The Effectiveness of Coastal Zone Management in the United States

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The Coastal Zone Management Effectiveness Study was undertaken between 1995 and 1997 to determine how well state coastal management programs in the United States were implementing five of the core objectives of the U.S. Coastal Zone Management Act (CZMA). The five core objectives studied were: (1) protection of estuaries and coastal wetlands; (2) protection of beaches, dunes, bluffs and rocky shores; (3) provision of public access to the shore; (4) revitalization of urban waterfronts; and (5) accommodation of seaport development (as an illustration of the policy to give priority to coastal-dependent uses). Separate articles in this issue of Coastal Management *report the findings of the five studies, each dealing with one of the core objectives. Each of the articles assesses issue importance, processes and tools used, and the limited outcome data available for that objective. This article provides an overview of the purposes of the study, the methodology used, the summary findings of each study, and overall conclusions and recommendations of the study team. State coastal programs are found to be effective in addressing the five CZMA objectives examined, but this conclusion is based on very limited information about program outcomes. A more definitive conclusion will require better outcome information. Coastal managers in the United States have not agreed upon indicators of success, which severely inhibits systematic and sustained collection of outcome information. A national outcome monitoring and performance evaluation system is recommended to address these deficiencies and allow better determinations of program effectiveness in the future.*

Keywords coastal management programs, effectiveness, outcome monitoring, program evaluation

Introduction

The federal Coastal Zone Management Act (CZMA) was adopted by the U.S. Congress in 1972. It provides a national framework for improved management of the coastal lands and waters of the nation's coastal zone. The CZMA was designed to provide broad policy guidance, federal financial resources, and legal tools as incentives to coastal and Great Lakes states and island and territorial jurisdictions (hereinafter "states") wishing to upgrade their capacity for coastal management. Participating states first went through a planning and program development phase and then submitted a proposed program to the administering federal office for approval. Most state programs were approved in the late 1970s and early 1980s, and implementation has been ongoing ever since (Godschalk, 1992).

Since passage of the CZMA, there have been numerous efforts to evaluate the success of the state and local programs under the act. As discussed below, these evaluations have varied widely in scope, focus, and methods employed. Most have relied on descriptions of processes, case studies, expert opinions, and public perceptions to judge success. There has yet to be a comprehensive analysis of program effectiveness based on a systematic study of program policies and the outcomes of policy implementation.

This article and the five articles that follow in this special issue of *Coastal Management* (Good, Weber, & Charland, 1999; Bernd-Cohen & Gordon, 1999; Pogue & Lee, 1999; Goodwin, 1999; Hershman, 1999) describe the results of the National Coastal Zone Management Effectiveness Study (CZME), undertaken between 1995 and 1997. This study was commissioned by the U.S. Office of Ocean and Coastal Resources Management (OCRM) in the National Oceanic and Atmospheric Administration (NOAA) and administered through the National Sea Grant Program, also within NOAA. Although not fully the "comprehensive analysis" alluded to above, this study advances thinking on evaluation methodologies for coastal zone management (CZM) and is based on

systematic assessment of the 29 approved coastal programs operating at the time of the study. The CZME differs from previous studies (discussed below) in that it seeks to evaluate program effectiveness based on "on-the-ground outcomes" of program implementation, as well as on traditional process and policy indicators. This necessitated the collection of a great deal of information about program activities, the development of indicators from which effectiveness might be inferred, and the formulation of conclusions that would be useful information for coastal management policy makers, program managers, and interest group advocates. Further, because the U.S. program is the oldest national-level coastal management program in the world, and one that has enjoyed relative stability over the years, lessons from its implementation experience could be valuable for the scores of national and subnational efforts to develop and implement coastal management programs through-out the world.[1]

This overview article provides the governmental and policy structure for the U.S. CZM effort, noting the challenges that structure creates for systematic evaluation. Second, the framework for the CZME is established starting with a concise reference to selected past evaluation studies to distinguish them from the "program effectiveness" approach chosen here. The framework is described in some detail because it provides the general model used by each of the five individual studies, and the method may be used, modified, or amplified by other evaluators in the future. Third, the five studies of the core objectives are summarized briefly, noting how the methods for each may have differed from the general model, and presenting key conclusions specific to that topic. Lastly, national conclusions and recommendations about coastal program effectiveness and the need for future monitoring of results are reported.

The heart of the CZME analysis is the five articles that follow this one. This overview article is a guide to the approach and content of each, but not a substitute.

Governmental Structure and Policy Framework of CZM in the United States

A central feature of coastal management practice in the United States is the set of programs and activities at all levels of government that directly link to the federal CZMA.[2] Under the CZMA all three levels of government, federal, state and local, are given important roles to play and considerable flexibility in defining those roles. This results in diverse coastal programs around the country which presents particular challenges for a systematic and national-scale program evaluation.

At the national level the OCRM is the administering office. It interprets the statute through rules and regulations, interacts with oversight and reauthorizing committees in the Congress, and approves (or rejects) state coastal management programs and program amendments submitted to it for approval. Additionally, it awards grants to states for planning and administration of coastal programs, evaluates the progress of the states in implementation, and oversees implementation of the federal consistency provisions of the CZMA.[3]

The states are the action arm of the coastal management system. The states follow the framework and guidelines laid out in the federal act. States, for example, determine the boundaries of the coastal zone, the key coastal problems, the policies and laws that address them, and the state and local organizations required to be involved in implementation. Within each state, a designated lead agency is the author and lead implementor of the coastal management program and the recipient of federal grants and matching funds for planning or administration. Frequently, the states provide technical assistance to other

entities, build constituencies, research coastal management issues and trends, and promote new policies.

Local governments, including cities, counties and substate regional entities, are often primary implementors of state coastal policies and programs. They use traditional land use powers and infrastructure improvements to achieve coastal policy objectives. Another important means of implementation is through state agencies with resource management mandates, such as state agencies with submerged lands, fish and wildlife, or environmental responsibilities. These implementing units work closely with the lead state agency, and as a result can receive federal CZMA funds and benefit from the federal consistency mandates under the CZMA.

After 25 years (1972–1997), this three-tiered, intergovernmental system has matured and is a stable element in most states. Of the 35 eligible states, 32 participate in the voluntary program.[4] Federal funding to the states and territories for CZMA is now at about $50 million per year (not including a 50% local matching requirement for most programs), distributed according to a formula considering coastal population, length of coastline, and other factors (CZMA, Sec. 306 (c)). The networks the states have established for implementation are extensive, spreading the coastal management requirements widely within the state and local governance structure.

The national structure for CZM anticipates considerable diversity at the state and local levels. Such diversity creates a host of different approaches to coastal problems, which complicates determination of whether national goals are being met. Each state must choose the level of importance to afford different CZMA objectives and the approach to take in addressing them. Similarly, the form of management states choose can vary widely. OCRM has identified five program types among the states ranging from direct regulatory control by a single state agency to a shared regulatory approach involving other state and local agencies (NOAA, 1998).[5] The information generated through these different management types will vary greatly, complicating a national assessment. For example, a state-level permit system for wetlands protection could generate uniform information about trends in resource protection or loss, whereas a local permit process would reflect diverse types and forms of information within the state. Even when uniform, statewide data is available, it may not be comparable to data from other states, because of differences in jurisdiction, assessment criteria and information requirements. Similarly, states may seek to promote public access to the coast in a variety of ways, such as through land use regulation, purchase of coastal parks, and protection of public rights of way. Each strategy may involve a different agency at either state or local levels. Information about public access trends would have to be sought from each, and their approach to record keeping and information collection can differ widely.

