR-ECO's project leader, Odd Aksel Bergstad, has been awarded the Research Council of Norway's 2004 prize for outstanding communication of research. The jury was both impressed and inspired by the diversity and professionalism that were features of the MAR-ECO public outreach programme. The prize is worth NOK 200,000. Congratulations to Odd Aksel, who shares this honor with all partners in the project.

The scientific reports from the 2004 G.O. Sars expedition and the MS Loran cruise are ready and posted on www.mar-eco.no/sci. Tracey Sutton, Filipe Porteiro and Gui Menezes visited Norway to initiate collaborative analyses of the fish samples and data obtained during the expedition.

The *G.O. Sars* expedition was joined by Norwegian artist Ørnulf Opdahl, who painted his impressions of the sights and science around him. An exhibition of these watercolors opened at the Henie-Onstad Art Center at Høvikodden near Oslo, Norway on 21 October, drawing approximately 500 guests. Ørnulf Opdahl's findings and subsequent results from the MAR-ECO expedition will be on view at a number of exhibitions in the future. When the Henie-Onstad exhibition closes on 20 February 2005, it will be sent to "Nordens Hus" in Reykjavik, Iceland. Plans for further exhibitions are under discussion.

A film crew also joined the *G.O. Sars* expedition. The resulting documentary on MAR-ECO Ørnulf Opdahl is scheduled to air on NRK, Norwegian television, on 25 December 2004. An international version will be completed soon after.

A Nordic zooplankton workshop was held in Sandgerdi, Iceland, under the leadership of Astthor Gislason from the Marine Research Institute. The workshop included participants from Iceland, Norway and the Faroe Islands.

In December, MAR-ECO participated in Norway's National Science Week (Forskningsdagene), an annual nationwide event to make science and research available to the public. MAR-ECO invited two classes of students age 11 to learn about the mysteries of the deep-sea. Olav Rune Godø amazed the schoolchildren with images and stories from the MAR-ECO expedition. After a guided tour at Ørnulf Opdahl's exhibition, the students made drawings of fishes, jellyfish and the *G.O. Sars*, wrote stories and a cartoon, and made colorful squids of knitting wool.

- **Gulf of Maine: GoMA.**

The new version of the Gulf of Maine Biogeographic Information System (GMBIS) and its Dynamic Atlas will be available in early January at the Gulf of Maine Census's web site <http://www.usm.maine.edu/gulfofmaine-census>. Click on the Research tab and explore the trawl survey and other initial databases, which will expand over time. GMBIS offers options for people with different interests and skills, from scientists to resource managers and educators. Users can directly download all or portions of data bases; can combine and map data; explore a "themes" page (which will add stories over time); and peruse products based on data from the system. The purpose of the Dynamic Atlas is to enable, for the first time, the ready access to and integration of Gulf of Maine databases that will enhance understanding of the diversity, abundance, and distribution of life in the Gulf of Maine, and how these are changing. It will be a direct outreach tool to educators and the public, a background tool for resource managers, and a means by which scientists can both get direct access to data and develop hypotheses for testing. During 2005, GMBIS will become part of an even larger effort in the Gulf of Maine region. The Gulf of Maine Census has initiated the Gulf of Maine Ocean Data Partnership, which now comprises 18

federal, state, university, and nonprofit agencies and programs that maintain ongoing marine data bases. The databases cover biology, geology, oceanography, and environmental quality.

On December 7, the Gulf of Maine Data Partnership held its first annual meeting and adopted a work plan that takes the first essential steps toward a system of dynamic exchange and integration of dozens of distributed databases. The Partnership is regarded as a pivotal tool both for integrating biology and biodiversity into an integrated ocean observing system, and, through this integration, advancing ecosystem-based fisheries management. David Mountain of the Northeast Fisheries Science Center is the Partnership's chair and Bob Branton of the Department of Fisheries and Oceans - Canada is vice chair. Evan Richert, program director of the Gulf of Maine Census, will chair the Partnership's Outreach Committee and serve on the Executive Committee.

- **Chemosynthetic Ecosystems: ChEss.**

ChEssBase is now online at the ChEss web site (<http://www.soc.soton.ac.uk/chess/database/database.html>). It provides taxonomical, biological, ecological and distributional data of all species described from deep-water chemosynthetic ecosystems, as well as images, bibliography and habitat information. At the moment, ChEssBase includes data on 716 species from 74 chemosynthetic sites around the globe and 949 papers. ChEss is now working with Karen Stocks to integrate ChEssBase in OBIS.

Javier Sellanes, Victor Gallardo and their team made great discoveries of large areas of gas hydrates and five new species of chemosynthetic bivalves during a cruise in October 2004 to the continental margin off Chile (http://www.soc.soton.ac.uk/chess/chile_discovery04.html).

