FOCUS ON: COASTAL ZONE '97

INTERNATIONAL NEWSLETTER OF COASTAL MANAGEMENT

Intercoast Network

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CZ'97 Brings Best to Boston

From July 19–25 in Boston, Massachusetts, in the northeast United States, more than 1,000 leading international coastal management practitioners; local, regional and federal government officials; members of the academic community; representatives from industry and nongovernmental organizations; and interested members of the public attended Coastal Zone '97 to exchange ideas and experiences. From a pre-conference workshop featuring international coastal experts on the weekend prior to the official opening of CZ'97, to a special all-day communications seminar to wrap up the week, the coastal management community shared their knowledge and met fellow professionals under the banner theme of "The Next 25 Years: Charting the Future of Coastal Zone Management."

Plenary session and keynote speakers ranged from environmental advocacy group officials to the cardinal of the Catholic Archdiocese of Boston. Workshops sessions touched upon subjects ranging from front-line coastal stewardship and constituency-building to high-tech mapping and modeling to how to respond to an oil spill. Field trips and special events staged by the organizers allowed the participants to visit a variety of sites of interest, and broaden their network of contacts at evening events.

Intercoast Network was on hand to capture many of the more interesting sessions and speeches, and highlight for you some of the more provocative presentations. Breaking news such as the preliminary results of the national assessment of America's 1972 Coastal Zone Management Act is included inside, as well as reports that emerged from international correspondents, and the views of the participants as reflected in an on-site coastal management poll.

While the "information overload" that Larry Hildebrand addresses in this issue's guest editorial may be unavoidable at an event of this magnitude, it is doubtless that CZ'97 provided all the attendees with new ways of facing the coastal management challenges of the future.

Historic Boston Harbor provided a perfect backdrop for CZ'97 events.

It's Déjà Vu All Over Again

Reflections of a Coastal Zone Conference Junkie

Guest Editorial
By Larry Hildebrand

If you've participated in coastal zone conferences anywhere in the world during the past few years, have you come away from these events with the strange feeling that you've been there, heard that and got the T-shirt? Do you come with expectations of having your assumptions challenged, offering up your experiences, engaging in great debate, and leave having advanced the field of coastal and ocean management in some small way? I do, but unfortunately find myself regularly disappointed.

This editorial is partly to vent spleen, but also to challenge the collective "we" of the so-called *Coastal Nostra* to make absolutely as much as we can from these im-portant gatherings. I feel that one must question the status quo for the good of our common interest.

Having co-chaired the organizing committee of a major international coastal zone conference myself, I am in no way denigrating the dedicated folk who commit countless hours toward organizing and conducting these large and potentially important events. It is a monumental task and anyone

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Highlights

Déjà Vu

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who undertakes it is to be commended for their efforts. It is just that we seem to be stuck in a cookie-cutter model for coastal zone conferences that perpetuates boring and largely irrelevant political speeches, hundreds of paper presentations in far too many concurrent sessions, with too little time to absorb it all due to information overload.

My eyes glaze over when I hear yet another presenter stating knowingly how important the coast is, that it is the most dynamic area on the planet, the increasing threats it is facing, the need for integration, blah, blah, blah. I think we've heard enough times about the importance of Chapter 17 of Agenda 21, the Organization for Economic Co-operation and Development (OECD) recommendations, and the Law of the Sea Convention. All right already, we've got it! While these are certainly fundamental benchmarks for the steps we need to take to progress, isn't it about time that we go that one step further and actually start to debate the ways and means of securing some commitments and turning these prescriptions into action?

I challenge the notion that we can continue to justify the expense and lost opportunity costs of these large coastal zone events in their current format. I'm sure that if we took stock of the time and money invested in a major conference, the collective wisdom and experience that is present yet largely untapped, and the potential to do some good, and compared benefits against investment, we'd be sadly disappointed and likely embarrassed with our conclusion. If that's the best we can do, then let's spend the money instead on saving the Great Spotted Coastal Dickiebird or putting everyone on the coast up on stilts to save us from the projected ravages of sea level rise. Let's do something, anything, other than more of the same.

So How Do We Make It Better?

First ask yourself, in what way do you learn best? By sitting and listening? By talking at people? Or is it by sitting around a table with folks who have different perspectives of the coastal challenge, sharing experiences, debating the issues at hand, proposing ways forward and coming to some collective conclusions? We need thought-provoking keynote addresses that set the scene for the conference by engaging and challenging us collectively to produce results. We have to ask ourselves where are we at present in the field of integrated coastal management? What have we learned? What must we do next to make integrated coastal management programs even better than they are now?

We need good, solid outputs from these conferences; collections of papers in conference proceedings just don't cut it. What we deserve is a good summary and action plan that lays out the challenges at hand for the international community, for legislators and regulators, and for those working at a more local level, and outlines things that we as individuals, in our various personal or professional capacities, can do. Our objective must be to advance the field. Any conference summary must highlight the key points that future CZ conferences will build upon.

All right, you might be saying, put up or shut up. Well, this summer's Coastal Zone Canada '98 is being organized to challenge the model we are used to. The keynote addresses will serve to challenge, the paper sessions will be limited to the slot between morning coffee and lunch, and the entire afternoon each day will be dedicated to working sessions which have the objective of producing tangible recommendations and working models for all to use. While not professing to be the perfect solution, at least we're trying. Come judge for yourself.

We should also consider some global coordination among the easily half-dozen CZ events that are held around the world each year. Given the proliferation of CZ conferences in the past few years, can we organize something that will allow us to achieve a result that is more than the sum of the parts?

Just think how much the field of coastal and ocean management could be advanced in the course of one year if each event started with the results of the ones preceding it, debated and built upon those recommendations, and produced another, more specific, action plan. This would require a significant degree of coordination among the various conference organizing com-mittees, well in advance of the conferences to take place that year. If a single theme were tackled in the six venues, from different geographic, socio-political and cultural perspectives, and the results were shared and built upon, just think of where we could be in 12 months! Alternatively, the six events could each choose a different theme, yet still share their results as important context for the other events. It would be an ambitious agenda.

In the meantime, why don't we use the *Intercoast Network* newsletter and Internet-based discussion groups such as Coastnet as forums to generate ideas and themes that future CZ conferences can tackle?

So, challenge my proposals, send me an exploding E-mail or agree with me, but for goodness' sake, don't just accept the status quo and blindly sign up for the next CZ conference without demanding that it be structured to engage the experience and perspectives that will be present and make a tangible contribution to the future of coastal and ocean management. There is far too much at stake for us to do any less.

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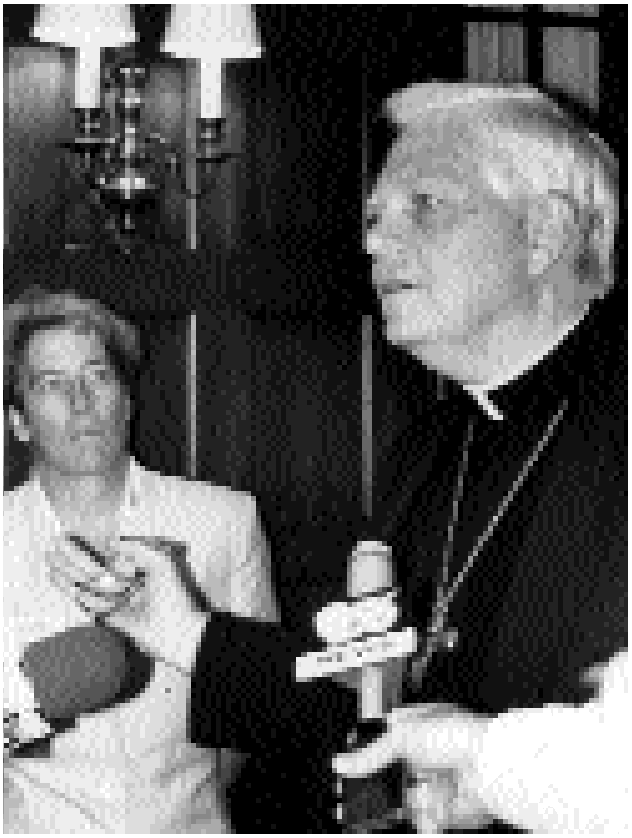
Bringing Religion into the ICM Mix

By Chip Young

One of the more innovative presentations at CZ'97 was the luncheon keynote speech on July 22 by Cardinal Bernard Law of the Catholic Archdiocese of Boston. His address, "The Rights and Responsibilities of the Fishing Community," added religion into the rich and varied mix of issues that make up integrated coastal management. The nationally-prominent Law, who was born in Mexico, brought an unexpected international flavor to his remarks, beginning his address by warmly greeting the Spanish-speaking participants in their own language, before giving a provocative speech that merged the practical with the spiritual in managing coastal resources.



Cardinal Bernard Law of Boston has become actively involved in fishing community issues. At left is Massachusetts Coastal Zone Management Agency director Peg Brady.

Law, who rose to the position of cardinal in 1985, is the first Catholic church leader of his stature to play such a role in the environmental field in Massachusetts. A member of his planning staff currently sits on the Massachusetts Coastal Zone Management Agency (CZMA) Coastal Resources Advisory Committee.

Law has led the work of the archdiocese in the local fishing community through the Massachusetts Fisherman's Partnership. Law described his attendance at a meeting which hundreds attended, held at a church in the nearby fishing port of Gloucester, saying he heard tales from groups including the fishermen's wives association about the current problems in the industry. Law said he was moved by their stories and told them, "I have no power to solve your problems, but I promise to be a voice for you."

Peg Brady, the director of the Massachusetts CZMA who has seen Law in action on the front lines, commented after his speech, "Through his leadership, Cardinal Law has successfully brought together the many fishing interests who were traditionally in conflict."

Law noted the "fractious dealings" the fishing community has had in the past with both regulators and environmentalists, and explained, "Fishermen need to find ways to mind the fisheries for sustained good. They need to find their place in the conservation movement." He also warned against creating adversarial relationships among users of coastal resources.

"The common good is never served either in the exploitation of natural resources or in an ideologically-driven environmentalism that views human society as a cancer," Law observed. He elaborated on that theme at a later press conference: "We paint polarities, saying that anyone who goes against the environmentalists' view is threatening natural beauty. We can intellectually conceive of these two poles, but we need to gain a balance to protect the common good."

The archdiocese has also worked with a local lobstermen's cooperative and a variety of Massachusetts officials to help set aside a portion of the Boston waterfront for the local lobster fleet. The strong sense of community orientation the church has brought to its work was reflected in many of Law's statements.

"The concept of stewardship implies a sacred trust," Law declared. "We need to create among ourselves a conspiracy of working together for a common good." Despite Law's personal involvement, he has seen no appreciable duplication of his efforts elsewhere in Massachusetts, though he holds out hope for work on coastal issues by other dioceses in the future.

Recalling another famous local resident, the legendary Tip O'Neill, former Speaker of the U.S. House of Representatives, who uttered the famous American political adage, "All politics is local," the cardinal offered a global call to action to CZ'97 participants: "If Boston has anything to offer the international environmental community, it is this: environmental failures are not the result of differing philosophies or differing values. Failures are the result of an unfortunate tendency to chatter about environmental values, pit them against economic interests, and then do nothing."

25th Anniversary of CZMA

Study Finds Coastal Management Act Generally Effective Recommends Better Results Measurement, Tracking

Keeping with the CZ'97 theme of celebrating 25 years since the passage of the Federal Coastal Zone Management Act of 1972 (CZMA), preliminary results of a National Sea Grant College Program-directed study of the CZMA were presented at a CZ'97 workshop featuring the members of the CZMA assessment team. The National Coastal Zone Management Efficiency Study found that overall, the CZMA, one of the nation's earliest resource management laws which provided fiscal incentives to 35 states and territories to develop coastal zone management programs may be one of the most effective. The assessment was a two-year undertaking, designed to evaluate the effectiveness of the policies, process and tools that state and regional coastal programs used to accomplish five management objectives of the Act: protection of wetlands and estuaries; protection of beaches, dunes, bluffs and rocky shores; provision of public access to the coast; revitalization of urban waterfronts; and promotion of seaports.

The multiple case examples used show that coastal states and territories have developed effective policies promoting protection of critically important estuaries, wetlands and beach areas while at the same time insuring public access to coastal areas. The team members also believe that the CZMA has been important in stimulating economic development of urban waterfronts and the promotion of environmentally responsible seaport development. This success has come at a time of increased pressure on coastal resources, with demographic projections predicting that 80 percent of the United States population will live within 50 miles of the coast by the year 2000.

The study found that in every state coastal management program there are numerous case examples to illustrate on-the-ground effectiveness of CZMA policies. It cited the fact that state programs were often quite innovative in achieving their objectives through the implementation of a combination of regulatory and non-regulatory approaches. The conclusions are based on available data from the individual programs, case examples and the tools (a variety of planning, regulatory and scientific techniques used to manage and balance the use of coastal resources) that are employed by the programs.

The challenge of the CZMA to strike an appropriate balance between competing interests and issues, and the generally evidenced ability to do so, was a key factor of the study group's conclusion that the coastal management program is meeting its objectives. However, the report does state that it would be difficult to provide a definitive national evaluation because there is, at present, no single database of CZMA activity, nor is there a set group of nationally-compatible evaluation standards and data.

As a result, the study recommends that the National Oceanographic and Atmospheric Administration's

Protection of Estuaries and Coastal Wetlands

Protection of estuaries and coastal wetlands is a high priority for the great majority of state coastal zone management programs. Sufficient data were available for probable determinations for about one-third of the states and the great majority of these received "very effective" or "effective" ratings. As a result, the study concludes that the national program as a whole is doing well in this area.

Regulatory laws, local planning, acquisition, education and mapping were viewed as the most effective techniques for protecting estuaries and coastal wetlands. The most underutilized management strategy, especially considering high coastal wetland loss, historically was wetland restoration, a concept that has been the subject of ongoing national debate. State coastal programs have invented and adapted wetland management tools, among the most copied of which are special area management planning and mitigation banking. One of the significant accomplishments has been a dramatic turnaround in tidal wetland loss in the states examined both in absolute and long-term trends, and for this state coastal management programs deserve much of the credit.

Protection of Beaches, Dunes, Bluffs and Rocky Shores

State coastal zone management programs are effectively balancing protection of natural shoreline resources with competing demands such as the protection of properties from hazard risks and allowing for recreational use of the coast.

State coastal programs around the country have developed a variety of effective tools to protect beaches and other natural shorelines. These include shoreline setbacks and the regulation of shoreline development, acquisition and stewardship of state lands, and research and public education about shoreline processes and human impacts.

Systematic planning has minimized the impacts of improper development and erosion on both natural systems and adjacent properties and structures. The use of scientifically-established, long-term erosion rates to establish construction setbacks, a better understanding of the adverse impacts of shoreline armoring on natural beach sand transport, and the implementation of non-structural solutions to coastal erosion have all shown beneficial outcomes and are the results of coastal zone management program activity.

Provision of Public Access to the Shore

State programs give significant attention to the need to provide public access to the shore. Due to decreases in public funding and increased societal concern over the protection of private property rights, coastal states have been very inventive in developing new tools and approaches as an effective means of providing public access. Examples include providing legal assistance to secure public rights-of-way and developing partnerships with public and private institutions. Traditionally, acquisition and regulatory techniques had been heavily relied upon.

All states are involved in establishing and maintaining access sites, planning for future access, and providing public outreach on the importance of safeguarding public access to their coasts. A key public access impact was the expenditure of more than $16 million in federal funds for low-cost shorefront acquisition and improvement projects around the country.

(NOAA) Office of Ocean and Coastal Resource Management improve outcome monitoring and develop better means of data collection to enhance efforts at future effectiveness assessments, and to promote better sharing of successful efforts among the 35 individual state and territorial programs.