Another factor complicating an assessment of the state coastal programs is that specific objectives as well as "integrative" objectives are articulated within coastal programs. This follows the CZMA language, which requires states to address specific goals (protect natural resources, improve public access, and others) as well as to develop a single, comprehensive management program that achieves "wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic, and aesthetic values as well as the needs for compatible economic development . . ." (CZMA, Sec. 303(2)(A)). State coastal programs, therefore, strive to achieve many specific objectives while at the same time attempting to integrate multiple objectives so that all are achieved as fully as possible within a project review or a given geographical area. This is done using environmental assessments, permit reviews, special area management plans (SAMPs), and similar integrative processes. This necessarily involves trade-offs

among uses. This tension between the desire to achieve specific objectives and the desire to integrate multiple objectives further complicates the measurement of CZM program effectiveness. Criteria for measuring "integration" are less clear than those for measuring more specific objectives. States vary greatly in how they pursue the goal of integration, making it difficult to "add up" the state efforts to determine if the federal goal is being met.

The complex structure of coastal programs and the tension between specific and integrative objectives lead to a number of questions for the evaluator. At what level should evaluation be focused? Whose goal or set of goals should be the basis for studying results? Who is the recipient of the information from the study, and how will this information be used? As is seen in the following section, the CZME investigators chose to be inclusive and to assess individual state programs as well as the collective effort of all state programs, and to study single objectives as well as processes for integration of objectives within the states.

The Framework of the CZME Study

The CZME was undertaken as a type of program evaluation, or a "systematic assessment of program results and, to the extent feasible, systematic assessment of the extent to which the program caused those results" (Newcomer, Hatry, & Wholey, 1994, p. 3). Newcomer, Hatry, and Wholey (1994) pointed out that the benefits of program evaluation go well beyond "accountability" and include providing feedback on program expenditures, operations, and results (what works well or not so well, and why); aiding in developing new legislative proposals and reauthorizations; assisting in making budget allocations; implementing and improving public programs; and managing and reporting on the uses of public funds.

Program evaluations often focus only on the processes used in public programs, such as a study of how funds were spent or what program decisions were made. Other forms of program evaluation address outcomes. An outcome evaluation focuses attention on changes in social and physical conditions brought about by the activities of the public program (Putt & Springer, 1989, p. 50).[6] Outcome evaluations develop measures that ask how well the program delivers on the intended objectives, not simply how well the tasks of the program are performed. This is a more difficult form of evaluation because the legislative goals and the criteria that determine program success are difficult to establish, and the results are often not clear-cut (Putt & Springer, 1989, p. 51). Outcome evaluations are of particular interest to higher level decision makers who supervise or control programs, whereas process evaluations are better aimed at the program manager level.

Program evaluations differ dramatically from studies that address the condition of particular resources or activities. Studies of the condition of a resource ask what service that resource provides society and whether that service is improving or deteriorating over time and in particular locations. Although this information is critically important to the public program manager concerned with the resource, it is not the same question as whether the program is achieving its objectives. As will be shown later, results of program evaluations can be effectively combined with resource-condition information to redefine goals and priorities.

In public sector programs, managers and policy makers receive a cacophony of unsystematic feedback on program performance (Newcomer, Hatry, & Wholey, 1994). This is certainly true in the CZM world, where there has been no shortage of commentary

on the successes and failures of CZM programs. Bernd-Cohen et al. (1995) identified and classified over 60 published and peer-reviewed studies that purport to evaluate CZM program activities since 1975, commenting that these studies vary considerably in their intent, approach, scope, and findings. Some of these studies, as well as additional ones, can be put into four classes: conceptual studies that address how to do CZM evaluations (e.g., Rosentraub & Warren, 1976; Englander, Feldmann, & Hershman, 1977; Lowry, 1980; Bowen, Hoole, & Anderson, 1980; Mazmanian & Sabatier, 1983); studies evaluating and describing the performance of the national program (e.g., Knecht, 1979; NOAA, 1981; Lowry, 1985; Archer & Knecht, 1987; Brower et al., 1991; Godschalk, 1992; Owens 1992); expert opinions and assessment of state coastal programs (e.g., Swanson, 1975; Healy, 1978; Kinsey, 1985; Born & Miller, 1988); and the impact of coastal regulatory and planning decisions (Sabatier, 1977; McCreary et al., 1992; Good, 1994). Since 1995 the literature has been enriched. In 1996, Allin, Menashas, and Wright compiled and analyzed all of the mandated "Section 312" evaluations done by the OCRM between 1978 and 1995, showing trends observed from their periodic site visits and a review of state program activities. A major study by Knecht, Cicin-Sain, and Fisk (1996, 1997) surveyed 260 coastal experts to learn perceptions of the performance of state coastal programs in meeting national objectives. Finally, many coastal management investigators are focusing on integrated coastal management (ICM) and exploring how to evaluate these initiatives taking place in countries around the globe (Cicin-Sain & Knecht, 1998; Olsen, Tobey, & Kerr, 1997; Sorensen, 1997).[7]

The CZME contributes to this literature through a systematic review of the processes *and outcomes* of all approved state coastal programs. No previous evaluation has systematically sought to assess program outcomes from a national perspective. For many years CZM evaluations have relied on process outputs as measures of success (e.g., the number and type of laws passed by states [Knecht, 1979], or permits issued/denied [Sabatier, 1977], or the amount of money spent [Owens, 1992] coupled with selected case examples). Recent national-level studies have continued the emphasis on processes (Brower et al., 1991; Bernd-Cohen et al., 1995; Allin, Menashas, & Wright, 1996). The intent of this study is to show what difference CZM has made on the actual resources it is supposed to protect or restore, or on the uses it is supposed to advance.