A series of project proposals have been submitted to different funding agencies and are being evaluated: Exploration of Chemosynthetic Habitats of the New Zealand Region, NOAA-OE (USA), PI: Amy Baco, 2005-2007; AUV Mapping of Chemosynthetic and Deep-Sea Coral Ecosystems in the Gulf of Mexico, NOAA/NOPP (USA), PI: A. Shepard, 2005-2006; INSPIRE - within the Deep Oceans NERC Initiative, NERC (UK), PI: Chris German, 2006-2011; Exploration, discovery and analysis of chemosynthetic ecosystems south of the Polar Front, NERC (UK), PI: Paul Tyler, 2005-2010; InterVENTion: educational video series on hydrothermal vents, Volkswagen Foundation (Germany), PI: Kristen Kusek, 2005-2006.

The first trial of the Outreach from Sea programme during a cruise in October to TAG in the MAR was a success (<http://www.soc.soton.ac.uk/chess/tag04/25oct.html>). ChEss is now planning to further develop the programme next year with the participation of schools during two cruises: Exploration of the Southern MAR (PI: Chris German) and Investigation of the Easter Island Microplate (PI: Bob Vrijenhoek).

Eva Ramirez, Daniel Desbruyères and Antje Boetius participated in the events for the 20th anniversary of Ifremer (France) in October 2004.

- **Tagging of Pacific Pelagics: TOPP.**

TOPP's fall 2004 tagging season was particularly ambitious, with continued efforts on a broad range of species including pinnipeds, sharks, tunas, swordfish and whales. Recent highlights include:

Pinnipeds (Elephant Seals and Sea Lions). All twenty five of the female elephant seals tagged in June are heading back to the Ano Nuevo rookery to give birth to a pup. When they return sometime between January and February the tags will be removed and the oceanographic data obtained by the data loggers recovered. These data include high quality water temperature and chlorophyll profiles. In addition, four of these animals carried the newly designed SMRU salinity temperature data loggers (see below). Following last year's successful capturing, handling, and tagging of 21 adult male California sea lions, TOPP's pinniped team revamped their capture equipment and built a new floating platform mount in its present location, the Monterey Bay Harbor. This year's tagging efforts, initiated in September 2004, will track sea lion locations and diving behavior as the animals disperse from the Monterey Bay region along the West Coast of the United States and southern British Columbia. In addition to the five temperature-only satellite relay data loggers (SRDL) acquired with funding from the Center for Integrative Marine Technologies, six newly-designed SRDL (developed with funding from the National Oceanographic Partnership Program - ONR) will be deployed to provide salinity as well as temperature and depth data (conductivity,

temperature, and depth; CTD). So far three of these tags have been deployed and are reporting data. While prototype CTD tags from SMRU were tested on elephant seals in spring 2004, this fall marks TOPP's first deployment of a CTD tag on a member of the eared seal species group. Via Satellite, CTD tags transmit location information daily, and temperature and salinity during select dives. The hope is that these tags will transmit for a minimum of three months, and possibly as long as six to nine months, generating finer scale data that, when merged with large scale satellite remote sensing data, will help meet an important TOPP goal. Subsurface environmental data such as temperature, salinity—and consequently density—gathered by the CTD tags generate major benefits for both biological and oceanographic research. The advantage of deploying these tags on sea lions rather than elephant seals is that sea lions remain in the California Current, while elephant seals roam over the greater North Eastern Pacific. During November and December, the pinniped team deployed satellite tags and data loggers on 12 female California sea lions on their Southern California rookery on San Nicolas Island. In addition to providing information on movement patterns and diving behavior, the tags are providing information on when and where the animals are feeding (by measuring changes in stomach temperature) and like the elephant seals water column temperature and chlorophyll profiles. These tags were deployed at the end of October and have been recently recovered during the first part of December.

Pacific Tunas (Albacore, Bluefin and Yellowfin). In November, Kurt Schaffer and Dan Fuller of IATTC tagged 81 yellowfin tuna from the *F.V. Her Grace*, nearly all of which were released from three different areas off Baja California. Including these efforts, TOPP has deployed over 325 archival tags in total on albacore, bluefin and yellowfin tuna. Data from these tags will yield important new information for ocean observation in the California Current and provide critical biological data for regional management efforts.

Sharks. Shark team scientists, led by Dave Holts of NMFS, successfully tagged seventeen blue sharks during October. This latest effort brings the total sharks tagged in the North Pacific in 2004 to 75, including blue, mako, salmon, thresher and white sharks. Most of these sharks were double-tagged with Smart Position or Temperature Transmitting tags (SPOT) and Pop-up Archival Transmitting (PAT) tags. Secured to the dorsal fin, SPOT tags transmit to the Argos satellites at intervals when the shark surfaces. These tags provide a highly accurate track, which enhances the environmental and behavioral data gathered by PAT tags that release, surface and transmit to Argos satellites after a period of time preprogrammed by TOPP scientists. Since their release off Central California all the sharks have moved south and are now off Baja California, Mexico.