"For a relatively small federal program, the Coastal Zone Management Program, has filled a critical niche," said the study's overall director, Marc Hershman of the University of Washington's School of Marine Affairs. "State and local coastal zone management organizations work to protect coastal environments and improve public uses. After 25 years of work there are far more public access sites and revitalized waterfronts. Also, the rate of wetland loss is significantly reduced. Important steps have been taken to allow natural beach and dune systems to buffer against hazards such as storms and erosion, and there are leading examples of integrating water-dependent industries into coastal environmental planning. This study documents those success while at the same time points out the need for on-going monitoring of state and local program results to insure continued improvement in their effectiveness."

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Redevelopment of Deteriorating Urban Waterfronts and Ports

Coastal zone management is helping more than 300 cities in 29 coastal states and territories revitalize their urban waterfronts in ways respecting the special quality of the nation's urban shorelines, although revitalization is largely the prerogative of cities. States most active in waterfront revitalization are found in regions that have experienced significant industrial change over the last two decades.

Among the activities fostered through coastal management efforts are: provision of public access through waterfront parks, boardwalks, viewing towers and fishing piers; conservation of historically and culturally important buildings and sites; the protection of ports and water-dependent industries from encroaching upland development; the cleaning up of contaminated sites; and the organization of exhibits, festival and special events that celebrate both the natural and human histories as well as the contemporary importance of the coast.

Five successful state approaches that have proven to be effective strategies for revitalization include: marketing state assistance programs, targeting specific waterfronts and ports for revitalization, delegating responsibility for revitalization to a networked agency, responding to revitalization initiatives from local communities, and reacting to redevelopment activity through the regulatory process.

Promotion of Seaport Development

Most states rank seaport development as an important issue and all states have general policies preferring water dependent uses. Twelve state programs give specific policy, planning and/or regulatory direction to the port sector and are the most effective state port coastal zone management programs.

Seaports were defined as major commercial deepwater ports important to international trade. Using this definition, 12 state coastal programs were intensively reviewed because they were considered "port-active", i.e., they gave port development a "high" rating in perceived importance to other issues and they had a port relatively active in international trade.

These states use management tools such as planning and regulatory criteria specific to ports to delineate areas for port development. These tools include "no-sprawl" policies, and regional or port master planning programs. They further facilitate port development by providing financial and engineering/environmental support to ports. The impact of coastal management programs is reflected in port projects that have changes in siting, size and economic and environmental impact due to the coastal management program influence.

Vision 20/20: A Future of Coastal Management Where Are We Going? Who Will Take Us There?

By Josh Lott

The velvet tones of Frank Sinatra and booming bass of the Stereo MC's belied the jarring picture of the United States coast painted in the Vision 20/20 session at Coastal Zone '97. *Edgelife*, a five-minute, multi-media presentation, flashed images of pollution, rampant development and the variety of human life along the coast, and in-cluded statistics exploring the changing demographics of the U.S. coastal area. *Edgelife* provided the spark that ignited a lively group of panelists and spirited audience discussion.

Vision 20/20 sought to raise questions about the future of coastal management, and provoke the audience into rethinking the limits of the profession. Its focus was directed primarily at the "new generation" of coastal managers, those who have come of age professionally in the past five to ten years, long past the infancy of coastal management in the U.S.

The initiative began in July 1996 at the Coastal Society conference in Seattle. A futurist talked about how the world is evolving, and the changes to expect in the next 20 to 50 years. Issues included worldwide urbanization, the changing structure of work and the need for life-long education. The U.S., according to the futurist, is seeing a decline in regard for authority, an ambivalence toward risk and the growth of a multi-racial, multi-ethnic society. Amid this talk of the changes that await us, we noticed that young coastal management professionals, those whose lives and careers will be most affected by these changes – and those who must adapt the profession to respond to these changes – were under-represented on the conference program and discussions.

We considered this disparity a call to arms and posted this "manifesto" on the Web: *We are the new generation of practitioners in coastal management. And we have quickly become members of the coastal management "institution." Alternatively, we are members of a generation which questions the authority of its institutions while expecting those institutions to solve its problems. We were raised on television. We are products of post-Watergate America, and understand the cynicism felt by many of our compatriots.*

Those in our generation who see a future in coastal management need to better articulate where coastal management should be going. Coastal management is a young discipline. Many of the originators are still active in the field. However, it is up to us to ensure our discipline adapts to the current social and physical realities in the country's coastal areas and anticipates future trends.

The country is much more diverse now than it was when coastal management got its start. For example, California will soon become the first state not to have any ethnic group as a majority. In addition, the country is becoming more geographically diverse. There is increasing development of ex-urban and rural areas, brought on in part by new communication technologies. At the same time, there is a greater understanding of the impact of low density sprawled development: increased potential for polluted runoff; voluntary isolation from communal resources and concerns; and destruction of the traditional economic base of coastal com-munities, urban and rural.

This is the opportunity to express our vision of coastal management in the year 2020. New technologies are revolutionizing the field of coastal management. In addition, creative partnering, funding, and incentive-based approaches are necessary to deal with the current anti-regulatory movement across the country and to provide longer-standing solutions. How can these technological and institutional advances be brought to bear on the increasingly diverse coastal management issues facing an increasingly diverse country?

It was decided to host a special session at CZ'97 and focus it on three themes that will be increasingly important to a new generation of coastal managers:

- Social Separation from Natural

Challenges such as beach development will be faced by a new generation of coastal managers.

Resources: Combating the forces that separate millions of coastal residents from their waterfronts, rivers, beaches and marshes

■ Environmental Justice and Equity: Ensuring that all coastal populations are well-represented in decisionmaking and none suffer disproportionately from environmental degradation

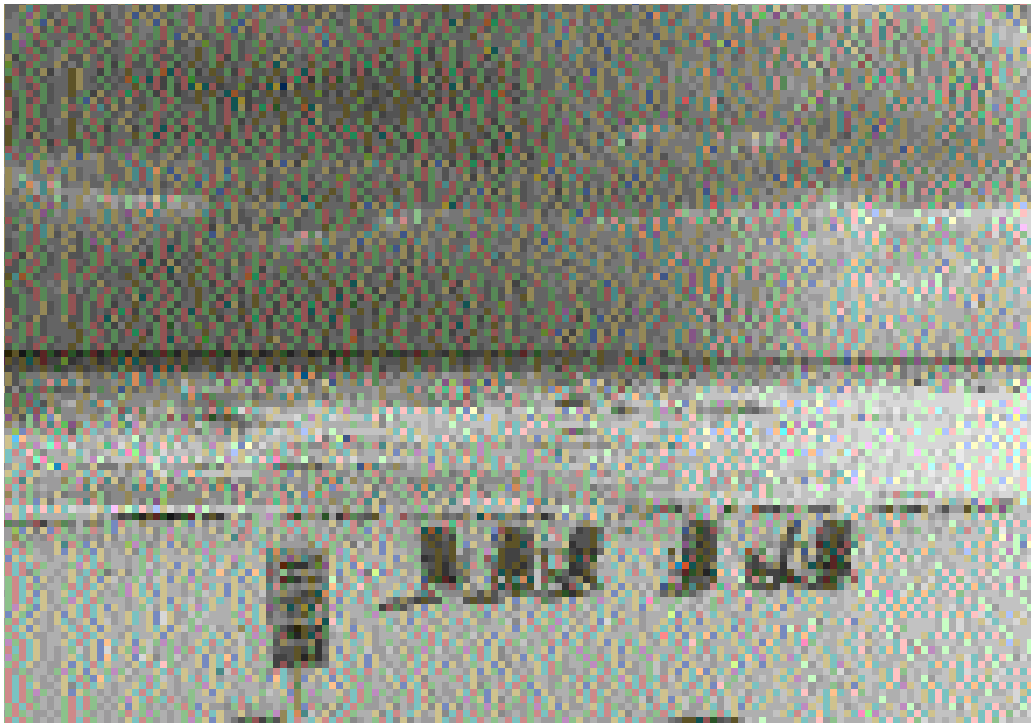
■ Inspiration and Leadership: Learning to fight the cynicism and apathy that can defeat new ideas.

We broke the session into two parts. In Part I, through an introduction and the showing of *Edgelife*, we looked at the coast as it exists today and briefly explored the role for our generation in coastal management. In Part II, we heard from people working in coastal communities on innovative projects, and from some innovative thinkers who we asked to consider these issues.

All of the panelists supplied inspiration and insight. Chelsea Albucher of Boston's Environmental Diversity Forum talked, among other projects, about the effort to reclaim the waterfront of the city of Chelsea, a community just north of Boston.

Beverly Baker, the U.S. Environmental Protection Agency's Anacostia River Liaison does extensive outreach work with the residents of the Anacostia watershed in Washington, DC and Maryland, organizing education programs, teaching kids to explore the river and waterfront, and helping residents understand and participate in the political processes that affect the river and their neighborhoods.

Mike Hill is an architect and the Outreach Program Coordinator for the National Building Museum in Washington, DC. Mike helped develop the Museum's City Vision program, which teaches city kids to solve problems in their neighborhoods and waterfronts through planning and design. Mike's presentation focused on a redevelopment exercise for the Anacostia waterfront he helped his students put together. When given a choice of locations for the project, the kids instinctively chose the riverfront, reflecting, perhaps, people's innate connection to the water. Mike reminded his audience that, at some point in our lives, each of us fell in love with the water, and the more that feeling can be encouraged in people from all walks of life, the more success we will have in achieving sustainable coastal communities.



Vision 20/20 addressed a variety of coastal issues, such as private beach ownership.

Two more participants in the session helped lead discussions. Michael Orbach of Duke University's Nicholas School of the Environment spoke from the perspective of an educator and a long-time contributor to the national coastal management program. Steven Stichter, from the Caribbean Disaster Mitigation Program, Organization of American States, has experience in both U.S. and international coastal planning. Steven spoke of how coastal management has produced some exceptional laws and programs around the country that can be used to address the emerging issues discussed at the session.

Lively debate followed the presentations. Students, young professionals, activists, and coastal management veterans all contributed. One topic was the role of coastal managers as designers, which both Mike Hill and Michael Orbach stressed as being the case, even-though many managers may not agree. Another topic was outreach and valued public participation. Stressed was how to communicate effectively with the many different elements of the coastal population, including children, senior citizens and others; and how to achieve beneficial public participation to help build community support for a variety of innovative programs.

Since CZ'97, we have maintained our web site and begun an E-mail list devoted to Vision 20/20 (see the web site on how to subscribe). We are planning a follow-up session for the 1998 Coastal Society Conference, exploring ways to distribute *Edgelife*, and actively seeking more input. Please visit our website at http://www.nos.noaa.gov/ocrm/vision2020.html.

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Pre-Conference Workshop Highlights International Projects

Part I
Global Initiatives Since the 1992 Earth Summit

On the weekend preceding the official opening of CZ'97, an international training workshop on integrated coastal management (ICM) was held at the Massachusetts Port Authority Exchange Conference Center at the Boston Fish Pier. The workshop was the fourth in a series of training workshops (Long Beach '91, New Orleans '93, Tampa '95), and featured over 70 participants from 30 countries, including coastal practitioners; federal, regional and state officials; international donor institutions; United Nations agencies; and nongovernmental organizations.

The first morning of the workshop was broken into two panel discussions. The first, a capsule view of which follows, involved reports that looked at the progress being made in ICM since the adoption of Agenda 21 at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 (also referred to as the Earth Summit or the Rio Summit). Chapter 17 of Agenda 21 dealt directly with oceans and the coast, and has been a catalyst for advancing ICM worldwide since the UNCED meeting.

In the second panel, representatives from Asia, Africa, Europe, Latin America and the Caribbean, and North America gave regional responses to international ICM initiatives, discussing the progress and setbacks that have occurred since 1992. (Capsule reviews of the regional presentations are found on page 10.)

The objectives of the workshop were to review progress in implementation of Chapter 17 of UNCED's Agenda 21; to provide an opportunity for participants to consider and compare their own experience with ICM at both the national and local levels with other practitioners and program managers, both national and international; to introduce approaches to ICM that address a range of issues; and to provide the opportunity to view a local level example of efforts to promote ICM.

The Worldwide Response

Katie Ries of the U.S. National Oceanic and Atmospheric Administration (NOAA) briefly outlined some of the international ICM initiatives that have been implemented since the 1992 UNCED in Rio de Janeiro. Panelists representing the perspectives of international experts, governmental and nongovernmental organizations, and donor institutions then elaborated on these activities and their relationship to the issues of climate change, biodiversity and land-based sources of marine pollution, among others.

Global Trends: Population and Coastal Demographics

Don Hinrichsen, a consultant to the United Nations, gave an overview on global population trends and coastal demographics which point inevitably to increased demand on coastal resources. In order for coastal management plans to be effective, Hinrichsen said, they require the following fundamental ingredients:

- They must be participatory, not imposed. Local community involvement in all phases of coastal management is essential.
- It makes sense to find a lead agency of the central government to oversee coastal management with solid local counterpart agencies.
- Coastal urban planning is very important to resource management, but is often neglected. Coastal cities and towns need to be brought into the process.
- Resource management is perhaps the most difficult, given the multiple uses of coastal areas. Zoning coastal areas must be done in cooperation with major resource users.
- The process of coastal governance should build public constituencies in support of broad-based management plans.

Ocean and Coastal Progress Since UNCED

Biliana Cicin-Sain, of the University of Delaware's Center for the Study of Marine Policy addressed post-UNCED conditions. She noted that the mood at the recent "Rio+5" summit at the United Nations (U.N.) was a "very depressing" one because environmental indicators demonstrate a continuing deterioration of global ecosystems over the last five years.

However, on the positive side, she said there has been a large change in institutions which should make a difference in the next five years, and more progress has been achieved in ocean and coastal issues than in other areas of Agenda 21. According to Cicin-Sain, a solid foundation for ICM was being laid. ICM has been adopted worldwide as a means of managing the intricate problems associated with the coasts and is reflected in a number of international agreements and conventions developed or entered into force since UNCED, including the U.N. Law of the Sea, the Framework Convention on Climate Change, Straddling Fish Stocks Agreement, Small Island Developing States Action Plan, Global Program of Action for the Protection of the Marine Environment from Land-Based Activities, and the International Coral Reef Initiative. International fi-nancial institutions have embraced ICM and have expanded their funding of coastal and marine-related projects, through such mechanisms as the Global Environment Facility.

In summarizing, she noted that although financial contributions haven't been fully realized on the international scale, there has been much institutional organization and focus around the implementation of ICM. While this

has not translated into major changes within the state of the global environment, the foundation for this change has been laid.

ICM and Climate Change

Martha Perdomo, of the U.N. Framework Convention on Climate Change (FCCC) Secretariat in Bonn, Germany, informed the group about the FCCC's treaty on global climate change, which as of July 1996 had been ratified by 166 countries. These countries have recognized climate change as "a common concern of humankind."

The goal of the Convention is to forge a global strategy "to protect the climate system for present and future generations." Governments that become parties to the Convention will seek to achieve its ultimate objective of stabilizing "greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic [human-made] interference with the climate system." The Convention provides a framework within which governments can work together to carry out new policies and programs that will have broad implications for the way people live and work. The recent Kyoto Conference on global climate change was an obvious target for promoting these views.

The most relative Convention articles pertaining to ICM are Article 4.1 (b) which calls for nations to implement programs that mitigate climate change; and Article 4.1 (e) which specifically calls for nations to develop ICM plans.

ICM and Land-Based Sources of Pollution

Sian Pullen, of the World Wildlife Fund–United Kingdom (WWF-UK) discussed the Global Program of Action (GPA) for the Protection of the Marine Environment from Land-Based Activities. The GPA was adopted in Washington, DC on November 3, 1995.

Pullen pointed out that the GPA recognizes that increases in populations and economic activities in coastal areas are leading to an expansion of construction as well as alteration and loss of coastal habitats and associated wildlife populations. The GPA's objectives include the safeguarding of ecosystem function; maintenance of biological diversity; and where practical, the restoring of marine and coastal habitats affected by human activities. To accomplish the GPA's goals, ICM is viewed as one of the major tools for coordinating programs aimed at preventing marine degradation.