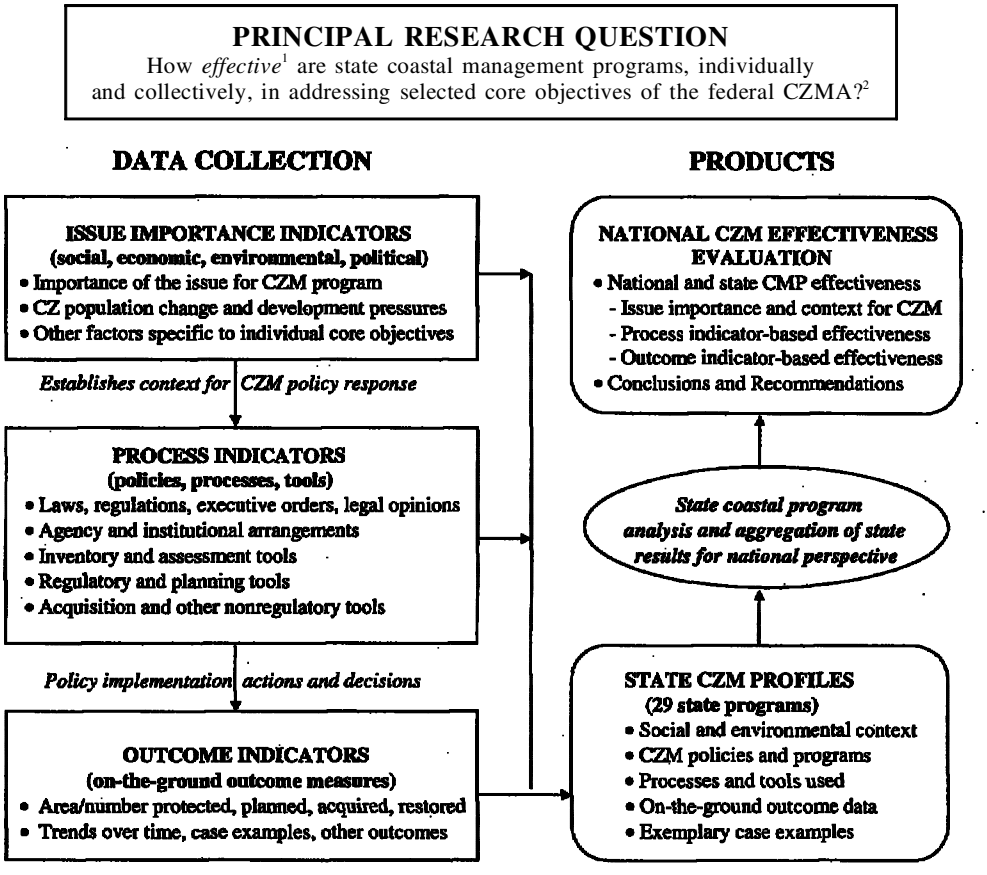
Additionally, the CZME strove to be a truly "systematic" study, a key requirement for program evaluation. Every state was surveyed for policies, processes, and outcomes using similar data collection instruments, and were checked for accuracy by state program officials. Although each author varied the way in which the data were analyzed (to account for differences in the core objective being studied), the resulting reports are parallel in structure.

From the outset, the CZME was labeled an "effectiveness evaluation," a term the CZME team had to define.[8] We defined "effectiveness" to mean the impact of the state coastal management programs relative to the objectives of the CZMA as measured by "on-the-ground" outcomes of CZM program actions and decisions, the processes used to achieve the outcomes, and the relative importance given to the issue by the CZM program. Effective coastal programs, in our view, must show a clear link between the goal they deem important, the processes they set up to achieve that goal, and the outcomes resulting from those processes that advance the goal.

Effectiveness was to be assessed for certain core objectives of the CZMA. The core objectives to be studied track the legislation closely and constitute some of the fundamental policy objectives of CZM: the protection of natural resources such as wetlands and estuaries; the protection of beach, dune, bluffs, and rocky shore resources; public

access to the coast; revitalization of urban waterfronts; and priority consideration to coastal-dependent uses such as seaport development. Other objectives that are equally important, but that were not studied due to lack of time and resources, include management of coastal hazards, better governance through the coordination and simplification of procedures, public participation, and others.[9] Although the team was not asked to study the integration of the multiple goals of CZM in specific areas or in the coastal zone as a whole,[10] we do comment on this in the study.

The general model used in the study and the steps followed by each of the investigators are illustrated in Figure 1. The data collection efforts are guided by the principal research question, which also set the broad parameters of the study. Embedded in the research question are three terms that shaped the study. *Effectiveness* was defined and guided our



[1]*Effectiveness* is defined as the impact of state CMPs relative to national core objectives. *Effectiveness* is measured by the on-the-ground outcomes of CZM program actions and decisions, the processes used to achieve the outcomes, and the relative importance given to the issue by the CZM program.

[2]The core objectives selected include (1) protecting estuaries and coastal wetlands; (2) protecting beaches, dunes, bluffs, rocky shores; (3) providing for public access; (4) revitalizing underutilized waterfronts; and (5) promoting seaport development.

Figure 1. General model for evaluating the effectiveness of the U.S. national coastal management program (developed by Jim Good, in consultation with the research team).

methodology (discussed above). Next, state programs were the focus of the study, which is appropriate since states are the primary vehicle for achieving national coastal management objectives.[11] Individual effectiveness was to be measured as well, requiring a synthesis and assessment of the work of all the states to make a composite judgment. Finally, the research question called for addressing the "core objectives" of the CZMA.

Each principal investigator on the study team focused on one of the core objectives listed above.[12] After a trial run at collecting data from five "test" states (Pennsylvania, Louisiana, Rhode Island, Oregon, and South Carolina), a common outline and approach was established by the team for information collection.[13] We sought information about the importance of each core objective in each state, the policies and processes used by each state to address the objective, and the outcomes resulting from the processes used (Figure 1, left column). The "issue importance indicators" included social, economic, and environmental data. Each investigator used a different set of indicators, usually some combination of objective factors (e.g., rate of population growth; percent of the coastal zone in wetlands) and priority assignments by the state coastal program officials. Judgments about effectiveness could vary depending upon the importance and priority of the issue in the state. The second data set was developed for "process indicators" and included descriptions of the policies, processes, and tools used by the state to address the objective. This was the most "information-rich" part of the study since information of this type is most frequently documented by the states. Each investigator came up with a typology of policies, processes, and tools for their core objective; descriptions of them; and in most cases assessments of the relative importance of the process indicator for that particular issue. Finally, each investigator sought the best "outcome indicators" they could find that would most inform their effectiveness analysis. Here, there is considerable variety among the reports. Among the outcomes used were geographic area protected or enhanced (in linear distance or area), access sites established, development projects completed, and organizational learning. Additionally, case examples were used which illustrated particular processes used and selected outcomes.

The right column of Figure 1 lists the products of the CZME. The first product resulting from the data collection work is state CZM profiles, a set of descriptive files for each of the states and each of the five core objectives studied. Data for the profiles come primarily from state coastal program documents and a questionnaire generated for each core objective followed by interviews with key officials in the state. In virtually every case, federal or state publications are used especially in establishing the context for an issue. Approximately 150 profiles were generated.[14]

The next level of study involved state coastal program analysis and aggregation of the state results to gain a national perspective. This is the heart of the evaluation. Each investigator developed indicators for assessing performance. Process indicators show such things as the frequency with which a tool was used compared to others, or the level of importance given to the process by the program managers. Outcome indicators present specific data that would identify an end result, such as the acreage of wetlands fill permitted or the stage of completion of revitalization projects within a district. Case examples are used to illustrate use of a management tool or a particular outcome. Two investigators developed a "model" or "ideal" coastal program for their core objective and assessed individual states against the model. The results of this work are found in national CZM effectiveness evaluation reports for each core objective.[15] The five articles that follow in this theme issue of *Coastal Management* are shortened versions of these reports.

While data collection with the states was underway, a parallel effort was undertaken to interview CZM program leaders and to seek broader viewpoints about achievements,

successes, and failures. A series of interviews and focus group discussions were held with 20 individuals, called CZM "senior program managers," to gain an historical perspective on changes due to CZM program efforts.[16] These individuals were veteran coastal program managers, many of whom had been at the task since the inception of the program. Because the formal structure of the CZME was based on measuring the implementation of specific statutory goals, the interviews and focus group discussions were designed to get "outside the box" of specific program requirements and to explore broader views about what difference CZM has made. In particular, we asked the senior program managers about the most significant coastal problems prior to CZM, the unique role CZM played in addressing those problems, major "success" stories or contributions, and primary failings or frustrations. These results are presented at the end of the next section.