Whales. Six of the tags deployed on blue whales by the TOPP cetacean team in August are still transmitting regular positions. Of these, three whales have moved south along the coast and are currently in the waters off San Diego or Mexico, two are in regions of high productivity north of San Francisco Bay, and one has moved off shore. Clearly, the highly productive near-shore waters in the California Current are important habitat for the blue whale in the fall months.

Seabirds. During the month of December, scientists on the seabird team, led by Scott Shaffer of UCSC, will begin tracking efforts at Tern Island in Northern Hawaii, and Guadalupe Island in Mexico. At Tern Island, the team hopes to follow 50-60 single foraging trips using satellite tags and 30 post-breeding migrations using archival tags on Laysan and black-footed albatrosses. At Guadalupe Island, they plan to monitor 30-40 single foraging trips and 15 migrations using archival tags on Laysan albatross. The satellite transmitters will track single 10-30 day foraging trips in both locations. The archival tags will track birds for one year, offering TOPP researchers an exciting glimpse of albatross movements during the non-breeding period (ca. five months). In January and February 2005, two more teams will deploy archival tags on sooty and pink-footed shearwaters in the southern hemisphere. Forty-five archival tags will be deployed for a period of eight-ten months to determine the migratory routes of the birds as they commute from breeding sites in the southern hemisphere to the North Pacific.

Data Management. TOPP's data management team continues to make significant strides forward with the live access server. Web site visitors can both follow the satellite tagged animals at the TOPP page (<http://las.pfeg.noaa.gov/TOPP/>) and view the pop-up tags that have been reporting throughout 2003 and 2004 (<http://las.pfeg.noaa.gov/TOPP/popups.html>). Visitors can see the animated species tracks plotted along with 1) Advanced Very High Resolution Radiometer (AVHRR) derived sea surface temperature, or

2) Moderate Resolution Imaging Spectroradiometer (MODIS) derived chlorophyll. These displays provide a powerful tool for understanding the environmental features that influence animal movements. To increase efficiency, the TOPP team has developed methods to update the data automatically each night.

Education and Outreach. Eric Nardone, TOPP web project coordinator, and Diane Richards, TOPP content developer, have joined the project's education and outreach program at the Monterey Bay Aquarium, expanding the programs efforts to raise public awareness about the tagging project and ocean conservation in general. The team is developing a new Web site design that will present the information TOPP collects to the public, engaging, educating and exciting individuals about the marine environment and related conservation issues.

- **Salmon/Coastal Tracking: POST.**

The last of the 2004 POST array was retrieved from Alaskan waters at the end of November, when a weather window finally opened. (Several fishing vessels sank in SE Alaska – none with POST crew aboard! – in the preceding Fall months owing to the severe weather). No tagged fish were detected on this listening line, demonstrating that the many green sturgeon we had detected on the southern lines in Washington and British Columbia had not moved up to north of the SE Alaskan Panhandle. Unfortunately, the lack of tagged salmon was expected, because the excellent movement rates we collected from the array to the south showed that these animals were migrating north at speeds that meant the batteries in their tags would be depleted before they reached the Alaskan line. POST will decide this winter to either move the existing Alaskan line south or to program a sleep period into the tags. If they choose the latter approach, the tags will conserve power by going to sleep after a month or so and then will wake up and begin transmitting again shortly before they reach the current line.

- **Latitudinal/Longitudinal Gradients in Near-Shore Biodiversity: NaGISA.**

NaGISA has truly globalized in the past year, as reflected by the project's Principal Investigators: Yoshihisa Shirayama (Western Pacific NaGISA), Brenda Konar (Eastern Pacific NaGISA), Paula Spiniello (Caribbean NaGISA), Mohideen Wafar (Indian Ocean NaGISA), Lisandro Benedetti-Cecchi (Euro-NaGISA) and Rafael Riosmena-Rodriguez (Mexico). To date NaGISA has over 30 active field sites in 8 countries including Japan, Thailand, Vietnam, Indonesia, Malaysia, the Philippines, Russia and the USA. It has member groups in more than 15 other countries preparing to begin work, including Ireland, the Netherlands, Poland, China, Taiwan, Mexico, Venezuela, Puerto Rico and Canada. Benefiting from many helpful comments by reviewers around the world, the NaGISA leadership finalized its Phase II plans, which were approved by the SC at the Paris meeting. The Sloan Foundation then renewed its support for the international coordination of NaGISA. NaGISA now has several other major proposals in review.