The GPA functions on three levels: international, regional and national. Activities cover capacity building, mobilization of financial resources, international institutional framework, and additional areas of international cooperation (waste-water treatment, persistent organic pollutants). Developments on the regional scale include the Arctic and Mediterranean regions' creation of draft regional programs of action, with the Middle-East and Southwest Atlantic scheduled to hold meetings in 1997. Both give hope for the future of dealing with land-based sources of pollution.

ICM Training

Alice Hicuburndi of the U.N. outlined their TRAIN–SEA–COAST (TSC) Program. The TSC Program is an intercountry cooperative training network made up of academic and training institutions from developing and developed countries. It involves the management and sustainable development of oceans and coastal areas and is directly responsive to the call of UNCED for enhanced human resources development through training and education.

The TSC Program works toward the establishment of an international, de-centralized program for coordinated development and sharing of high quality standardized course materials relating to ocean and coastal sustainable development. Its network of 10 centers around the world encourages the exchange of materials, information and instructors in order to allow their maximum utilization worldwide, thus avoiding duplication of effort and reducing the costs of developing training programs.

TSC is based on a previous global communications strategy known as the "TRAIN–X Strategy." The major elements of the TRAIN–X Strategy include: 1) common course development methodology; 2) coordinated development of training materials to maximize resources and avoid duplication; 3) a cooperative network for exchange of materials and instructors; 4) a series of courses for the training of trainers including human resource development/training managers, course developers and instructors; 5) use of modern training techniques, including open learning and computer assisted learning; and 6) use of training information systems for the management of large cooperative networks.

Future sea level rise due to climate change could add to coastal erosion problems in places such as Sri Lanka.

ICM and the World Bank

Marea Hatziolos of the World Bank gave an overview of her organization's initiatives in ICM. The Bank is a relative newcomer to ICM, but Bank support of ICM has grown into a formally recognized program, which targets three main areas of intervention: awareness creation and training, investments, and partnerships. Currently, there is $260 million for ICM projects in the Bank's portfolio.

The Bank has undertaken an evaluation of ICM activities in the Mediterranean region to better understand what was and was not successful, and

(continued page 31)

Pre-Conference Workshop

Part II
Regional Responses to International Initiatives

On the weekend preceding the official opening of CZ'97, an international training workshop on integrated coastal management (ICM) was held at the Massachusetts Port Authority Exchange Conference Center at the Boston Fish Pier. The purpose and goals of the workshop are described in the article, "Pre-Conference Workshop Highlights International Projects" on page 8 of this *Intercoast*, which gives an overview of the seminar's first panel presentations, which focused on international initiatives in ICM since the 1992 Earth Summit in Rio de Janeiro.

A second panel, chaired by Lynne Hale of the University of Rhode Island's Coastal Resources Center, featured presentations on the impacts that those international initiatives have had on a particular country or region. The panelists were also asked to identify ideas to increase the positive impact of international ICM-related initiatives within their country.

Below is a synopsis of what was presented by the panelists.

Asia

Panelist Sapta Putra Ginting, directorate general for Indonesia's Proyek Pesisir coastal management program, discussed how Indonesia has increased its reliance on coastal resources over the years. Fisheries landings have increased from 0.7 million tons in 1968, to 2.6 million tons in 1991. At the same time seafood exports increased from 21,000 to 409,000 tons/year. Indonesia has also experienced a rapid growth in the maritime transportation industry as well as an increase in tourism concentrated in coastal areas. Unfortunately, a central agency does not exist to manage the many coastal issues. Because of this, there is a conflict of planning among sector developments and agencies including national and local government, the private sector and the local community. This lack of sectoral coordination, in addition to the lack of law enforcement and human resources, has led to the degradation of marine resources.

According to Ginting, in order to cope with these problems, Indonesia has implemented some ICM strategies as a result of international initiatives, such as strengthening institutions. There is a need to improve marine resource management in order to sustain productivity and contribute to full economic development. To accomplish this, cross-sector overlaps in the use of ecosystems must be identified and resolved and national guidelines should be established for marine regions and management of their resources.

He also cited various projects pursuing different goals within the context of ICM:

- The Marine Resources Evaluation and Planning Project (MREP) (Asian Development Bank), whose objectives are to improve coastal planning and management, and develop and strengthen existing coastal information systems
- The United Nations Development Programme (UNDP's) Riau Coastal, which will develop a wet-land profile and strengthen regional planning and broader local government and policy to maintain coastal resources
- United States Agency for International Development (USAID's) Coastal Resource Management Project, which will create a model for ICM that emphasizes community-based resource management
- The Asian Development Bank (ADB's) Segara Anakan Conservation and Development initiative, which is focused on: 1) canal development under public works, 2) institutional development, and 3) coordination and management.

Africa

Coastal African nations are heavily dependent upon the coasts, explained Jeremiah Daffa of the Tanzanian Coastal Management Partnership. This reliance creates incredible pressures on coastal areas as regards subsistence fishing, mangrove harvesting, coastal mining and sewage discharge.

Many African nations have been affected by ICM, and are attempting to adapt the elements into national management plans. This integrated approach is new, as most nations have been managing their coastal zones through a multi-sectoral approach in which there has been no national and local coordination. This is further complicated because most African nations face political instability.

Overall, the African continent has experienced some success with regards to ICM, however, it largely has not taken root. Daffa also stated that in the cases where Africa has initiated programs, the issue of sustainability is questionable. Capacity isn't well built into most nations to develop or sustain ICM programs. African nations have shown, particularly on the community level, that they are quite adept at implementing ICM. However, even this community-based conservation will require national support to sustain it over the long term.

Europe

Constantine Galabov, a former director of Bulgaria's coastal management program who is now a professor at Sofia University of Technology told participants there are several levels of groups that are practicing ICM in Europe: international organizations, individual countries, local organizations and governments, etc. The major international initiatives have spurred regional activities in certain European waterways such as the Mediterranean, Baltic and Black seas. On the national scale, individual countries have implemented legislative or institutional frameworks that incorporate ICM.

To further the implementation of ICM on national and regional levels four points should be considered:

- ICM concepts should be introduced into governments and state agencies
- Regional cooperation (basin-wide) with neighboring countries is important

■ Participation of international organizations is necessary

■ Help from developed nations, serving as role models for ICM development in Europe is vital.

Latin America/Caribbean

Important ICM-related activities have started in practically all countries in the Latin American/Caribbean region according to Leonard Nurse, director of the Coastal Zone Management Unit in Barbados. Examples include:

■ Identification and establishment of focal points for coordination of coastal management activities

■ Inventorying and mapping of critical coastal and marine resources

■ Genuine attempts to better manage and regulate activities such as fishing, sand mining, marine parks and protected areas, coastal development, and coral reef protection and monitoring.

International ICM initiatives have had a major influence on the management of marine and coastal pollution, including land-based sources. Almost all the countries in the region have completed inventories of land-based sources of marine pollution by category, as well as by amount and type. All countries have agreed to adopt the Land-Based-Sources of Marine Pollution protocol when it is finalized. The Framework Convention on Climate Change has implemented a major regional global climate change initiative, funded by a Global Environmental Facility (GEF) grant of US$ 66.3 million, which is establishing a sea-level monitoring network, constructing a climate change database, creating an inventory of coastal resources and use and forming policy, among other projects.

There is no doubt, according to Nurse, that the region has greatly benefited from some of the global initiatives implementing ICM. A few of the most important examples are:

■ The notion/concept that ICM is slowly becoming part of the national thinking. There is also some sense of "ownership" among many stakeholders

■ National ICM activities are now better designed, planned and executed

■ Coordination among national agencies is improving

■ There is more and better utilization of national and regional expertise

■ There is an increasing number of bi- and multi-lateral partnerships which have been forged at the national level as a direct consequence of global initiatives

■ There are improved and more functional institutional arrangements for ICM

North America/Gulf of Maine:

The Gulf of Maine is a shared resource between five jurisdictions in three US states (Massachusetts, New Hampshire and Maine) and two Canadian provinces (Nova Scotia and New Brunswick). Its coastline extends from Nantucket, Massachusetts to Cape Sable, Nova Scotia. The Gulf supports an abundance of species, including 140 species of birds, 205 species of fish, 26 species of whales, dolphins and porpoises, and 1,600 types of bottom-dwelling organisms, such as clams and marine worms. Twenty-nine of the species are listed as threatened or endangered, including the critically endangered northern right whale. The Gulf's economic value is unparalleled when compared to similar ecosystems such as the Bering and North seas. In 1988, total commercial fishery landings were worth approximately $650 million and employed over 20,000 fishers; aquaculture harvests totaled $57 million. Tourism and home development have also created a positive impact on the region's economy.

In 1989 U.S. and Canadian representatives signed an agreement on the conservation of the marine environment of the Gulf of Maine. The agreement created the Gulf of Maine Council on Marine Environment (GOM) which is composed of the top environmental officials and business leaders from each of the five member jurisdictions. Since then, the Council has launched a number of initiatives, including: 1) a marine debris reduction campaign, 2) a Gulf-wide marine monitoring program, 3) a system for information sharing among the five jurisdictions, and 4) numerous public education materials and workshops. Today, the Council fosters cross-border cooperation among government, academic and private groups. The goal of the Council is to develop and implement a sustainable management strategy for the Gulf.

In 1996 the GOM Council refined and updated its action plan. The action plan defines the council priorities, objectives and timetable for cooperation among the five jurisdictions. Five priority areas identified are:

■ To protect and restore regionally significant coastal habitat

■ To restore shellfish habitat

■ To protect human health and ecosystem integrity from toxic contaminants

■ To reduce marine debris

■ To protect and restore fishery habitats and resources.

Also identified is what needs to be done to increase the positive impacts of international ICM initiatives in the Gulf region:

■ Enhancing public awareness of the GOM as an entity deserving special recognition and protection

■ Building partnerships that can enhance the activities in priority areas

■ Improving Council infrastructure and capacity to translate research and monitoring information about GOM to the public

■ Identifying strategies for improved implementation of action plan objectives

■ Reinforcing and strengthening current partnerships.

A Sri Lankan Afternoon

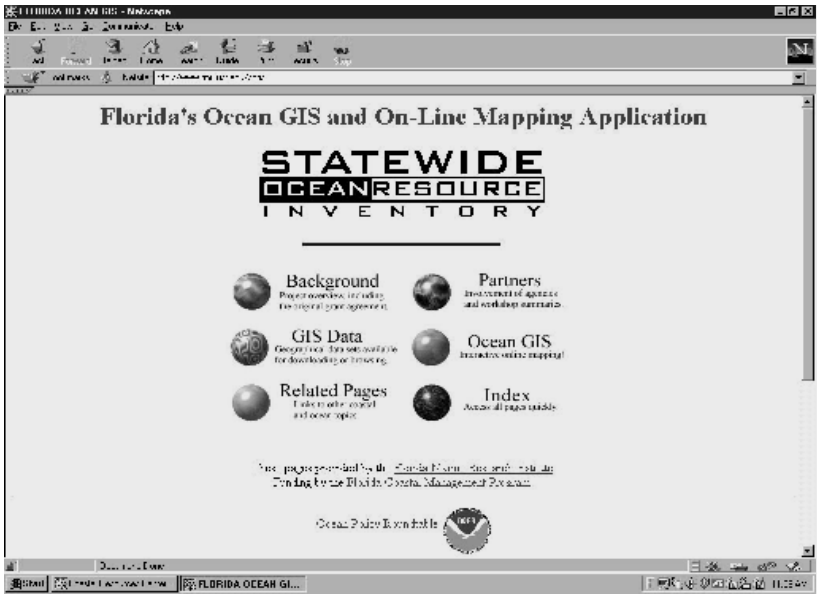
In the afternoon, pursuing the theme of linking international, national and local level ICM, a case study of Sri Lanka was presented by Indra Ranasinghe of Sri Lanka's Coastal Conservation Department, and Lynne Hale, Kem Lowry, and Brian Needham of the U.S., who had been involved in Sri Lanka's ICM program via the Coastal Resources

(continued page 31)

Preparing an Innovative Approach to Florida's Ocean Policy

By Robert Hudson, Christopher Friel and Courtney Westlake

Leading the nation in ocean policy are four coastal states: California, Oregon, Maine and Florida. These states have recognized that innovative approaches are needed to realize the ecological, food, fuel and medicinal potential of the oceans. Growing conflicts in the territorial sea are motivating these states to manage the present and prepare for the future of their oceans. California began in 1990 by creating an Ocean Resources Task Force to report on existing ocean resource management. Oregon, concerned with oil and gas leasing in federal waters, created a task force to address resource management concerns inside the 200-mile Exclusive Economic Zone and currently have an Ocean Policy Advisory Council. The efforts in Maine have prompted a Gulf of Maine Action Plan to address pollution, human impacts and oil spills until the year 2000.



Data from Florida's Statewide Ocean Resource Inventory are available on-line at http://www.fmri.usf.edu/sori.

Protecting Florida's Resources

The Florida Coastal Management Program (FCMP) and 1000 Friends of Florida have created an Ocean Policy Roundtable to address Florida's ocean management. The FCMP decided that an ocean policy should be based upon the most accurate information available, and where there are gaps in the data, a systematic approach should be implemented to gather information. The Statewide Ocean Resource Inventory (SORI) project, funded by the National Oceanic Atmospheric Administration (NOAA) through the FCMP, addresses this need by developing a Geographic Information System (GIS) database and distribution mechanism that provides information in a format that can be easily used by those developing Florida's ocean policy.

The Coastal And Marine Resource Assessment (CAMRA) section at the Florida Department of Environmental Protection's Florida Marine Research Institute (FMRI) organized the data acquisition and software development efforts of the SORI project around several marine management issues. Focusing on management issues guaranteed that SORI would remain relevant. CAMRA aligned the issues and directions of the SORI project with those set forth in Florida's Ocean Future: Toward A State Ocean Policy created by Florida State University for the FCMP. This document, in concert with the discussions of the FCMP Ocean Policy Roundtable, put into context the technical development aspects of the SORI project. NOAA's Coastal Services Center (CSC) in Charleston, South Carolina also recognized an increasing need for ocean governance and convened a series of Southeastern Regional Ocean GIS scop-ing meetings to address many of the same issues addressed by Florida's Ocean Policy Roundtable. Since then, FMRI and the CSC have formed a strong partnership to advance ocean GIS.

Targeted Information Delivery

Traditionally, GIS users and developers approach an application from drastically different perspectives. Users dwell on what the software should do, whereas developers concentrate on how to make the software do it. To avoid using a generic interface to house a "data dump" that does not address the management questions at hand, stakeholders with a vested interest in ocean policy were invited to take an active role in the identification of issues, the prioritization of data-gathering efforts, and the ultimate presentation of the data. Through this partnership, a bridge was built between the technical community and the ocean resource planners. A targeted GIS tool was created that accommodated the interests of both sides. Achieving a consensus regarding information format and presentation allows for the organization of the "fire-hose" of data.

The design process included determining priority coastal ocean issues, inventorying data and integrating spatial data (e.g., Florida Administrative Code, agency contacts, and management plans) with more than 150 spatial datasets. In addition, the project partners assisted in designing a customized interface, and evaluating the application to enhance its applicability. This method of identifying partners and designing the products with their input maximized the satisfac-

tion of users while providing a technical architecture that can be up-graded periodically.

Ocean Stakeholders

The SORI application reflects the information needs of the ocean stakeholders – who range from Florida's Regional Planning Councils, to National Estuarine Research Reserves, to the Florida Keys National Marine Sanctuary and universities – by providing only relevant information in an organized fashion. While the state is faced with numerous marine issues, the partners focused on a short list in the SORI project, such as fisheries management, law enforcement, disaster response, marine commerce and resource quality / critical habitats. This framework guided the database inventory and acquisition process.

The SORI partners evaluated GIS data layers using a matrix that linked GIS databases to management issues (e.g., vessels corridors to the law enforcement issue). The GIS data layers that were applicable to the greatest number of issues were considered high priority for acquisition and presentation. This exercise enabled SORI developers to cluster 15-20 databases in targeted "views" for the priority issues.