This article presents the final stage of the study: a determination of the overall effectiveness of the state CZM programs based on a synthesis (to the extent possible) of the five studies on specific core objectives of the CZMA. This synthesis includes the observations of the senior program managers and adds national conclusions and recommendations.

Two limitations of the study should be reiterated. The most significant is the scarcity of data for many of the outcome indicators, a point mentioned above. When available, the data were often of poor quality and lacked comparability. This was not unexpected, because there is no outcome monitoring requirement for assessing coastal program performance, nor was there a requirement for baseline data when programs were first set up. Indeed, one of the underlying purposes of this study was to identify a meaningful set of outcome indicators for each objective that might serve as a basis for a national performance monitoring system in the future.

A second limitation relates to the problem of attribution. Program evaluation theory, as noted above, seeks to determine if the program being evaluated caused the outcome observed. The emphasis in this study was on examining outcomes that can be linked back to the implementation of state CZM policy and processes, not on comparing the relative contribution of the CZM program outcomes with those of the many other public and private programs working toward similar goals. Many of the outcomes we identified were the result of partnerships or parallel actions between CZM programs and other governmental agencies and private organizations. Credit should be shared among many players. In our study, for CZM to get credit for contributing to the outcome, there needed to be a clear state CZM policy, an associated application of state CZM processes to advance that policy, and a direct or indirect outcome that could be linked back to a CZM process and policy objective.

Results of the CZME Study

The results of the CZME are found primarily in the studies of the five core objectives chosen for study. These five studies are summarized below and presented in detail in the articles that follow in this special issue of *Coastal Management.* Additionally, this section presents the results from the interviews with senior program managers and discusses findings relating to the integration of the objectives of the CZMA.

Protecting Estuaries and Coastal Wetlands

Good, Weber, and Charland (1999) found sufficient outcome data to make "probable" effectiveness determinations for about one-third of the states examined. Of these, they

found that 80% were performing at expected or higher levels in protecting wetland and estuary resources considering issue importance and strength of processes used in the state. If these states can be shown to be representative, they argue, then the national program as a whole can be considered effective for this objective.

Good, Weber, and Charland (1999) follow a four-step process in their study, first examining issue importance, next the potential effectiveness of coastal management programs based on process indicators, then outcome effectiveness based on on-the-ground outcome indicators, and finally, overall performance based on a comparison of outcome effectiveness with issue importance and potential effectiveness.

To rate and compare the importance of estuary and coastal wetland protection as a CZM issue in each state, the authors chose seven issue importance indicators—three environmental, two social-demographic, and two perception based. To them, issue importance serves as the context for determining the level of program performance.

Next, Good, Weber, and Charland (1999) define a "model state CMP [coastal management program]" for estuary and wetland protection based on the most important processes and tools identified by all the states. From the model coastal management program, criteria were developed and applied to estimate the potential effectiveness of each state program "on paper." Potential effectiveness ratings increased as the state approached the model.

Outcome indicators were defined as "measures of on-the-ground protection provided by the CZM processes and tools." An example is the area of wetland compensatory mitigation required in a CZM regulatory program as documented in the permit process. This indicator, along with other measures of regulatory, planning, acquisition, and nonregulatory outcomes, were used to estimate outcome effectiveness. The authors found data sufficient to make at least "probable" outcome effectiveness determinations for just 12 of the 29 coastal management programs. They rated 10 of these 12 (83%) as either "effective" or "very effective." To rate overall performance, they compare outcome effectiveness results with the seriousness of the problem in the state (issue importance) and with the ability of the state's decision-making institutions to deal with the issue (potential effectiveness). As they put it, this allows a determination of overall performance for a state that suits its particular situation, rather than a determination based on a "one size fits all" approach. Thus a state with a low issue importance rating is not held to the same standard as one that rates that issue as high.

Protecting Beaches and Dunes

Bernd-Cohen and Gordon (1999) conclude, based on process indicators and case examples, that coastal programs are effectively addressing the goal of protecting beach and dune resources. To support their conclusion they cite the wide range of tools in use, the progressive upgrading of these tools over the years, and numerous case examples of sophisticated tools now in use. Outcome data were inconclusive and available in only a few states.

The authors outline 26 tools used by the states to protect beaches and dunes, from which they derive 10 key "process indicators of effectiveness." The majority of these indicators are regulatory, including controls over construction and public access, where these may damage natural resources. They highlight one commonly used device, coastal setback regulations, to show its potential utility to protect resources and reduce hazards. However, they also point out that a carefully developed setback law often includes many exceptions designed to enhance recreation or protect private property rights. And because

outcome data that show the results of implementation are inconclusive and revealed mostly in case study examples, they cannot make definitive conclusions about the effectiveness of setbacks, or other regulatory and planning devices, that are designed to protect the resources.

Bernd-Cohen and Gordon (1999) highlight the wide range of tools in use, including regulatory programs, planning coupled with regulations, stewardship of publicly owned lands, research, and public education. They point out that CZM programs have progressively upgraded their management tools to improve how they deal with development impacts and long-term effects. And they present case examples that show some highly sophisticated tools now in use to address the technical and legal issues. These achievements, when viewed against the backdrop of conflicting policies and multiple governmental programs concerned with beach and dune resources, suggest to them good progress toward the protection goal.

The authors believe that meaningful outcome monitoring and evaluation are possible for this topic area. The outcome data collected, though inconclusive, suggest that states are both capable and desirous of more rigorous documentation of results. Bernd-Cohen and Gordon (1999) presented a list of outcome effectiveness indicators that, if systematically monitored and reported across all states, could serve as the basis for a national performance evaluation system for this issue area.

Providing Public Access to the Coast

Pogue and Lee (1999) conclude that state CZM programs are national leaders in improving access to the coast, first through a wide range of acquisition, regulatory, and planning tools, and more recently through innovative technical assistance and public education and outreach programs.

The authors note that the CZMA was the first federal law to establish a public access policy for the United States, and that the state CZM programs are in the forefront of implementing this goal. States use a wide range of tools to achieve the goal, including acquisition, regulatory and land use requirements, technical assistance, and public education and outreach. The diversity of approaches is illustrated through a variety of case examples. Although hard numbers for measuring outcomes were not available, Pogue and Lee (1999) note that about $35 million (unadjusted 1988 dollars) were spent on 455 public access-related projects between 1985 and 1988—roughly 12% of the total CZM funding available in that period. The authors report an estimate of over 12,000 public access sites available in 26 of the 29 states, though the linkage with CZM program actions could not be studied. The states with the most sites tend to have the greatest number of processes available for promoting access. The authors note a policy shift in the 1990s away from direct acquisition and regulation toward technical assistance and public outreach—a recognition of the overall decrease in funds available for access. Innovative approaches such as design standards, legal research, and signage are highlighted. They also stress the role of CZM programs in balancing resource protection needs with growing public demand for beach recreation opportunities.

Chief among their recommendations is that CZM programs conduct needs assessments to determine the kind of access needed in the future and where it should be located. And, due to the creativity and innovation used to achieve access, they argue for a clearinghouse, or register, for documenting and sharing information on innovative tools and programs.

