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Embracing the Power of Learning

By James A. Tobey

Integrated coastal management (ICM) has been practiced worldwide for almost three decades in both small-scale pilot projects and national efforts. Global recognition of ICM and the number of field interventions grew rapidly following the 1992 United Nations Conference on Environment and Development (UNCED). The Rio Conference established ICM as the central vehicle for sustainable coastal development. Now on the edge of a decade since Rio, the world is turning its attention with

renewed interest on the accumulated experience in applying ICM worldwide—what methods work and what methods do not, what progress has been achieved, and what needs to be done in the future? To capture lessons from experience and to develop reliable guidance for improved ICM in the future calls for a conscious emphasis on learning strategies and activities.

This issue of *InterCoast* is about learning, where this refers to systematically acquired knowledge that informs and influences actions.

We use the term cross-portfolio learning to mean that the knowledge is acquired and given meaning through use across multiple ICM project sites and interventions. This kind of learning is fundamental to improving the success of coastal management worldwide in addressing coastal problems and forces of degradation. Learning from others, assimilating that knowledge, and adapting it to practice offer the opportunity to make rapid advances without repeating others' mistakes.

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Landscape of Integrated Coastal Management Learning Activities

By Kem Lowry

Integrated coastal management (ICM) has been a recognized sub-field of environmental management for almost three decades. Within that 30-year period, the recognition of the potential importance of coastal management for food security, poverty alleviation, conservation of bio-diversity, reduced risk from natural hazards and economic development has grown dramatically. The number of nations or semi-sovereign states with coastal management programs of some kind has grown from 57 in 1991 to 95 in 2000, while the actual num-

ber of programs has nearly doubled in the same period.

The growth of investments in coastal management has not been matched by a corresponding increase in certainty about how best to tailor the tools of coastal management to the many program contexts in which they are needed. While millions of dollars are invested annually in coastal-related scientific and engineering research, the resources invested in addressing important coastal management uncertainties and knowledge gaps are miniscule.

What is to be learned from the

nearly three decades of global coastal management experience? How can that learning be most effectively organized? Systematic research is obviously central to this process, although research findings cannot always be translated into neat lessons. Learning strategies also need to tap the wealth of practical experience among ICM professionals. Like other professionals, ICM practitioners are constantly seeking to make sense of what is happening in their design and implementation activities as well as solve specific problems. More systematic attention to these practical sense-making and problem-solving activities of practitioners could result in potentially important contributions to the intellectual
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Tobey

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describe cross-portfolio learning efforts in ICM and identify the topics that ICM educators/practitioners have selected as priorities for improving the effectiveness, reach, and impact of ICM activities. Lowry (page 1) develops a very useful roadmap to navigate through the potentially complex world of learning topics and approaches. Applying Lowry's taxonomy of learning methods, we can sort many of the contributions in this issue in two categories: testing assumptions and case studies.

Four of the contributions fall in the category of testing assumptions. These involve rigorous empirical tests of causal assumptions linking community conditions, project features or project processes to project outputs and outcomes. Pollnac (page 4) describes how systematic analysis and empirical testing across a large number of projects in the Philippines has contributed to our understanding of the factors most important in influencing the success of community-based marine protected areas (CB-MPAs). Predictors of overall success of the MPAs in the study sample are small population size, perceived marine fisheries crisis, abundance of alternative income projects, high level of community participation in decisionmaking, and continuing advice from the implementing organization. Equally important, the study suggests that some commonly held assumptions about good practice are invalid for the region of the study. The research findings are directly feeding back to strategies and practices of United States Agency for International Development's (USAID) coastal resource management project in Indonesia.

The contribution by Gillett (page 6) describes an empirical

study commissioned by the World Bank on the factors that contribute to success in coastal management. Information from 31 coastal communities in five Pacific Island countries was collected from a total of 133 small focus groups and analyzed to help Pacific Island governments and donors to better tailor community-based coastal resource management policies and programs to the needs of local communities. The study found that some of the key factors that influence success involve aspects of intersectoral collaboration, the role of alternative income opportunities, and the importance of outside assistance.

Parks, Johnson and Salafsky (page 8) describe a learning portfolio approach whereby a group of projects deliberately come together to collectively and systematically learn about the conditions under which a conservation tool works, does not work, and why. A learning portfolio is being developed among projects in the Indo-Pacific region that are interested in testing shared assumptions and collecting standardized information relevant to answering questions being asked about locally managed MPAs. By designing for a systematic comparison of projects, it is hoped that the capacity of each project to achieve specific, measurable conservation objectives will be strengthened. In this way, the authors explain that the net impact of the collaborative effort is "greater than the sum of its parts."

Christie and colleagues (page 10) describe another collaborative learning partnership on ICM with a geographic focus on the Philippines and Indonesia. This learning effort is designed to empirically investigate the factors and conditions that influence the sustainability of ICM and MPAs. Learning topics include decentralization, community characteristics and dynamics, and strategies for human and institutional

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Lowry

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capital of ICM practice.

What should we be learning about? Several important topic categories are shown in the table below along with the types of questions that might be asked. (These questions are only examples, most of which are focused on community-level issues. A more complete elaboration of questions would address issues at several geographic or jurisdictional scales.)

Learning Strategies

Like other professionals, ICM practitioners learn from experience through observation, reflection, exchanging stories, reading research reports and by means of several other formal and informal inquiry strategies.

Case studies, evaluations, expert groups and other learning methods are all ways to organize raw perceptions, to sort them out, to create categories and to express inter-

actions and relationships among variables. How is all the information generated by these activities to be used effectively? Donors deciding what types of projects to fund and practitioners confronting planning and management design questions face two practical dilemmas:

- How do we create credible generalizations from the mass of information about ICM experience?

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TOPIC CATEGORIES IN INTEGRATED COASTAL MANAGEMENT

Learning Focus	Examples	Types of Questions
Coastal Resource Issues	Causes of decrease in fish size and diversity (community scale) Trends in fish catch per unit of effort (national; global)	How are local fish stocks changing over time, if at all? What are the local causes of decreases in fish size and diversity as seen by fishery biologists? By other stakeholders? What are the national and international trends in fish catch per unit of effort? In types of fish caught? What causal attributions do stakeholders make about changes in trends? How much scientific consensus is there about causes of trends?
Management Technologies	Types of management tools used for specific resource issues such as fisheries Effectiveness of alternative management tools in different settings	What management tools such as marine reserves or gear restrictions are being used at the community level in tropical environments to increase the productivity of local fisheries? How effective are they? Under what circumstances are they less effective?
Capacity for Management	Management staff knowledge of resource conditions, coastal dynamics, and community conditions needed for effective planning and management Technical skills required for effective planning and management Distribution of knowledge and skills in governing group	In any particular ICM setting, what knowledge of coastal dynamics is regarded as essential for effective planning and management? What skills are deemed essential? What knowledge or skill 'gaps' exist in any particular planning and management setting? As determined by whom? What is known about how to make effective ICM planning and management 'capacity' judgments? What ICM 'capacity building' strategies have been found most effective? Which less effective?
Community Context for ICM	Local environmental conditions Community social organization Community livelihood conditions Traditions of self-governance	What are livelihood conditions in coastal communities designated for management projects? How, if at all, does relative poverty shape community willingness to engage in self-management efforts? What social structural factors are important in enhancing or impeding community-based management efforts? How do traditions of self-governance affect community willingness to engage in community management?
Program Design and Implementation Processes	Impact of program design processes on implementation processes and outcomes Identification of 'best practices' for ICM planning and management	What techniques of community mobilization are most likely to result in understanding and continued support of the ICM project? What types of baseline studies have been done in support of community projects? What has been learned about what constitutes a 'sufficient' analysis? How have communities been involved in the identification of coastal issues to be addressed by the project? In the identification of alternative management tools? In the evaluation of alternative tools? What has been learned about how different techniques for involving communities enhance or impede community support and participation in implementation processes? What problems have emerged in the implementation of community projects? How might they have been better anticipated in planning processes?
Institutional Design	Design of institutions to address 'free-riding', rent-seeking, user conflicts, etc. Design of institutions for inter-organizational coordination	To what extent is 'free-riding' a problem in self-governing community management efforts such as those using marine reserves? What institutions have been designed-or have evolved---to address this and other resource use issues? How effective are they? How do communities coordinate with local government? How is ICM authority and management responsibility shared among levels of government? How effective are these arrangements? What problems have emerged? Have any adaptations occurred?

Learning Across Projects: Detecting Factors Influencing the Success of Coastal Resource Management

By Richard B. Pollnac

Decisionmakers in coastal resource management (CRM) need to develop strategies and tactics that will maximize the chances of success. They would like to know that if procedures A, B and C are carried out, the probability of success is X. And that if C is not carried out, the probability will reduce to Y, or if A, B, C and D are carried out, the probability of success will increase to Z. The best approach to respond to this need is the cross-portfolio research method that determines interrelationships between variables in a set of observations of any type of phenomena. One first identifies the dependent variable of interest, for example, success of some CRM objective. Pre-existing theory and information are then used to identify other characteristics of the cases believed to influence the dependent variable, such as practices assumed to influence achievement of a CRM objective. The dependent and independent variables are evaluated for each case, then statistical analyses are applied to determine both the strength and statistical significance of the relationships between the variables. The results can be used to identify practices or other characteristics that influence the achievements of CRM objectives.

Similar techniques have long proven useful in determining factors influencing the success of rural development projects. Elliott R. Morss' 1976 publication, *Strategies for Small Farmer Development*, is an excellent example. For coastal development and management projects, the author and his colleague, John J. Poggie, applied

these techniques in the 1980s to identify factors influencing the success of fishers' cooperatives. The World Bank recently used the same techniques to elucidate factors influencing CRM in their recent study, *Voices from the Village* (Gillett, p. 6). This year (2001), the World Resources Institute published a document, *Fish for the Future?*, describing the process they are developing to collect comparable data across some 22 South Pacific and Sulu-Celebes Sea marine protected area (MPA) projects to detect factors influencing project success. Cross-portfolio analysis and empirical testing is the only way one can produce reliable information concerning the probability of success of applying selected practices to cases (e.g., communities) manifesting specified characteristics.

In order to conduct this type of analysis, one needs strictly comparable data collected from a sample of CRM sites. Strictly comparable data means that data on all variables of interest are collected by employing identical methods in all the sites in the study sample. Data of this type are rarely, if ever, available in published material concerning CRM projects (e.g., CRM project reports, journal articles, etc.). This is a consequence of the fact that each author collects, analyzes, and writes-up their findings with varying levels of objectivity as well as different implicit or explicit theoretical perspectives.

The cross-portfolio research method was used by the author and his colleagues (Brian Crawford and Maharlina Gorospe) to discover factors influencing the success of community based MPAs (CB-MPAs) in the Visayas, Philippines.

Objectives of most CB-MPAs are multiple:

- Resource conservation and improvement
- Community empowerment
- Establishment of MPA hardware and rules (e.g., marker buoys, guard house, community signboards, a management plan, etc.)
- Effective enforcement of rules
- Recognition by community members that the MPA is positively affecting the resource

The research devised ways to measure the achievement of these objectives and developed a multi-component, composite measure of project success. A review of applied social science theory, community-based MPA (CB-MPA) project reports, and directed focus group meetings with Philippine and Indonesian MPA practitioners were used to make a preliminary identification of practices and site characteristics believed to influence project success. This resulted in some 300 variables to be evaluated.

The author, his research associate Maharlina Gorospe, and a team of Philippine research assistants visited 45 communities with CB-MPAs in the Visayas, Philippines. In each community the success variables as well as the practices and site characteristics expected to influence project success were evaluated. The resultant data set was then analyzed. First, simple, zero-order correlations between the summary success measure and 64 distinct predictor variables were calculated. Twenty-three (36 percent) of the predictor variables manifested a statistically significant ($p < 0.05$) relationship with the success measure. Step-wise multiple regression was used to identify the specific combination of these

23 practices and site characteristics that best predict MPA success. This analysis indicated that five factors appear to be the most important of all those studied in the overall success of the MPAs in our sample ($R^2 = 0.68$, $p < 0.001$). The five predictor variables are 1. population size (relatively small), 2. a perceived a crisis in terms of reduced fish populations before the MPA project, 3. percent successful alternative income projects, 4. a relatively high level of community participation in decision making, and 5. continuing advice from the implementing organization.

A simple way of illustrating the strength of this finding is to give each project site a score representing the number of characteristics or practices that they manifest in the right direction; for example, small population, high percentage of successful alternative income projects, etc. We can then plot the success score against the number of predictor variables as in Figure 1. This figure clearly illustrates that as the number of predictor variables increases, so does the level of success of the MPA.

The methods applied in this paper were capable of identifying a set of five practices and site characteristics—out of a very large set of possibilities—that seem to be crucial for the success of CB-MPAs. Some variables widely assumed to be important for CB-MPA success did not appear so in the analyses—only a little more than one-third of the predictor variables were significantly correlated with the composite success measure. For example, a number of published papers as well as practitioners suggest that a full-time village facilitator is an important pre-condition to success. The correlation analyses indicated that this factor does not have a significant relationship with the success measure used here. The same holds true for the almost ubiquitous

belief that MPAs initiated at the village level are more likely to be successful. Many other variables expected to be related to MPA success also proved to be unrelated in our sample.

The significance of such findings is that decisionmakers can use them to avoid unnecessary, costly activities in CB-MPA projects. For example, it costs a great deal more to have a full-time facilitator for each village involved in a project. If part-time facilitators achieve the same level of success, as indicated by the analysis, significant savings can be made.

We do, however, have several cautions with respect to applying the present analyses. First, nothing has been said about the factors influencing important predictor variables, such as the success of alternative income projects. We are planning to identify some of these factors in future analyses of the data. Second, some of the predictor variables, such as population size or level of democracy seem to be inherent characteristics of a community—possibly the result of historical forces in the area. Changing these characteristics (e.g., improving the level of democracy in a community) may prove to be a difficult, long-term or impossible task. Perhaps, it would be most efficient to select sites manifesting these preconditions. Third, the results are useful to the extent that one agrees that the success measures used here are the right measures of success of a CB-MPA, and fourth, we do not know if the findings can be generalized beyond the Visayas region of the Philippines.