Interactive Mapping

CAMRA contracted GPC, Inc. and Map Vision Technologies to "World-wide Web-enable" an interactive mapping application, which previously only ran in stand-alone mode. The 150 geographic Florida datasets are viewable in a user-friendly, interactive mapping session from an Internet browser. The datasets are organized in two fashions: by ocean issue and thematically. Each dataset can be downloaded individually or as part of a collection of related datasets. The Federal Geographic Data Committee (FGDC) metadata and an ArcView legend file are bundled with the spatial datasets and immediately downloadable to a local computer. Florida Administrative Code citations, governmental agency phone numbers, and management plan information can be "geo-accessed" for any location in Florida. The SORI application is a desktop research tool as well as a spatial data warehouse. The 16 interactive maps supply one gigabyte of spatial data organized for analysis of ocean policy. The SORI database can be viewed on-line or downloaded for more targeted viewing in ArcView.

The on-line SORI mapping application (www.fmri.usf.edu/sori) provides the following:

- Geographically accessible Florida Administrative Code, management plans, and phone numbers of agencies statewide
- "Manager-friendly" interface to view issue-driven GIS data
- An on-line tool for downloading 150 GIS data layers allowing users to fill out a request form to download user-designated GIS datasets, metadata, and an ArcView legend file within each view
- Thumbnail sketches of statewide datasets in small static maps showing a visual inventory of the SORI database
- Searchable FGDC metadata– Datasets are hyper-linked to metadata on the Florida Data Directory maintained by the Florida Geographic Information Board
- On-line help – documentation of how to navigate inside the Internet mapping application and instruction on down-loading the GIS information.

Ocean resource stakeholders can now browse current ocean information that was not previously available in one location. This is the optimal distribution method due to the large volume of data that is required to support decisionmaking at this scale with the most current data available.

A New Management Tool

"Our oceans remain the 'last frontier' but hopefully we have learned that the frontier mentality of conquering our resources leads to environmental and economic stress. Through the use of advanced information and GIS technologies, I believe we are on the verge of revolutionizing the way information is used to ensure effective management of our ocean resources," says Ken Haddad, chief of the Florida Marine Research Institute. Although interactive Web-mapping provides worldwide access to spatial data, its performance is limited by existing band width. National telecommunication initiatives will increase the carrying capacity of the Internet within the foreseeable future and the increased capabilities will allow nearly limitless access to ocean GIS data.

Florida is working to protect the quality of marine resources for future generations.

The SORI issue-driven views are available not only to project partners, but also to education facilities, the public, and other governmental and non-governmental organizations world-wide. Globally, users will be able to browse and extract data that are necessary to address their needs as the ocean policy scenario unfolds. Ocean issues are inherently three dimensional. Once ocean data are delivered to the desktop, users can take full advantage of rapidly emerging three dimensional data visualization tools.

For further information contact: The Coastal and Marine Resource Assessment section at the Florida Marine Research Institute, 100 Eighth Ave. S.E., St. Petersburg, FL 33701-5095, USA. Tel:813-896-8626, FAX: 813-983-1679.

Plenary Sessions Paint Picture of Future

By Chip Young

Two of the more compelling speakers at Coastal Zone 97's plenary sessions were Robert White, a senior fellow at the H. John Heinz III Center for Science, Economics and the Environment, who gave the introductory speech at the CZ'97 opening session on "Rethinking Integrated Coastal Management into the Next Millennium"; and Walter Reid, vice president for programs at the World Resources Institute, whose statistical overview of coastal change highlighted the closing full session.

White served as chief of the United States Weather Bureau and first administrator of the National Oceanic and Atmospheric Administration before continuing his career in environmental science and services in the private sector. He gave a historic overview of the growth of the environmental movement in the United States, focusing on key government initiatives. The highlight was the 1972 Coastal Zone Management Act, a program that has had a federal investment to date of $800 million, and approved programs covering 97 percent of the nation's coastline.

White stressed the economic importance of the U.S. coasts, where 180 million Americans spend approximately $75 billion per year on recreational activities. The money spent on beach tourism in the U.S. is expected to approach $100 billion in a few years, bringing with it sizable impacts on infrastructures such as roads, buildings and facilities. In addition, "The two billion tons of cargo valued at over $500 billion per year that now move through the nation's 190 seaports can be expected to leap ahead as we become increasingly dependent upon imported oil and other natural resources and as the import and export of manufactured goods increase with a growing world economy."

How can coastal managers best manage the complex challenges that face these valued and valuable resources in the future? White suggested "that a greater focus on the marriage between modern approaches to computer modeling and simulation, and coastal authorities, can serve to increase the coherence of actions of single purpose authorities… (M)odels and simulations that incorporate the economic and social forces, that take into account the pressures of a growing population as well as their environmental and economic impacts as a means of achieving consensus on courses of action and their consequences."

White cited the advance in the use of computer modeling for complex systems in the fields of business and government, and noted that models could be developed for virtually "all time and space scales from small coastal ecosystems to a broad coastal areas," and be of use worldwide. The stepping off point for exploring the feasibility of such computer modeling would be agreement among agencies to provide the funding, with development to be done in the academic community. "I'm convinced the academic and nongovernmental community would welcome a move in this direction. We would then have an integrating force where the ownership of the process was widespread," he concluded.

Walter Reid's address looked at future changes along the world's coasts, and the impact that they might have upon human health.

One of Reid's key points concerned urban growth, a critical issue for the CZ'97 attendees as reflected in the poll of participants which revealed that the emergence of megacities was viewed as the single greatest threat to the future health of the world's coastal environments (See story, page 15). Currently, one-third of the world's urban population lives within 60 kilometers of the coast, Reid noted. Between 1980 and 2000, urban populations will increase by 380 million people–about the population of Canada, Mexico and the United States combined.

World Resource Institute statistics show that 305 of China's 467 largest cities are coastal and are growing at a rate of 4.7 percent a year, which means a doubling of the population every 14 years. In Africa, 100 of the largest 150 cities are coastal, while in Latin America and the Caribbean, 57 of 77 major cities are located on the coast.

It is hard for many to visualize the prediction that by 2010, the zone from Rio de Janeiro to Sao Paulo, Brazil, will have become one large, urban agglomeration. But as Reid explained, "Urban growth is linked to increased economic activity in coastal areas. All 14 of China's current economic free zones and special economic zones are coastal. Indonesia has yet to install 80 percent of the industrial capacity it will have by the year 2010. This does not mean better economic conditions for all. Between 25 and 50 percent of the world's urban population now lives in extreme poverty."

These population pressures create other problems which have harsh impacts on human health. Eutrophication and microbial contamination from sewage and runoff foster disease and loss of fisheries. Combined with over-fishing and loss of habitats for fish, this is a critical factor in tropical developing countries where 60 percent of the people depend on fish for 40 percent or more of their protein.

CZ'97 Poll Targets Megacities as Greatest Coastal Threat

A poll of attendees at CZ'97 revealed that existing and emerging "megacities" were seen as the greatest future threat to the health of the world's coastal environments. The hot topics of global warming and sea level rise ranked a distant third behind megacity growth and freshwater diversion as looming threats. (Megacities are commonly defined as urban areas that have more than 10 million people or are estimated by the United Nations to have 10 million by the year 2000.)

The poll was sponsored by the New England Aquarium and the Urban Harbors Institute at the University of Massachusetts. Conference attendees were asked to rank today's major threats to the coastal zone, future threats and possible strategies to minimize these threats. Approximately 30 percent of the 1,000-plus attendees responded to the phone bank poll, which was conducted by Voice Poll Communications.

"Population growth, particularly in coastal areas, is the source of most of the problems identified by Coastal Zone participants as threats to the health of the world's coastal environments," commented Jerry R. Schubel, president of the New England Aquarium. "Coastal habitat destruction, through physical alteration and nutrient over-enrichment, can be tied directly to this population growth."

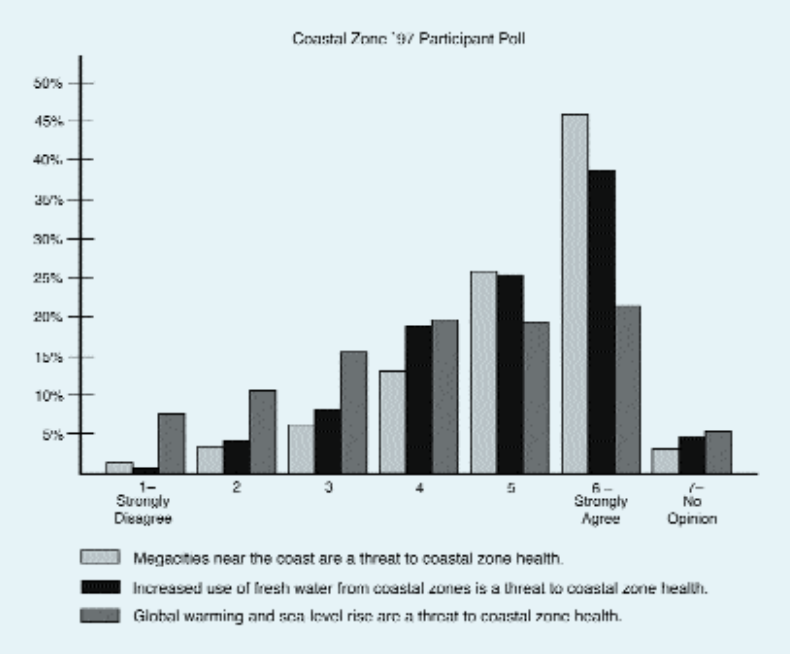
Seventy-eight percent of respondents ranked overfishing as a substantial threat to the sustainability of coastal zone resources. That same percentage ranked contamination by long-lived pollutants as the most significant threat to the ecosystem and human health. Physical alteration of the coast was seen as the primary contributor to habitat destruction by 88 percent of the poll participants.

Impacts suggested to participants as potential threats to sustainable development, habitat destruction and the health of the coastal zone included overfishing, gas and oil recovery, shipping and transportation, recreational impact, conflict between developed and developing countries, physical alteration of the coastline, nutrient over-enrichment, fishing techniques, coastal zone mining, plastic waste, contamination by long-lived pollutants, toxic algae blooms, microbiological contaminants, existing and emerging megacities, utilization and diversion of freshwater, global warming and sea level rise, and inability of existing governance systems to sustain competing values and global economic forces.

Reflecting the ongoing debate about the consequences of global warming and sea level rise, only 41 percent of the respondents targeted those events as major future threats to the health of coastal zones. The burgeoning megacity problem and increases in utilization and diversion of freshwater from coastal areas outweighed the global climate change issue at 73 percent and 64 percent, respectively.

When asked about strategies to minimize these present-day and future threats, the international experts at CZ'97 resoundingly identified public education and the need for people to assume environmental stewardship roles as critical to the future health of coastal zones.

The CZ'97 poll was a big attraction near the conference registration desk, and the bank of phones set up to take the opinions of attendees was nearly always in use throughout the week. Conference organizers and the polling firm were able to produce results of the survey for attendees to take away with them on the final day of activities.



CZ'97 poll on future threats to the health of coastal environments.

Shrimp Aquaculture – Where Are We Headed?

By Jason W. Clay

During the past year, there has been a growing awareness of the environmental and social impacts of shrimp aquaculture production. As a result, a number of forums have been convened to explore the issue of what could be done to reduce the impacts of shrimp aquaculture. These meetings have been organized by the industry, nongovernmental organizations (NGOs), individual buyers, certification organizations, multi-lateral organizations, academic entities and trade associations.

A few examples of organizations that are discussing the creation of policies, regulations, guidelines, principles and best management practices for more sustainable shrimp aquaculture:

■ The Global Aquaculture Alliance (GAA) is an industry group composed of shrimp producers, traders and corporate buyers that was created at the World Aquaculture Society meeting in Seattle in February 1997. It has begun a lengthy consultation process to address, among other topics, reducing environmental impacts including mangrove loss, increasing the adoption of best management practices, and reducing the social impacts associated with shrimp aquaculture.

■ The Industrial Shrimp Action Network (ISA Net) was formed in October 1997 by the environmental and community-based NGOs representing some 10 million members with offices in more than 100 countries. The group was created to oppose the expansion of unsustainable industrial shrimp aquaculture.

■ In October the World Bank completed a study regarding the environmental impact of shrimp aquaculture with an eye toward developing policy guidelines for Bank investments in shrimp aquaculture. The Bank recently approved a shrimp aquaculture loan to Mexico and is currently working with Thailand producers to develop a certification process for shrimp that are sold to the Japanese market.

■ In October, the National Chamber of Shrimp Aquaculturalists in Ecuador devoted its fourth annual meeting to four days of discussions regarding sustainable shrimp aquaculture. The organization is interested in working with NGOs to create a set of guidelines for sustainable shrimp aquaculture for the country.

■ In November, the Holmenkollen group was reconvened to expand the principles developed in 1994 on salmon aquaculture to include shrimp. The group's guidelines will be available in early 1998.

■ Colombia has just hired a consulting firm to explore the possibility of establishing a nation-wide set of guidelines for a certification system for shrimp aquaculture in the country.

■ ASEAN, the group of nine east Asian countries that includes some of the largest shrimp producers (Thailand, China, Indonesia, Malaysia and Vietnam) and consumers (Japan, China and Thailand), has just created the ASEAN Shrimp Industry Task Force to address the various issues raised by shrimp aquaculture production, processing and marketing of shrimp from the several member states.

■ Tesco, a large United Kingdom (UK)-based grocery store chain, has begun to explore the types of conditions that it could reasonably place on the shrimp that it purchases and resells in order to reduce their social and environmental impact.

■ The UK-based Soil Association for Organic Standards is currently exploring the creation of the Soil Association's Organic Aquaculture Standards. They expect the draft guidelines to be available by early 1998.

■ The Earth Centre's Council for Sustainable Aquaculture in the UK is also looking into shrimp aquaculture with the idea of attempting to define the criteria for what would constitute sustainable shrimp aquaculture.

■ The World Aquaculture Society devoted a considerable number of sessions at its 1997 annual meeting in Seattle to sustainable shrimp aquaculture and will do so again in its 1998 meeting in Las Vegas. This has consistently been a forum where industry, NGOs and academics come together to discuss these issues.

■ In February 1998, the American Academy of Arts and Sciences will sponsor a half-day panel discussion, bringing together academics, pond operators and NGOs, on problems with the sustainability of shrimp aquaculture at its annual meeting in Philadelphia.

What is clear from these meetings is that there is a widespread and growing interest in the impact of shrimp aquaculture production. Most in the industry or outside it would admit that many mistakes have been made in the past. These involve not only the inappropriate siting of shrimp ponds (e.g., in fragile ecosystems such as mangroves and wetlands), the large by-catch from the harvest of wild post-larvae for use in ponds, the failure to use best management practices (e.g., not using freshwater from aquifers, not reducing the daily water intake to less than five percent, not releasing "loaded" water into systems), and the displacement of local populations from areas without sufficient recognition of their traditional resource rights.

Over time, environmental NGOs have become aware of the problems that have been associated with shrimp aquaculture and have used this information to increase public awareness of these issues. This has often created conflict with producers, industry associations and even governments. Many in the industry have come to believe that the best way to avoid such criticism is to develop their own guidelines which include best management practices

and/or certification programs which will allow their product to be sold without being singled out in the marketplace as a result of the impacts of its production. Recent surveys, however, indicate that less than two percent of U.S. consumers trust industry claims about products.

To date, each of the different groups have set about creating their own sets of guidelines. The industry established the GAA to undertake this task, and the NGOs created ISA Net, which is formulating its own guidelines. In response, the United Nations Food and Agriculture Organization and the Holmenkollen group, respectively, are establishing their guidelines for sustainable shrimp aquaculture, and aquaculture in general.

Much of the debate, so far, has focused on whether shrimp aquaculture is, or is not sustainable. However, as the discussions of principles, guidelines and better management practices move forward in all the different forums, it is becoming clear that shrimp aquaculture can be more sustainable, and that by adopting better management practices at the pond level and better regulatory and planning processes at the state level, there can be a significant reduction in the overall impact of the industry.

