

NOAA COASTAL OCEAN PROGRAM

Project News Update



Coral Reefs Initiative Update

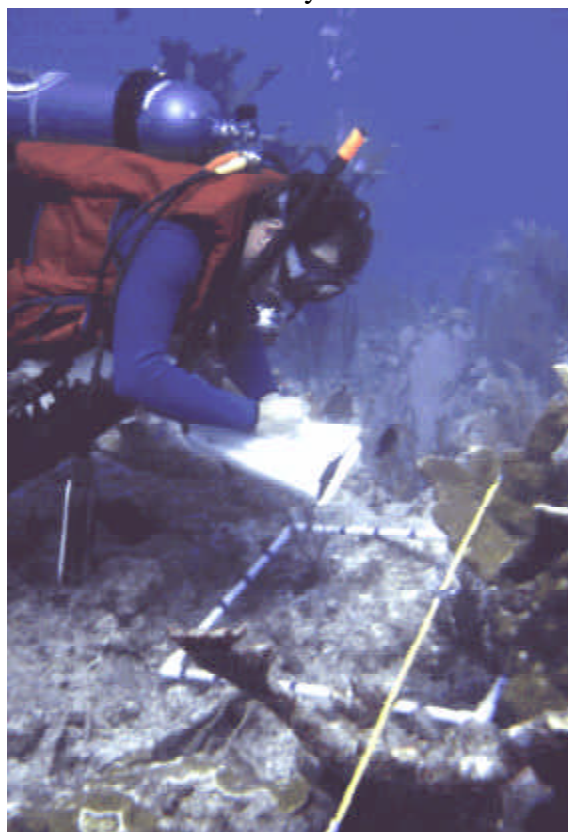
NOAA is working to support activities of the interagency U.S. Coral Reef Task Force. Formed by Executive Order in 1998, the Task Force is developing plans to research the major causes and consequences of coral reef damage; comprehensively map, monitor and assess the health of U.S. coral reefs; and develop strategies to reduce damage and restore ailing reefs.

The Coastal Ocean Program (COP) of NOAA's National Centers for Coastal Ocean Science is participating in the U.S. Coral Reef Task Force's Ecosystem Science and Conservation Workgroup by leading plans for regionally-focused, long term, ecosystem-level research programs. This research initiative, co-led by the Department of the Interior (DOI), will support management-oriented basic research, focused on the interactions between land-based activities and coral ecosystems. The initial focus will be Pacific coral reefs, to be followed by counterpart studies in the Atlantic.

The COP is also administering two coral reef research projects that support the objectives of the 1998 Executive Order, the Hawaii Coral Reef Initiative (HCRI) of the University of Hawaii and the National Coral Reef Institute (NCRI) at Nova Southeastern University. The HCRI was established in 1998 as a research and monitoring effort leading towards better management of coral reef ecosystems in the State of Hawaii. Ongoing research efforts focus on major threats to coral reefs including: over-fishing, sedimentation, eutrophication, algae blooms, and introduced species.

Work is progressing rapidly on all the islands in the Hawaiian chain with Coral Reef Assessment and Monitoring Program sites. Initial assessments and transect installation are expected to be completed in early fall 1999. Two additional projects are underway that will determine which predators play the most critical roles in controlling algal and coral abundance on reefs. HCRI scientists are also pioneering the use of molecular techniques to identify the species composition of algal turfs on Hawaiian reefs. This new methodology will provide a rapid means to assess changes in algal turf composition and allow for a more precise assessment of the ecological balance of algal species on Hawaiian coral reefs.

The NCRI is focusing on the protection and preservation of coral reefs through applied and basic research on



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From the Director's Computer.....

The Year of 1999 has been a big year for the Coastal Ocean Program. Formerly a program office directly under NOAA, we are now part of NOAA's National Ocean Service (NOS) line office. As a result, we also have a new organizational name, the Center for Sponsored Coastal Ocean Research (CSCOR). We will increasingly refer to this new name over the next year. These changes were instituted as part of NOAA's larger reorganization, but despite the transfer, rest assured, we still run the Coastal Ocean Program and will continue to do so.