Finally, there are some who

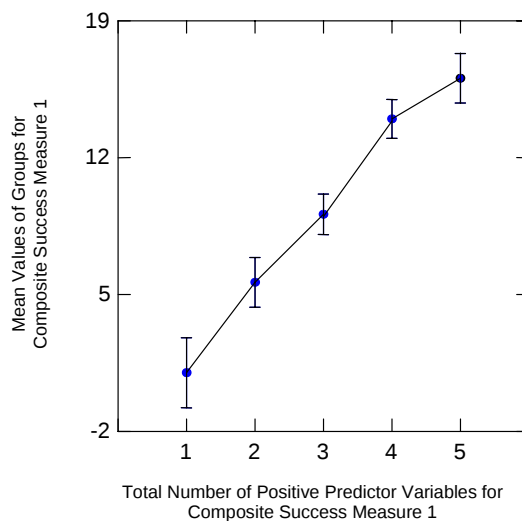


Figure 1. Success score versus number of predictor variables at each site.

argue that institutions such as CB-MPAs are the result of a mostly unpredictable sequence of antecedent human behavior, where the final results could be changed by any change in any step in the sequence. Hence, the relative success of any CB-MPA must be explained as a consequence of its unique history. Taken to the extreme, this approach denies the existence of general processes that influence the outcomes of human behavior. The question of whether there are general processes involved or that each case is a unique instance of human behavior is an empirical question. As such, it can only be resolved by comparative field research such as that reported here. Despite these caveats, the findings should prove to be a useful supplement to the many case studies found in the literature. Application of the findings should improve the present success rate of CB-MPAs. They are directly feeding back to strategies and practices of the Proyek Pesisir Coastal Resource Management Project in Indonesia. The findings should also stimulate further research to identify in more detail the factors influencing the success of CB-MPAs. In the end, if ideas are to be more influential, they will have to evolve

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Voices from the Village: Across Portfolio Learning in Coastal Resource Management in the Pacific Islands

By Robert Gillett

Coastal resources are of fundamental importance in the Pacific Islands. Much of the region's nutrition, welfare, culture, employment, and recreation are based on the living resources in the zone between the shoreline and the outer reefs of the region. For many centuries there has been a recognition by Pacific Islanders that some form of resource management is necessary to assure sustainability of these resources. In former times, traditional management of coastal resources was undertaken by many coastal or resource-owning communities and appears to have been reasonably successful. In recent years, however, serious problems in the management of coastal resources have arisen. There is the dual problem that the authority of local traditional leaders has been eroded, while the threats to the resources (over-harvesting, destructive fishing, pollution, and a wide range of land-based threats) have increased.

In this current situation, there appears to be a need to carefully examine the successes in coastal management and focus on identifying factors contributing to those successes. What are the processes most likely to result in successful management? What should be the role of external stakeholders (governments, nongovernmental organizations) in supporting these processes? When resources for management are scarce, where should they be allocated to maximize the chances of success?

This study, commissioned by the World Bank in 1998, examined some of these questions from the point of view of 31 coastal communities in five Pacific Island coun-

tries: Fiji, Samoa, Solomon Islands, Palau, and Tonga.

Methodology

The study relied primarily on community perceptions of factors affecting coastal resource management at the village level. There were two main reasons for this approach: first, there was no comprehensive ecological survey of coastal resource conditions in the Pacific which could be used to compare conditions between the sites. The costs and time involved in conducting such a survey would have been beyond the scope of this study. Second, and perhaps most importantly, the majority of decisions regarding coastal resources are made by local communities based on their own perceptions. A better understanding of their perceptions is therefore essential to help Pacific Island governments and donors formulate appropriate national policies and coastal programs.

Several indicators could potentially be used for determining site management success, but many require intensive data gathering and quantification. Accordingly, the study used villagers' perceptions of four relatively simple success indicators which did not suffer from this limitation:

- *Trends in productivity of key resources used.* The study obtained simple perceptions of cost per-unit-effort trends for three key resources used by village groups over a decade.

- *Trends in habitat condition.* This measure consisted primarily of perceived changes in three local habitats over a decade.

- *Trends in incidence of*

threats. This was to determine the importance and urgency of key threats to the site, and the extent to which they have been contained or increased.

- *Compliance with management rules.* This evaluated the compliance with a selection of five local and national rules.

A questionnaire was formulated for the collection of information at the village level on the success factors and on other aspects of coastal resource management. Perceptions of success were collected from a total of 133 small, resource users focus groups at the 31 sites, including elders, women, and men. In addition, the study collected information from various other community sources (e.g., village leaders, large village meetings, key respondents, village teachers, and shopkeepers) on the factors that may affect management success. The answers from the community were complemented by study team observations of site conditions and interviews with representatives of government agencies and external partners.

Study Sites

The study was carried out at 31 sites in the five countries. There were 12 focus sites (four-to seven-day visits) and 19 supplementary sites (one-to three-days visits). The 31 sites ranged in size from 0.6 square kilometers in Papa (Samoa) to 2,360 square kilometers in Luaniua, Ontong Java (Solomon Islands). The sample included two urban sites (Koror in Palau and Honiara Fishing Village in the Solomon Islands), five peri-urban sites and 24 rural sites. Several of the rural sites were very isolated

and lacked regular transportation. Eight sites, including all sites in Tonga and Cooks in, and Honiara fishing village in the Solomon Islands, lacked any form of customary marine user rights and were operated under open access regimes. All of the remaining sites had some form of customary marine tenure.

Key Results

Coastal resources are perceived to be declining...

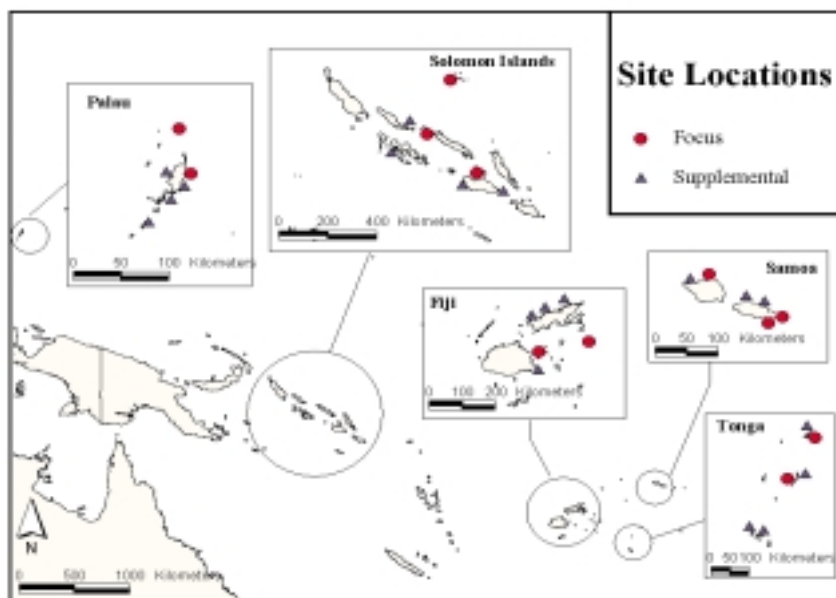
Community groups were generally pessimistic about resource trends. Only 10 percent of the responses said that catch per-unit-effort had increased over the last 10 years, and only 3 percent associated such an increase to management interventions. Perceptions about habitat conditions and threats to coastal resources were more optimistic, with about half of the responses seeing negative trends. Several of the communities where resources were perceived to be declining were villages with low population densities, suggesting that even in remote areas, the impact of a few efficient commercial fishers on the exploitation of fragile coastal resources should not be overlooked.

...and the nature of the threats to coastal resources appears to be changing.

Communities perceived pollution as the fastest rising threat to coastal resources, while destructive fishing threats were perceived to be declining the most. Threats caused by overfishing, siltation, and mining fell between these two extremes. Overfishing and destructive practices, however, were commonly identified as among the most important threats to coastal resources.

The outlook for coastal resources is perceived to be bleak.

Respondents at 21 of the 31 sites



believed coastal resources would continue to decline in the future. In village after village, people whose livelihood depends on the health of coastal resources argued for stricter enforcement of existing regulations and additional restrictions on commercial harvesting.

Simple management rules work best...

The study found that at 13 of the sites (42 percent), respondents were not familiar with many of the national rules designed to manage coastal resources. In general, those interviewed believed that the following types of rules obtained the most compliance:

- National regulations that were seen to be relevant to the community and which were subsequently adopted by village leaders as local community rules

- National rules enforced by buyers or exporters, such as the national ban on trade in crocodiles in the Solomon Islands

- Marine sanctuaries, closed seasons for specific fisheries, and rules restricting destructive fishing practices (e.g., ban on night diving)

In general, the results of the study indicate that the simpler the national rules, the better they were understood and followed by coastal communities.

...while open access constrains community action.

Eight of the villages lacked any mechanisms to exclude outsiders from using their coastal site. With one possible exception, none of these open-access sites had developed community rules for managing coastal resources. By contrast, all of the restricted-access sites had adopted local management rules, indicating that the authority to restrict access by outsiders is a powerful incentive for community-based management. Compared with restricted-access sites, open-access communities perceived threats to coastal resources to be increasing faster and felt less capable of dealing with local threats.

Communities need help...

Community-based management was found to be insufficient in five major areas:

1. The villagers felt that some form of outside assistance was needed to handle coastal pollution, mining operations, commercial overfishing, and other threats such as dredging, construction of causeways, and drilling for oil.

2. Nearly 40 percent of the villages lacked mechanisms to control their own fishing effort. Where such mechanisms existed, external partners had acted as catalysts for community action.

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A Learning Portfolio: Testing Marine Protected Areas in the Indo-Pacific

By John E. Parks, Arlyne Johnson, and Nick Salafsky

Can locally-managed marine protected areas (LM-MPAs) lead to conservation?

There is a growing trend towards establishing MPAs in coastal areas. In many parts of the world, these same coastal areas are sources of cash and subsistence for local residents; in certain parts of the world, such as the Western Pacific, some communities legally own the near-shore resources. As a result, there is growing interest in whether local residents can establish MPAs, and if so, whether these areas contribute to biodiversity conservation and/or sustainable resource use. In particular, resource managers want to know whether they can develop general, yet non-trivial guiding principles regarding the conditions under which LM-MPAs can lead to more effective resource management.

Over the past decade, a number of coastal resource management projects have implemented LM-MPAs. Most projects are in isolation from one another; thus, experience gained by one team may not necessarily be shared with another. As a result, learning has often been unsystematic and anecdotal, making it difficult—or even impossible—to draw broader principles about whether these areas work.

This raises the question: Is there an efficient and expedient way to bring marine conservation practitioners together to share their experiences and collect common information? How can they collectively learn and develop principles for using LM-MPAs? One answer is to use ‘learning portfolios’ designed to collaboratively and systematically test shared assumptions, in this case, whether LM-

MPAs result in measurable improvement in biodiversity conservation and sustainable fisheries.

Answering Complex Conservation Questions

A learning portfolio has two goals: to help projects systematically and collectively learn about the conditions under which a conservation tool works, does not work, and why; and to strengthen the capacity of project teams to achieve measurable conservation objectives.

In a traditional program, projects are focused primarily on results. Because each project is using different conservation tools, information exchange only occurs haphazardly as shown in the model on the left side of the diagram. Within a learning portfolio, on the other hand, a group of projects come together to test the effectiveness of a specific conservation tool such as eco-enterprises as shown in the model on the right side of the diagram.

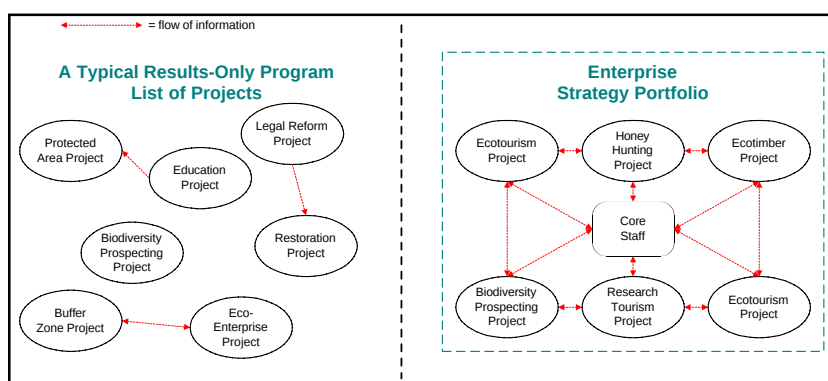
The assumption behind the learning portfolio approach is that by focusing on a common tool, as much or more can be learned from failures as success regarding the conditions under which this tool is useful. Learning portfolios also allow an exchange of ideas and

experiences among practitioners who are all working on similar things, thus promoting cross-project learning, peer mentoring, and ultimately, more effective capacity building. Ideally, a learning portfolio thus becomes much greater than the sum of its parts.

History of LM-MPA Learning Portfolios

In August 2000, Indo-Pacific-based LM-MPA practitioners and researchers met to develop a method to collectively learn and develop principles of using LM-MPAs. As the result of two workshops, a learning portfolio was designed to test a set of shared assumptions about which LM-MPA conditions result in measurable biodiversity conservation and sustainable fisheries. At the workshops, project teams first developed models of the conditions at their specific sites. They then began to identify common assumptions and factors behind the use of LM-MPAs at their sites and what data might be collected to test these assumptions. At the end of the workshops, the project then developed a social contract outlining how the projects would work with one another in the portfolio.

In February 2000, representatives of the participating organizations met to form a portfolio coor-



Adapted: Salafsky and Margoluis (1999), *Greater Than the Sum of Their Parts*, Biodiversity Support Program, Washington DC.



During the Fiji workshop, South Pacific project representatives were invited to a LM-MPA site in Verata where they surveyed recovering bivalve populations. Photo by John Parks.

dination team (PCT) to facilitate portfolio activities, particularly ongoing communication between projects about management and monitoring, and the methods and data collection to test a shared set of portfolio hypotheses.

Challenges to Moving Forward

One of the biggest challenges facing the portfolio is finding the resources to take on the portfolio activities. At a project level, additional time and effort are required from staff and community members to participate in this collective initiative. At a portfolio level, time and additional funding are required to convene portfolio meetings and help support the project-based activities.

Another challenge is to create incentives to participate. This is accomplished by supplying what is needed to improve their ability to do work. An attraction to join is the opportunity to improve and enhance their site-based conservation efforts. An additional bonus is pooling results and collectively learning if project participants' strategies are achieving measurable success.