NaGISA has chosen "Synergy" as its motto for 2005. The first Joint Synergy meeting was held in conjunction with the FMAP (Future Modeling of Animal Populations) Project in Kyoto, Japan in November. The meeting resulted in the following areas of cooperation being established between FMAP and NaGISA: (a) the development of standard statistical methods and software to analyze the unique data types that NaGISA will produce, (b) standard mapping tools that will optimally display the unusual linear NaGISA data, (c) The development of synthetic large-scale ecological models that can be applied to NaGISA data. A more detailed report can be found on the NaGISA website: <http://www.nagisa.coml.org/>

NaGISA is happy to announce that Registration is now open for our next taxonomy workshop 'Echinodermata' to be held 1-3 March 2005 at the Seto Marine Laboratory in Japan. This is a basic training workshop for the taxonomic study and field identification of Echinoderms. The goal of this workshop is to train and transfer basic knowledge and techniques of echinoderm taxonomy to young scientists currently working with NaGISA however all participants are welcome. The course will be supervised by Toshihiko Fujita (Ph.D.) of the Department of Zoology, National Science Museum (Tokyo, Japan) and Masaki Saba, of the Japanese Society of Systemic Zoology and author of "Sea and Brittle Stars in Japanese Waters." Details and registration forms can be found on the NaGISA website: <http://www.nagisa.coml.org/>

NaGISA will hold an international conference in conjunction with the World Coastal Zone Conference (WCZC) on 16-20 October 2006 in Japan. The conference will be open invitation to related coastal

biodiversity projects. Preliminary session themes include habitats, timelines, community structure, and invasive species.

- **Abyssal Sediments: CeDAMar.**

CeDAMar has given its website a major facelift, including a new logo. Please be sure to check it out at: <http://www.cedamar.org>.

First results of the expedition ANDEEP I & II are soon to appear in print in a special volume of Deep-Sea Research. The volume is dedicated to the late Howard Sanders, one of the pioneers in modern deep-sea biology.

CeDAMar has initiated a fellowship program for deep-sea taxonomists. A total of 10 fellowships will be granted per year. Deadlines for application are 15th March, 15th June, 15th September, and 15th December each year. For more information, including eligibility and application submission, see the CeDAMar website.

- **Ice Oceans – Arctic: ArcOD.**

ArcOD held its first SSG meeting at the CORE facilities in Washington DC on 21-22 November. Representatives from Russia, Canada, Norway, Germany, Denmark/Greenland and the US were present. The agenda included presentations and discussions about each country's potential contributions to ArcOD, IPY plans and science plan/implementation questions.

Members of the ArcOD office in Fairbanks are PIs or Co-PIs on five pending proposals relevant to CoML. Most decisions on funding are expected in early 2005.

Members of the ArcOD office participated in the following CoML-related meetings and workshops:
CoML Canadian National Committee Workshop, Ottawa, Ontario, October 29-31, 2004
Ocean Biodiversity Informatics, Hamburg, Germany, November 29-December 1, 2004
CoML Meeting of the education and outreach network, Paris, France, December 2-3, 2004
IASC Arctic Coastal Biodiversity meeting, Bremerhaven, Germany, December 6-8, 2004

- **Ice Oceans – Antarctic.**

A new CoML field project on Antarctic biodiversity – Census of Antarctic Marine Life (CAML) has been approved for funding. Principal investigators are Colin Summerhayes (SCAR, UK) and Michael Stoddart (Australian Antarctic Division). CAML will focus, during the International Polar Year (IPY) in 2007/08, on how the evolution of life in Antarctic waters has influenced the diversity of the present biota and use these observations to predict how it might respond to future change. Toward this end, CAML will inventory species of the Antarctic slopes and abyssal plains, benthic fauna under disintegrating ice shelves and plankton, nekton and sea ice-associated biota at all levels of biological organization from viruses to vertebrates, as well as assess the critical habitats for Antarctic top predators and develop a coordinated network of interoperable databases for all Antarctic biodiversity data (SCAR-Marine Biodiversity Information Network) under OBIS.

- **Seamounts.**

Principal Investigators, Malcolm Clark and Ashley Rowden (NIWA, New Zealand) and Karen Stocks (San Diego Supercomputer Center, USA) have been awarded funding to initiate a new CoML field project on Seamounts. Census of Marine Life on Seamounts (CenSeam) will provide the framework needed to prioritize, integrate, expand and facilitate seamount research efforts to build towards 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 main themes: (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?

- **Microbes: ICoMM.**

On 29 November, the Marine Biological Laboratory (Woods Hole, MA) publicly launched the ICoMM project through a press release. The Press Release can be found online at http://www.mbl.edu/inside/what/news/press_releases/2004_pr_11_29.html.