How will this move to NOS affect you? Well for starters, we are no longer dependant on other NOAA offices for award transfers. Our creation of a granting program allows us to distribute awards more directly. That's good news for researchers awarded COP grants. Another significant result is the adoption of a new set of Department of Commerce policies for grants management. Recipients and subrecipients are subject to all Federal laws and agency policies, regulations, and procedures applicable to Federal financial assistance awards. Additionally, all future request for proposals will be listed in the Federal Register Notice, which will be accessible through our website.

COP has helped develop a new exciting research initiative on coral reefs and this issue's lead story describes COP's involvement. Look for more information about other new initiatives in the coming months on our website.

In keeping pace with the electronic age and in an effort to reach a wider audience, this and all subsequent issues of Program Notes will only be available on-line at our website www.cop.noaa.gov. We are no longer distributing hard copies. Please send us your comments and suggestions on how we might improve this new web-based format so we can make future issues easier to use. As always, if you have questions or comments about any of our three goal areas (harmful algal blooms, cumulative impacts, and fisheries ecosystems) or specific research initiatives, please contact our office at (301) 713-3338 or email: coastalocean@cop.noaa.gov

Thank you,



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COP Project Coordinator Profile



Dr. Beth Turner joined COP in January, 1998 with a diverse academic background and experience with other Federal agencies. Trained as a benthic ecologist, Beth earned her Ph.D. in Biological Oceanography from the University of Delaware, a M.S. in Marine Environmental Science from SUNY Stony Brook, and a B.A. in Biology from Texas Christian University. Beth transitioned from a research career to program management in 1995 when she became a study director at the Ocean Studies Board of the National Academy of Sciences/National Research Council Ocean. She also served as a Program Officer in Biological Oceanography at the Office of Naval Research, immediately prior to joining COP.

At COP, Beth manages fisheries oceanography projects, including GLOBEC (Global Ocean Ecosystem Dynamics) and SEBSCC (Southeast Bering Sea Carrying Capacity). She serves as a liaison between the academic and Federal scientists funded by these competitive research programs, and NOS and NOAA management. She is active in interagency coordination efforts with NSF and ONR.

Beth is married to Dwight Trueblood, another NOAA employee, and their most challenging and rewarding job is the care and direction of two boys, Dylan (4) and Gregory (2 ½). Beth and Dwight can often be found playing cars and trucks, teaching the intricacies of tree-climbing and bicycle-riding, building toy train sets, and protecting their dog and cat from the attention of two toddlers. Beth was a member of a semi-professional ballet company in high school, and more recently has danced with the Rockville Civic Ballet in her home town of Rockville, MD. With the arrival of her children, she has had to content herself with taking aerobics twice a week, but she looks forward to a time when she can return to ballet classes.

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Harmful Algal Blooms: ECOHAB

Over the last year, several Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) research projects from around the country have made exciting progress in improving our understanding of Harmful Algal Blooms (HABs). Here are some of the highlights of selected COP funded ECOHAB projects:

In the Gulf of Maine study, two strains of *Alexandrium* (responsible for paralytic shellfish poisoning) appear to behave differently to nutrient supply. This difference might lead to very different behaviors of toxic *Alexandrium* in the region, perhaps leading to unique spatial distributions as a function of local and regional circulations. Coupled physical - biological models are also expanding, to link life cycle characteristics of the cells with circulation in the Gulf of Maine. This linkage is critical to developing successful forecasts for blooms in the region, and therefore toxicities to be expected in coastal shellfish populations.

In Florida, a *Gymnodinium breve* study is similarly examining biological properties of the classic red tide organism and local regional circulation patterns. Initial broad category biological models have been replaced with a detailed food web model, linked to potential supplies of atmospheric iron and *Trichodesmium* as a trigger for development of the recurring, blooms off Florida's west coast responsible for neurotoxic shellfish poisoning. These refinements will provide more rigorous models, which will be linked to circulation patterns currently being developed, for forecasting purposes.