Revitalizing Waterfronts

Goodwin (1999) found 303 urban waterfront districts that have benefited from state CZM programs. Districts, on average, are roughly halfway to full revitalization (infrastructure has been improved and at least one redevelopment project is completed). Fourteen coastal programs are determined to be the most effective in waterfront revitalization because of their on-the-ground outcomes and the close linkage among CZM policies, processes, and outcomes. Revitalization is occurring mostly in those areas of the country experiencing industrial change: the rust belt, the Pacific Northwest, and New England.

Goodwin (1999) found that providing funds for waterfront planning and public improvements was considered the most important of all the tools used by coastal managers to revitalize waterfronts. He documents CZM funds of over $30 million leveraging over $430 million of non-CZM funds, an amount he believes is an underestimate. In addition to identifying funding and the wide range of additional tools used by the coastal management programs, he defines key process outcomes such as adopted waterfront revitalization plans and design studies performed to achieve on-the-ground outcomes. Goodwin develops an ideal waterfront revitalization program and determines, in a similar way to Good, Weber, and Charland (1999), the degree to which each of the states approaches the ideal.

Outcomes themselves were in three forms: extent of revitalization in the state measured by the number of districts involved; stage of revitalization achieved in each district; and scope of resulting on-the-ground improvements that revitalize and achieve coastal management goals. For example, Goodwin (1999) shows the number of districts where revitalization is complete; the number having reached certain milestones such as completed plans, infrastructure, or projects; and the number of districts achieving different types of uses.

Goodwin (1999) finds that the greatest needs nationally are to formulate an urban waterfront database that would describe the amount of waterfront revitalization that has occurred and the amount that still remains unfinished, and to elevate waterfront revitalization to a national objective under section 309 of the CZMA.

Accommodating Seaport Development

Hershman (1999) concludes that 12 "port-active" states are effectively achieving the goal of CZMA because of their specific policies and management tools which facilitate port development, and because of preliminary evidence of "organizational learning" in CZM and port agencies derived from case studies in 10 of the 12 states.

Seaport development is one of the coastal dependent uses to which CZM programs are to give priority consideration. Hershman (1999) focuses on large-scale general cargo ports because of the role they play in global trade and their importance to the nation, as well as to the state in which they are located. He found that most states give port development only general consideration in policies and procedures, similar to any other coastal developer, but that 12 states stand out as "port-active" states. These states have significant port facilities from a national perspective (or relative to their size), and correspondingly, these CZM programs have more specific policies and techniques to help review and facilitate port development. These specific tools include financial grants, specific port zones, expedited regulatory processes, and other tools.

According to Hershman, measuring outcomes in meeting the seaport development goal is problematic; whether a port is built or not is dependent primarily on economic

and locational factors. CZM can influence the timing, shape, and manner of port development, but this depends on the context in every case and normally reflects other CZM objectives such as wetland protection or public access. He relies, therefore, on the notion of "organizational learning," where the manner in which the port and CZM organizations interact to accommodate their mutual needs becomes a measure of effectiveness. If what they learn from each other results in changed objectives within each organization and helps resolve differences, then the port and CZM organization are being effective in meeting the objectives of a multipurpose act like the CZMA. Through case examples he suggests that they are, in effect, beginning to integrate the multiple objectives of the CZMA within each organization.

Results from Interviews and Focus Group Discussions with Senior Program Managers[17]

As noted above, interviews with senior program managers were conducted at the same time the five studies of core objectives were undertaken. The purpose was to gain a broader perspective on changes resulting from state coastal management programs. Most of the senior program managers pointed to weaknesses in the governance arrangements and decision processes prior to CZM and ways in which CZM tried to address them. For example, a repeated theme was that prior to CZM program development and implementation, state resource agencies and local governments were poorly staffed, had inadequate policies and guidelines for development, and were uncoordinated, especially with respect to environmental issues. The senior program managers stressed CZM's unique role in upgrading capacity for management in state and local governmental units. They pointed also to process innovations such as consistency reviews, SAMPs, networking, and state–local partnerships. And, they emphasized the crucial importance of public participation and the availability of discretionary funding for implementation and specific projects. The studies of each of the core objectives document many of these new process tools in use today, but the senior program managers stressed the inadequacy of the decision process prior to CZM and the importance of this institutional restructuring

In addition to institutional changes, the senior program managers commented about significantly different outcomes once CZM programs were implemented. Examples included elimination of shoreside waste dumps and construction of over-water housing, substantial reduction in the rate of development near or on wetlands, protection and promotion of water-dependent uses, revitalization of obsolete industrial areas, and increased public access. These comments track closely the findings in the studies of specific core objectives. They also observed that a major outcome of CZM is that only well-conceived development projects are proposed, that is, that CZM standards and requirements help to weed out the poor projects before they reach the stage of seeking official approval.

Finally, the senior program managers were forthcoming about failures. A number of them commented that issues such as water quality protection, watershed management, and non-point-source pollution control are not yet well addressed in the coastal zone, whether by CZM programs or other governmental efforts. Others noted that techniques for measuring cumulative impacts and for promoting sustainable development need to be better integrated into environmental programs, including CZM programs. Finally, there was a plea for elevated attention by the national program office to the importance of the federal consistency rules so that state programs would have greater leverage over federal activities and permitting functions.

Integration of CZM Policy Objectives

The primary objective of the CZME was to address the core objectives of the CZMA described above. Additionally, the CZME strove to point out how integration of objectives is achieved within state coastal management programs. Four of the studies brought out that multiple objectives of the CZMA are met simultaneously when decisions are made about one of the core objectives. As noted above, the CZMA goal of "wise use" is sought through consideration of multiple goals, such as in "special areas," where specific plans are promoted that balance environmental goals with those of coastal-dependent economic development.

Goodwin (1999) shows that revitalization plans for urban waterfronts included uses that advance other objectives of CZM, including public access, historic preservation, promotion of water-dependent uses, and environmental clean-up. Bernd-Cohen and Gordon (1999) observe that protecting beaches and dunes often was balanced with protecting against the hazard of coastal erosion and land loss. They also found that recreational use of beaches might detract from the goal of protection but that measures introduced through CZM controlled access to minimize adverse impact on the natural resources. Pogue and Lee (1999) make a similar observation when they illustrate how public access was promoted, but with safeguards against overuse of the resource that might degrade it. Finally, as noted above, Hershman (1999) found that port development was accommodated within CZM programs but that the CZM programs influenced the siting and design of port projects in order to meet other CZM objectives, such as natural resource protection and reduced pollution.

National Conclusions and Recommendations from the CZME

Each of the five studies presented in this special issue reaches its own conclusions and recommendations for improving implementation and tracking the results of the specific core objective. This section discusses general conclusions reached by the team regarding the effectiveness of state CZM programs, and how to better measure program results in the future.

- The team concludes that state CZM programs are effectively implementing the five CZMA objectives examined. However, this conclusion is based on assessment of the policies, processes, and tools used, and on only limited outcome data and case examples that were available.

Although there is some excellent on-the-ground evidence of effective implementation, a more conclusive determination will require a broader, more sustained, and consistent approach to documenting outcomes of program decisions. There are a number of reasons why the team came to this conclusion.