ICoMM is rapidly accelerating. It has begun to organize its working group meetings and has plans for its Benthic Systems Working Group to meet on 14-15 January in Southampton, UK and its Technology Working Group to meet on 31 January – 1 February in Bremen, Germany. The ICoMM Scientific Advisory Council (SAC) has also been finalized and will meet along with the ICoMM Scientific Organizing Committee (SOC) at the Royal Academy in Amsterdam, the Netherlands on 7-8 February. The ICoMM website (<http://icommm.mbl.edu>) is under development but currently lists the members of the working groups, SAC and SOC, as well as a copy of the ICoMM proposal and links to participating institutions.

- **Zooplankton.**

Shuhei Nishida (Ocean Research Institute, University of Tokyo) held a “Zooplankton Training Course” at the University of the Philippines from November 30th to December 15th. Funded by the Japan Society for the Promotion of Science (JSPS), with additional support from CoML CMarZ, the workshop educates students and active scientists of Southeast Asia in methods on zooplankton ecology and identification, while examining plankton samples from local waters to establish regional faunal lists. Nishida will offer zooplankton workshops in Indonesia (2005), Vietnam (2006), and Malaysia (2007).

The first CMarZ Steering Group meeting has been scheduled for June 29th to July 1st in Bremerhaven, Germany. The meeting will be hosted by CMarZ co-P.I., Sigrid Schiel, of the Alfred Wegener Institute for Polar and Marine Research.

Developing Field Projects

- **Coral Reefs.**

An ad hoc steering group for an international field project on coral reefs met in Washington, DC on October 14-15. The group drafted a proposal, which is currently being circulated for comment before final submission to the SSC and the Sloan Foundation on 15 January. Nancy Knowlton (Scripps, USA), Rusty Brainard (NOAA Pacific Islands Fisheries Science Center, USA) and Julian Caley (AIMS, Australia) are leading the effort.

- **Margins.**

The margins field project is rapidly developing toward initiation in early 2005. Myriam Sibuet (Ifremer, France) is leading the effort, which includes representatives from Brazil, Chile, Canada, the UK and USA.

National and Regional Activities

- **Australia.**

The Australian committee met 13 December 2004. Plans for the coming year include the establishment of and long-term support for the Australian OBIS Regional Node, the development of a national CoML web site, and regional science programs. The committee is organizing a national CoML workshop as part of an existing key marine science forum scheduled for 2005.

- **Canada.**

The newly established Canadian OBIS Node, led by Bob Branton and his group at the Department of Fisheries and Oceans, is now contributing more than 300K records from 11 data sources to the OBIS Portal.

The Census of Marine Life Canada held a workshop 29-31 October in Ottawa, which formalized the implementation committee. Members are: Paul Snelgrove (Chair), Ellen Kenchington, RAM Myers, John Roff, Connie Lovejoy, Jean-Marc Gagnon, Philip Archambault, Peggy Tsang and Mike Sinclair. Additional members from Environment Canada and Parks Canada will be identified.

- **Caribbean.**

The manuscripts from the June 2004 workshop are being prepared for publication. The proceedings will be published by DesTech Publications in 2005. The book will have an introductory chapter, 10 marine biodiversity reviews of different Caribbean countries, an archaeological study of pre-Hispanic fisheries, and the summaries of the CoML projects, research institutions or programs and conservation agencies that participated in the workshop.

- **Europe.**

A meeting of the full EuroCoML Committee was held 12-13 October 2004 at the Royal Academy in Amsterdam. The committee identified priorities and goals, which were included as part of a renewal proposal submitted to the Stavros Niarchos Foundation for activities through 2007. The decision is pending.

- **Indian Ocean.**

The Indian Ocean OBIS Regional Node is under development, led by Vishwas Chavan and C.T. Achuthankutty of the National Institute of Oceanography (India). Dr. Achuthankutty and Indian Ocean Secretary, P.A. Lokabharathi attended the Paris SSC meeting with N/RIC Chair, Mohideen Wafar.

- **South America.**

The South American Committee met on 25-26 October in Lima, Peru. The report from this meeting can be found online at <http://www.coreocean.org/Dev2Go.web?id=248273>.

- **Sub-Saharan Africa.**

The South African Data Center for Oceanography (SADCO) will host a regional OBIS node for Africa.

The Benguela region, one of the HMAP case studies, under the leadership of Lance van Sittert, has completed its initial phase to compile a comprehensive review of the impact of human activities on the Benguela, from the pre-historic era until present. This report has just been published (Griffiths *et al.* 2004 (17 authors). Human impacts on marine animal life in the Benguela – a historical overview. *Oceanogr. Mar Biol. Annu. Rev.* 42:303-392). Please contact Charles Griffiths (<mailto:clgriff@pop.uct.ac.za>) for a copy. A second phase has been approved, under the leadership of Charles Griffiths, to develop ECOPATH models of energy and materials flow in the Benguela both in its pristine state, and at various stages during its subsequent exploitation. Commencement is set for January 2005 with the help of a well-qualified student, Kate Watermeyer.