At present, none of the groups convened represents all the different stakeholders that are affected by shrimp aquaculture. Rather, they are each like the blind man describing the part of the elephant that he can touch. Still, it is very important for all these independent processes to take place. This will allow each of the groups to come up with their best understanding of what the issues are by trying to define and potentially implement sustainable shrimp aquaculture. However, if the process stops here it will not have served a useful purpose. These different groups need to bring their different sets of guidelines and principles to the table to create a single set of guidelines for sustainable shrimp aquaculture that could serve as the basis for an independent, third party certification program. This would insure that all relevant groups participated and that the process of developing overall guidelines was transparent. Then one could truly point to some shrimp as being sustainably produced and encourage consumers to support that type of production.

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The FAO and Sustainable Shrimp Aquaculture

The United Nations Food and Agricultural Organization (FAO) convened a technical consultation on policies for sustainable shrimp aquaculture in Bangkok, Thailand from December 8-11. The meeting was attended by representatives from 10 countries, six intergovernmental and multilateral organizations, seven shrimp industry organizations and seven nongovernmental organizations. In addition, there were nearly a dozen individual resource people that were invited to attend.

The objective of the consultation was to contribute to the preparation of guidelines containing policy options and methodologies for government officials as well as to develop an appropriate incentive structure and regulatory and decisionmaking framework for the development of sustainable shrimp aquaculture. In particular, the group was to discuss and, upon agreement, recommend for shrimp aquaculture:

- A legal and institutional framework for planning, regulating, monitoring and enforcement
- Planning and regulatory methods
- Policies that would affect the distribution of net benefits from the industry
- Siting and best management practices
- Measures to achieve consensus and resolve conflicts among the different coastal resource users

After considerable discussion and debate concerning whether shrimp aquaculture is sustainable, is not sustainable or can be sustainable, the group decided to acknowledge that there probably were sustainable shrimp operations to be found, but it would make no comment about how common they are. Similarly, the group argued about the impact of shrimp aquaculture on the environment, what constitutes fragile ecosystems and what the implications of net loss are for the environment. Finally, all present agreed that there should be no further loss of fragile ecosystems as a result of shrimp aquaculture.

Still, the group found that there were a number of areas upon which there was already considerable agreement. A draft report of the policies and principles prepared and endorsed by the group is available from the FAO. With the exception of Greenpeace (which objected, in particular, to the lack of NGO participation), all those groups present adopted the final draft as an excellent first step. The group recommended that two additional technical groups be convened by the FAO. The first would be to develop further the legislative and regulatory frameworks necessary for countries to oversee shrimp aquaculture. The second would be to develop a specific set of guidelines for siting shrimp ponds and recommendations for best management practices.

The final draft of the policies recommended by the group build upon the FAO's Code of Conduct on Responsible Fisheries. The draft policies and principles provide a good starting point for further discussions on what would be required to insure sustainable shrimp aquaculture production and will certainly have an impact on the numerous discussions that are being convened on the topic by dozens of organizations around the world.

SEACAM Begins Work Program in Eastern African Region

by Carol Hall

In August 1997, the Secretariat for Eastern African Coastal Area Management (SEACAM) was launched in Maputo, Mozambique. A regional organization, the Secretariat works with many stakeholders committed to integrated coastal management (ICM) in 10 Eastern African countries: Comoros, Eritrea, Kenya, Madagascar, Mauritius, Mozambique, Réunion (Fr.), Seychelles, South Africa and Tanzania. SEACAM resulted from the desire of the Eastern African countries to accelerate implementation of ICM in the region as described in the Arusha Resolution (1993) and Seychelles Statement (1996).

Specifically, leaders within the region identified two areas that need to be addressed for the region to accomplish large scale coastal zone management: Better coordination and collaboration between agencies and stakeholders nationally, and between countries regionally; and more systematic exchange of experiences showing and evaluating successes, failures and lessons learned.

Rather than implementing coastal management projects itself, SEACAM provides information and builds the capacity to implement ICM programs. The Secretariat also works closely with other regional programs towards this goal.

The Secretariat is hosted by the Ministry for Coordination of Environmental Affairs of Mozambique (MICOA). The Swedish International Development Cooperation Agency (Sida/SAREC) is the major international supporter of SEACAM.

Priority Areas

The SEACAM Reference Group, comprised of representatives from the Eastern African countries, reviewed and approved the Secretariat's Work Program at the end of October 1997. All representatives of the Reference Group agreed on activities for the Secretariat to implement during its two and a half year lifespan. The Reference Group approved five priority areas:

- Capacity building, particularly for local nongovernmental organizations (NGOs)
- Database management of CZM programs, projects and activities and institutions and individuals
- Environmental assessment
- Public sector management
- Sustainable financing of coastal management programs

Initial Activities

SEACAM must have the flexibility to enact its Work Program with speed and efficiency. Within one month of approving the Work Program, planning of three activities was well underway:

1) *Local and Community Based ICM Workshop* (March 1998, Zanzibar). This first workshop will bring together project managers, local and national governments, NGOs and donors to discuss lessons learned from the first phase of ICM. Many new community ICM projects are planned for the region; however, no evaluation of established projects has been done. SEACAM will be jointly organizing the workshop with the Western Indian Ocean Marine Science Association (WIOMSA), Zanzibar.

2) *Local NGOs Capacity Building Program*. A training program is planned to improve the project development and management skills of local NGOs. There is strong support for this program because of the inability of local NGOs to implement activities. A series of five, week-long training seminars is planned starting in Mozambique in March 1998. Ideally the training sessions will include NGOs from several countries to promote learning from others' experiences. The training seminars will cover: 1) preparing project proposals, 2) identifying potential funding sources, 3) project development, 4) project management, 5) financial management, 6) communication and dissemination, and 7) project monitoring and evaluation.

3) *Eastern African Coastal Area Database*. SEACAM is creating a database of projects, programs and research, and institutions and practitioners, to meet the need for information sharing on ICM activities. The database will be coordinated with other databases and project inventories in the region and be disseminated both in print and on the Worldwide Web.

Future Activities

In addition, SEACAM will undertake other activities as summarized below.

SEACAM Work Program

1. Local and Community ICM
- Zanzibar, March 1998 workshop
- Organized with WIOMSA

2. Eastern Africa Coastal Area Database
- Projects, programs and research
- Institutions and individuals

3. Dissemination of ICM Information
- Arusha program documents
- Other document dissemination
- Web page and newsletter
- Distance working groups

4. Building Capacity of Local NGOs
- Training materials development
- Project management training seminars
- Possible expansion to include local government authorities

5. Environmental Assessment Training
- Aquaculture guidelines review and training seminars
- Tourism guidelines review and training seminars
- Other sector areas

6. Public Sector Management Training
- Training materials development
- National workshops

7. Sustainable Financing
- Case study workshop
- Training seminars on strategic planning and coordination

8. Maputo Ministerial ICM Conference, March 1999
- Preparatory meeting in conjunction with 2nd Conference of Parties of the Nairobi Convention

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Links between Public Health and ICM: The Epidemic of Decompression Illness Among Indigenous Lobster Divers in the Northern Autonomous Region of Nicaragua

By Maria Haws, in collaboration with Dr. Humberto Castro Olayo, M.D.

Quality of life and public health are often closely tied to effective coastal resource management. Ineffective management results in scarcity of resources, thus intensifying competition between stakeholders and forcing those unable to find other employment into increasingly hazardous practices. An example of this is the lobster divers using SCUBA equipment from the Northern Autonomous Area of Nicaragua (RAAN). These divers suffer from a high incidence of decompression illness (DCI).

Most lobster diving takes place in the Miskito Cays, a group of coral cays 40 miles northeast of Puerto Cabezas. The lobster industry is controlled by foreign-owned companies and companies from interior Nicaragua that operate vessels and contract indigenous (mostly Miskito) men to dive for lobster. SCUBA gear and transportation to the reefs are provided in return for a commitment to sell the lobsters for low, fixed prices.

Lobster stocks have declined, thus requiring SCUBA divers to go deeper and stay down longer. Divers must descend to depths of 90 to 130 feet and make repeated dives using 8-11 tanks of compressed air with infrequent breaks on the surface. In addition, there is no training or safety gear such as depth gauges or watches, and attempts by divers to self-medicate using drugs and alcohol compounds the problem. As a result, DCI (excess nitrogen accumulation in body tissues) has become a common occupational sickness. DCI causes symptoms ranging from a light tingling sensation to paralysis to death. The only effective treatment is recompression in a hyperbaric chamber followed by slow, controlled decompression within 12 hours of the accident.

In 1996, at least six fatalities were reported and the injury rate is unknown. These deaths and injuries affect not only the divers but the extended families through loss of income and high medical costs. Because alternative employment is scarce, divers dive even when afflicted with DCI, which results in accumulated injuries that eventually makes diving physically impossible.

The economy also suffers. A diver's estimated annual income is between $5,000 to $8,000, while the export value of one diver's harvest is approximately $60,000. This makes the lobster diver one of the largest contributors to the Nicaraguan economy. Nevertheless, little attention has been paid to these workers. This is partially because the harvest is not taxed; thus no money is available for health services.

After learning of the success of MOPAWI, a Honduran non-governmental organization that trained lobster divers in diving safety and starting a hyperbaric treatment program, Dr. Humberto Castro Olayo, Director of the Puerto Cabeza Hospital, began a similar program. It took Dr. Olayo two years to find a donated chamber, repair it, obtain a working compressor, receive training in hyperbaric treatment of DCI and raise funds to start the treatment program. This was achieved with assistance from local and foreign allies.

The chamber became operational in March 1997. In the first four months of service, 22 lobster divers with DCI were treated. Most had moderate to severe cases, since divers with light cases do not report for treatment. At least nine of the 22 patients would have died or been permanently paralyzed without treatment. Treatment costs are high, treatment in the chamber alone costs $22 per hour and repeated treatments of 10-12 hours each are required in severe cases. Currently there is no long-term funding. Some boat owners pay for treatment of their divers, while others do not. Funds are donated by dive organizations and by relatives of afflicted divers.

A new decompression chamber in Miskito Cays is helping save divers' lives.

Efforts are under way to start a SCUBA safety training program and strengthen the dive organization. Industry owners are being encouraged to provide long-term funding. It is hoped that training and medical treatment will contribute to the diver's self-confidence and will demonstrate the need to support resource management efforts, as has occurred in the Honduran Miskito Coast.

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REPORTS FROM THE FIELD

ASIA

PHILIPPINES

What's Up in the CRMP Learning Areas

The Coastal Resource Management Project's (CRMP) learning areas are: San Vicente, Palawan; Northwest Bohol; Olango Island, Cebu; Negros Oriental; Malalag Bay, Davao del Sur; and Sarangani Bay, Sarangan. In just over a year, the CRMP has established a partnership with the Local Government Units (LGU). Memoranda of Agreement supporting coastal resource management (CRM) were signed by CRMP and the LGUs of all the learning area municipalities and cities. A Participatory Coastal Resource Assessment (PCRA) has been completed in Palawan and is ongoing in the other five areas. This represents the first phase in the CRM planning and implementation process. The six learning areas are following similar tracks in the CRM planning process but are at different stages of completion.

San Vicente, Palawan. Resource maps describing vital information on the area's coastal resources and issues and problems confronting the communities were one product of the PCRA. These maps were used to initiate barangay (village) planning. Carmelita Tagudar-Corkum the learning area coordinator (LAC), together with the San Vicente Technical Assistance Office, are designing an integrated coastal management plan for Port Barton that has a thriving small-scale tourism industry and strong local commitment to CRM. It emphasizes community participation and multi-sectoral and institutional support. The Port Barton experience has encouraged CRM planning in other barangays, and will serve as input to the San Vicente Municipal CRM Plan. To build enthusiasm and demonstrate successful CRM in other coastal areas, 25 delegates from San Vicente toured Cebu, Bohol and Negros in September 1997.

Negros Oriental. Spearheading CRMP-related activities is William Ablong. In partnership with the Department of Agriculture (DA) Bureau of Fisheries and Aquatic Resources and the Office of the Provincial Agriculturist (OPA), the project has conducted training courses and organized the Bantay Dagat groups (community volunteers deputized by the government to patrol the coasts) into municipal federations. Together with the Resource Management Division under the Provincial Planning and Development Office (PPDO), a marine ecology seminar was held in Amlan. A partnership with a nongovernment organization (NGO), the Ting Matiao Foundation (TMF), was recently formalized to facilitate the CRM planning process at the municipal and barangay levels. An advisory council to TMF-CRMP that included the Department of Environment and Natural Resources, DAOPA, PPDO, Silliman University and a representative of the LGU (on-call basis) was formed to help coordinate and implement activities.

Northwest Bohol. Camilo Cimagala is coordinating activities, with NGO support from the Haribon Foundation. A PCRA trainers' training course was completed and municipal PCRA facilitators' training courses are being held. Community organizing has been started on the islands of Batasan in Tubigon, and Jagoliao in Getafe. CRMP is also providing inputs to the Coastal Zone Management Section of the proposed Environment Code of the Province. Expansion sites of Dimiao, Loon and Getafe are also showing serious interest in pursuing CRM activities.

Olango Island, Cebu. Olango is an island with 11 barangays under the jurisdiction of Lapu Lapu City. Maria Fe Portigo, with an intern from St. Theresa's College, is preparing the PCRA at the barangay level. Also, youths are showing interest in better management of their coastal resources. Due to lack of livelihood and enterprise opportunities on the island, the enterprise development specialist of CRMP, Monette Flores, together with the LAC, initiated enterprise resource scanning sessions with the different sectors in Olango Island. Data gathered from these will be used to form enterprise development strategies and projects.

Sarangani Bay, Sarangani. Coor-dinating CRM activities is Hermenegildo Cabangon. In September, 166 community volunteers from different municipalities and General Santos City attended a seminar on community organizing. CRMP advisors Evelyn Deguit and Ruperto Sievert provided technical advice. The LAC is active in the Sarangani Bay Protected Area Management Board. The LAC attend-ed orientation meetings on the South Moro Gulf Coastal Community De-velopment Project. Recently a memorandum was signed for the CRMP to support CRM in the municipalities of Kalamansig, Lebac and Palembang in Sultan Kudarat.

Malalag Bay, Davao del Sur. Oscar Francisco and Johnette Delejero were recruited to assist LAC Melchor Maceda. PCRA training courses were completed and barangay-level PCRAs are underway. A workshop was held to discuss the possibility of a Unified Fishery Ordinance to address CRM issues on law enforcement, fishery regulation and municipal water boundaries. An offshoot was the formation of a technical working group to draft the ordinance. CRMP provides legal support through its affiliation with the

Legal Environmental Advocacy Program of Silliman University.

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ASIA

INDONESIA

Eastern Indonesia – International Symposium

In November 1997, an international symposium was convened in Malang (East Java, Indonesia) that focused on integrated management and sustainable development of coastal and marine areas, the subject of Chapter 18 of the Indonesian Agenda 21 Strategy. The symposium was jointly organized by the National Technology Institute (ITN Malang); the National Coordination Agency for Surveys and Mapping (BAKOSURTANAL); Proyek Pesisir; and the United States Agency for Inter-national Development Natural Resources Management Program, implemented via the University of Rhode Island's Coastal Resources Center (CRC).

The Indonesian Agenda 21 Strategy was released in March 1997. The strategy is designed as a "one policy package with the objective of making sustainable development, with an environmental perspective, a reality in Indonesia." The Malang symposium sought to provide a forum for sharing information between integrated coastal management (ICM) practitioners to improve Indonesian ICM knowledge and capacity to implement the Agenda 21 Strategy.

Thirty nine papers were presented within five sessions corresponding to parts of Chapter 18 of the Agenda 21 Strategy:

1) Integrated Coastal Management – Seven papers from North American, Australian and Indonesian (national and provincial) perspectives; 2) Marine and Coastal Mapping, Monitoring and Environmental Protection – Seven papers that outlined legal, ecological and technological aspects of ICM and described case studies from Australia, Canada, Malaysia and Indonesia; 3) Utilization of Marine and Coastal Resources for Sustainable Development – Eight papers that focused on coastal and marine resources use (mangroves, mariculture, nipa, communities, etc.) and on case studies of ICM programs in Sri Lanka, the Philippines, the Great Barrier Reef and Indonesian provinces; 4) Vulnerability to Sea Level Rise, Climate Change and Tsunami – Three papers dealing with various aspects of sea level rise and climate change and their implications for coastal habitats, coral reefs and shore front development; and 5) Training, Education and Research – Seven papers dealing with recent curriculum developments in Indonesia and other countries, including new training technologies.