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Cumulative Impacts: PNCERS

The Pacific Northwest Coastal Ecosystem Regional Study (PNCERS) is a five year, multi-investigator, interdisciplinary approach to identifying the physical and human factors affecting the estuarine and nearshore ecosystems along the outer coast of Oregon and Washington. Funded by COP, PNCERS focuses on five coastal estuaries: Willapa Bay and Gray's Harbor in Washington, and Tillamook Bay, Yaquina Bay, and Coos Bay in Oregon. Additional aspects examine bio-physical interactions in the nearshore environment, over the coastal region of Washington and Oregon.

Rather than create an exhaustive ecosystem inventory, PNCERS has provisionally chosen to focus on several ecologically, economically, and socially valuable ecosystem components. These include the Pacific salmon, Dungeness crab, Pacific oyster, and tourism. In the first year of PNCERS, the research team has begun to create an integrated, interdisciplinary program simultaneously functioning on economic, social, and ecological levels.

Management of Pacific coastal systems is complex, as there are numerous laws at the federal, state, and local level which direct use of land and water, indicate stewardship, regulate pollutants, and protect commercial uses such as navigation. Many communities appear to have little knowledge of the relationships between ecosystem change and the loss of system structure and function, and consequent downturns in the local economy.

In the next few years, PNCERS research will develop better models of how ecological change influences regional economies and social beliefs. In addition to further defining key physical and human factors affecting ecosystem production, attempts will be made to determine how local communities believe the system is working (or not), as

a bridge to developing useful tools for future ecosystem management. For more information about PNCERS, please contact COP's Sue Banahan at (301)713-3338.



COP Reviews GLOBEC and ECOHAB Proposals

The Coastal Ocean Program is completing the review of research proposals received in response to recent announcements for the Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) and Global Ocean and Ecosystem Dynamics (GLOBEC) research programs. Along with its ECOHAB partners, (the Environmental Protection Agency, National Science Foundation, Office of Naval Research, and National Aeronautics and Space Administration) COP supports long-term, large scale, multi-disciplinary research on harmful algal bloom ecology and oceanography in U.S. coastal waters. Proposals were sought for four topic areas: ecology and oceanography of HABs, including *Pfiesteria*; Long Island brown tides; prevention, control, and mitigation of HAB impacts; and economic assessments of HABs. A proposal review panel was held in July, and COP awards are expected to be completed by fall 1999.

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Program analyst Marc Suddleson educates conference participants about COP.

Coastal Zone '99

Coastal Zone 99: The People, the Coast, the Ocean - Vision 2020, was held in July in San Diego. Kevin Sellner, Program Manager of ECOHAB, presented a paper, "Current Harmful Algal Bloom (HAB) Research and Management Applications for Policy Decisions," at a special session focusing on HAB science policy and decision-making. Other papers presented covered the Economic Impacts of HABs and Options for Prevention, Control and Mitigation. Marc Suddleson, Program Analyst, met with many of the over 1,100 conference participants at the COP display, describing ongoing COP research projects and existing COP research products for coastal resource managers. Over 100 participants requested copies of COP's Decision Analysis Series reports. Michael Murphy also provided information at COP's display to conference attendees about its recently formed parent office, National Center for Coastal Ocean Science, located in the National Ocean Service of NOAA.

New Publications in COP's Decision Analysis Series

COP is pleased to announce two new reports in its Decision Analysis Series with an addition four scheduled for release this fall. A complete list of reports in the Decision Analysis Series can be accessed through the COP website: www.cop.noaa.gov. To order hard copies, please call COP at: (301) 713-3338 or email coastalocean@cop.noaa.gov

Decision Analysis Series No. 12 - Guidelines for the Conservation and Restoration of Seagrasses in the United States and Adjacent Waters.

This document provides an overview of the current state of seagrass conservation and restoration in the United States, discusses important issues that should be addressed in planning seagrass restoration projects, describes different planting methodologies, proposes monitoring criteria and means for evaluating success, and discusses issues faced by resource managers. The complete document may be downloaded in PDF format at: <http://shrimp.bea.nmfs.gov/digital.html>.