Finally, developing a common and realistic learning framework is

not an easy task. A learning framework is essentially the analytical 'map' of standardized steps and methods used to guide all portfolio members in their test of commonly shared assumptions. The LM-MPA learning framework is therefore the foundation that determines whether or not this learning portfolio has the potential to successfully achieve the goal of being able to determining the conditions under which LM-MPAs work, do not work, and why.

Where the Learning Portfolio is Headed in the Future

Over the next six months, the learning portfolio will:

- Finalize a learning framework for testing shared assumptions
- Confirm project membership and readiness to participate
- Develop and implement a workplan for data collection and capacity building

The PCT will play an important role in helping project teams to collect, collate, and analyze data and in coordinating cross-portfolio learning processes. Ongoing data collection by participating projects will then occur, with new groups being phased into these activities. It is hoped that within a year or two,

the total number of participating projects will have grown to a size that the group's collaborative work is internationally recognized and accepted.

Learning Portfolios in the Context of Global ICM Efforts

The LM-MPA effort is only one example of how a coastal management tool is being tested across a diverse set of sites and organizations. Learning portfolios could be established to generate sets of guiding principles on the use of ICM tools. In turn, this could also lead to a learning portfolio to test the effective integration and use of various tools within an ICM framework. Such nested lessons from applied marine conservation science will be required if resource managers and conservation practitioners are to expand their learning beyond the site-specific level. This would enable conclusions to be drawn at a regional and global scale—where our management efforts must evolve in order to ensure sustainability and human survival.

(Information on learning portfolio initiatives can be found on website: www.fosonline.org)

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Is Integrated Coastal Management Sustainable? New Research in the Philippines and Indonesia

By Patrick Christie, Manuel Arbon, Catherine Courtney, Akhmad Fauzi, Marc Hershman, Kem Lowry, Roy Olsen de Leon, Richard Pollnac, Robert S. Pomeroy, and Alan White

In light of the volume of published literature and current funding levels, considerable interest surrounds integrated coastal management (ICM) in developing countries. Following the United Nations Conference on Environment and Development, donor contributions towards ICM have dramatically increased. For example, in the Philippines, it has been estimated that approximately US\$25 million is spent annually to support ICM. ICM takes many forms depending on the context, but principally it has focused on encouraging sustainable coastal resource use through an iterative process of regulation and policy development, institutional coordination, and education.

Mainly due to limited financial resources, externally funded projects generally have been the main proponents and implementers of ICM within developing countries. The dependence on external financial and technical assistance creates the potential for unsustainability of institutions and policies as projects are terminated and support staff and funding are withdrawn. Based on experience, it is a common belief among coastal management practitioners that many seemingly robust institutions and initiatives wane after external support is withdrawn. For example, in the Philippines, the majority of marine protected areas (MPAs) established with good intentions are not maintained for appreciable amounts of time, a situation commonly observed elsewhere in the region.

Some feel that projects do not put enough attention into the planning of phase-out activities. Recently, there have been some very useful comparative studies that investigate the success of coastal management and MPAs. While success and sustainability of ICM and MPAs are likely interrelated, the relationship between these variables is unclear.

Very little of the coastal management literature goes beyond raising concerns about sustainability to provide empirically-based explanations. Many ICM projects conduct internal evaluations; however, it is not typically within the mandate of ICM projects nor their external project evaluations, to conduct detailed research into whether efforts were sustained beyond a project's termination. This is symptomatic of a relatively young field whose literature and theoretical basis is at an early stage of development. To address this practical and theoretical gap, this project was undertaken primarily to understand the dynamics of how ICM processes are sustained after formal project termination.

ICM Sustainability Research Project

In January 2001, with financial support from the David and Lucile Packard Foundation, a multi-disciplinary and multi-institutional research initiative was launched. This research project will investigate the influence of these factors on ICM sustainability in the Philippines and Indonesia, countries with some of the most innovative and varied approaches to ICM in the tropics. This effort has three mutually reinforcing sub-objectives that are developed in detail below.

1. *Applied evaluative research*

To identify factors and conditions, at various levels of gover-

nance and in different contexts that influence ICM sustainability.

2. *ICM project assistance*

To provide policy recommendations and educational materials to assist ongoing and future ICM initiatives to improve the sustainability of coastal management in the Philippines and Indonesia.

3. *Capacity development*

To improve human and institutional capacity to conduct evaluative research and ICM by strengthening institutional linkages between practitioner and research/educational institutions in the US, the Philippines, and Indonesia.

An advisory group made up of nongovernment and government ICM practitioners will review research results and products and help ensure that recommendations are realistic.

Applied Evaluative Research

A general operational definition of a sustainable ICM process is "one that supports sustainable resource use beyond the termination of an ICM project. It is adaptive and multi-sectoral as appropriate and is supported by a stable source of financial and technical resources."

A literature review identified that legal, socio-cultural, economic, institutional, bio-physical, project design and underlying contextual variables are likely to have considerable impact on ICM sustainability. Based on this review, this project will begin by focusing attention on impacts of the following factors on ICM sustainability:

- Centralization of policy development
- Community-level characteristics and dynamics
- The role of legal consistency
- ICM-derived economic and bio-physical benefits (if they exist)

- ICM project strategies for human and institutional capacity development

- Financial mechanisms
- Use and management of information

- Globalization and market penetration into coastal communities

The project will focus on the Philippines and Indonesia to improve the understanding of context and so that generalizations may be derived. These countries were chosen for a number of reasons: their high levels of coastal biodiversity is at extraordinary risk, and human reliance on these resources warrants efforts to develop innovative strategies for ICM. Furthermore, the Philippines provides an opportunity to study ICM in a context where many historic and current ICM initiatives have been undertaken. Fewer examples of ICM exist in Indonesia, however, increasing numbers of programs are underway that could directly benefit from research efforts in the Philippines.

The research will consider both historic and ongoing ICM projects and the institutions that collaborate with these projects. The Coastal Resources Management Project (CRMP)-Philippines, CRMP-Indonesia, nongovernmental organization-led ICM projects (e.g., World Wildlife Fund-Philippines and Nature Conservancy-Indonesia projects), and historic large-scale ICM projects in the Philippines and their collaborating institutions will be studied.

The research will be conducted in four principal phases:

1. Focus group interviews of ICM researchers, practitioners, and community leaders (April-June 2001)

2. Intensive multi-method, multi-disciplinary quantitative field research that will validate and extend the initial propositions (June-September 2001)

3. Intensive multi-method, multi-disciplinary qualitative field research which will conceptualize and explain the patterns uncovered by quantitative research (July-November 2001)

4. Comparative, but focused, field research in Indonesia that will test the ability to generalize and the relevance of the findings from the Philippines field research (April-July 2002)

The following are initial propositions based on a preliminary literature review and discussions among principal investigators (PIs). These will be examined during the research component of this project.

Proposition 1: The majority of historic ICM initiatives (institutions, policies) have not been sustained beyond formal project termination.

Proposition 2: In those instances where ICM initiatives have been sustained beyond formal project termination, the following are the most effective predictors of sustainability:

- Strong and supportive local leadership at the community level
- Strong and supportive local leadership and institutional commitment at the local government level
- Significant economic benefits from ICM activities for local communities
- Inter-sectoral coordination and inter-governmental (national to local) coordination
- The presence of stable communities (without significant demographic or economic shifts since project termination)
- The lack of direct market



March 13-15, 2001 planning meeting.

penetration by multinational markets for marine products (e.g., live fish)

- Decentralized governance structures that are backed by national-level policies/assistance
- Adaptability of established ICM regimes/policies to change
- Enhanced local capacity and understanding of the goals and process of natural resource management
- Adequate and long-term funding mechanisms that support ICM

Similarly, when these conditions are absent, sustainability of ICM is not likely.

Proposition 3: That the perspectives of government officials, ICM practitioners, and coastal residents on the factors that drive ICM sustainability will be quite distinct, but will overlap considerably.

ICM Project Assistance

As research results are processed, project PIs will work to make this information available and relevant to ICM projects interested in improving the sustainability of coastal management. This effort will focus on two levels: 1. at the project level (including government and nongovernment-led initiatives), and 2. at the national level by providing information that could help guide the national-level

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Shrimp Farming and the Environment

By Michael Phillips, Jason Clay, Ronald Zweig, Carl Gustav Lundin, and Rohana Subasinghe

In recent years, aquaculture has become an increasingly important economic activity in coastal areas of many countries. It offers one of the few viable opportunities for poverty alleviation, community development, and food security in coastal regions of many countries in the tropical developing world. The development of coastal aquaculture has certainly not been without its controversies. The shrimp aquaculture, in particular, has generated considerable debate in recent years over its social and environmental costs and benefits. Rapid expansion of shrimp farming in some countries in Latin America and Asia has focussed attention on the need for effective management strategies. Such strategies should tap the potential of the sector for economic growth and poverty alleviation, while controlling the negative environmental and social impacts that can accompany poorly planned and regulated development.

Recognizing that challenges for better management of shrimp aquaculture around the world are complex, and that improved practices often result from identifying and analyzing lessons learned and exchanging such information, a consortium program entitled *Shrimp Farming and the Environment* has been developed. The partners are the World Bank, the Network of Aquaculture Centres in Asia Pacific (NACA), the World Wildlife Fund (WWF), and the Food and Agriculture Organization of the United Nations (FAO). The program comprises over 35 complementary case studies prepared by more than 100 researchers in more than 20

shrimp-farming countries. Cases range from specific interventions within single operations to thematic reviews of key issues in shrimp aquaculture. The goal is to document and analyze experience around the world in order to better understand what works, what doesn't, and why.

The program is based on the recommendations of the World Bank review on shrimp aquaculture and the environment (1998), a NACA/WWF (1999) meeting in Bangkok, Thailand, on shrimp management practices, and a FAO Bangkok technical consultation on policies for sustainable shrimp aquaculture (1997). There are six main objectives of this cooperative program:

1. Generate a better understanding of key issues involved in sustainable shrimp aquaculture
2. Encourage a debate and discussion around these issues that leads to consensus among stakeholders regarding key issues
3. Identify better management strategies for sustainable shrimp aquaculture
4. Evaluate the cost for adoption of such strategies as well as other potential barriers to their adoption
5. Create a framework to review and evaluate successes and failures in sustainable shrimp aquaculture which can inform policy debate on management strategies
6. Identify future development activities and assistance required for the implementation of improved management strategies that would support the development of a more sustainable shrimp culture industry

The consortium is giving special attention to poverty and equity issues, and the work will provide an assessment of the use of shrimp farming development/investments as a means of alleviating poverty

through targeted development interventions in coastal areas.

The program was initiated in 1999. The case studies cover a wide range of topics, from farm-level management practice, poverty issues, integration of shrimp aquaculture into coastal area management, shrimp health management, and policy and legal issues. The case studies together provide a unique and important insight into the present global status of shrimp aquaculture and management practices. While there is no major shrimp-farm development to date in Africa, the reported case study will provide guidance on important issues to consider in the face of potential shrimp-farm development in the region. The fieldwork has been completed for nearly all case studies, and reports are being finalized. They will be available in printed and web versions during 2001.

The proposed approach being taken involves consultation with as many stakeholders as possible throughout the study, from local to international. The preparation of the case studies has incorporated the views and inputs from a wide range of stakeholders, from local communities to global multilateral organizations. Several cases entailed widespread consultation with local farmers and communities, through community workshops and participatory meetings. In Bangladesh, for example, the researchers consulted stakeholders at all levels; from poor women and landless households involved in shrimp fry collection to senior government officials involved in policy development. The consultations with landless women in particular provided an important insight to the dependence of poor families in coastal Bangladesh on shrimp aquaculture for their livelihood. This

type of open and participatory approach to the case study research has provided a unique opportunity to gain understanding, generate consensus and identify management experiences from a wide range of stakeholders involved in this complex sector.

As the reports are drafted and finalized, findings from case studies are being discussed with a wider audience. This approach is designed to ensure that the findings will be based on widespread consultation and will have widespread impact and relevance. A website giving information on the case studies has been developed (<http://www.enaca.org>), and the Internet will increasingly be used as a means of disseminating information arising from the studies. Translations of case study materials into Spanish, Portuguese, Thai, and Mandarin Chinese, have been initiated to disseminate findings to non-English speakers. Priority will be given to further translation and dissemination in 2001.

There are indications already that the consortium approach and case study findings are having positive impacts. A few are highlighted to indicate the types of impacts that can be expected.

- In Mexico, for example, the findings are changing the ways nongovernmental organizations (NGOs) and foundations view and engage the shrimp aquaculture industry to work together to reduce agro-chemical runoff from commercial agricultural farms.

- In Brazil, one case is providing the basis for putting in place policies and investment screens for supporting more sustainable shrimp aquaculture management practices.

- The outcome of a multi-country, thematic analysis of shrimp disease issues has helped promote regional cooperation on the movement of animals in Latin America both among governments and shrimp producers. This case has also raised awareness of inter-regional cooperation in aquatic animal disease control within the Asia-Pacific Economic Cooperation (APEC) forum and provided a base for new project assistance in Latin American countries.

- One study in Vietnam explored the role of shrimp aquaculture in coastal community development. This case has raised awareness in the country about the potential connection between aquaculture and poverty allevia-

tion. It has already led to a new government policy orientation towards poverty focussed aquaculture development.

- The Bangladesh case promoted dialogue between NGOs and the government and led to wider appreciation of social issues in shrimp culture development. The case also contributed to the development of management strategies for a World Bank-supported project in coastal areas.

- A case from Colombia explores the use of an artificially extended natural mangrove as a biofilter to treat effluent from a shrimp farm. There is of considerable interest in the incorporation of natural biofilters in shrimp operations as a way to avoid pollution and, in the case of Colombia, the pollution taxes they generate.

- A consortium case is also being developed that looks at the production and market implications of third-party certification systems for shrimp aquaculture. The goal of this work is not to create a certification system, but rather to identify what the major issues and implications are for such work. There is tremendous interest in this issue both on the part of producers and retailers, but few have thought through the issues carefully.

- One case will also explore the potential of investment and buyer 'screens' that could be used to send signals to producers regarding more sustainable shrimp aquaculture on the part of investors and consumers. While the consortium will explore the implications of such screens (e.g., simple vs. complex, etc.), it will not be involved in any way in establishing such screens or undertaking certification or screening activities.

The findings from some of the cases were also discussed at the recent expert consultation on

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Shrimp-seed trader in Bhimavaram, Andhra Pradesh, India. An example of employment generation through shrimp aquaculture.