In addition to these five sessions, an evening seminar on coastal and marine geographic information (related to session 2 above) was conducted by the Marine and Coastal Information Systems team of the Marine Resources Evaluation and Planning Project (an Asian Development Bank and Government of Indonesia project). Five papers dealing with coastal and marine information systems, including GIS and remote sensing applications, metadata and spatial data standards were presented. There were 170 representatives from government, industry, academia, (NGOs), community organizations and aid organizations in attendance.

In the concluding session, co–convenors Jacub Rais (National Research Council) and Ian Dutton (CRC) noted that the symposium had generated an unprecedented level of interest in ICM as a framework for resolving the challenges of managing Indonesia's vast marine and coastal estate. The symposium showcased aspects of Indonesia's rapidly developing ICM capability, but also highlighted key strategic needs. Of particular note, the symposium linking Indonesian ICM practitioners with the broader global ICM community; those links form a significant foundation for ongoing international cooperation and information exchange which will be vital to realization of the Agenda 21 vision.

The Symposium proceedings will be published by ITN Malang in early 1998. Copies may be ordered directly from Leo Pantimena (ITN Malang) via E-mail: geodesi@malang.wasantara.net.id or FAX: 62-341-553015.

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EUROPE

REGIONAL

EUCC Launches Green Islands Program

The European Union for Coastal Conservation (EUCC) has just launched its public awareness program, "Green Islands," at various European locations. The program aims to support nature conservation and sustainable development of coastal zones at a local and regional level. Green Islands is a parnership between the EUCC, non-governmental organizations (NGOs) and local authorities in 15 European countries. Activities include: 1) development of integrated approaches for coastal management and conservation, 2) public awareness and outdoor education, and 3) stimulating local involvement in field management work, especially in Central and Eastern Europe (C&EE).

In September 1997, the first Green Islands Days were held in the Netherlands and in St. Petersburg, Russia; similar Days will be organized all over Europe in the coming years.

The program includes four local projects in C&EE: Yuntolovsky (Russia),

Dnestr Delta (Ukraine), Oder Delta (Poland) and Nemunas Delta (Lithuania). These aim to involve local NGOs, farmers, fishers and schools in integrated development and field management.

The European Commission (EU) is supporting a special campaign in 1998-99: "Green Islands for Natura 2000," promoting the implementation of the EU Habitats Directive and the development of a natural site network (Natura 2000). Special activities are envisioned in Germany, the Netherlands, France, Italy and Greece. The project will also result in a number of video productions and brochures.

Green Islands is the first NGO-based awareness campaign for the coastal zone at a pan-European level and one of the largest of its kind in the world, with an initial budget of US$ 450,000. The EUCC expects to expand the program to 100 locations in the year 2000.

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EUROPE

BRAZIL/GERMANY

Interdisciplinary Research in the MADAM Project: Report on the Third Annual Workshop

In 1995, the project "Mangrove Dynamics and Management" (MADAM) was launched as a cooperative initiative between the University of Pará and the Goeldi Museum, both located in Belém, Brazil, and the Center for Tropical Marine Ecology (ZMT) in Bremen, Germany. MADAM is supported by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) in Brazil and the Ministry for Education, Science, Research and Technology (BMBF) in Germany. The project area is a 110 km^2 mangrove peninsula in Rio Caeté, Pará, east of the mouth of the Amazon River near the city of Bragança.

MADAM is an interdisciplinary program aimed at integrating various scientific fields to achieve sustainable development. The socioeconomic, biological and physio-chemical aspects are investigated and the results are used in ecological and economic models. Data is entered into a Geographic Information System (GIS) and made accessible to the public via Internet.

The first scientific results were presented at the third MADAM Project workshop (November 11-12 1997). The hydrographical and biogeochemical groups presented data from over a year's worth of continuously measured dissolved inorganic nutrients, and dissolved and particular organic carbon and nitrogen. Meteorological and hydrological parameters were also reported.

Biological data was presented characterizing the structure and species composition within the mangroves. Identification of key forms and their ecological and economic significance was of particular interest. Results were presented on the vegetation structure, biomass and primary production of the most important terrestrial and aquatic plant communities. Fisheries biologists focused on issues concerning trophic structure and recruitment of economically and ecologically important species.

Results were presented on the structure and function of the economic, demographic and socio-cultural aspects of the mangrove system around Bragança. A main focus was how the local population deals with the ecosystem and to what extent they are dependent on the mangrove forest from an economic, social and cultural viewpoint.

The modeling team showed how data from the various MADAM groups can be used for management recommendations aimed at sustainable utilization of the mangrove system. The modeling team is divided into three sections: 1) "Dynamic" focusing on the analysis of population dynamics of man-grove trees and seedlings; 2) "Trophic" focusing on the nutrient requirements of the aquatic ecosystem and the biomass flows between them; and 3) "Eco-nomic" focusing on the links between ecological aspects and market analysis.

Using the modeling results and socioeconomic and institutional parameters, strategies for sustainable management and optimization of the ecological potential of the mangrove system shall be developed.

Also, implementation of the integrated coastal zone management concept supported by the database were discussed. The database in connection with a GIS (summarized as: Mangrove Information System – MAIS) was demonstrated which enabling the data to be interpreted and displayed.

The 1998 MADAM Workshop will focus on the interdisciplinary aspects of the project.

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LATIN AMERICA

DOMINICAN REPUBLIC

Conservation and Management of Biodiversity in the Coastal Zone of the Dominican Republic

A project is underway to preserve Dominican Republic's coastal ecosystems and their biodiversity by developing an innovative, multi-resource model of coastal management with the participation of all stakeholders.

The purpose of this project is to: 1) strengthen the capacity of organizations

to manage the coastal zone; 2) establish a research program to support coastal management;3) promote the establishment of coastal management practices and policies at the regional level; 4) establish appropriate mechanisms of improving public awareness of biodiversity; and 5) implement effective mechanisms for the participation of local communities in conservation and planning actions. The project is being developed for three pilot areas: the National Park of Jaragua, the Montecristi National Park and the Samaná Bay region.

The Jaragua National Park is the largest protected area in the country's park system (1,374 km^2). It is located in the southwestern part of the country, close to the Haitian border. The park is very biodiverse, and includes islands (Beata and Alto Velo), coral reefs, mangroves, seagrasses, wetlands and forests. Dominican Republic's primary lobster population, *Panulirus argus*, is in this region. Sixty percent of the country's bird population is in the park and the largest flamingo population is found here. The terrestrial fauna are the most interesting, and include two endemic Cyclura iguana species, the Hispaniolan Solenodon and Hutia, marine turtles and manatees. The ecotourism potential of the park is tremendous.

The Montecristi National Park is located in the extreme northwest of the country and borders Haiti. The park is 530 km^2 and its biodiversity includes large areas of dry forests, as well as the most extensive wetlands, mangrove forests, fringe reefs, and grass beds and the off-shore Seven Brothers Keys. The park houses several endangered species such as West Indian rock iguanas, Antillean manatees, American crocodiles and four species of sea turtles. The Montecristi National Park was recently granted "regional priority" by the World Bank/International Union for Conservation of Nature and Natural Resources' Global Representative System of Marine Protected Areas.

The Samaná region is located along the northeastern coast. Three marine protected areas are located there: the National Park Los Haitises, the Scientific Reserve Lagunas Redonda and Limón, and the Banco de La Plata. The Banco de La Plata has "regional priority." It is the main Atlantic breeding ground of the humpback whales (*Megaptera novaeangliae*). The region includes the country's largest estuary, which supports the primary shrimp population (*Penaeus schmitti*). Other significant resources include extensive wetlands, mangrove forests, coral reefs and grass bed habitats. The variety of marine and coastal environments makes Samaná a significant fishery region and a growing tourist attraction.

Biodiversity inventories and environmental monitoring systems have been established in these areas. These, together with a socioeconomic valuation of the resources use, should serve as the baseline information for the implementation of site management plans for the conservation and sustainable use of Dominican coastal resources.

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LATIN AMERICA
COSTA RICA

Regional Turtle Workshop in Tortuguero, Costa Rica

Tortuguero, Costa Rica was the setting for a week-long workshop on marine turtle conservation and management in Central America (September 26-October 1). The 57 participants representing government and nongovernmental organizations from seven Central American countries, Mexico, Venezuela and the United States came together for this regional event organized by Associacion de Nuevos Alquimistas (ANAI) (Costa Rica) with funding from the World Wildlife Fund (WWF) under Proyecto Ambiental Regional para Centro America (PROARCA/Costas), and under the auspices of the Central American Commission for Environment and Development (CCAD). The workshop was held at Casa Verde, the biological field station of the Caribbean Conservation Corporation (CCC). CCC and the Wider Caribbean Sea Turtle Recovery Team and Conservation Network (WIDECAST) provided additional support for this event.

During the workshop, the participants discussed the major threats facing marine turtle conservation in Central America, developed priority action plans, and prepared several agreements and press releases which were unanimously endorsed and presented publicly at the closing ceremony in San Jose.

During the meeting, all the positive energy and enthusiasm of the participants was overshadowed by the announcement of the increased illegal hunting of green turtles in Tortuguero National Park. Local researchers confirmed that during this season alone, between 1,500-2,000 turtles had been illegally hunted in the park for sale in the local meat markets. This appalling news spurred outrage, but also strengthened the commitment of all participants to increase collective efforts on behalf of marine turtles.

One important result of the work-

shop was the establishment of a Central American network of turtle experts that will coordinate on joint projects throughout the region, and will collaborate with similar networks in the Caribbean and worldwide.

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LATIN AMERICA

NICARAGUA

Coastal Zone Management in the Miskito Coast of Nicaragua

At a workshop in September 1997, local leaders and government officials from the Miskito Coast of Nicaragua unanimously embraced a profile of coastal zone management issues prepared by a local conservation non-governmental organization (NGO), Mikupia, in collaboration with the intercommunity management committee of Karata Lagoon. Together with The Nature Conservancy (TNC) and the World Wildlife Fund (WWF), the University of Rhode Island's Coastal Resources Center (CRC) has provided technical support to Mikupia and the intercommunity committee through PROARCA/Costas, a regional project carried out under the auspices of the Central American Commission for the Environment and Development, with funding from the United States Agency for International Development.

The profile provides a base for lagoon management plans to be developed during the coming year, as a first step toward management plans for the entire Northern Atlantic Autonomous Region of Nicaragua (RAAN). The assembled leaders and officials, many of whom were up in arms against each other just a decade ago, prepared a common declaration of principles and actions to improve stewardship of the lagoons, coasts and forests throughout the RAAN. By fully involving the indigenous population, technical experts, government officials and private stakeholders, the profile is yet another step towards achieving planning and taking action.

Earlier this year, the intercommunity committee agreed to undertake interim management measures to protect lagoon resources. These measures included the removal of nets from the lagoon mouth, the enforcement of a closed season for shrimp, control of the cutting of mangroves and controls on the use of motors on boats in the lagoon. These measures received wide public support. These small steps are significant because they are the first efforts by communities in the region to take responsibility for the natural resources.

The tools and experiences which TNC, WWF and CRC are developing together in the Miskito Coast are also being applied in PROARCA/Costas' three other sites in Central America and will result in similar work with local leaders and communities to strengthen stewardship of coastal and marine resources.

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AFRICA

TANZANIA

Tanzania Coastal Management Partnership

Tanzania's coastline stretches 800 km along the Western Indian Ocean which, like much of the world's coastal areas, is experiencing rapid change. Today, much of the coastline is relatively undeveloped, but in an increasing number of areas, human activities including unplanned coastal development, destructive fishing, uncontrolled harvesting of mangroves and disposal of waste into the ocean are causing coastal ecosystem degradation. As the coastal population continues to increase, resource exploitation practices that are destructive and unsustainable will place increasing pressures on the resource base.

The Government of Tanzania has embraced integrated coastal management (ICM) to ensure that all coastal developments are carried out sustainably, insuring both short-and long-term benefits to the nation's citizens.

What is the Tanzania Coastal Management Partnership? The Tanzania Coastal Management Partnership (TCMP), is a cooperative initiative among the Government of Tanzania, the United States Agency for International Development (USAID) and the University of Rhode Island's Coastal Resources Center (CRC). The TCMP will work with the existing network ICM programs and practitioners to facilitate a participatory, transparent process to unite government and the community, science and management, and sectoral and public interests to wisely conserve and develop coastal ecosystems and resources. The TCMP's Goal of the Partnership is to "establish the foundation for effective coastal governance." During the next five years, the TCMP will work towards achieving the following results:

- The formulation of meaningful ICM policy that is effectively applied to coastal problems at both the nation-

al and local levels

- The definition and application by government, business and communities of sustainable practices for emerging coastal economic opportunities
- Implement mechanisms to facilitate national support of effective local ICM
- Increase institutional and human capacity for ICM
- Improve understanding of and support for ICM in Tanzania

For further information contact: Mark Amaral, Coastal Resources Center, University of Rhode Island, Narragansett, RI 02882 USA. Tel: 401-874-6224. FAX: 401-789-4670. E-mail: amaral@gsosun1.gso.uri.edu. Website: http://www.brooktrout.gso.uri.edu.

AFRICA

TANZANIA

Tanga Coastal Zone Conservation and Development Programme: Tanzania

Tanga Coastal Zone Conservation and Development Programme is about listening, participatory planning and cooperative implementation. The programme is linking coastal communities to government, addressing nonsustainable resource use, assisting the process of village action planning, and assisting in getting the village action plans accepted by central government. The programme has been successful and gained attention nationally and internationally.

Where is Tanga?

Tanga Region is one of five maritime regions of mainland Tanzania. It has a coastline stretching 150 km. The coastal population is over 150,000 people that live in one urban area and 90 villages spread over three coastal administrative districts; Muheza, Tanga Municipality and Pangani.

Solving Coastal Problems by Engaging Local Communities: Irish Aid

Concerns for the deteriorating state of marine and coastal resources and the need to arrest this trend led to discussions at various levels within the government of Tanzania, the International Union for Conservation of Nature and Natural Resources (IUCN) and Irish Aid. IUCN's involvement in Tanzania dates back to 1996 when assistance was being provided for the assessment of the marine and coastal resources. The discussions resulted in Irish Aid approving support for the implementation of the "Tanga Coastal Zone Conservation and Development Programme." The overall objective of the programme is "To safeguard the resources of the Tanga Region coastal environment for the benefit of present and future generations of the residents through a series of integrated activities aimed at protection, sustainable use and management of coastal zone resources." IUCN is providing support and technical assistance to the programme by drawing in global expertise.

Phase I of the programme, which started in July 1994, had two specific objectives: to assist the district and village institutions of Tanga Regional in undertaking integrated management of the coastal zone; as well as draw in the full participation of coastal communities in implementing effective management of fisheries, coral reefs, mangroves, coastal forests and wildlife including restoring degraded environments.

What Was the Process?

These specific objectives are being achieved by aiding local government staff in coordinating and educating communities to identify priority environmental problems related to the sustainable use of the coastal resources, and to resolve them using their own resources when possible. The local communities are the main actors in this project.

Recognizing that the existing government planning process does not adequately deal with important environmental issues, the programme is focusing on improving coordination between government and coastal resource users. Different training activities involving the joint participation of government staff and resource users have been implemented. These training activities have assisted in bridging the gap between government and community and building trust between them.

Successes in Community Actions

Village initiatives taken to date include the formulation and enforcement of by-laws, undertaking patrols to prevent destructive fishing, reef zoning and closures for replenishing fish stocks, and re-planting of mangroves in degraded areas. The communities have also improved basic sanitation in their villages, made their own fuel-efficient stoves, reduced damage to their food crops from wild pigs, and are testing mariculture techniques. Women have particularly benefited from the successful introduction of seaweed farming.