- **USA.**

The U.S. National Committee (USNC) of Census of Marine Life (CoML) is currently seeking nominations for new members. In December 2004, three scheduled rotations off the Committee will leave vacancies. If you would like to nominate someone to serve on the U.S. National Committee, please send their name, contact information, organization, area of expertise, and any other relevant information (not to exceed 2 pages in total) to Peter Fippinger (<mailto:pfippinger@coreocean.org>). The full announcement can be found at <http://www.coml.us>.

The UNSC last met in Washington, DC on 15-17 November. The committee developed an *Action Plan* for the implementation of the nascent U.S. program. Invited participants from Federal Agencies, non-governmental organizations, private industry and academia contributed significantly to the discussions. The result is a draft action plan that focuses USNC efforts on areas of significant contribution to the nation, outlining the goals and objectives of the program and clearly identifying a three-year plan for implementation. The draft is in preparation. The committee also spent a day reaching out to Capitol Hill staff, Federal agencies, industry and other potential funding sources.

The USNC has accepted an invitation from the Federal Interagency Coordination Office of Ocean.US for the US National Committee to have a seat on the organizing committee for Data Management and Communications (DMAC), as well as the long-term DMAC Steering Team. The DMAC Steering Team will be drawn from the federal, regional, academic, public, private, and international sectors; and will address numerous issues associated with data information handling and dissemination, including OBIS and DMAC interoperability and the IOOS standards assessment and recommendations process. The first meeting of this body is tentatively planned for January 2005.

The 6th International Aquarium Congress held 5-10 December 2004 in Monterey, CA featured a session on CoML, organized by USNC member Jerry Schubel. Jerry is chair of the USNC education and outreach subcommittee.

USNC will co-organize a full day of sessions at Marine Technologies Society 2005 Conference in Washington DC in September. Ideas for the sessions include current biological and chemical sensor technology, data management and synthesis related to integrated systems, and the applications of observing systems to education and outreach.

Cross-cutting and Other Related Activities

- **SCOR Panel on New Technologies.**

The SCOR Panel on New Technologies for Observing Marine Life (formerly Working Group 118) announces its membership. The panel is chaired by Elgar De Sa (National Institute of Oceanography, India). Other members cover the range of relevant technologies for observing marine life and include Yogi Agrawal (Sequoia Scientific, Inc., USA), Geoff Arnold (Consultant, UK), David Farmer (University of Rhode Island, USA), Gaby Gorsky (CNRS, France), John Gunn (CSIRO, Australia), Antonio Pascoal (Inst. for Systems and Robotics, Portugal), Alex Rogers (British Antarctic Survey, UK), Heidi Sosik (Woods Hole Oceanographic Institution, USA), and Song Sun (Chinese Academy of Sciences, China-Beijing). Liaisons identified to date include Ron O'Dor (CoML), William Karp (ICES and NOAA), and Peter Pissierssens (IOC). Liaisons from other organizations are welcome.

The panel will hold its first meeting in Goa, India on 14-16 February 2005. CoML Project representatives are welcome to attend. Two projects – Seamounts (Alex Rogers) and TOPP (John Gunn) – are represented on the panel's membership. This panel is meant to be a resource for CoML projects, individually and collectively, in relation to technology needs. For more information about the panel, see <http://www.jhu.edu/scor/TechnologiesPanel.htm>.

To all CoML Project Leaders, if you have not yet completed and returned the SCOR Panel's questionnaire, distributed to you some months ago, please do so as soon as possible. Please contact Ed Urban (<mailto:scor@jhu.edu>) at the SCOR Secretariat or Panel Chair Elgar De Sa (<mailto:elgar.desa@gmail.com>) with any questions.

- **SCOR Marine Projects Coordination Meeting.**

Representatives of twenty of the largest international marine research projects met under the auspices of the Scientific Committee on Oceanic Research in Venice, Italy, 23-24 September, to establish common needs and goals. Focal issues were compatibility of data management plans, the uses of and contribution to the Global Ocean Observation System, Southern Ocean plans, particularly related to the International Polar Year, 2007-9, the need to maintain time-series and contributions to environmental assessments. The meeting report is now available and posted in the Reports & Documents section of the CoML Secretariat website: <http://www.coreocean.org/Dev2Go.web?id=261613>. For additional information about them meeting, go to <http://www.jhu.edu/~scor/ProjCoord.htm>.

- **DNA Barcoding.**

Registration is open for The First International Conference for the Barcoding of Life, which will be held at The Natural History Museum, London on 7-9 February 2005. Robert Ward (Australia) is one of the marine

voices on the organizing committee. CoML encourages all interested marine taxonomists to attend. Go to <http://www.nhm.ac.uk/science/BOL/> to register.