Improving Watershed Governance: Lessons Learned from Efforts in the United States

By Mark T. Imperial and Timothy Hennessey

Some researchers, practitioners, and government officials assume that no watershed is managed without having some form of centralized watershed program. Our view of management programs is somewhat different.

The program discussed here gives heavy emphasis to science, planning, and the preparation of detailed management plans. Every watershed in the US is managed in some way by a wide range of government programs whose decisions influence the health and integrity of ecological systems. Therefore, watershed management should focus on finding ways to get this portfolio of government programs to work together better. Often this involves building, managing, and maintaining collaborative relationships that facilitate the direct (e.g., restoration projects, infrastructure investment, etc.) and indirect (e.g., public education, new research, etc.) actions necessary to improve environmental conditions and enhance watershed governance. This implies that watershed management is inherently strategic, and practitioners should not expect that it is an effective way to address all watershed problems.

This article summarizes the findings from a recent evaluation of six watershed management programs completed for the National Academy of Public Administration as part of its *Learning from Innovations in Environmental Protection Project*. The academy commissioned this study to help determine whether watershed management is a useful tool for helping federal, state, and local governments to address complex

environmental problems such as nonpoint source pollution (NPS) and habitat loss and degradation. Our study evaluated watershed management programs at six locations in the US: the Inland Bays (Delaware), Narragansett Bay (Rhode Island, Massachusetts), South County Salt Ponds (Rhode Island), Lake Tahoe (California, Nevada), Tampa Bay (Florida), and Tillamook Bay (Oregon).

The findings reported below are organized around the four basic stages of the policy process. This should not imply that watershed management follows a linear sequential process. Planning activities were iterative in nature and implementation often began before the 'plan' was completed. In some cases, participatory planning was an implementation activity. In others, implementation was only loosely related to a plan's policies and recommendations, although the planning was the catalyst for these actions. The following sections summarize some of our important findings and the lessons learned from this evaluation.

Problem Definition: The Ecology of Governance

In this study, it was clear that the physical and institutional environment in which a watershed management effort developed had a strong influence on how problems were selected or defined as well as the policy instruments chosen. The strong influence of these contextual factors suggested to us that implementation priorities should be set at the state and local level rather than at the federal level. Moreover, it was clear that while it was important to understand how

ecological systems functioned, it was equally important to understand 'the ecology of governance,' that is the tradeoffs among environmental problems and how institutions addressing watershed problems functioned and interacted with one another. This information is critical because it helps practitioners identify ways to improve watershed governance.

Characterizing Problems: 'Nesting' Science and Agenda Setting

We were also interested in the role that science played in the policy process. We concluded that in order for science to inform policy, it must be nested in a decisionmaking process. Scientific research is of little use if the information generated is not salient to decisionmakers. We also found that scientific research rarely tells decisionmakers what to do, although it often helps define problems and shapes the debate on policy alternatives. Our analysis also revealed that better information on environmental conditions and implementation was needed. In particular, state and local officials needed better technical and financial assistance to improve data collection and integrate data management systems.

Implementation: An Exercise in Advanced Governance

Much of our analysis focused on evaluating the activities that offered some potential for improving environmental conditions. Common implementation activities included: regulation, installation of best management practices, habitat restoration/protection, participatory planning, infrastructure investment, public education, and scientific research.

The particular pattern of activity varied in each watershed based on

SCIENCE AND INTEGRATED COASTAL MANAGEMENT

B. von Bodungen and R.K. Turner, editors

Dahlem Workshop Report 85

This volume from the Dahlem Workshop, Dahlem University, Berlin, Germany (2000), provides a multidisciplinary forum for international experts from environmental, cultural, social, and economic sciences to discuss the crucial issues relevant to the further development and implementation of integrated coastal management.

Among the topics discussed are the success and failure in transboundary issues, shoreline development, coastal management in developing countries, and unifying concepts. Lack of communication and scientific information as well as neglect of the precautionary and subsidiary principles in the policy cycle were identified as the main cause and failure in the integrated coastal management process. It emphasizes that management should take the form of an adaptive approach to cope with uncertainties in prediction and outcome.

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the configuration of problems and institutions. We concluded that regulation often helped minimize and control future problems (e.g., NPS, and habitat loss and degradation). However, the power of regulation to stimulate restoration was limited when environmental conditions had already deteriorated. In these cases, watershed management programs used non-regulatory activities such as investment in infrastructure (e.g., sewers), the installation of best management practices, and habitat restoration to improve degraded systems.

Collaboration emerged as the dominant implementation strategy. These strategies involved a wide range of public, private, and non-profit organizations. For example, in a habitat restoration project, one organization may own the land, another performs the engineering and design work, another provides technical assistance, another supplies funding, and another recruits volunteers to help maintain the site. At the policymaking level, it was common to find organizations working together to develop a set of shared policies (e.g., priorities

for habitat restoration), share knowledge, or pool financial or staff resources. In some cases, shared policies were incorporated into a higher-order set of rules or decisionmaking processes. For example, priorities for habitat restoration might be incorporated into state funding programs or local comprehensive plans. In some cases, new collaborative organizations were created whereby their members agreed to implement shared policies. For example, in Delaware, the Inland Bays developed the Center for the Inland Bays, a new nonprofit organization. Tampa Bay created an independent alliance of government agencies known as the Tampa Bay Estuary Program. Tillamook Bay formed the Tillamook County Performance Partnership.

There was also no substitute for a well-managed program. Issues such as program leadership, staffing and recruitment, personnel management, budgeting, contracting, and grants management emerged as important factors influencing both planning and implementation. Administering watershed manage-

ment programs often proved to be a complex endeavor requiring a formidable set of professional skills.

Adequate resources (e.g., staff, money, etc.) and flexibility in spending also influenced implementation efforts by helping public officials plan and budget with confidence. This allowed state and local priorities to drive implementation, rather than the priorities and grant restrictions contained in federal programs. This flexibility allowed watershed management programs to make the transition from implementing a set of loosely-connected discrete projects to a systematic program that uses a set of integrated projects to achieve specific goals. Making this transition is important. The danger inherent in a project-based approach is that over the long term, the projects may never amount to more than what respondents in Tillamook Bay referred to as "random acts of environmental kindness." The individual projects offer some benefits, but are implemented in different sub-basins or are too limited in scope,

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WISE Coastal Practices: What and How?

By Dirk Troost

In 1996, United Nations Educational, Scientific and Cultural Organization (UNESCO) began the Environment and Development in Coastal Regions and Small Islands (CSI) initiative. From this came the UNESCO Wise Coastal Practices for Sustainable Human Development Forum. The long-term goal of the CSI initiative is to develop an ethical code of practice to resolve conflicts over resources and values, as well as to promote sustainable living in coastal regions and in small islands.

The question is, how to do this and manage resources and values in the world's increasingly fragile coastal areas? To answer this question, the CSI initiative incorporates three main modalities: pilot projects, university chairs/twinning, and a global web-based discussion forum [<http://www.csiwisepractices.org> (username: csi; password: wise)]. The initiative has initiated and co-sponsored some 21 pilot projects involving some 60 countries and has initiated two formally established university chairs. This establishes a solid basis to develop and evaluate the concept of sustainable coastal living.

What: Definitions of WISE Practices

The web-based discussion forum 'Wise Coastal Practices for Sustainable Human Development' (referred to as the Forum) was launched in April 1999. There were two initial goals. The first was to determine the relevance and usefulness of WISE practice concepts at a grassroots level. Whereas 'best practices' attempt to describe what should be done, 'wise practices' accept that, in the real world, there is always going to be some compromise. The second was to discuss the findings within a wider context

and with expanded participation.

WISE practices were defined as actions, tools, principles, or decisions that contribute significantly to the achievement of environmentally sustainable, socially equitable, culturally appropriate, and economically sound development in coastal areas. Though general, this definition provides a framework for action.

Participants of a 1998 workshop proposed 16 characteristics to further define WISE practices. These were then used for the discussion and analysis of 'example wise practices.' These WISE practices are:

- Ensure long-term benefit and provide capacity-building and institutional strengthening
- Be sustainable and transferable
- Be interdisciplinary and intersectoral and incorporate the participatory processes
- Provide for consensus building and include an effective and efficient communication process
- Be culturally respectful and take account of gender and/or sensitivity issues
- Strengthen local identities and shape national legal policy
- Encompass the regional dimension and provide for human rights
- Be documented and have undergone evaluation

This list of WISE characteristics has been evolving over the past two years. There continues to be an ongoing dialogue on these practices; much of this is occurring within the Forum.

How: Global Internet Forum—Sharing Experience and Knowledge

UNESCO's WISE Practices Internet Forum creates a vehicle to share experience and link knowl-

edge through pilot projects, university teaching, and research initiatives. This kind of integration, particularly on a global scale, sets the Forum apart as an ambitious, and also as a very powerful, endeavor. The power of the Forum is driven by those engaged in the many practical aspects of coastal management. Over the past two years, it has been relatively easy to participate in the Forum as time and interest permits. It has been even easier to be a passive participant for those fortunate enough to have a computer and good Internet connections. However, it is not always easy to meet these technological requirements. Thus, the 4,000 participants in the Forum represent but a miniscule portion of those who could be teaching and learning through its use.

One potential direction of the Forum is linking the local and global levels through regional and inter-regional mechanisms. One possible mechanism is to develop regional fora, and perhaps inter-regional fora, e.g., a small islands forum. Such fora would be complementary to the global Forum and would provide for widened participation through the use of local languages, focus on specific topics, and the incorporation of other activities such as face-to-face meetings. A further proposal is to use the results of the Forum, specifically the WISE characteristics, to advance and assess the pilot project and university chair activities, so that they can be re-focused to become model WISE practices for sustainable coastal and small island living.

A recommendation for the Forum as it evolves is to direct it more towards priority issues such as conflict resolution and the transfer and exchange of WISE practices. There is a need to prioritize

and plan appropriate and worthwhile actions for the next seven years. It is hoped and urged that the Forum recipients play an active role in this process.

Vehicles such as the Forum are the only way to improve accessibility to information on successes and failures, and the questions of why and how. Only with the interaction of vehicles such as the Forum and the many other integrated coastal management-devoted programs

will strides be taken towards sustainable management of our coastal resources.

[Much of the text for this document has been taken either directly or in-part from the UNESCO CSI, *Wise Coastal Practices for Sustainable Human Development Forum: Work in Progress 2* at website: <http://www.unesco.org/csi/wise/wip2.html> and the Forum website at: www.csiwisepactices.org (username: csi; password: wise)]

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Christie

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coastal management policy development process currently underway in the Philippines and Indonesia. The participation of ICM project advisers, advisers to donors, and ICM practitioners will help ensure that findings and recommendations influence future projects. Linkages to ICM initiatives will be made through a multifaceted approach involving printed documents, the Internet, presentations at ICM project workshops, and professional conferences. The culmination of the project will be the production of a 'best practices' guidebook that is intended to assist mainly ICM project designers and practitioners. Initial recommendations based on this research will be implemented by involved ICM projects as a way to gain a sense of whether recommendations are feasible and effective. Considering the likelihood that there will be future ICM projects in the Philippines and Indonesia, this research will provide useful information that is likely to be incorporated into these projects' plans.

Capacity Development

Capacity development will result from direct participation of personnel in fieldwork and analysis,

incorporation of findings in university-level classroom activities, and extension of results to ICM project staff. Additionally, considerable effort will be focused on developing collaborative and mutually respectful working relationships between US and Asian colleagues. The involvement of US and Asian researchers, practitioners, and graduate-level students in this effort will improve each institution's capacity to conduct multidisciplinary, comparative research.

Initial Activities

An initial literature review has identified major trends in the coastal management literature regarding success and sustainability of tropical coastal management. This literature review will be augmented with information from the more highly developed institutional management and development literature.

A planning meeting was held March 13-15, 2001, at Silliman University in the Philippines. During this meeting, the PIs and advisors developed detailed research questions and hypotheses, and selected methods and sites. To help with the formulation of interview guides and to develop linkages with potential users of the

project's recommendations, a focus group with ICM practitioners, government officials and academics was held at Silliman University April 27, 2001. During this meeting participants identified key constraints to ICM sustainability from the practitioner's perspective. They also expressed interest in collaborating with the research team to implement recommendations. Research in the Philippines will cover approximately 10 sites that vary in ICM project size, time since phase out, and implementing agency. Field research in the Philippines will start in June 2001 and in Indonesia in April 2002.

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Learning Networks Called for by Conservation Practitioners

By John E. Parks, Ghislaine Llewellyn, Ian M. Dutton, and Robert S. Pomeroy

Capacity-Building Lessons for Coral Reef Conservation

The 10th meeting of the International Coral Reef Symposium (ICRS) in October 2000 was the largest ICRS symposium to date, with more than 1,500 scientists, resource managers, and decisionmakers. The meeting's agenda focused on current critical issues such as climate change, the future of coral reefs, and destructive fishing.

One session was dedicated to effective learning on coral reef conservation and associated ecosystems management. The session presented lessons (both successes and failures) on creating coral reef management capacity and on the results and conclusions within a broader integrated coastal resources management (ICM) context. Currently underway is a para-

digm shift away from habitat-specific management to an approach where coastal management needs are being integrated.

Present Scale of Learning: Too Little Too Late?

One of the most commonly cited lessons in the session was the need to increase the scale of learning about coral reef conservation. Learning has been highly site specific, making it difficult to confidently extrapolate lessons at a broader, geographic scale. Only a few programs are at the replication phase where site-specific approaches and lessons are actively being applied elsewhere. Called for was the need to increase the scale that CRM systematically and confidently learns about what works, what doesn't, and why, across a network of sites on a large geographic scales. It was pointed out that if this need for scaling-up ICM learning is not met soon, we would be condemning future generations to

live in a world of small, stand-alone site successes amidst a larger area of failure.

It was stated that in order to maximize conservation impact, models need to be developed where learning occurs systematically across a network of coral reef management sites. Also noted was the need to use a learning network model to spread the impact of successful conservation measures beyond an individual project to aid those just starting.

Recommendations to Increase the Scale of Future Learning

At the session's close, the question still remained: How do we move beyond merely a site-specific learning scale to one that allows learning and adaptation of ICM efforts to occur across projects operating around the world? A useful place to begin to answer this question would be a set of policy actions based on the cumulative experience of session presenters. This article will start that process.