An external evaluation of Phase I was conducted in February/March 1997. The evaluation team was highly impressed by the positive impacts.

Based on the evaluation team's findings, Irish Aid has approved funding for a three-year Phase II. This phase will involve testing new sustainable practices of resource use; improving the expertise of district staff; expanding to include other villages to demonstrate that the programme can work beyond the pilot stage; beginning the process of mainstreaming through the testing of financial sustainability of key activities; and internalization of processes within coastal communities.

For further information contact: Magnus A.K. Ngoile, Institute of Marine Sciences, University of Dar es Salaam, Tanzania.

AFRICA
ZANZIBAR

Menai Bay Conservation Project, Zanzibar

Menai Bay, southwest of Unguja Island, is a traditional fishing ground extensively covered by coral reef. The area had been relatively undisturbed until recently, when fishing pressures combined with destructive fishing techniques became a serious problem. Studies done in 1992 confirmed extensive reef damage in the area. The damaged reefs were being colonized by organisms normally not associated with a healthy reef such as *Turbinaria* spp., (seaweed) and *Diadema setosum* (spiny sea urchin).

As a step toward regulating fishing pressure, local communities around Fumba Peninsula, with the assistance of the Commission of Natural Resources–Fisheries and the Department of Environment, formed an informal management committee to monitor fishing activities of visiting fisherfolks. Members of the committee volunteered to undertake unpaid sea patrols, but ran into trouble due to lack of training in arresting procedures. In 1994, at the invitation of the Commission of Natural Resources–Fisheries, the World Wildlife Fund (WWF) began to provide support to the Revolutionary Government of Zanzibar to enhance management measures originally initiated by local communities of Fumba Peninsula. This was instrumental in having the area designated a conservation area by the Revolutionary Government in August 1997. The bay is the biggest marine conservation area in Zanzibar, with an area of 470 km^2, and the seaward boundary close to 61 km (see map). It supports the livelihood of about 16,000 people in 17 villages.

Designation of the bay as a conservation area was received with mixed feels. Visiting fisherman, especially those from Dar es Salaam, condemned the move outright as an act intended to discriminate against them. Local communities, however, applauded the decision. Their morale boosted, they were willing to participate in surveillance and patrol activities. These are now undertaken by fisheries staff in collaboration with coastal guards using a flat-bottomed seven-meter fiberglass boat provided by WWF earlier this year. Technical advise, a car and a VHF radio are also provided by WWF.

The Menai Bay Conservation Area (MBCA) at Unguja Island, Zanzibar.

All visiting stakeholders are required to obtain written authorization from the Director of Fisheries (Deputy Commissioner of Natural Resources) before undertaking any activity in the area. This is a reactive measure pending development of a long-term management plan that will regulate extractive use of all natural resources in the area.

At Kizimkazi Dimbani village, the community offered two rooms in a newly built fish market for the project's field base. Community participation, which was originally pioneered by villagers of Fumba Peninsula, has extended to all villages around the bay. Under the supervision of village headman and Menai Bay project staff, an environmental committee has been setup in each village. Village representatives also participate in the overall management of the project.

Success or failure of this project will, to a large extent, depend on involvement of local communities in the implementation of conservation strategies. The local community, however, must be constantly motivated to participate at all stages. This will be achieved in part through environmental education programs. In addition, the principles of common ownership and free and unrestricted entry have to be revisited as a condition for success of the project.

Management plans are being developed on a participatory basis with all stakeholders. The intended result is to develop a viable and sustainable institution capable of maintaining all activities undertaken by the project.

For further information contact: Winley Sichone, Menai Bay Conservation, Living Stone House, Zanzibar, Tanzania. Tel: 054-33206. FAX: 054-33701.

UNDP Launches Strategic Initiative on Ocean and Coastal Management (SIOCAM)

By Dr. Anders Wijkman

In December 1997, the United Nations Development Programme (UNDP) approved a $1.1 million project to support its Strategic Initiative on Ocean and Coastal Management (SIOCAM). SIOCAM is a global initiative which seeks to harness the knowledge and skills of UNDP Headquarters, United Nations agencies, donors, other external support agencies (technical and donor) and projects themselves, to enhance the effectiveness of ocean and coastal management projects in promoting sustainable human development. While the initial target will be UNDP projects, it is expected that SIOCAM will eventually provide a framework for broader collaboration with other external support agencies.

SIOCAM (under a preparatory grant) has already sponsored the UNDP/Coastal Resources Center (CRC) Survey on Coastal Management Initiatives which was announced in the Fall 1997 issue of this newsletter.

SIOCAM should be seen in the context of a rapidly growing UNDP portfolio of over $70 million of ocean and coastal management projects. Danny Elder and Olof Linden have reviewed the rapidly evolving portfolio of UNDP projects and made recommendations for the future. Their 1996 report *Review of a Possible UNDP Initiative in Ocean and Coastal Management* merited much discussion. A table of prior-itized needs and resources, which UNDP prepared on information from UNDP projects, provided the additional perspective needed to prepare the SIOCAM project document. It remains an extremely useful point of reference for interested parties.

The recently approved SIOCAM project has the following four objectives:

1. Establish training and distance learning networks primarily through a major Global Environment Facility project. Partners for this component will be the TRAIN-SEA-COAST (decentralized course development and sharing system) and IW-LEARN (Internet distance learning network) programs. TRAIN-SEA-COAST is already active in 10 countries.

2. Systematically document and disseminate best practices and resources, initially within UNDP projects but eventually to a wider group. Brief descriptions have already been prepared for two best practices identified. These will be put on the SIOCAM homepage soon to be developed.

3. Contribute to and ensure that the SIOCAM Network benefits from several key U.N. Agency and donor coordinated activities such as the World Commission on the Oceans, the Coastal Development Donor Consultation, the UNDP/CRC Survey on Coastal Management Initiatives and the new TRAIN–FISH Program.

4. Strengthen UNDP Headquarters' capacity to support and enhance an expanding portfolio of ocean and coastal management projects. One product will be a program advisory note to provide guidance in the preparation of project proposals.

SIOCAM is illustrative of the new type of UNDP global program intervention – a clearly focused, demand–driven, collaborative effort which takes advantage of a global perspective to address common interests of regional and country development projects.

UNDP is looking forward to the continued progress of SIOCAM and the opportunities which this initiative will provide for broader collaboration.

For further information contact: Philip Reynolds, SIOCAM Manager, Sustainable Energy and Environment Division, BDP, UNDP, One U.N. Plaza, New York, NY 10017, USA. Tel: 212-906-5866, FAX: 212-906-6973, E-mail: philip.reynolds@undp.org.

Visit Intercoast on the World Wide Web

If you've missed any recent issues of Intercoast Network, you can catch up on back information and opinions by visiting the University of Rhode Island's Coastal Resources Center home page on the Worldwide Web at http://brooktrout.gso.uri.edu. Past issues of Intercoast are available under CRC's information services, along with other resources and publications, including:

- "Educating Coastal Managers," the proceedings of a 1995 workshop held in Rhode Island, which provides a call to action for new and improved ways of educating and training coastal practitioners and evolving the discipline into a professional career field with enhanced educational opportunities
- Opinion and editorial pieces by Intercoast's editor Stephen Olsen, which have been appearing on a regular basis in the U.S. press
- Links to other valuable coastal management Websites.

Any suggestions or comments to on CRC's World Wide Web page that will help improve dissemination of information and news on coastal management is welcome. Contact: Chip Young, Intercoast Network, Coastal Resources Center, University of Rhode Island, South Ferry Road, Narragansett, RI, 02882 USA. Tel: 401-874-6630; FAX: 401-789-4670; E-mail: cyoung@gsosun1.gso.uri.edu.

INTERCOAST SIDER FORMATION

Electronic Resources

Bering Sea Ecosystem Metadatabase. NOAA seeks entries for a Bering Sea ecosystem metadatabase. The inventory of physical and biological data will help re-searchers, managers, students, fishers and the general public investigate and understand the complex ecosystem of the Bering Sea. Address: http://www.pmel.noaa. gov/bering/mdb.

Caioba–A Model of Beach Recuperation and Protection Against Sea Erosion. This site describes the protection of two beaches in Caioba, a summer resort in the State of Parana, Brazil. Available in English and Portuguese. Address: http://www.netpar.com.br/lindroth/caiobain.htm.

Coral Cay Conservation. Information on Reef Check and International Year of the Reef is located in this website. Address: http://www.coralclay.org/.

The Earth Network. This site contains information relating to sustainable development; included are mutimedia resources and new reports. Address: http://www.ecouncil.ac.cr.

Environmental Scientist E-mail List. This list was developed to provide a forum for practicing environmental scientists with a multitude of interests, including, natural resource management, wetland management, environmental assessment, sampling, monitoring, etc. To subscribe, send a message to subscribe@envtechcenter.com with the following message in the body: subscribe EnvScientist your name. Leave the subject blank.

The Northern Gold Coast Beach Protection Strategy involves widening of the beach and dunes to provide a storm buffer, create more parkland and improve surf conditions. A website detailing their plans is located at: http://www.beach-protection.onthenet.com.au/.

Idealist is an on-line directory of over 10,000 nonprofit and community organizations working in 120 countries. Address: http://www.idealist.org.

Index of Watershed Indicators. This site compiles information on the condition and vulnerability of watersheds in the United States. Address: http://www.epa.gov/surf/iwi.

MADAM. In response to Agenda 21, the project "Mangrove Dynamics and Management - MADAM" was initiated in 1995. The objective of MADAM is to conduct research on the function and structure of such a sensitive mangrove ecosystem. Program updates are available on MADAM's website at http://alf.zfn.uni-bremen.de/~kontakt/ZMT-MADAM1.htm.

The Middle East Desalination Research Center. This organization is dedicated to basic, applied and sponsored research in the area of desalination technology to mitigate the stress on water resources in the region. Website: http://www.medrc.org.om/.

New Directions in Systematics was an international workshop organized by the European Science Foundation Network in Systematic Biology, and held in Hersonissos, Crete, Greece from October 15-18, 1997. All abstracts from the workshop can be accessed in full via the Institute of Marine Biology of Crete Bibliographical Services Page. Address: http://www.imbc.gr/biblio_serv/index.html. Abstracts are divided into four sections covering:

- Personal Perspectives
- Taxonomic Challenges of Species-Rich Groups
- Links Between Developmental Biology and Systematics
- Bioinformatics: Using and Communicating Taxonomic Knowledge

Pronatura. Information on the projects and products that Pronatura is involved with are featured here. Address: http://www.pronatura.org.mx/.

Reef Check. This website is coordinated by the Institute of Environmental Studies Research Center, Hong Kong University of Science and Technology Clearwater Bay, Kowloon, Hong Kong. Address: http://www.ust.hk/~webrc/reef.html.

Publications

Top 10 Watershed Lessons Learned. Environmental Protection Agency. 59 pages. This book distills the experience of dozens of watershed practitioners into 10 lessons, illustrated with real-life stories and accompanied by a list of related resources. #EPA 840-F-97-001. Contact: Environmental Protection Agency. Tel: 1-800-490-9198. Website: http://www.epa.gov/owow/lessons. Free.

Biodiversity in Land-Inland Water Ecotones. 1997. J.-B. Lachavanne and R. Juge (eds.). 326 pages. Advanced reference text on the properties of land-water ecotones and their role in maintaining local, regional, and global biological diversity. Contact: Parthenon Publishing Group, UK office: Casterton Hall, Carnforth, Lancs, LA6 2LA, UK. Tel: 015242 72084. FAX: 015242 71587. US office: One Blue Hill Plaza, PO Box 1564, Pearl River, New York 10965, USA. Tel: 914 735 9363. Toll free (US and Canada only): 1-800-735-4744. FAX: 914 735 1385. Website: http://www.parthpub.com/books/environmental.html. UK£48.00. US$85.00.

Biotechnology for Water Use and Conservation: The Mexico '96 Workshop. 1997. 725 pages. Contact: OECD Washington Center, 2001 L Street, NW, Suite 650, Washington, DC 20036-4922 USA. Tel: 202-785-6323. FAX: 202-785-0350. Website: http://www.oecdwash.org.

Documenting, Evaluating and Learning from our Development Projects: A Systematization Workbook. 1996. D. Selener, with C. Purdy and G. Zapata. This workbook describes the concept of systematization, provides guidelines and tools for planning and implementing the systematization process, and for conducting follow-up and evaluation activities. Contact: IIRR, Apartado Postal 17-08-8494, Quito, Ecuador. FAX: 593-2-443-763. E-mail: daniel@iirr.ecuanex.net.ec. 170 pages. US$20. Available in English and Spanish.

Mangrove Ecosystem Studies in Latin America and Africa. 1997. Kjerfve, Lacerda & Diop (eds.). Contact: Americas: Forest Service, US Dept. Agriculture, International Institute of Tropical Forestry, PO Box. 25000, Rio Piedras, PR 00928-6302, USA. Africa: UNESCO Office - Dakar, 12 ave. Roume, BP 3311, Dakar, Senegal. Europe: UNESCO (CSI), 1 rue Miollis, 75732 Paris, cedex 15, France. Asia and the

Pacific: International society for Mangrove Ecosystems, c/o College of Agriculture, University of the Ryukyus, Okinawa 903-01, Japan. Free.

Participatory Action Research and Social Change. 1997. 358 pages. D. Selener. Part I describes the participatory research action approach in community development, organizations, education and agriculture. Part II discusses the implications of each approach. Contact: Global Action Publications, Apartado Postal 17-08-8494, Quito, Ecuador. FAX: 593-2- 443-763. E-mail: daniel@iirr.ecuanex.net.ec. US$30.

Sharing Coastal Management Experience in the Western Indian Ocean. Proceedings of the Experts and Practitioners Workshop on Integrated Coastal Area Management for Eastern Africa and the Island States. S. Humphrey and J. Francis (eds.). Contact: Western Indian Ocean Marine Science Association (WIOMSA), P.O. Box 3298, Zanzibar, Tanzania.

Status of Coral Reefs in the Pacific. This book is compiled from the papers presented at a joint symposium of the Pacific Science Association's Scientific Committee on Coral Reefs and the 1997 Annual Meeting of the International Society for Reef Studies. Contact: RCUH, Sea Grant College Program Communications Office, 1000 Poppe Road, MSB 200, Honolulu, HI 96822 USA. US$20.

Conferences

February 24–26, 1998. **First National Conference on Coastal Resource Management.** Bogor, Indonesia. Contact: Darmawan, Centre for Coastal and Marine Resources Studies, Kampus APB Darmaga, Bogor 1668, Indonesia. E-mail: awanuri@indo.net.id.

March 10–12, 1998. **Canadian Hydrographic Conference.** Victoria, B.C., Canada. Contact: 1998 Canadian Hydrographic Conference, Inst. of Ocean Sciences, P.O. Box 6000, Sidney, B.C., Canada, V8L 4B2. Website: http//:www.ios.bc.ca/ios/chs/pages/access_e.htm. E-mail: chc98@ios.bc.ca.

March 10–13, 1998. **Oceanology International 98: The Global Ocean.** The Brighton Metropole, UK. Contact: Oceanology International 98. E-mail: oi98@spearhead.co.uk. Website: http://www.spearhead.co.uk/Spearhead/Exhibitions/main/oi98dir/OI98FRONT.html.

March 19, 1998. **The Fourth Marine and Estuarine Shallow Water Conference - Users and Regulators Seeking Consensus.** Atlantic City, New Jersey, USA. Contact: Ralph Spagnolo, U.S. Environ-mental Protection Agency, Region III, 841 Chestnut Street, Philadelphia, PA 19107 USA. Tel: 215-566-2718. E-mail: spagnolo.ralph@epamail.epa.gov. or Ed Ambrogio. Tel: 215-566-2758. FAX: 215-566-2782. E-mail: ambrogio.edward@epamail.epa.gov.