The SSC in Paris also encouraged the organization of a workshop to establish a network to assemble DNA barcodes of all fish. Bob Ward and Paul Hebert (Canada) are taking the lead on the workshop, which is tentatively planned for 6-8 June in Guelph, Ontario. The goal of the network would be to complete by 2010 the barcoding of all species of marine fish now in collections or newly collected by CoML.

- **Known, Unknown, Unknowable.**

The Known, Unknown, Unknowable (KUU) conference on *Future Marine Biodiversity* is scheduled for 22-25 April 2005 at Scripps Institute of Oceanography in La Jolla, CA. More information will be available in the coming months.

- **Economic Value Study**

One Fish, Two Fish, Red Fish, Blue Fish: What is the Value of a Census of Marine Life? This article on the study by James Sanchirico and Michele Callaghan (Resources for the Future) can be found online in the Fall 2004 issue of Resources magazine: http://www.rff.org/rff/Publications/Resource_Articles.cfm

CoML in the News

- **November Press.**

The November news release, "Making Ocean Life Count," highlighting CoML progress in 2004 generated coverage in at least nine languages and 26 countries. These included 28 stories by 18 newswires and major radio networks including the BBC World Service and Voice of America. The biggest known newspaper coverage was provided by prestigious outlets in Europe, NRC Handelsblad in The Netherlands and the Irish Times (page 1). Prominent features with photos ran in the Telegraph, the Guardian and the Scotsman (UK), Die Welt (Germany) and El Pais, Spain's largest daily. The story was referenced in the New York Times and the Washington Post. Other major print coverage included the Sydney Morning Herald and the Advertiser (Australia), El Mundo (Spain), Folha de São Paulo (Brazil), and the Globe and Mail (Canada). The story was captured on roughly 250 media websites worldwide. For a full summary of press coverage, please contact E&O team members Darlene Crist (<mailto:darlene.crist@cox.net>) or Terry Collins (<mailto:terrycollins@rogers.com>).

General News

- **The Oceanography Society.**

The Oceanography Society is accepting nominations for its Fellows Program. The Fellows Program has been established to recognize individuals who have attained eminence in oceanography through their outstanding contributions to the field of oceanography or its applications during a substantial period of years. The deadline for nominations is 31 December 2004. For submission is **December 31, 2004**. For submission details, visit http://tos.org/awards_honors/fellows_program.html. Contact the TOS office (<mailto:info@tos.org>) with any questions.

The Oceanography Society and UNESCO's Intergovernmental Oceanographic Commission will hold their joint International Ocean Research Conference in Paris from 6-10 June 2005. The goals of the meeting are to reflect on how far oceanography has come and to help define the coming decade of international collaboration in science and education. General plenary sessions include: Harmful Algal Blooms, Black Sea Oceanography, Molecular Evolution and Diversity of the Oceans, Biogeochemical Cycles of Trace Elements and Implications for Marine Ecosystems. Abstracts are due by 31 January 2005. Detailed instructions and submission guidelines are posted at <http://tos.org/conference.htm>.

- **Dynamic Planet 2005.**

Dynamic Planet 2005, a joint assembly of the International Association of Geodesy (IAG), International Association for Physical Sciences of the Oceans (IAPSO) and the International Association for Biological Oceanography (IABO), will be held 22-26 August 2005 in Cairns, Australia. An IABO session, organized by Mark Costello, Ron O'Dor and Ian Poiner, will focus on CoML. There are also many other joint

sessions of relevance to CoML work. The closing date for the submission of abstracts is 23 April for hard copy submissions and 29 April for on-line submissions. Early-bird registration is open until 30 May, but registration will be accepted online until 18 August. For more information, see:

<http://www.dynamicplanet2005.com/>

- **DIVERSITAS.**

DIVERSITAS will hold its first Open Science Conference, *Integrating biodiversity science for human well-being*, on 9-12 November 2005 in Oaxaca, Mexico. CoML is organizing a session focusing on the DIVERSITAS Theme of BioDiscovery. Abstracts are now being accepted online until 31 March at: <http://www.diversitas-osc1.org/>. Registration will be open in January.