From the ICRS Capacity Building Session came a common set of lessons, conclusions, and recommendations. Analysis of these generated the following four recommended policy actions to improve and scale-up learning on coral reef conservation to an appropriate level for the 21st century.

Action One: Establish Formal Learning Networks Across Sites and Geographic Scales

In order to develop the level of management capacity that will operate at a scale necessary to influence the globalized threats that presently act on coral reef and coastal ecosystems, learning must



Fijians exchanging community techniques for monitoring bivalve and crustacean populations. Photo by John Parks.

CORAL BLEACHING: CAUSES, CONSEQUENCES AND RESPONSE

Heidi Z. Schuttenberg, editor

February 2001

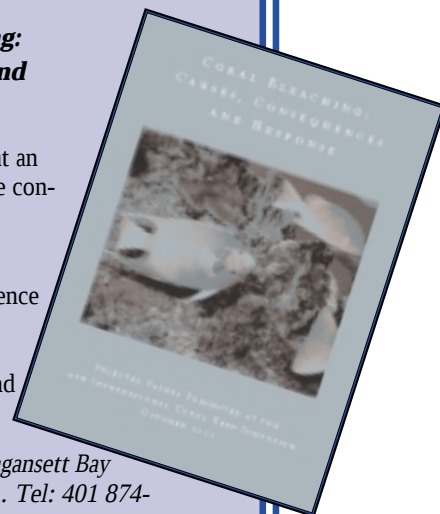
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Slected Papers presented at the 9th International Coral Reef Symposium on ***Coral Bleaching: Assessing and Linking Ecological and Socioeconomic Impacts, Future Trends and Mitigation Planning***

Coral reefs are among the most biologically diverse ecosystems on the earth, but are degrading at an alarming rate in all tropical oceans. Throughout the Indo-Pacific, only a small fraction of reefs are considered to still be in excellent condition. Many reefs are seriously degraded, particularly in the Philippines and Indonesia.

This compendium captures the symposium's special session results. It brings together the experience in the science and management of coral reefs under conditions of climate change, emphasizing socioeconomic aspects of coral bleaching. It is hoped that it will bring attention on the need for effective and innovative approaches to management of coral reefs. With awareness, knowledge and action, the viability of coral reefs will be assured.

For further information, contact Communications Department, Coastal Resources Center, Narragansett Bay Campus, University of Rhode Island, South Ferry Road, Narragansett, Rhode Island 02882 USA. Tel: 401 874-6224. Fax: 401 789-4670. E-mail: communications@crc.uri.edu. Website: <http://crc.uri.edu>



occur quickly and at relevant regional and global scales.

Therefore, learning must evolve past a site- or organization-specific level to one where multiple organizations and projects are collaboratively and formally learning together on data that is based on sound science. To do this, nearly one-third of the papers presented at the session specifically recommended that formal learning networks be established between ICM sites using similar tools at scales beyond the national and organizational level. Through such formal learning networks, group learning and adaptive management can be promoted, and regional and global policymaking guidance can be provided on the effective use of coral reef conservation tools. To do this, a dialogue must occur between the government, the university community, nongovernmental organizations, and local communities. Though this means of communication may be time consuming and expensive,

systematic learning across sites is the best tool available to produce confident and replicable conservation principles. This can be used as management guidance by others considering the use of such tools in their projects.

An important distinction made during the ICRS session was that the recommended learning in future ICM efforts be led by the projects and communities themselves, as opposed to outsiders only. It was, however, noted that for capacity building and technical assistance purposes, outside expertise would be a necessary component of any ICM learning network undertaking.

Action Two: Develop Simple Methods for Doing Such Learning Networks

The methods for establishing formal learning networks in conservation are still being developed, and as a consequence, the overall process is still being determined. Those learning networks underway

require patience and flexibility, two attributes that are often difficult to reconcile given the immediacy and urgency of the many threats. One example illustrating the difficult nature of learning exactly how to do this is a learning network of sites throughout the Indo-Pacific. These sites are systematically testing the conditions under which community and co-managed marine protected areas are effective tools for conservation (Parks et al., page 8). However, systematically testing a shared set of assumptions across this network first requires developing, adopting, and employing a common learning framework that provides individual projects a standardized set of information needed to address the questions being asked. As simple as the process for producing a rigorous, shared, learning framework may appear at first, the reality has been far more difficult in the case of this network. One of the most difficult and critical steps in designing a

(continued page 32)

Draining the Swamp and Beating Away the Alligators: Baseline 2000

By Larry Hildebrand and Jens Sorensen

Yes, we know the plan was to drain the swamp, but how can we do that when we are up to our armpits in water and always beating away alligators?

There have been a number of occasions when we have heard this well known swamp and alligator metaphor from integrated coastal management (ICM) practitioners to depict how they cope with the day-to-day challenges and tasks involved in developing and managing complex ICM programs. It appears that most ICM practitioners have little time to look beyond the immediate demands of their own programs to find information from other ICM efforts that would contribute to the success of their project or program. The alligator fixation is further compounded by three other factors: ignorance of existing information exchange networks, the absence of a number of frameworks to organize and facilitate international information exchange, and skepticism that lessons learned from any nation's or sub-national unit's ICM effort can significantly assist in solving the problems and challenges of ICM efforts in another nation.

The rapidly growing field of ICM is replete with experience and lessons learned that can and should guide improving the practice around the world, as well as allow us to assess the extent of progress. Access to much of this information is readily available from a variety of sources that are devoted to ICM as an international practice. These include at least 85 websites of direct relevance to the practice (www.coastalmanagement.com). E-discussion groups (e.g., Netcoast and Wise Coastal Practices for

Sustainable Human Development), online and hard copy newsletters (e.g., *Coastal Guide News*, *icoast*, and *InterCoast*), three journals focused on ICM, and the outputs from dozens of international and national levels ICM conferences every year.

The issues that have motivated ICM efforts (e.g., pollution, over-exploited fisheries, coastal hazards) are very much the same in all nations (with some differences between tropical and temperate climates, and developed and developing countries). Similarly, all units of government are involved in ICM, regardless of their socioeconomic or political regime. They all have a similar set of process challenges in each step of the ICM program (or project) cycle (i.e. initiation, preparation, adoption, implementation, evaluation, and revision).

"We are not learning nearly as much as we could from the vast and rich experience of ICM efforts" is a statement that is becoming a common refrain. ICM's vast and rich experience derives from its 35-year history and the 447 efforts in 95 nations around the world at all levels of governance (from international to community-driven programs). ICM efforts have occurred in all types of political regimes, in all types of environments, and in countries at all levels of socioeconomic development.

There are two evident consequences of the failure of one ICM effort to learn from similar ICM efforts. First, the ratio of failed or ineffective programs to successful programs is much higher than it could be. Second, the same well-known and, for the most part, avoidable mistakes are continuously

being repeated while successful approaches are not being replicated.

The issues that have motivated the initiation of ICM efforts (motivating issues)—such as point and non-point pollution of coastal waters or destruction wrought by coastal hazards—are very much the same in all nations (with some differences between tropical and temperate climates and between developed and developing countries). Similarly, all units of government involved in ICM, regardless of their level of socioeconomic development or their political regime, have a similar set of challenges that confront program initiation, preparation, adoption and implementation (process issues). Two examples of global challenges are modeling complex systems in order to make adequate impact assessments and assessing the socioeconomic worth of environmental values that are not-directly measurable such as biodiversity or coastal esthetics and amenities. Furthermore, developing nations have a very similar set of many additional challenges that confront each step in the ICM program development process. These include absence of free press and access to public information, pervasive corruption, the competency of professional staff, and national governance and wealth controlled by a relatively small group of elites.

Baseline 2000 (B2K)

In September 2000, the Coastal Zone Canada 2000 Conference was held in Saint John, New Brunswick, Canada. The Coastal Zone Canada Association (CZCA, a national NGO) organized and administered the conference as they had done for three previous biennial events. In December 1999, CZCA decided that a baseline paper (Baseline 2000 or B2K) should be prepared for the 2000 Conference. A comprehensive

background report was also prepared to provide the information and data that were the basis for the discussion paper's findings and conclusions.

The basic objective of B2K was to establish a baseline that would enable periodic assessment to determine ICM's growth in number and type of efforts, development of model planning approaches and management techniques, achievements in resolving motivating issues, and successes in overcoming common challenges. Furthermore, Baseline 2000's information exchange frameworks and databases should provide practitioners the ability to learn what works in certain contexts, what doesn't work in certain contexts, and why.

The Organizing Frameworks and Databases

Baseline 2000 is built on seven organizing frameworks and a number of associated databases. Currently, each of the frameworks and databases are in various stages of completion.

A global database for ICM efforts. At the close of 2000, the number of ICM efforts stood at 447: 41 efforts at the international level, 98 at the national level, and 308 efforts at sub-national levels. At the same time 95 nations and semi-sovereign states had at least one ICM effort at a national or sub-national level. Four tables of ICM efforts are presented in the report. The tables include the contact information for most of the ICM efforts.

The compilation of ICM efforts is the first of three stages to develop an interactive database. The second stage would be a standardized survey questionnaire to determine at least the following information for each ICM effort: priority issues, planning and management approaches, techniques employed, institutional arrangements, bud-

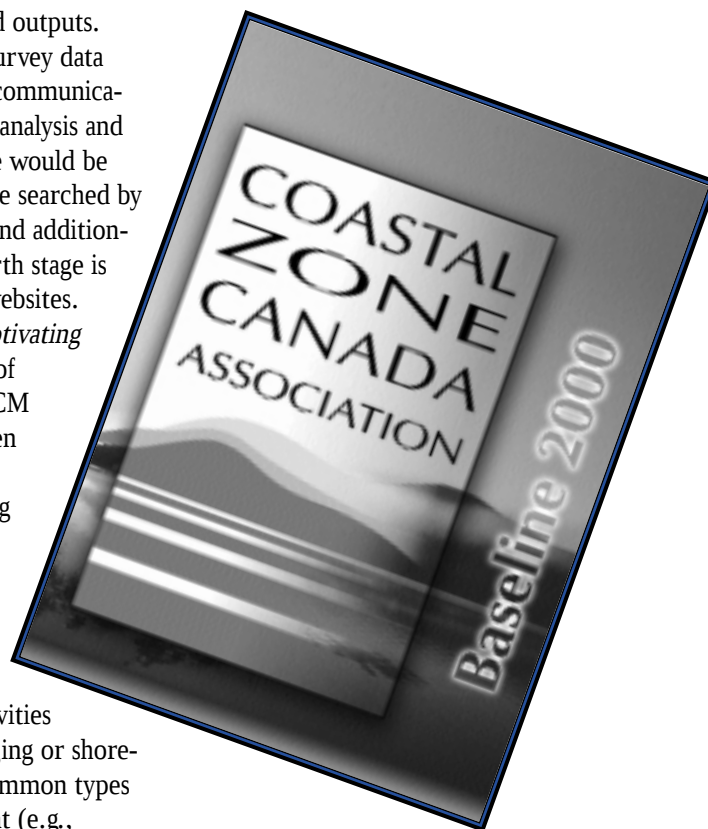
et/staff resources, and outputs.

The third stage is survey data (including follow-up communications on each survey) analysis and formatting. A database would be compiled that could be searched by the above categories and additional categories. The fourth stage is to design associated websites.

An index of the motivating issues. The similarity of motivating issues in ICM efforts has already been noted. The index will connect the motivating issues as well as the cause and effect networks of adverse impacts that may be generated by the common types of activities or actions (e.g., dredging or shoreline armoring) and common types of coastal development (e.g., tourism resorts or mariculture).

An index of model planning approaches and techniques. Over the last two decades, it has become apparent that, for the most part, each motivating issue has the same environmental and socioeconomic dynamics. Whether it is Sri Lanka, Spain, or Surinam, estuary eutrophication, in most cases, has the same causes, impacts, remedial and mitigating actions, and types of stakeholders. These similarities, despite location, have prompted government institutions and non-governmental organizations to develop model planning approaches (e.g. flood plain management) and management techniques (e.g., impact assessment or permit letting). The index will integrate these and will have an index of motivating issues as well as common challenges.

An index of common challenges (or process issues). Currently, this index is divided into two parts: challenges to all nations and additional challenges to developing nations. The 19 challenges to all



nations are subdivided into: information and predictability, costs and benefits and their incidence, institutional arrangements, and distribution and access to power. The 21 additional challenges to developing nations are subdivided into: demographics and impoverishment; culture of decision-making, institutional capacity, and information base.

Comparative assessment of guidance literature. Content analysis was done on 29 documents that provide general guidance on ICM as an international practice. A seven page matrix compares these with six types of ICM dimensions. Each dimension type has a list of specific dimensions. The types of dimensions and the number of specific dimensions are: 23 inherent aspects (e.g., multi-sector), 38 principles (e.g., priority given to coastal dependent uses), 30 steps in the ICM cycle (e.g., enforcement), 6 general components (e.g., applied research) and specific techniques (e.g., impact assessment),

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Artificial Reef Study Undertaken by California Sea Grant Program

By Christina S. Johnson

During the 1960s and '80s, the United States' California Department of Fish and Game participated in the construction of many artificial reefs to enhance sport fishing in the state's coastal waters. Constructed by sinking old streetcars, automobiles, barges, planes, cement pipes, concrete rubble, and quarry stones, these reefs were meant to provide an underwater landscape to attract fish by giving them nooks and crannies for hiding and hunting. In theory, the reefs had two benefits: they would boost fish catches, and offset pressures on fish stocks by providing fish with added habitat.

To a certain degree, these reefs worked as planned. In places like Paradise Cove in Santa Monica Bay, California, where 20 automobile bodies were submerged in 1958, marine biologists reported observing surfperches, sargos, kelp bass and small California halibut at the reef within hours of its completion. Today, more than 100 artificial fishing reefs have been constructed at 33 sites in Southern California's nearshore waters. Most of the more modern reefs are build of either quarry stone or donated concrete from harbor projects.

What has not yet been determined is whether these reefs actually benefit fish or merely make them more vulnerable to fishing by congregating them in set areas. If so, it is possible that the reefs may actually be contributing to declining fish stocks.