March 16–27, 1998. **Coastal Management: Options and Issues in Interdisciplinary Work between the Social and Natural Sciences.** Bremen, Germany. Contact: Dr. Matthias Wolff, Center for Tropical Marine Ecology (ZMT), Fahrenheitstrasse 1, D-28359 Bremen, Germany Tel: +40 421-2208 324. FAX: +49 421-2208 330R. E-mail: mwolff@zmt.uni-bremen.de.

March 17–20, 1998. **First Open Science Meeting of GLOBEC International.** Paris, France. Contact: Roger Harris, Plymouth Marine Lab, Prospect Pl., Plymouth, PL1 3DH, UK. Tel: +44-1752-633-400. FAX: +44-1752-633-101 E-mail: r.harris@pml.ac.uk.

April 1–3, 1998. **1st Regional Conference on Pacific Island Coastal Erosion.** Maui, Hawaii, USA. Contact: Rob Mullane, Hawaii Sea Grant. Tel: 808-984-3254. FAX: 808-984-3251. E-mail: mullane@hawaii.edu.

April 29–May 1, 1998. **National Biennial Coastal Management Conference. "Sharing Responsibility from Surfer to Scientist."** Perth, Australia. Contact: Coast to Coast '98 Conference Coordinator, Ministry for Planning, Albert Facey House, 469 Wellington St., Perth, Western Australia 6000. Tel: 08 9264 7503. Mobile: 0417 917 026. E-mail: corporate@planning.wa.gov.au. Website: http://www.wa.gov.au/planning/conference/Coastal98.

May 3–6, 1998. **Watershed Management: Moving From Theory to Implementation.** Denver, Colorado, USA. Contact: Water Environ-ment Federation, 601 Wythe Street, Alexandria, VA 22314 USA. Tel: 703-684-2400.

May 22–September 30, 1998. **Expo '98: The Oceans, a Heritage for the Future.** Lisbon, Portugal. Contact: Parque Expo '98, S. A., Av. Marechal Gomes da Costa, 37, 1800 Lisboa. Tel: 01-831-98-98. FAX: 01-837-00-22. E-mail: info@expo98.pt. Website: http://www.expo98.pt.

May 25–29, 1998. **Education and Training in Integrated Coastal Area Management: The Mediterranean Prospect.** Genoa, Italy. Contact: Stefano Belfiore, International Centre for Coastal and Ocean Policy Studies–ICCOPS, c/o The University of Genoa, Department POLIS, Stradone di S.Agostino 37, 16123 Genoa, Italy. Tel./FAX: 39-10-209-5840. E-mail: iccops@polis.unige.it.

May 27–30, 1998. **7th International Symposium on Society and Resource Management: Culture, Environment, and Society.** University of Missouri-Columbia. Contact: Dr. Sandy Rikoon, Rural Sociology, 108 Sociology Building, University of Missouri-Columbia, Columbia, MO 65211 USA. Tel: 573-882-3738. FAX: 573-882-1473. E-mail: ssrsjsr@muccmail.missouri.edu. or Dr. Charlie Nilon, Fisheries and Wildlife, 112 Stephens Hall, University of Missouri-Columbia, Columbia, MO 65211 USA. Tel: 573-882-0861. FAX: 573-884-5070. E-mail: snrnilon@mizzou1.missouri.edu.

June 1–4, 1998. **Coastal and Marginal Seas.** UNESCO, Paris. Contact: William Erb, IOC. Tel: 33-1-45-68-40-19. E-mail: w.erb@unesco.org.

June 16–20, 1998. **PACON '98–The 8th Pacific Congress on Marine Science and Technology. "Toward the 21st Century: The Pacific Era."** Seoul, Korea. Contact: PACON International, P.O. Box 11568, Honolulu, Hawaii 96828-0568 USA. Tel: +808 956-6163. FAX: +808 956-2580. E-mail: pacon@wiliki.eng.hawaii.edu.

July 19–25, 1998. **INTECOL VII International Congress of Ecology.** Florence, Italy. Contact: Almo Farina - vice-president INTECOL, Secretariat VII International Congress of Ecology, Lunigiana Museum of Natural History, Fortezza della Brunella, 54011 Aulla, Italy. Tel: 39-187-400252. FAX: 39-187-420727. E-mail: afarina@tamnet.it. Website: http://www.tamnet.it/intecol.98.

July 28–31, 1998. **PORSEC'98 (Interdisciplinary Multi-sensor Studies of the Pacific Ocean).** Qingdao, China. Contact: Ming Xia He, Ocean Remote Sensing Institute, Ocean University of Qingdao, 5 Yushan Road, Qingdao 266003, China. Tel/FAX: +86-

532-287-9301. E-mail: mxhe@ns.qd.sd.cn.

August 17–21, 1998. **International Conference on Satellites, Oceanography and Society.** Lisbon, Portugal. Contact: D. Halpern, Jet Propulsion Lab, MS 300-323, California Institute of Technology, Pasadena, CA 91109-8099 USA. E-mail: halpern@pacific.jpl.nasa.gov.

August 22–28, 1998. **World Deltas Symposium.** New Orleans, Louisiana. Contact: Juli Figeac, Conference Coordinator, 117 Pleasant Hall, Louisiana State University, Baton Rouge, LA 70803 USA. Tel: 504-388-6479. FAX: 504-388-6570. Website: http://opal.ga.lsu.edu/deltas98.

August 30–September 3, 1998. **Coastal Zone Canada '98.** Victoria, British Columbia. Contact: Coastal Zone Canada '98, Conference Management, Division of Continuing Studies, University of Victoria, Box 3030, Victoria, B.C., Canada V8W 3N6. Tel: 250-721-8470. FAX: 250-721-8774. E-mail: czc98@ios.bc.ca. Website: http://www.ios.bc.ca/ios/czc98/.

Lisbon, September 3–5, 1998. **Joint IGU-IOC Seminar. "The role of ocean science and geography in facing ocean management for the third millennium."** (by invitation) Contact: Prof. Adalberto Vallega, University of Genoa. Tel: +39-10-209-5858. E-mail: vallega@polis.unige.it

September 8–10, 1998. **Coastal Environment '98. "Environmental Problems in Coastal Regions."** Cancun, Mexico. Contact E-mail: liz@wessex.ac.uk.

October 5–7, 1998. **Fifth International Conference on Remote Sensing for Marine and Coastal Environments.** Contact: ERIM/Marine Conference, P.O. Box 134008, Ann Arbor, Michigan 48113-4008, USA. Tel: 1-313-994-1200, ext. 3234. FAX: 1-313-994-5123.

November 23–26, 1998. **Inaugural International Tropical Marine Ecosystems Management Symposium.** ICRI, Townsville, Australia. Contact: Harvey Events Group, Ltd., Suite 3b, 41 Stuart Street, Townsville Qld 4816, Australia.
E-mail: julie@harveyevents.com.au.

Periodicals

Ocean and Coastal Management. An international journal dedicated to the study of all aspects of ocean and coastal management at local, regional, national and international levels. Contact: Biliana Cecin-Sain. E-mail: bcs@udel.edu.

Marine Pollution Bulletin. Concerned with the rational use of maritime and marine resources as well as documenting marine pollution and introducing new forms of measurement and analysis. Contact: Charles Sheppard. E-mail: SH@dna.bio.warwick.ac.uk.

SEAFDEC Asian Aquaculture. This bimonthly newsletter reports on sustainable aquaculture. Published by Aquaculture Department of the Southeast Asian Fisheries Development Center. Contact: Training and Information Division, SEAFDEC Aquaculture Department, Tigbauan, Iloilo 5021, Philippines. Tel: 63-33-335-1009, 336-2891, 336-2937, 336-2965. FAX: 63-33-336-2891, 335-1008. E-mail: tms-seafdec@phil.gn.apc.org or seafdec@moz-com.com. US$30.

Training

On-line Courses in Global Sustainability. State of the world (http://darwin.bio.uci.edu/~sustain/state/index.html), Biodiversity and conservation (http://darwin.bio.uci.edu/~sustain/Bio139/index.htm) and Sustainable oceans and coastal zones (http://darwin.bio.uci.edu/~sustain/suscoasts/index.htm) courses are being offered from the University of California, Irvine. Contact: Dr. Peter J. Bryant, School of Biological Sciences, University of California, Irvine, Irvine, CA 92697-2275, USA. Tel: 714-824-4714. Fax: 714-824-3571. E-mail: pjbryant@uci.edu. or Dr. Barry Costa-Pierce, Department of Environmental Analysis and Design, University of California, Irvine. Tel: 714-824-8573. Fax: 714-824-3571. E-mail: bcp@uci.edu.

Coastal Zone Canada '98 Coastal Communities in the 21st Century: Sharing our Experience, Building our Knowledge

August 30–September 3, 1998

Rapid population growth, environmental change, overuse of resources and global economic forces put pressure on the world's coastal communities.
An unprecedented need exists for coastal management decisions based on solid information and open dialogue among the many coastal communities.

Coastal Zone Canada '98 (CZC'98) will extend the CZC'94 and CZC'96 recommendations for a collaborative, community-based approach to sustainable coastal development towards the creation of practical tools. Participants in CZC'98 will develop a learning toolbox of models, strategies, alternative
pro-cesses and awareness.

Obstacles to sustainable coastal development include:

- Unempowered communities, lacking information, money and human resources
- Uncoordinated ideas/players
- Scientific information that is inadequate, inappropriate or unavailable
- Missed learning opportunities.

Despite enthusiasm for research, action and the commitments of volunteers and managers, society is not providing the resources needed to look back on coastal management successes and failures.
CZC'98, drawing on the experience and insight of diverse communities, will develop ideas and tools to help overcome these obstacles.

Short oral presentations and posters are invited in three focus areas: Integrating Social, Economic and Ecological Factors; The Need for (and use of) Science in the Coastal Zone; and Empowering Communities.

For further information contact: CZC'98, Institute of Ocean Sciences, PO Box 6000, Sidney, B.C., Canada V8L 4B2. FAX: 250-363-6479. E-mail: czc98@uvcs.uvic.ca. Website: http://www.ios.bc.ca/ios/czc98/.

Pre-Conference I

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identify lessons learned and disseminate the results. To accomplish this, the Bank is examining the effectiveness of the Mediterranean Environmental Technical Assistance Program (METAP), which helps countries prepare policies, programs and investment projects to cope with marine pollution, inadequate water supply and sanitation, habitat destruction, etc.

Case studies were used to evaluate effectiveness at the program and project levels. On the project level, the evaluations found that over half the case studies fulfilled stated objectives; however, complex projects were only partially successful. The programs created greater public awareness and strengthened institutional capacity, but improvements in the environmental quality of the study areas and overall impact of the programs were less easily determined. The projects were also evaluated on their sectoral, governance and nation-regional integration.

Less than half achieved better than moderate sectoral integration. The study also found that there was weak vertical integration and poor stakeholder participation in most instances. However, ICM was effectively integrated into national planning in France, Israel and Tunisia. When examining project sustainability, the evaluation found that sustainable financing was not built into projects and the implementation phase was stalled due to insufficient resources, despite growing political support at the local level.

On the program level, the studies found that ICM was not generally integrated into national development planning, and was hampered by the lack of national policy framework and legislation; scaling-up successful projects was difficult in most countries without national programs, and linkages with regional economic programs were not developed. Ultimately, it was determined that it was premature to determine the overall impact from these programs.

The pre-conference workshop was organized and co-sponsored by the National Ocean Service of the U.S. National Oceanic and Atmospheric Administration (NOAA), the U.S. Agency for International Develop-ment (USAID), the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO), University of Rhode Island Coastal Resources Center, University of Delaware Center for the Study of Marine Policy, University of Massachusetts Urban Harbors Institute, the Massachusetts Coastal Zone Management Program (CZMA), the Massachusetts Port Authority and Normandeau Associates.

Pre-Conference II

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Center at the University of Rhode Island. They compared two local level initiatives within a national ICM framework: the Rekawa Lagoon and Hikkaduwa Special Area Management (SAM) Plans. These plans illustrated some of the progress being made involving stakeholders and community groups in meaningful co-management. Issues being addressed at the two very different SAM sites include coral degradation, land-based sources of pollution, marine sanctuary management, tourism and user conflicts, coastal erosion, shrimp mariculture and fisheries.

This was followed by break-out sessions in which participants were requested to form regional groups to represent Africa, Asia, Latin America, and the Caribbean and Europe. The groups were asked to address the issues of:

- Identifying the resource issues most suitable for community/co-management, and to list the major obstacles that impede community/co-management in your country
- Discussing and reporting your response to the following questions in the context of your own country:
  - What can communities, government and nongovernment organizations do to overcome the obstacles listed in Task 1?
  - What are appropriate roles for national agencies to support community/co-management?
  - What can international programs/initiatives do to support community/co-management?

The break-out sessions were lively and productive. It was interesting to note the significant similarities between regions, particularly with regard to the lack of training and capacity-building being an obstacle to ICM. The highly participatory pre-conference workshop also served to forge professional and personal links that will strengthen international networking in the future.

The interaction was capped by a second-day trip to Pleasant Bay, Cape Cod for a visit and discussion of the development of a management plan for the Bay, one of the largest estuaries in Massachusetts. Cooperation between four local towns has resulted in the Bay being designated an Area of Environmental Concern, and a formal agreement to develop a joint resource management plan. The collaboration includes the Massachusetts CZMA and Department of Environmental management, as well as a proactive nongovernmental organization, Friends of Pleasant Bay.

A full report on the two-day conference, including the break-out sessions, from which information on the pre-conference workshops has been excerpted for this article, will be available in early 1998. For copies, or more information, contact: Steve Morrison, NOAA/National Ocean Service, Office of International Programs, 1305 East-West Hwy, N/EA, Silver Spring, MD 20910 USA. Tel: 301-713-3078 ext.175. FAX: 301-713-4263. E-mail: smorrison@ocean.nos.noaa.gov.

To Our Readers: Thanks!

Intercoast would like to thank the many readers who took time to fill out and return to us the survey we enclosed with Issue #29. We received copies from all around the world, which are giving us valuable and valued feedback on how *Intercoast* might be improved and what our subscribers would like to see in upcoming issues, as well as important demographics on our readership. Full results of the survey will be published in *Intercoast* #31. If you would like to electronically access the survey to add your input, it is on the Coastal Resources Center's WWW site at http://brooktrout.gso.uri.edu.

In the Next Issue of Intercoast

Tourism, Shoreline Development and Urbanization are three of the major problems confronting coastal managers as the 21st century looms on the horizon. Is "eco-tourism" really environment friendly? When does the balance tip in favor of profits versus the people where coastal development is concerned? How does a coastal management program cope with the increased pressures that are brought about by rapid urbanization?

Intercoast Network #31, due out this spring, will focus on those issues and how they are being addressed worldwide. Whether it is on the beaches of Zanzibar, in the sprawling metropolitan megacity that the Rio de Janeiro–to–Sao Paolo region is becoming, or along the pristine coastlines of Indonesia or Mexico, tourism, shoreline development and urbanization are demanding a sustainable balance between the users of coastal resources, the economy and the environment.

Intercoast #31 will present articles and opinions on these subjects, as well as a range of feature stories which provide lessons learned through firsthand experience and "Reports From the Field," which give updates on projects underway around the world. In addition, "Intercoast Insider Information" will continue to bring you updates and listings of new publications, upcoming conferences, new Worldwide Web sites and other resources which help coastal managers build a network from which they can learn from others in the field.

If you are interested in contributing to *Intercoast* #31, contact Managing Editor Noëlle F. Lewis at *Intercoast Network*, c/o Coastal Resources Center, University of Rhode Island, Narragansett Bay Campus, South Ferry Road, Narragansett, RI 02882, USA. Tel: 401-874-6870; FAX: 401-789-4670; E-mail: noelle@gsosun1.gso. uri.edu. Thank you.

Intercoast Network

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The objective of Intercoast Network is to facilitate the exchange of information, experience, and ideas on coastal management. Readers are encouraged to write to the Coastal Resources Center with comments on the newsletter and its effectiveness as a source of information for coastal managers.

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