Funding Announcements

For Calls for Proposals and other Announcements of Opportunity, please refer to the CoML Secretariat website: <http://www.coreocean.org/Dev2Go.web?id=205630>

OBIS Papers presented in Hamburg

OBIS Members, those that provide data or data tools to the OBIS Portal, made the following presentations at the Conference in Hamburg:

Appeltans, Ward; Vanden Berghe, Edward; Mees, Jan. *A taxonomic and biogeographic information system of marine species in the Southern North Sea developed by Flanders Marine Institute*

Best, B.; Halpin, Patrick. *Emerging Open Source Software, Standards and Protocols Used for Sharing and Analyzing Marine Biogeographic Data*

Branton, R.; Ricard, D. *Using OBIS to Provide Reliable Regional Scale Estimates of Population Indices for Marine Species from Research Trawl Surveys*

Branton, R.; Van Guelpen, Lou. *A Next Step in the Emergence of Self-funded OBIS Regional Nodes: Industry Sponsored Data Product Development on the CMB-BIO Internet Portal*

Chavan, Vishwas; Wafar, M.V.M.; Krishnan, S. *Biodiversity Informatics and Indian Ocean: Challenges and Potentials*

Costello, Mark J.; Emblow, Chris; Bouchet, Philippe; Legakis, Anastasios. *An analysis of gaps in knowledge of marine biodiversity in Europe*

Costello, Mark J.; Grassle, Fred; Zhang, Yunqing; Stocks, Karen I.; Rees, Tony. *The evolution and future challenges of the Ocean Biogeographic Information System*

Deprez, Tim; Vincx, Magda; Vanden Berghe, Edward; Mees, Jan. *NeMys: an evolving biological information system, a state of art*

Fabri, Marie-Claire; Galeron, Joëlle; Maudire, Gilbert. *BIOCEAN – A new database for deep-sea benthic ecological data*

Finney, Kim. *Key Ingredients For Developing A National Oceans Portal*

Froese, Rainer. *Lessons learned in the design, data management and user needs of FishBase*

Guinotte, John M.; Bartley, Jeremy D.; Iqbal, Asif; Fautin, Daphne G.; Buddemeier, Robert W. *Predicting and understanding biogeographic ranges from occurrence records and correlated environmental data: a method-development study using clownfishes and their sea anemone hosts*

Halpin, Patrick; Read, A.; Crowder, L.; Best, B.; Hyrenbach, D.; Freeman, S. *OBIS-SEAMAP: Developing a Biogeographic Research Data Commons for the Conservation of Marine Mammals, Sea Birds and Sea Turtles*

Kiefer, D.A.; O'Brien, F.J.; Domeier, Michael L. *A New Environmental Information System for Tracking Tagged Marine Organisms*

- O'Brien, Todd D. *Building a Global Plankton Database: Eight years after Hamburg 1996*
- O'Brien, Todd D. *NMFS-COPEPOD: An online, investigator-friendly, global plankton database*
- Rees, Tony. *Evolving concepts in the architecture and functionality of OBIS, the Ocean Biogeographic Information System*
- Ricard, D.; Myers, R.A.; Lucifora, L.; Ferretti, F.; Porter, A. *Integrating the OBIS schema into the information system that supports the Pew Global Shark Assessment*
- Rius, Josephine; Tolentino-Pablico, G.; Froese, Rainer; Pauly, Daniel. *Predicting trophic level for all fishes*
- Rosenberg, Gary. *Species naming curves versus species accumulation curves*
- Stevens, Darren; Richardson, Anthony. *The Continuous Plankton Recorder Database: current uses and future directions*
- Stocks, Karen I.; Baker, Karen S. *How do you build an information system that works? Lessons from environmental case studies*
- Stocks, Karen I.; Tittensor, Derek; Myers, R.A. *Using data systems to evaluate seamount biogeography*
- Tsontos, V.M.; Kiefer, D.A.; O'Brien, F.J. *A Web-based Fisheries Oceanographic Information System for the Gulf of Maine*
- Vanden Berghe, Edward; Bouchet, Philippe; Boxshall, Geoff; Costello, Mark J.; Emblow, Chris. *European Register for Marine Species Version 2.0: data management, current status and plans for the future*
- Vanhoorne, Bart; Claus, Simon; Cuvelier, Daphne; Vanden Berghe, Edward; Mees, Jan. *EurOBIS: The European node of the Ocean Biogeographic Information System*
- Zhuang, Wei; Zhang, Yunqing; Grassle, Fred. *Identify erroneous distribution data in OBIS using outlier detection techniques*

Calendar of Upcoming Events

February

- 7-8:** ICoMM Steering Group meeting, Amsterdam, Netherlands
- 7-9:** International Conference for the Barcoding of Life, London, UK
- 14-16:** Meeting of the SCOR Panel on New Technologies for Observing Marine Life, Goa, India

April

- 4-5:** US National Committee Meeting, Washington, DC
- 22-25:** Known, Unknown, Unknowable (KUU) Conference on *Future* Marine Biodiversity, La Jolla, CA
- 26-27:** CoML SSC Meeting, La Jolla, CA

June

- 2-3:** MAR-ECO Steering Group meeting, Lisbon, Portugal
- 29-1 Jul:** CMarZ Steering Group meeting, Bremerhaven, Germany