A Possible Test

The state's largest artificial reef is being constructed by Southern California Edison (a utility company) as a mitigation requirement for damaging kelp beds during con-

struction of its nuclear power plant in Orange County. Information from this will be used to help determine whether artificial reefs can be designed to increase fish production. In conjunction with this effort, the Department of Fish and Game, San Diego State University, and the University of California, Santa Barbara, are conducting a variety of fish surveys at this reef.

The reef's unusual structure and size makes this type of study possible. At present, though not for long, the reef is composed of 56 modules of concrete and quarry stone. These modules are arranged in seven big clusters, each containing eight modules. Each of these eight modules is four-tenths of an acre in area and each presents a slightly different reef design. Ultimately, the areas between the clusters will be filled with more concrete or quarry stone to provide substrate for a 150-acre kelp forest. The kelp beds are expected to attract bass, lobster, rockfish, sheephead, crab, urchin, and maybe even one day, abalone. However, in the meantime, this rocky habitat provides a rare opportunity to study fish reproduction, mortality, and growth as a function of habitat type.

A two-year California Sea Grant project at San Diego State University will examine how fish production varies within the reef's eight different rock habitats. To do this, very young fish will be tracked. Unlike large, freely swimming fish, young fish are unable to migrate from one reef to another. Thus, their abundance at one reef represents a better estimate of that reef's ability to boost fish production. A series of dives will begin in the summer of 2001, in which Sea

Grant scientists will count the number of young fish that have settled over the eight reef types. In subsequent dives, they will record the fishes' growth and survival rates. Their statistics will be compared to those gathered at the natural reefs nearby.

If an artificial reef is truly increasing fish production in the area, fish production should be greater on the artificial reefs than on the natural reefs. If the fish production rate is lower on an artificial reefs (measured by looking at a combination of recruitment, growth, fecundity, and survival), then it could be argued that the fish would have been better off settling on one of the natural reefs nearby. Alternatively, this can be argued from a different perspective. If fish numbers are limited by a lack of rocky habitat, artificial reefs may enhance fish abundance even though fish production is lower on the artificial reefs than on the natural reefs.

In the fall of 2000, researchers conducted a study to examine whether artificial reefs are supporting the same groups of animals and plants as the natural reefs. This is extremely important because it is possible that artificial reefs may alter the natural assemblages of species in an area. The study did find some differences between the reefs. On the artificial reefs, there were more bottom fish and fewer kelp-canopy fish. However, this was attributed to the age of the artificial reefs (built in the fall of 1999).

Scientists are also interested in monitoring populations of California sheephead, since these fish graze on sea urchins. Urchins are like locusts on a kelp forest. The 150-acre kelp bed is ideal for the study. Sheepheads are also under intense pressure by the live fin fishery, in which fish are trapped and delivered to wholesalers alive.

To determine whether the artificial reefs can increase populations of sheephead, a biologist with the Department of Fish and Game will begin tagging sheepheads in summer 2001 with sonic tags. These tags, which must be surgically implanted, emit a continuous ping. The fishes' locations can be tracked from a ship equipped with listening devices. From the data, scientists can estimate sheepheads' survival rate, their range, and their abundance per unit area. Determining the expected number of fish per a

certain area of reef can help managers predict how many fish an artificial reef can support.

Today's environment regulations often require coastal construction projects to undertake mitigation activities to offset environmental losses caused by construction. Because there is a growing interest in using the construction of artificial reefs as a mitigation tools, the information gathered from this study is becoming increasingly important.

Before the coasts are dotted with

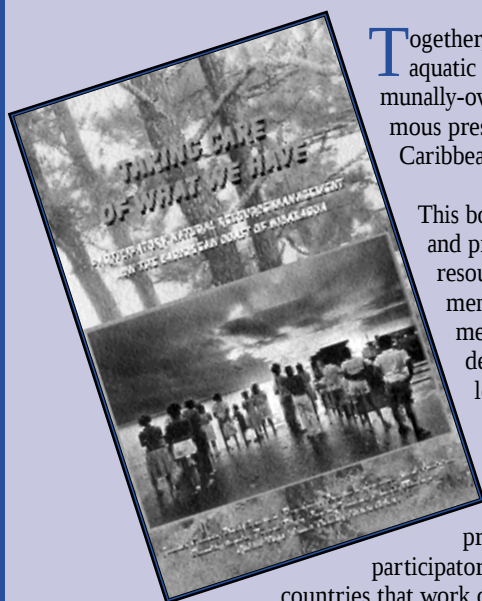
rock piles and sunken boats, biologists need to know whether these reefs actually benefit fish populations or merely make them more vulnerable.

For further information, contact Marsha Gear, Scripps, University of California, San Diego, 9500 Gilman Drive, Dept. 0232, La Jolla, California 92093-0232 USA. Tel: 858 534-0581. Fax: 858 453-2948. E-mail: mgear@ucsd.edu. Website: <http://www-csgc.ucsd.edu>

TAKING CARE OF WHAT WE HAVE: PARTICIPATORY NATURAL RESOURCE MANAGEMENT ON THE CARIBBEAN COAST OF NICARAGUA

Patrick Christie, David Bradford, Ray Garth, Bonifacio Gonzalez, Mark Hostetler, Oswaldo Morales, Roberto Rigby, Bertha Simmons, Eduardo Tinkam, Gabriel Vega, Ronnie Vernooy, and Noreen White

IDRC/CIDCA 2000. ISBN 0-88936-925-9



Together, rapid population growth, commercialization and exploitation of aquatic resources, deforestation and pollution, and encroachments on communally-owned resources are placing the world's coastal regions under enormous pressure. One example is the Pearl Lagoon estuary, the main basin on the Caribbean Coast of Nicaragua.

This book provides detailed insight into the problems of the Pearl Lagoon and presents alternatives for more effective management of its natural resources. It documents a new approach to the study and future management of a complex resource system in a politically demanding environment. It emphasizes the importance of interdisciplinary research in developing sustainable solutions to natural-resource-management problems.

Taking Care of What We Have will interest researchers, scholars, and students in natural resource management and development studies; donors, development organizations, and development practitioners working in the areas of natural resource management and participatory action research; and community leaders and NGOs in developing countries that work on natural-resource-management issues.

For ordering information, please see website: <http://www.idrc.ca> or Renouf Publishing Co. Ltd, 5369 Canotek Road, Unit 1 Ottawa, ON, Canada K1J 9J3. Tel: 1-613-745-2665. Fax: 1-613-745-7660. E-mail: order.dept@renoufbooks.com

Has Dynamite Fishing Resurfaced in Tanzania?

By **Gratian Luhikula**

“There is no doubt about it, fishing by use of dynamite explosives is back. Unless the Tanzanian government acts quickly, this illegal practice is going to turn into a rampage as it was in the 1980s and 1990s,” an old fisherman at Somanga village in Tanzania told a team of scientists making a survey of the state of the coast.

The old man who earlier explained that fish catches by local artisanal fishers had highly improved after the 1998 national crackdown on dynamite fishing, further noted that a new approach to combat dynamite fishing is needed. Though he had no immediate alternatives, he was of the opinion that the national and local governments needed not to rest after the successful crackdown that was spearheaded by the Tanzania People's Defense Forces (TPDF) (*InterCoast* #34). They were supposed to work out sustainable strategies for monitoring and enforcement, which would ensure fishing by explosives is completely checked out.

“The people who are now detonating dynamite know quite well that the government cannot undertake another crackdown, which is

not only expensive, but highly complicated to organize. Without a long-term monitoring and enforcement plan, it will not be easy to find a lasting solution to the illicit dynamite fishing,” the old man elaborated. He added, “Dynamite fishing is a complex issue that is intertwined with poverty concerns, corruption, greed, and ignorance that requires a more focused and integrated approach to root it out.”

Dynamite fishing had turned into a scourge evading practical solution in Tanzania. All the way from Tanga in the north to Mtwara along the south coast, explosives literally zapped the coast. It was not until the ministry of Natural Resources and Tourism, in cooperation with TPDF and the Navy police, embarked on a special operation in 1998 to crack down on dynamite fishers, that a breeze of peace returned to the coast. However, the crack down was extremely expensive for the government.

The effects of dynamite fishing need not be emphasized. Fishing by use of dynamite explosives is unquestionably the most destructive to the delicate marine environment. This is because dynamite is

usually detonated on coral reefs which are highly productive ecosystems supporting a great diversity of plant and animal life.

According to marine experts, dynamite fishers usually search for reefs with a high concentration of fish before detonating their explosives. The explosion, however, does not only kill fish, but cause total destruction of corals and other associated plant and animal life found in the vicinity of the blast.

It is estimated that a single dynamite blast instantly kills all fish, big and small, all invertebrates and plankton, as well as eggs and larvae of a variety of marine life within a 15-20 meter radius.

As far as the coral reefs are concerned, the effects of dynamite blasts are long lasting, and it takes many years for the affected ecosystem to recover. It may take 25-50 years for a destroyed reef to regenerate, if it does. But even if it regenerates, it may never return to its original state.

For further information, contact *Gratian Luhikula, Information and Liaison Officer, Tanzania Coastal Management Partnership, P.O.Box 71686, Dar es Salaam, Tanzania, Tel: 255 51 667589/666190. Fax: 255 51 668611. Email: gluhikula@epiq.or.tz* 🌐



Pollnac

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from analyses and empirical testing in a cross-portfolio learning approach as described here.

(Copies of the reports support-

ing this article are available from the author.)

For further information, contact *Richard B. Pollnac, Marine Affairs and Anthropology and the Coastal*

Resources Center, University of Rhode Island, Kingston, Rhode Island 02881 USA. E-mail: rpo4903u@postoffice.uri.edu 🌐

THE EASTERN AFRICAN COASTAL MANAGEMENT DATABASE: A NEW TOOL FOR STAKEHOLDERS IN THE REGION



Stakeholders in Eastern African countries need quality and timely information for implementing integrated coastal management (ICM). However, information sharing is facing a number of difficulties, such as lack of concise data about coastal activities, failure in contacting coastal practitioners mainly because their contacts and means of communication have not been made available and shortage of related bibliography.

Representatives from 10 Eastern African countries requested a creation of an Eastern African Coastal Management Database as for assisting stakeholders in the region and to better coordinate the implementation of ICM. The Secretariat for Eastern African Coastal Area Management (SEACAM) in collaboration with Resource Analysis developed the Eastern African Coastal Management Database, which contains information on coastal projects, programs, research activities, institutions, practitioners, bibliography, and other websites.

The database structure was based on the information needs of the region, the links between this information, and the way one can search for information.



For further information, contact Jorge Banze, Sten Engdahl, and Custodio Voabil, SEACAM, P.O. Box 4220, Maputo, Mozambique. Tel: 258 1 300641/2. Fax: 258 1 300638. E-mail: seacam@virconn.com

The Eastern African Coastal Management Database is accessed through the website: <http://www.seacam.mz>

New Watershed Management Initiatives

WORKSHOP REPORT. WISCONSIN, USA

The watershed management efforts examined in our study reflect only several types of collaborative watershed partnerships underway in the U.S. In July 2000, a dozen researchers gathered at the University of Wisconsin, Madison, Wisconsin, for a workshop to discuss some of the common characteristics of new watershed management initiatives and the current state of knowledge of the factors that influence their development and implementation.

The final report of these proceedings "Toward Understanding New Watershed Initiatives: A Report from the Madison Watershed Workshop" is available at website: <http://www.tu.org/library/conservation.asp>

Blue Flag Campaign: A Practical Tool for Integrated Coastal Management

By Finn Bolding Thomsen

The Blue Flag Campaign is an eco-label awarded to beaches and marinas complying with specific criteria within the categories of water quality, environmental education and information, environmental management, and safety and service facilities. The award has to be renewed each year to ensure continuous compliance with the criteria.

The campaign is owned and run by the independent non-profit organization, Foundation for Environmental Education in Europe (FEEE). The campaign started in 1987 with approximately 450 Blue Flag beaches/marinas in 10 European countries. Despite continuously strengthened criteria, the Blue Flag Campaign has become a huge and widespread success. Today, 23 European countries are working with the Blue Flag Campaign. In 2001 more than 2,700 beaches and marinas hope to

be awarded the Blue Flag.

The Blue Flag has become a very recognized symbol in Europe. Tourists and tour operators have identified the Flag as a symbol of clean, safe, and environmentally-friendly managed coastal areas. An increasing number of tourists are therefore asking for Blue Flags before choosing their holiday destination. Due to this, local authorities and marina owners are making efforts to increase the environmental and safety standards in order to comply with the strict criteria and receive the recognition.

In recent years, the success of the campaign has spread to countries and regions outside Europe. With the active support of the United Nations Environmental Programme and World Tourism Organization, the work towards the implementation of the campaign in a number of areas outside Europe has begun. South Africa, the Caribbean, and Southeast Asia

are actively working on the introduction of the campaign. There have been discussions concerning the introduction of the campaign in Northern America.

One of the strengths of the campaign lies in the approach towards integrated coastal management. The criteria consider different environmental management components: compliance with existing legislation on bathing water, wastewater treatment, physical planning, environmental codes of conduct at the beaches/marinas, legislation concerning beach use, and protection of natural sensitive coastal areas and the surrounding environment.

Although the Blue Flag Campaign is an award for beaches and marinas, the criteria are increasingly being applied to the hinterland in order to see if improvements there can have an effect on the environmental and safety conditions at the beaches and marinas. The last revision of the beach criteria included a requirement to take wastewater treatment in the whole municipality into consideration in the evaluation of a beach candidate. It will also be impossible to award a beach the Blue Flag if the beaches bordering the Blue Flag candidate are not properly managed.

The National Blue Flag Juries are the political responsible bodies in the evaluation and decision processes ahead of the season. The jury consists of all the relevant stakeholders in the coastal zone, and this representation is ensuring an important balance of the campaign. The typical jury members are the ministry of environment and health, the ministry of tourism or the national tourism board, environmental organizations, association of local authorities, lifesaving experts, educational experts, marina experts. Bringing all the relevant stakeholders together for

PLANNING AND MANAGEMENT FOR SUSTAINABLE COASTAL AQUACULTURE DEVELOPMENT

GESAMP REPORT AND STUDIES NO. 68

GESAMP (IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP

Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection 2001

The Food and Agriculture Organization of the United Nations (FAO) is publishing a guideline document produced by GESAMP's Expert Group on Environmental Impacts of Coastal Aquaculture. The GESAMP expert group concluded that in most cases, enhanced sectoral approaches or locally focused coastal management are likely to be the most effective approaches to dealing with these problems.