First, although on-the-ground outcome information is very scarce and needs to be substantially upgraded (as discussed below), we found sufficient outcome evidence to suggest effectiveness in implementation. As discussed above, we defined effectiveness as requiring a determination of on-the-ground outcomes that are closely linked to state CZM program processes and determinations of issue importance in the state. In each of the studies, some clear on-the-ground results were found. For example, Goodwin (1999) found substantial progress toward complete waterfront revitalization in 303 waterfronts. Good, Weber, and Charland (1999) found probable effectiveness for 12 of 29 states with

full or partial outcome data about wetlands protection. The three other studies relied primarily on process indicators and case studies of outcomes to conclude that the programs were effective in meeting the goal. For example, using case studies, Hershman (1999) found preliminary evidence of organizational learning among port and CZM agencies that changed the way port development occurs. Bernd-Cohen and Gordon (1999) and Pogue and Lee (1999) document a wide range of tools and processes in use and present numerous case examples showing how the tools achieved the desired outcomes on the ground.

Second, although the CZME defined on-the-ground outcomes as the primary measure of effectiveness, the role of well-defined and structured process in CZM is very important and a major factor in evaluation of program effectiveness. The survey of program managers emphasized the role of changed governance arrangements and improved decision processes as a major outcome of the CZMA. Each of the CZME studies documented the wide range of tools and processes states have used to achieve CZMA goals, and in two cases "potential effectiveness" was measured by showing how a particular state's set of management tools compared with those all state coastal managers considered to be most effective (Good, Weber, & Charland, 1999; Goodwin, 1999). Processes are also particularly important when multiple objectives are sought in managing one use. Bernd-Cohen and Gordon (1999) describe processes used to protect beaches and dunes, but note that these same processes must consider protection of private property rights and promotion of recreational use. Hershman (1999) shows that processes that accommodate port development do so by requiring resolution of environmental impacts. In these cases, the process may be a better measure of CZM than the outcome, since the choice of the correct outcome, or finding a good mix of outcomes, will always depend on environmental and land use factors specific to the situation.

Third, the five objectives studied comprise a key subset of the objectives sought under the CZMA, not all of the objectives. Additional work is needed to study these other objectives before the picture of program implementation will be complete. For example, reduction of coastal hazards was not studied directly. Nor was specific attention given to the goal of improved intergovernmental relations, including the important federal consistency and public participation provisions. These objectives are also important to CZM and could influence conclusions about effectiveness.

Fourth, the CZME was a coastal management program evaluation, not a "state-of-the-coast" study. It was a study of how well the state programs were addressing the core objectives of the CZMA that were studied, not a determination of whether the health of the resource or use category in question was improving or deteriorating. Thus the team could conclude on good evidence that the CZM program is being effective in its work, but be unable to conclude that the status of the resource has changed for the better or the worse. A good example is in the protection of coastal resources, such as wetlands or beaches and dunes. To take a negative spin for illustration purposes, if population growth in the coastal zone continues, coastal recreation and tourism expands, relative sea level rise accelerates, and the courts give greater protection to private property interests than to public or environmental interests, coastal resources may deteriorate and there may be nothing a coastal zone management program can do to reverse the trend given its current powers and resources. However, if resource trends were documented (showing either negative or positive resource conditions) and gaps are found between the coastal program's activities and the resource condition, then policy makers could alter the scope of the program or its policy objectives to address the apparent gap.[18] This is where program evaluation, combined with "state-of-the-coast" information (discussed later) can clearly show where new program goals may be needed.

- The team concludes that there are insufficient data for a systematic, outcome-based performance evaluation of state CZM programs, largely because of the lack of a common set of outcome indicators that would link state management activities and decisions to national CZMA objectives. The coastal management community in the United States should therefore undertake development of such indicators, balancing state and national needs, perspectives, and utility.

Although each of the investigators was looking for different types of information, a common finding was that the state programs, for the most part, could produce considerable information about processes followed at state and local levels, but could document very little about the on-the-ground results of decisions. Data that are collected are often collected only once for a case study or other special purpose, are limited in scope and in the time frame they cover, and are generally not comparable among states. Additionally, outcome data that were available for states could not be related to the overall status or condition of the resource or use category, nor could temporal or spatial trends be discerned in most cases.

A number of factors contribute to this lack of outcome information. The great majority of the tasks of coastal managers relate to the details of decision processes: gathering information, defining issues, evaluating alternatives, and reaching consensus, for example. Permit applicants, local governments, interest groups, and the coastal manager usually focus on one decision at a time. Once a decision is actually made and the process has ended, the coastal manager quickly focuses on the next decision to be made. Large backlogs of permits and similar management decisions are common. There is little time, outside pressure, or formal requirement to document and analyze on-the-ground outcomes. Another factor that constrains the ability to document outcomes is the diversity of players within the coastal management network. Many of the decisions that determine actual outcomes may be made in a resource agency separate from the coastal program office, or in local government offices with coastal responsibilities. Those offices may keep outcome information, but it may vary considerably in form and cost a great deal to collect and normalize. Finally, there is a natural tendency on the part of coastal managers to favor the case study form of reporting outcomes, rather than using systematic performance data. Case studies can explain causal factors lying behind the outcome, as well as the result itself. Case studies are a good way to show how multiple objectives are met and synergies achieved, or the opposite. A case study also relates the obstacles to be overcome in reaching a good decision, where quantitative results do not provide this sort of explanation. The big weakness of the case study is the inability to interpret spatial or temporal trends over the entire state and certainly over the entire nation. Further, the authors' particular viewpoints or biases can shape the way the story is told, which may lead to the studies being labeled "self-serving." Also, very few agencies do case studies that document program failures.

Examples of these factors are found in the CZME studies. One problem relates to permit data for development affecting beaches. Bernd-Cohen and Gordon (1999) found that many coastal programs maintained computerized permit data files, but included only process-type information in the data bank; information about the outcome, including area affected, types of resources affected, and mitigation requirements, could only be found through detailed research into the actual paper permit files for each project. The authors learned, however, that some state program officials are anxious to include this outcome information into data systems and some are experimenting with this now. Similarly, Good, Weber, and Charland (1999) found scant outcome data in wetlands

permit tracking systems, but also found that many states recognize this shortcoming and are in the process of improving their information management systems. They believe that this presents a "window of opportunity" to insure that these new systems include outcome data that are meaningful at both the state and national levels.

Goodwin (1999) was able to collect a great deal of outcome information about waterfront revitalization efforts. Since there were few existing sources of information at the state level, and since surveying all the coastal cities doing revitalization was beyond his scope, he relied on questionnaire responses of state officials about the number, scale, and scope of revitalization efforts within city waterfront revitalization "districts." Thus, he relied a great deal on the recollections and general observations of state CZM officials who had worked with the various cities. Such information, reliable for this study, will be difficult to replicate in the future, which leads him to recommend a waterfront revitalization inventory and database.