Decision Analysis Series No. 13 - Bering Sea FOCI Final Report

The Bering Sea Fisheries Oceanography Coordinated Investigations (Bering Sea FOCI) was a 7-year COP funded program to develop an understanding of stock structure and recruitment variation in Bering Sea walleye pollock. Based on recommendations from the Sitka International Conference on pollock, the goals were to determine stock structure in the Bering Sea and its potential relationship to physical oceanography, and to examine recruitment processes in the eastern Bering Sea. Both of these goals were designed with direct implication to management of pollock in the Bering Sea.

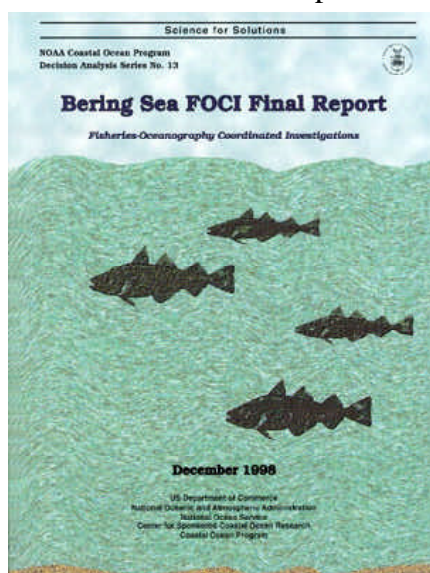
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Decision Analysis Series

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This research has greatly advanced the stock structure definition of Bering Sea pollock through determination of basin circulation, analysis of recent and historical survey data, and development of genetic testing methods. This information has assisted resource agencies such as the U.S. North Pacific Fishery Management Council better manage pollock in the Central Bering Sea. Following on the successful accomplishments of this study,



COP's current Bering Sea research is emphasizing an ecosystem approach and will be incorporated into stock assessments for more accurate recommendations.

Decision Analysis Series No. 14-19 - Gulf of Mexico Hypoxia Topic Reports

Nutrient over-enrichment from anthropogenic sources is one of the major stresses impacting coastal ecosystems and can lead to hypoxic (low oxygen) zones. An area severely impacted by hypoxia is the northern Gulf of Mexico where up to 7,000 square miles of bottom water have become hypoxic on a seasonal basis. This has important ramifications because most aquatic resources can not survive in the oxygen depleted waters. The hypoxia zone found in the northern Gulf of Mexico each summer forms amidst one of the most important national commercial and recreational fisheries.

Research documenting the development and

extent of hypoxia in the northern Gulf of Mexico has been on-going for several years. In 1997, the White House Committee on the Environment and Natural Resources (CENR) was asked to conduct an integrated scientific assessment of the causes and consequences of Gulf hypoxia. NOAA, represented by the Chief Scientist of the National Ocean Service, was asked to lead the assessment with the involvement of several federal agencies.

Each report was developed by a team that included academic, federal, and state scientists from around the country. Findings from the six reports will provide important input towards developing the integrated assessment which can be used to examine different management strategies for reducing nutrient loads and improving water quality in the Mississippi watershed and the northern Gulf of Mexico. Specifically, the hypoxia reports address the following issues:

- Series No. 14.*** *Characterization of hypoxia*
- Series No. 15.*** *Ecological and economic consequences of hypoxia*
- Series No. 16.*** *Flux and sources of nutrients in the Mississippi-Atchafalaya River Basin*
- Series No. 17.*** *Effects of reducing nutrient loads to surface waters within the Mississippi River basin and Gulf of Mexico*
- Series No. 18.*** *Reducing nutrient loads, especially nitrate-nitrogen, to surface water, groundwater, and the Gulf of Mexico*
- Series No. 19.*** *Evaluation of economic costs and benefits of methods for reducing nutrient loads to the Gulf of Mexico*

To learn more about the Gulf of Mexico Hypoxia Assessment, please visit the website:
http://www.nos.noaa.gov/products/pubs_hypox.html



Coral Reefs Initiative

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coral reef diversity, assessment, monitoring, and restoration coupled with education and training to scientists, managers and educators. The NCRI held a major conference in Ft. Lauderdale in April, 1999 to improve the definition of research and monitoring needs, thus enabling better management of the nation's coral reefs.