Part 1 is designed for policymakers and general planners. It presents the basic principles and procedures for using these more integrated planning approaches.

Part 2 is designed for coastal management and aquaculture development specialists. It provides in-depth review of the tools and their application.

For further information, contact Uwe Barg, E-mail: uwe.barg@fao.org. For further information on GESAMP publications on coastal aquaculture, see website: <http://www.fao.org/fi/meetings/gesamp/wg31cm.asp>

this purpose demonstrates the importance and necessity of bringing the public and private sector together. This approach is a clear illustration of integrated coastal management.

The daily administration of the campaign on the national level is in the hands of independent non-profit environmental nongovernmental organizations that are member of the FEEE network. The national organizations are responsible for the preparations ahead of the jury meetings, ensuring the compliance with criteria during the season, promoting the campaign, arranging information seminars, etc. It is voluntary whether a local authority or marina manager will apply for the Blue Flag. This demonstrates the importance of the bottom-up approach in the campaign in addition to the top-down approach in

the enforcement of existing legislation and development of new legislation.

A very important component in the Blue Flag Campaign is environmental education. FEEE is working with environmental education on three different levels: general awareness raising, adult/staff education, and formal school education. The Blue Flag Campaign focuses on general awareness raising through environmental information and education. In addition, all national organizations have seminars to educate the various stakeholders about coastal zone related issues. Formal school education is to a lesser degree included in the Blue Flag Campaign, but school children are often involved in the campaign through beach cleaning activities, excursions to the coast, among others.

The Blue Flag Campaign is an important tool in the work towards sustainable coastal development. It is concentrating on tourism by addressing actions at beaches and marinas. A goal is to continue to use current areas sustainably, and leave the more pristine areas untouched.

(Criteria, application procedures, development in a new country, and other information can be found at the Blue Flag website: <http://www.blueflag.org>)

For further information, contact Finn Bolding Thomsen, International Blue Flag Coordination, FEEE, The Danish Outdoor Council, Scandiagade 13, DK 2450, Copenhagen SV, Denmark. Tel: 45 33 79 00 79. Fax: 45 33 79 01 79. E-mail: bf.int@friluft-sraadet.dk

Imperial and Hennessey

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scale, magnitude, number, or duration to have much potential for significant improvements in a watershed's environmental conditions.

We also concluded that there were often unrealistic expectations about what could be accomplished by a watershed management program given current funding levels, the pervasive nature of many NPS problems, and existing institutional constraints. It is also important for policymakers, practitioners, and the public to recognize that many NPS problems are the result of the 'tyranny of small decisions' and developed incrementally over decades. It may take equally long periods of time to address them.

Evaluation: The Importance of Performance Monitoring

Our final set of findings con-

cerned monitoring and evaluating the effectiveness of implementation efforts. We concluded that performance measures and tracking systems played an important role in encouraging a systematic approach to addressing specific watershed problems. While it was important to have good data on environmental conditions, it was equally important to have a system that monitors federal, state, and local implementation activities on an ongoing and frequent basis. This information often helped develop and reinforce peer-pressure at the political, professional, and interpersonal level, helped sustain commitments, and encouraged additional implementation activities. These social norms also provide an informal means of helping enforce the voluntary agreements that typically lay at the heart of many collaborative implementation efforts.

(Environmental Governance in Watersheds: The Importance of

Collaboration to Institutional Performance, supporting case studies, and related publications are available at: <http://www.spea.indiana.edu/mimperia/imperial.htm>)

For further information, contact Mark T. Imperial, University of North Carolina at Wilmington, Wilmington, North Carolina 28403-3297 USA. Tel: 812-855-5971. E-mail: mimperia@indiana.edu. After 8/01 Tel: 910-962-3220. E-mail: imperialm@uncwil.edu or Timothy Hennessey, Dept. of Political Science. University of Rhode Island, Kingston, Rhode Island 02881 USA. Tel: 401-874-4052. E-mail: hennessey@uri.edu



(continued from page 7)

3. Communities had difficulty in enforcing local rules when it was unclear whether the rules conflicted with national laws (this was particularly true in Fiji and the Solomon Islands).

4. Communities may need access to expert advice on the technical aspects of managing resources.

5. Several respondents reported that external commercial operators had circumvented local management rules by forming alliances with local leaders.

...yet coastal resource management seems to be receiving low priority.

In general, the study found a need for greater government attention to coastal resource management. Only about one fourth of the staff time of national fisheries agencies is spent on coastal management matters. Given the low priority accorded to coastal management, it is not surprising that only about 40 percent of the villages had been visited by a government official to discuss coastal resource management issues during the previous 10 years.

Further collaborative efforts are needed, but perhaps of a different kind than presently provided...

Over-fishing was the most frequent cause cited for catch declines and one of the most important threats found at the study sites, yet in many cases it cannot be addressed adequately by current regulations. Programs may be needed to strengthen the communities' ability and awareness of the need to restrict their own fishing effort, and to restrict the issuance of commercial licenses. Many of the threats that, in the view of respondents, require some form of external assistance (e.g., coastal pollution, mining, coastal infrastructure construction) cannot be

controlled only by the institutions that traditionally have been given responsibility for dealing with coastal resource management (the fisheries and environmental agencies).

...most alternative income generation programs do not appear to have been successful in reducing pressure on coastal resources...

A common strategy to reduce pressure on coastal resources has been to introduce alternative ways to earn income, such as aquaculture, offshore tuna fishing, and deep-slope fishing. Community perceptions at the study sites are that these programs have generally not been successful in reducing pressure on coastal resources. This suggests a need to explore income generation opportunities outside the fisheries sector, should they exist.

...and some of the most valued partners play primarily an advisory role to the communities.

Fifteen study sites (48 percent) were being assisted by external partners in managing their coastal resources. In general, communities perceived the benefits of partnerships to outweigh their shortfalls, but communities and external partners tended to have different perceptions about the benefits of the partnership. Local communities tended to focus on short-term, tangible benefits, while external partners were more interested in process-oriented results (e.g., strengthening local management institutions). Communities perceived unkept promises, inadequate consultation, and slowness in achieving benefits as the main flaws of the partnerships, while the external partner focused on the failure of villagers to fulfill their commitments. The study also found that while external partners felt they had made strong efforts to

provide information to the communities, there was often little evidence that villagers had absorbed much of the information provided.

Sanctuaries seem to act as catalysts for community awareness of the benefits of coastal resource management.

Marine sanctuaries were found at 14 of the study sites. In general, these communities had favorable impressions of the sanctuaries' impact. Compliance was perceived to be good, and key species were thought to be increasing in abundance. The communities also felt, in general, that the sanctuaries would be sustained into the future. Perhaps as relevant as their management role, sanctuaries seem to act as catalysts in enlarging community awareness of the benefits of coastal resource management. The study team found, however, that greater attention needs to be paid to ensuring that the results of ecological monitoring are available to villagers, that no-take rules inside sanctuaries are strictly enforced, that sanctuaries are properly located and sized, and that villagers clearly understand the sanctuaries' objectives and benefits. While the benefits of sanctuaries were generally perceived to be positive, they do not eliminate the need for other management interventions.

Which factors affect perceived success at the site level? The relatively small number of sites, along with data constraints, made it difficult to distinguish the effects of multiple factors on perceived indicators of successful resource management. However, some general conclusions can be drawn. Among factors external to the site, natural disasters (e.g., cyclones) were significantly associated with the perception that fish catches were recovering and habitats had improved following a major event. The study provided indications of the national policies that may be

needed to support community-based management of coastal resources. These include:

- Simple and clear national regulations
- An enabling framework facilitating the adoption and enforcement of local rules
- Awareness programs aimed at local leaders
- Assistance on technical aspects of resource management

- Inter-sectoral collaboration to address land-based threats to coastal habitats

Some Final Thoughts on the Emphasis of the Survey

The results of the survey indicate the need for a greater reliance on socioeconomic analysis to understand the incentives governing local decisions on coastal

resource use. By listening to communities, coastal managers in the Pacific will be better able to formulate effective programs of assistance and to help curb the degradation of coastal resources and habitats throughout the region.

For further information, contact Robert Gillett, Fiji. Tel: 679 362855



COASTLEARN: A LONG-DISTANCE TRAINING PROGRAM FOR EASTERN EUROPE

By Alan H Pickaver

The European Union for Coastal Conservation (EUCC) International Secretariat is the lead partner in a new project—COASTLEARN—launched in January 2001. This project aims to make integrated coastal management (ICM) accessible to professionals in the Eastern Mediterranean, the Black Sea, and Baltic Sea. A vocational training package will be used that makes extensive use of the electronic media to develop and test new electronic-based training modules for topics of this and similar contents.

The project will communicate basic knowledge about ICM with the help of manuals distributed electronically (E-mail, CD-ROM) combined with references to where additional information can be found on the internet. Also proposed is a virtual, long-distance ICM problem-solving seminar involving both eastern and western partners.

A Helpdesk will be available for assistance. Course participants will be encouraged to support each other, exchange information, and jointly develop methods by communicating via E-mail, Internet relay chats, and virtual workshops. To minimize language barriers, the most important information will be translated into local languages. These developing networks will be linked electronically with existing ICM networks. The project's aim is to strengthen pan-European cooperation and encourage/allow other countries to participate in this process.

The Coastal Zone Management Centre of the National Institute for Coastal and Marine Management in the Netherlands will contribute know-how on ICM issues. The Institute for Infrastructural, Hydraulic and Environmental Engineering Delft, the Netherlands; and the Southampton Institute, UK, will provide ICM training expertise. The Forest Research Institute, Greece, will provide case studies and best practice examples from ICM projects Europe-wide. Experts from educational and planning institutes in several countries (e.g., Turkey, Slovenia, Bulgaria, and Poland) will ensure that the package meets the needs of the target audience, in addition to updating their distance-training techniques. These packages will be distributed not only in their own countries, but also to the whole region.

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shrimp aquaculture management held in Brisbane, Australia, during December 2000. An agreement was reached on a set of broad guiding principles for sustainable shrimp aquaculture management. FAO plans to table these guiding principles for government consensus at the first Committee on Fisheries (COFI) Sub Committee on Aquaculture (2002 in China), which was established during the 24th session of COFI in February 2001. The consortium has agreed to prepare documentation and reports together for this meeting. The consortium work will therefore potentially have significant impact at the intergovernmental level in helping to reach broader consensus on guiding principles for future management of shrimp aquaculture.

The year 2001 will be busy as the case study reports are finalized, thematic reviews are synthesized and the lesson's learned are summarized and disseminated. The consortium has agreed that this cooperative approach provides an important platform for gaining understanding and sharing experiences globally on shrimp aquaculture management. The next stage of work will focus more on support to implement the findings. This reflects a key concern among all consortium partners to translate the information generated into improved capacity and better management practice from the pond level to the ecosystem, national, and international levels. As aquaculture continues to expand globally and becomes more diverse and complex, the need to promote cooperation, capture lessons

learned, and share learning and experiences will increase as well. The consortium's partnership approach shows that such cooperation is not only fruitful in the short term, but also provides a platform upon which such cooperation can be further extended in the future.

The program was funded by the World Bank-Netherlands Partnership Program, WWF, NACA, FAO, and MacArthur and AVINA Foundations.

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MANAGEMENT OF BLEACHED AND SEVERELY DAMAGED REEFS

World Conservation Union Booklet Available

Since the 1980s, the phenomenon of coral bleaching has become more frequent, widespread and severe. Global climate change appears to be the main cause. Long periods of unusually warm sea temperatures in 1998 lead to wide-scale bleaching of coral reefs in the Indian Ocean, the Pacific Ocean and the Caribbean. Bleached corals expel their symbiotic algae and become susceptible to disease and overgrowth by algae. In the Seychelles islands in the western Indian Ocean, coral reefs were particularly hard hit by bleaching, and more than 90 percent of corals died.

Climate change and other human impacts are destroying the coral reefs of the world. Scientists estimate that one quarter of the coral reefs have already been destroyed, and a third of the remaining reefs are severely threatened. Urgent measures are needed to protect the remaining reefs.

The World Conservation Union (IUCN) has published a booklet, *Management of Bleached and Severely Damaged Reefs*, to provide guidance on how to protect and manage degraded coral reefs. The booklet is available in six languages: English, French, Spanish, Kiswahili, Indonesian and Portuguese. It was produced in cooperation with the Secretariat of the Convention on Biological Diversity, the World Wide Fund for Nature, and the US Agency for International Development.

The booklet can be ordered from IUCN Publication Services Unit, 219c Huntingdon Road, Cambridge CB3 0DL, United Kingdom. Tel: 44-1223-277894. Fax: 44-1223-277175. E-mail: info@books.iucn.org. Website: <http://www.iucn.org/places/usa/literature.html>. The English version of the booklet can be ordered free of charge from WWF Sweden, Ulriksdal Slott, SE-170 81 Solna, Sweden. E-mail: maria.teivonen@wwf.se

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and 29 challenges. The matrix illustrates a pronounced pattern of repetition among most of the dimensions. The practice of ICM has developed a dogma. The matrix serves as a reference point and, hopefully, it will constrain further repetition in the general guidance literature on ICM as an international practice.

An index and database of ICM topics. The literature on all aspects of ICM continues to grow. Review of this literature (particularly conference proceedings, journal articles, and newsletters) produced a listing of 218 topic areas of direct relevance to ICM. Most of these topic areas have their own information exchange networks (e.g., websites, periodicals, and conferences). An index of these topics will be converted into an interactive database that will include information on the exchange networks (those networks judged to be most helpful to ICM practitioners) associated with each relevant topic. The database of ICM topics should also serve as an integration point for all the key topics in the other six components.

Approaches and indicators for evaluating ICM programs. National governments in developed nations and international donor institutions are increasingly assessing whether their investments in a program—such as ICM—are wisely and effectively fulfilling the intended purposes of the program. These evaluations are also needed to improve project/program design and make adjustments to the internal workings of the ICM effort. This section focuses on the main impediment to creating a system for monitoring, evaluating, and periodic reporting on ICM programs. However, consensus has not been reached on specific and measurable objectives, valid and cost-effective indicators

for measuring each objective's achievement, as well the establishment of the standards (or targets) and the setting of timetables (milestones).

Further work is needed to develop each of these organizing frameworks and associated databases in order to make them fully operational and thereby achieve their full potential to improve ICM. In order to do this, funding is needed to complete information and data input into each framework, and make each operational and easily accessible to those interested in ICM or other fields or interests directly relevant to the practice.