The level of effort needed to uncover good outcome information should not be underestimated. Because so many different actions of government can be counted as an outcome in support of the goal, the research task is formidable. This was illustrated in the public access study. Pogue and Lee (1999) identify many forms of access that have been promoted through the efforts of CZM, including right-of-way exactions, street ends, piers and boat ramps, viewing towers, coastal parks, and others. The data quantifying the access provided might be housed in a separate agency from the CZM office, or in local government, and its location would vary according to type of access. Substantial work is required to collect this data for each state, and doing this was well beyond the resources of the CZME and would put a large dent in the state CZM office budgets. This points to the need to clearly identify how to finance outcome data collection.

Finally, another constraint to the collection of outcome information is the difficulty of knowing what constitutes an outcome indicator for a core objective. Hershman's (1999) study of seaport development brings this issue to the forefront. Virtually every state accommodated seaport development but commented that seaports must be developed with minimal environmental impact. Thus, a count of port development projects would be an inappropriate outcome, since it would not account for the degree of environmental sensitivity factored into the decisions. Hershman concludes that measuring the outcome of port projects requires case study analysis of each port project in each state, a task that could not be done in a study of this scope. He relies instead on process indicators, case examples, and organizational learning as measures of effectiveness.

Defining outcomes and outcome indicators should be a CZM-communitywide decision. If similar indicators are used among the states, then the ability to present a national picture is substantially increased. If indicators are the same, then there is the opportunity for states to share techniques of information collection and analysis, or to joint venture for outcome monitoring. And, if there is a national consensus about what indicators to monitor, this may influence federal agencies that collect information to use similar indicators and increase the amount of information and its use. Finally, OCRM is in an excellent position to be an information clearinghouse and to provide technical assistance in outcome monitoring because of the established communication flows between them and the states.

The investigators in the CZME study have suggested outcomes and outcome indicators for each of the five core objectives. This can be a starting point for a broader review and agreement among federal, state, and local program leaders. The outcomes and their indicators vary with the core objective being studied and with the process used to achieve the outcome.

Good, Weber, and Charland (1999, Table 7) present on-the-ground outcome indicators for the four sets of processes used to protect wetlands and estuaries: regulatory, planning, acquisition, and nonregulatory. For example, one regulatory outcome indicator is the area of annual permitted loss per year as a percentage of all regulated waters and wetlands. For each indicator, there are rating criteria that classify the outcome as high, medium, or low.

Bernd-Cohen and Gordon (1999, App. B) present outcome indicators for regulatory, planning, and land management and acquisition programs used to protect beaches, dunes, bluffs, and rocky shores. They would use aerial photography as well as permit records to document the rate of encroachment into the natural systems, and they document measures of active stewardship such as accessways, dune crossovers, and designated protected areas.

Pogue and Lee (1999, Table 2 and text at p. 226) use CZMA funds spent on public access projects, process indicators, total access sites, and case examples to illustrate goal achieve-ment. They find, for example, that during the period for which data is available, most of the national funds went to improving coastal parks and providing boat and fishing piers.

Goodwin (1999, Table 3) uses outcome indicators to measure the results of waterfront revitalization He shows the number of waterfront districts active in revitalization, the stage reached in revitalization, and the scope of uses achieved (which reflect achievement of other CZM goals within the revitalized waterfront, such as public access and marine activities).

Hershman (1999, at pp. 282–283) uses six process indicators derived from the most port-active states combined with a case example analysis of organizational learning to measure outcomes.

In developing a set of agreed upon indicators, emphasis should also be placed on those that show the multiple use and integration of goals sought through CZM. Coastal programs are comprehensive and strive for tools and decisions that factor in the many needs of coastal constituencies in light of the local environment, economy, and culture. Some outcome indicators show an attempt to achieve more than one coastal objective. Examples include restrictions on public access to protect the environment, reservation of space for ports while allowing interim nonport uses, and achieving water-dependent use in a revitalized urban waterfront. Additional indicators that are particularly relevant to CZM may be found in what Goodwin (1999) calls a "process outcome," an adopted plan whose implementation is set in motion but that may take years to complete. Still other indicators would capture the performance of CZM programs in dealing with large-scale issues, like controlling sprawl in the coastal zone, managing key large-scale developments, or protecting the integrity of coastal natural systems. Finally, as suggested by the senior program managers, organizational changes in governance stimulated by emerging CZM programs could be an indicator of the impact CZM has had on broader governmental trends.[19]

Although case studies have their limitations, as noted earlier, they can be a valuable way to examine outcomes that integrate many goals of CZM. Case studies allow a discussion of how multiple needs are considered and the role of CZM processes in reaching the conclusion. However, a common framework for reporting case studies and the outcomes presented in them is needed, a framework that allows comparison of issues, environments, and processes. The use of SAMPs in coastal programs, for example, provides a valuable way to do this comparison since the multiple objectives sought in the SAMP provide an initial framework. Pogue and Lee (1999) recommend a digest of case studies for public access. Bernd-Cohen and Gordon (1999) second this, arguing that in-depth case studies explain how CZM works and how the outcomes are obtained. Good,

Weber, and Charland (1999) urge case studies for estuary and wetland protection, and Weber (1998) has produced a set of 16 estuary and wetland case studies that will be made available on the internet. This approach might be broadened to other aspects of CZM.

- The team concludes that the time is ripe for Congress to initiate a national outcome monitoring and performance evaluation system and that OCRM should take the national lead in implementing the process. The overall CZME framework and outcome indicators can serve as the starting point for the design of such a system.

Systematic outcome monitoring, reporting, and evaluation will not occur without external stimulus and leadership. As mentioned earlier, coastal managers are already overburdened with implementation tasks, and the political and legal pressures they face are focused on current decision processes, not the monitoring and evaluation of past actions. Further, where coastal programs do measure outcomes, they use different indicators, virtually eliminating the possibility of comparing across states or making conclusions from a national perspective. Congress should require an outcome monitoring and reporting system and provide the resources for its implementation. This is the only way that on-the-ground outcomes from the national investment in CZM can be credibly measured.

An effective national outcome monitoring system will take time to develop. We foresee a number of steps that must be followed. First, the coastal community should undertake what Wholey (1994) called an "evaluability assessment." An evaluation assessment establishes the ground rules for an evaluation, including agreement on the goals and objectives of CZM and agreement that reaching these goals and objectives is plausible, that the performance data are available or could be generated, and that the intended users of the results have agreed on how they will use the information.

Second, the coastal community must decide which outcome indicators to use to measure the results of coastal management, or in Wholey's terms, determine the required performance data. Initially, indicators for a subset of CZM goals might be selected for a pilot study (discussed next). This should be a collective decision involving OCRM, state program managers, key Congressional staff, and selected interest groups that monitor CZM closely. This step is centrally important since the purpose of outcome monitoring and evaluation is to provide feedback to program managers who can then make decisions about program change.

Third, a pilot study involving several states should be undertaken to get an estimate of time and costs involved in full implementation. This would form the basis for a proposal to the Congress for CZMA amendments and funding that would be available to all states. This pilot study could be designed and undertaken by those states identified in the CZME as anxious to upgrade outcome information collection and use. An initial study involving the state of Florida and NOAA got underway in 1998 (NOAA, 1998).

Independent of a mandated national-scale outcome monitoring program, individual programs, or groups of state coastal programs, could improve their outcome monitoring and reporting. Similar steps would be needed as outlined above for a national-scale effort: plausible goals must be selected, indicators and data sources identified, and agreements reached about how the information would be used once collected. States could coordinate, or even combine these efforts, with respect to certain of their goals, such as among those states sharing a common geographic feature.