In August, 1999 the HCRI held a long-range planning workshop to discuss future directions for the program. The draft report to the Program Management Committee is currently being completed. Workshop participants concluded that managers need to (1) know the levels of fishing and ocean recreations activities throughout the state, (2) understand key biological processes, and (3) have time-series data on health of reefs vis-a-vis land use change. For more information on the NCRI, HCRI, and other COP Coral Reef Research activities, please contact Michael Dowgiallo at (301) 713-3338.

Upcoming Meetings and Conferences

- September 25-30, 1999, New Orleans, Louisiana: Estuarine Research Federation's (ERF) 15th Biennial International Conference. ERF is an international organization whose purpose is to promote research in estuarine and coastal waters, to promote communication between members of affiliated societies, to conduct meetings and to be available as a source of advice in matters concerning estuaries and the coastal zone. NOAA's National Centers for Coastal Ocean Science is co-sponsoring the conference and COP will have a booth. Please see the ERF website www.erf.org for more details.
- September 28-30, 1999, University of Minnesota/Duluth: EEGLE/KITES/CoOP ("all hands") Joint Meeting. The purpose of the meeting will be to provide the opportunity for EEGLE and KITES Principal Investigators to present results of their on-going work, exchange ideas, and plan for next years activities.
- October 5-8, 1999, Stanford Sierra Camp, near Lake Tahoe: The Eastern Pacific Ocean Conference. Three of the four oral sessions have GLOBEC/SEBSCC implications and presenters. See EPOC website, <http://www.itd.ucdavis.edu/~clrhodes/EPOC99/announce99.html#SESSION>, for more details.
- January 24-28, 2000, San Antonio, Texas: American Geophysical Union, Ocean Sciences Meeting. A special session, entitled "Integrating Biology and Physics in Ecosystem Studies of Planktonic Populations" will focus on GLOBEC results and the special session "Cross Margin Transport in the Great Lakes and Coastal Oceans" will have principal investigators from the EEGLE and KITES projects presenting their recent findings.



ECOHAB

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Other work has resulted in the development of a cell-specific antibody enabling rapid detection of the toxic HAB species in a suite of many other species, an ideal “early warning capability.” Research in the coming year will focus on developing a probe for estimating division rates and physiological states in the field, permitting detection of actively growing offshore populations, the “seed” for inshore blooms.

In the Mid-Atlantic, a large regional *Pfiesteria piscicida*, dinoflagellate, and nutrient study is also being funded by COP as part of ECOHAB. Although less than a year old, serious progress has already been made, including identifying natural predators that may be effective in regulating *Pfiesteria piscicida* in late spring. Cell specific probes for the organism are also being developed. When complete, they might provide rapid detection capability in the field. Work in the second year will focus on improving a test capable of detecting toxic and non-toxic life stages. A separate study will provide similar detection possibilities, leading to early warning of potentially health-threatening organisms in the wild.

For more information about these and other ECOHAB projects, please contact COP’s Kevin Sellner at (301) 713-3338 or visit: <http://www.redtide.whoi.edu/hab/nationplan/ecohabprojectsummaries.html>

COP Proposals

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COP, along with its GLOBEC partner NSF, supports long-term studies on cross-shelf transport processes in the California Current System (CCS). A review panel was held earlier this month to consider 5 year research proposals for field research, meso-scale surveys, long-term observation, and modeling of the CCS. Awards are expected in October 1999. The GLOBEC program also plans to soon announce funding for studies of the coastal Gulf of Alaska.

For More Information

Contacts about specific COP projects should be made to the person(s) listed in each news item. General inquiries, comments on the newsletter, information on the COP, and requests for copies of publications may be directed to the Update Editor, Eli Weissman, in any of the following ways: Telephone (301) 713-3338; Fax (301) 713-4044; E-mail; eli.weissman@noaa.gov; or by mail to NOAA Coastal Ocean Program (NCOP), 1315 East-West Highway, Room 9700, Silver Spring, MD 20910.

Additionally, updated program information and links to COP-related projects may be accessed at our website: <http://www.cop.noaa.gov/>