Beyond 2000

Baseline 2000 is a tangible expression of the CZCA's commitment to use its biennial conference series to generate products of value to the coastal/ocean planning and management agenda and to have these serve as the benchmark for ICM at the turn of the century. This benchmark can be used to measure and evaluate our individual and collective progress over time.

The next CZC conference (CZC 2002, Hamilton, Ontario) will report on progress made, highlight new lessons learned, and to provide working sessions designed to produce insights and practical approaches for advancing ICM beyond Baseline 2000.

If we heed the recommendations in Baseline 2000 and increase our learning from the experiences in the literature as well as Baseline 2000 frameworks and the databases, the state-of-the-art of ICM should increase significantly. We can learn from the success and failures of similarly situated swamp rehabilitation projects how to effectively and efficiently both control the alligators and drain the swamp, with minimal adverse impacts while achieving the best

agreement among the stakeholders. We can then communicate the lessons learned from our project to others contemplating similar projects. Who could ask for anything more?

(Funds for the B2K project came from the CZCA, Canadian Department of Fisheries and Oceans, Environment Canada and the U.S. National Oceanic and Atmospheric Administration. Jens Sorensen was commissioned to do the B2K project. A concise conference version and a comprehensive background report of Baseline 2000 are available at website: <http://www.dal.ca/aczisc/czca-azcc/index.htm>)

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shared learning framework is modeling sites' operating conditions in order to share and compare within the network to produce a common set of testable assumptions.

Generating site models across a suite of projects requires a common method and language that can be followed by multiple projects independent of one another. Thus, to be useful in a shared learning framework, project models must be developed as simply and clearly as possible. This simple methodology is critical to long-term success of such necessary efforts needed in an ICM learning networks.

Action Three: Increase Cross-Project Communication and Learning Opportunities

In order to scale-up coral reef conservation learning from site-specific lessons to principles concluded across a network of systematically-tested sites, the exchange of information and experiences must occur at a cross-project level. This cross-project or 'network' learning is a method of first-hand learning that provides for the sharing of tangible lessons that are clearly understood by those working on coral reef management.

Critics of such cross-project learning argue that the consequences of such efforts are limited and do not always outweigh the exorbitant cost in terms of time and money. As a result, critics advocate for 'virtual' networking alternatives such as online meetings. However, not everyone agrees with this approach. Some presenters at the session highlighted the need for such network learning to occur actively, rather than passively through virtual communications such as E-mail or the Internet. Through cross-project visits and meetings, projects will be enhanced by allowing 'real-time' learning.

In all of the discussion at ICRS regarding the utility of site visits for cross-project learning, two points were made clear for future guidance: 1) cross-project visits should be done strategically, based on the needs of the projects involved and their mutual contributions toward one-another; and 2) such visits should be conducted within the context of a much broader learning network of project sites that exceeds organization- or country-specific parameters.

Action Four: Increase Support to Those Who Are Doing the Learning

To do the kind of learning outlined within the previous three recommendations will obviously require a new commitment of human and financial support from donors and policymakers. At present, the financial support available for doing coral reef management is limited and highly competitive. Even so, donors, research scientists, and managers are forming innovative partnerships and learning arrangements with conservation practitioners to improve the scientific techniques underlying the practice of day-to-day coral reef management. Despite this collaboration, however, there remain significant gaps. Relatively few donor agencies seem prepared to invest in the long-term scientific effort necessary to develop applied conservation experiments and learning arrangements. As a consequence, our learning capacity is limited, and we face real risks of drawing the wrong conclusions about the efficacy of particular approaches to conservation management.

Financial support is not the only resource formal learning networks require—they also need dedicated people. The learning participants themselves are a key resource for learning network success, as such people are instrumental in demonstrating that group learning may be

more beneficial to projects than the costs of their participation. In order to keep learning networks going, the learning process has to be kept meaningful to the entire group. Of ultimate importance for such learning approaches to work is having the human resource support necessary to organize and establish a coordination and facilitation team.

Support for learning networks also extends to a project level. For long-term, cross-project learning, it was noted that the types of support needed were well-developed monitoring methods appropriate for the communities and assistance in data analysis. Also essential was a central website for sharing ideas and capacity-building training, as well as support to enable travel.

Estimating the level of human and financial support required under any particular ICM learning network is specific to the number of project sites involved, the scale of questions being asked, and the number of assumptions being tested. Although seemingly unaffordable, an important message regarding investment is that such learning efforts are not always too expensive to implement. Indeed, while they may require sizeable capital investment to initiate, such short-term costs of scaling-up ICM learning efforts are insignificant when compared to the long-term costs associated with the continued loss of coral reefs and other coastal ecosystems.

(For copies of a summary of these recommendations, contact Robert Pomeroy, E-mail: rpomeroy@wri.org)

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COASTAL RESOURCES MANAGEMENT

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Tobey, J., J. Clay and P. Vergne. 1998. ***Maintaining a Balance: The Economic, Environmental and Social Impacts of Shrimp Farming in Latin America***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2202. In English and Spanish.

Olsen S., K. Lowry and J. Tobey. 1999. ***A Manual for Assessing Progress in Coastal Management***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2211.

Pogue, P. and Noëlle F. Lewis. 1999. ***Coastal Hazards Mitigation: An Overview of the Policies, Programs and Activities in the Coastal Northeast***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2216.

Tanzania Coastal Management Partnership Support Unit and the Mariculture Working Group. 1999. ***Tanzania Mariculture Issue Profile***. Dar es Salaam, Tanzania.

Olsen, S.B. 1999. ***Coastal Management: What Are We Learning From U.S. and International Experience?*** URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report. #2218.

Olsen, S.B. 1999. ***Educating for Governance of Coastal Ecosystems: The Dimension of the Challenge***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2219.

Olsen, S.B. 2000. ***Increasing the Efficiency of Integrated Coastal Management***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2220.

Coastal Resources Center. 2000. ***Coastal Resources Management Project II, 1999 Results: Increasing Conservation and Sustainable Use of Coastal Resources***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2222.

Fraser, N., B. Crawford and J. Kusen. 2000. ***Best Practices Guide for Crown-of-Thorns Clean-up***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2225.

Pollnac, R. and B. Crawford. 2000. ***Assessing Behavioral Aspects of Coastal Resources Use***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2226.

Olsen, S.B. 2000. ***Ecuador's Pioneering Initiative in Integrated Coastal Management***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2227.

Coastal Development Authority-Kenya. 2000. ***Moving Coastal Management Forward, Kenya Progress Report 1994-1999***. URI Coastal Resources Center. Narragansett, Rhode Island USA. Coastal Management Report #2231.



COASTAL RESOURCES CENTER

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Tobey

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capacity development. The learning effort combines empirical testing of propositions with training and capacity development.

Two contributions to this issue describe cross-portfolio learning efforts using a case study learning approach. Phillips and colleagues (page 12) describe a major international collaborative effort whose goal is to analyze and share experiences on management of shrimp aquaculture in coastal areas. Over 35 cases from around the world have been prepared with the objectives of improving understanding of key issues involved in sustainable shrimp aquaculture, enhancing capabilities for evaluating success and failures in sustainable shrimp aquaculture, and identifying better management strategies. In the coming year, the consortium will communicate the findings and seek ways to feed them back to action and innovation on the ground.

Imperial and Hennessy (page 14) describe the cross-portfolio learning effort of six watershed management programs in the United States. A common set of propositions and research questions were posed and then applied to a case study evaluation of each watershed program. Major topics that the case studies cast light upon include the importance of contextual factors, inter-institutional collaboration, flexibility in planning and implementation, the role of science in deliberation and decisionmaking, and the importance of defining and measuring outcome goals.

Two other of the contributions highlight the possibilities and challenges of broad-based learning networks. Troost (page 16) explains the objectives and activities of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Wise

Coastal Practices for Sustainable Human Development Forum. The Wise Practices Forum combines field project experience, mentoring and web-based information on coastal management issues, practices and strategies.

Parks and colleagues (page 18) describe efforts to establish a formal learning network on coral reef conservation. A session of the 10th meeting of the International Coral Reef Symposium (ICRS) in 2000 was dedicated to shared learning and recommendations to increase the scale of future learning. Recommendations include establishment of formal learning networks across sites and geographic scales; development of systematic, but simple learning methods; increased cross-project communication and site visits, and increased human and financial commitment to cross-portfolio learning.

These and the other collaborative learning networks described in this issue of *InterCoast* recognize the need to boost the benefits of learning in ICM to enhance the reach and impact of projects. This is particularly critical in a world in which development challenges are increasingly complex and resources are shrinking. Given the scope of the coastal challenges, the complex realities, and gaps in knowledge on best strategies toward sustainable coastal development, strategic collaboration is a necessity. No one can "go it alone."

In other collaborative networks and partnerships in coastal management networks, partners collaborate through a variety of initiatives, including pilot projects; training and research; evaluation; information sharing; identification of gaps and supporting action at the local, national, and regional level; and development of common goals, principles, and tools. In some cases, task force teams address spe-

cific priorities and provide strategic assistance to participating organizations. Learning networks provide an environment for partners to advance learning initiatives and develop solutions.

Finally, the contribution by Hildebrand and Sorenson (page 20) describes how coastal management conferences can promote the development of a common learning agenda in ICM. The last biennial Coastal Zone Canada Conference prepared background and discussion papers on the status of ICM as an international practice. One of the objectives of the *Baseline 2000* paper was to review the key principles, strategies, techniques, and tools of ICM that have emerged and are now largely accepted within the community of practitioners. This recognized that to develop and advance a shared learning agenda, we must first develop a consensus on what has been learned about good practice in ICM. At the Coastal Zone Canada Conference 2002, the baseline 2000 will be revisited to produce insights and approaches for advancing learning in ICM.

In summary, the contributions to this issue show that there are many approaches and strategies to learning. As Lowry observes, some questions about practice can be addressed using focus groups and expert groups, documentation, case studies, or web-based learning networks. Others require more scientific, experimental methods. When the costs of being wrong are high and the issues are contentious, inquiry strategies are needed that are widely accepted as resulting in reliable and credible results. In all cases, the ultimate aim is to promote learning activities that will boost the cumulative impact of ICM efforts worldwide and the transfer and adoption of new ideas to practice.

The number and quality of learning efforts in ICM are increasing, and this is a sign of a strong and maturing field and an indication that donors are encouraging structured learning efforts. In May 2001, the Coastal Resources Center at the University of Rhode Island is convening a workshop on cross-portfolio learning in ICM. The workshop will build on the experience gained from the activi-

ties presented in this issue of *InterCoast* and will seek to further advance understanding of learning methods, priority areas for learning, and opportunities for improving collaborative learning partnerships. *InterCoast* will notify readers how to obtain a copy of the proceedings when they are available later this year.

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Lowry

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- How do we know which generalizations to apply to the specific conditions of a particular project at a particular site?

In general, what ICM practitioners learn from experience and the variety of inquiry strategies gets expressed in five ways:

- Practice stories. Tales we tell each other about practice; about what has worked, what hasn't and why.
- Rules of thumb. Practical, often implicit personal guidelines we use to organize our own professional behavior.
- Lessons. Principles or guidelines drawn from experience or inquiry that apply to classes of situations.
- Best practices. Specific 'how-to' guidance for carrying out planning or management tasks.
- Propositions. Causal attributions made on the basis of rigorous research.

Encouraging More Learning in ICM

How can we make learning more relevant to ICM practice?

Here are some general suggestions.

1. Incorporate learning into project designs. The Indonesian CRMP included explicit learning tasks into the project design. The resulting documentation and analysis could serve coastal projects in that country for years to come.
2. Identify key questions or uncertainties in ICM practice. ICM practitioners confront similar project design and implementation issues and problems. What are they? Which ones are researchable?
3. Match inquiry strategies to these key questions. Expensive, rigorous analysis is not necessary for all important practice questions. Some questions about practice can be addressed using focus groups or case studies. Other questions may require quasi-experimental methods.
4. Acknowledge—and address—issues of research validity and credibility. Testing new drugs or medical procedures requires experimental methods both because the stakes are high in terms of lives and potential cost-savings and because opinion about the efficacy of new medical approaches is often divid-

ed. The same is true of some ICM issues. When the costs of being wrong are high and the issues are contentious, inquiry strategies are needed that are widely accepted as resulting in 'credible' results.

5. Encourage a more critical approach to 'lessons', 'best practices' and other inquiry products. A more systematic approach to learning requires us to examine the products of such inquiries more critically and to offer suggestions for revisions and refinements. Peer review should become the norm.

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WHAT WORKS AND WHAT DOESN'T? ESTUARY, BAY, AND LAGOON MANAGEMENT



There is an increasing awareness that subtle, cumulative, and possibly irreversible changes are occurring in our environment. Estuaries, bays, and lagoons, the systems with the most immediate inputs from land, are particularly vulnerable to actions taking place on land. Increased use of fertilizers and the discharges of sewage effluents have greatly increased rates of fertilizer delivery to the coastal environment with the consequence of increasing the occurrences of hypoxia and harmful algal blooms. Toxic pollution entering from rivers, runoff, and atmospheric deposition has become so pervasive no place has been left untouched. River flow has been reduced by extraction for irrigation and industrial and domestic use. Deforestation has caused severe sedimentation in some systems, decreasing light penetration and limiting biological production. All these factors can have devastating effects on the fish and other organisms that live and spawn in these areas.

Unfortunately, management of estuaries, bays, and lagoons has always been complex and fraught with problems created by overlapping and competing industrial, political, economic, preservation, and recreational interests. The result is there is little consensus about management approaches. In short, what works and what does not work?

The next issue of *InterCoast* (#40, Fall 2001) will report on the current understanding of watershed management, and how different practices affect estuaries, bays, and lagoons. Can certain approaches to watershed management help to restore and preserve the coastal areas? Can good management avoid creating unforeseeable problems in the future?

To contribute, please contact Noëlle F. Lewis, Coastal Resources Center, University of Rhode Island, Narragansett, Rhode Island 02882 USA. Tel: 401-874-6870. Fax: 401-789-4670. E-mail: noelle@gso.uri.edu. Website: <http://crc.uri.edu>. General articles on other coastal management issues are also welcome.

Deadline is August 1, 2001. Articles should be 1,000-1,700 words. Articles will be edited; please do not include references.



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