In all of these efforts to develop an outcome monitoring and performance evaluation system, the CZME serves as a logical starting point. The CZME study team followed a

process similar to that outlined above, beginning with selected core objectives of the CZMA, identifying state program responses to these objectives in terms of policies, processes, and tools; identifying associated outcome indicators; and collecting and analyzing available data to document results. Further, virtually all of this work was done in collaboration with state program contacts, including program managers. However, it was not possible in a study of our scope to seek a consensus among the states on outcome indicators, to assess data availability precisely in advance, or to seek agreement on how the results of the study would be used. Nevertheless, state profiles for each of the CZMA core objectives studied and the full national reports can be especially useful resources for follow-up work.

In the development of a national system, there are other aspects of the CZME evaluation framework that should also be given serious consideration by the CZM community. As shown in Figure 1, we determined that issue importance in a state is a central factor that drives consideration of other factors, and that issue importance indicators can be stated and data found for measurement. Put simply, coastal problems and needs differ markedly from state to state, and standards of performance should reflect the level of importance given to an issue. Further, we articulated either a "model" coastal program, or a list of the attributes of successful programs, for each core objective by a cross-state aggregation of processes and tools employed. These were then used by two of the investigators to estimate "potential effectiveness" of a state program by comparing individual state processes with the model. Also, outcome indicators were defined as those that could be linked back closely to the tools and processes used, which allows a determination of "outcome effectiveness." Finally, Good, Weber, and Charland (1999) take this framework an additional step by comparing outcome effectiveness to issue importance and potential effectiveness to determine whether state programs are, overall, performing better than expected, about as expected, or less than expected. These features of our framework, and methods used by the various investigators, will prove to be excellent grist for the mill in the next stage of evaluation.

Ultimately, program evaluation must be combined with information about the condition of coastal resources, or state-of-the-coast information, to give policy makers the best guidance for policy change and improvement. Program evaluation might show that a program is being effective in using the tools it was given to meet a goal, yet the resource in question might still be sub-par or deteriorating. CZME investigators called for such linkages. Goodwin (1999) suggests a national inventory for urban waterfront revitalization. Pogue and Lee (1999) call for a needs assessment to determine the type, amount, and location of new public access sites. Bernd-Cohen and Gordon (1999) argue for use of aerial photo documentation as well as permit records to track the performance of setback laws. In these cases and in others, an important factor is the degree to which the CZM program plays a dominant role in managing or influencing the resource in question. To the extent that CZM plays a major role, then state-of-the-coast information is the appropriate baseline and change reference against which to compare CZM decision-outcome results. Although linking changes in the state of the coast to CZM decision-outcomes over time will always be difficult, such comparisons will at the very least tell us in what direction CZM decisions are moving. Further, they will provide guidance for more detailed investigation of what is working well, what is not, and how policies and programs might be changed. That, after all, is one of the end games of evaluation.

NOAA is in a good position to advance this linkage between coastal change as

exemplified by state-of-the-coast reporting and the program performance of CZM. A number of NOAA programs address the general condition of coastal resources and uses. The newly initiated state-of-the-coast (NOAA, 1998) report[20] is intended to report on the national condition of coastal and marine resources, including pressures on the resource, the state or condition of the resource, and corrective responses. Knowing how state coastal programs address these resource problems and identifying the gap, if any, between the program result and the state of the resource would be useful information for program administrators and policy makers.

Thoughts Toward the Future

Monitoring outcomes and evaluating program performance are expensive and time consuming. Newcomer, Hatry, and Wholey (1994) argued that this cost should be borne only if the program is significant enough to be worth evaluating, the results will influence decisions, and the results will be available in time. In our view, now is the time to make this investment. The pressures on coastal resources have never been greater because of coastal development and population growth, the explosion in recreational use of coastal and marine areas, and increased knowledge of the effects of climate, pollutants, and other stresses on the environment. Further, there is renewed political interest in coastal and marine issues within the Administration[21] and the Congress,[22] as well as the states (Hershman, 1996). Policy makers will be looking at the results of past program activities and asking whether enough has been done to properly manage coastal resources and whether the policy tools available are sufficient to do the job.

This article, and the CZME in general, has emphasized that outcome monitoring is the missing piece in the 20 years of assessing the performance of the CZM system. This observation is not meant to undermine the importance of studying other aspects of CZM program development and implementation. For CZM to be successful, the right issues must be chosen for attention, program policies and processes must work well, and the institutions that do the work of CZM must be well structured and effective. This calls for the study of issues other than those that look at program outcomes. Economic analysis might show the importance of certain resource uses, which then leads to greater policy attention to those resource potentials. Public administration efficiency studies might show how improved organizational arrangements can assist in achieving objectives. And the study of certain processes, for example, the regulation of private land uses, can show best practices to avoid legal challenges.

Finally, the CZME emphasized systematic study of program processes and outcomes as a way to provide feedback to improve program scope, content, and implementation. It is important to point out that this is only one form of evaluation among many. Other forms of evaluation should not be neglected. For example, studies of "quality" in coastal development would ask whether protected environments are maximizing ecological and esthetic functions, or whether revitalized waterfronts are being used and enjoyed by people. Additionally, studies of perception of success or failure are important indicators of public satisfaction or distress with public sector actions, which is important in democratic societies. Finally, views and judgments of experts who have watched and experienced CZM over the years provide invaluable insights into success and failure over longer time horizons—they can see the forest as well as the trees. A variety of forms of assessment can provide robust feedback to CZM program managers and policy makers, and they can suggest indicators to be used in future program evaluations.

Notes

1. The spread of CZM around the world over the last decade has become known as "ICM," or integrated coastal management. This literature is large and growing. See Cicin-Sain and Knecht (1998); Sorensen (1997); and Olsen, Tobey, and Kerr (1997) and references cited therein.

2. The CZMA is the most comprehensive national statute dealing with coastal areas, but there are many other laws and programs that address specific coastal problems such as water quality, use of navigable waters, wildlife and fisheries, mineral resources, land use, and specific hazards such as flooding (Beatley, Brower, & Schwab, 1994; Christie, 1994). A challenging feature of state coastal programs under the CZMA is to build linkages and networks with these many other programs that influence how the coast is used. These specialized programs may be incorporated to varying degrees into approved coastal programs, but the linkages to the state coastal office, federal funds, and federal consistency will vary. This confounds CZM evaluation because the scope of the program being evaluated becomes fuzzy and will vary among the states.

3. These important provisions require that federal activities, and permitting or licensing decisions, that affect land and water use or natural resources of the coastal zone must be consistent with the enforceable policies of approved coastal management programs. Details of the provisions are summarized in Christie (1994).

4. All coastal and Great Lakes states and island territories have approved programs except Illinois, Indiana, and Minnesota. Coastal programs for Georgia, Ohio, and Texas were approved after the CZME was undertaken.

5. The five are: Direct (a single state agency regulates); Direct/LCP (a single state agency regulates but may delegate power to a local government under a local coastal program [LCP]); Networked (a single state agency coordinates the activities of other state and local agencies who have regulatory power); Networked/LCP (same as Networked with the addition of enforceable LCP); Networked/Regulatory (a lead state agency shares regulatory authority with other state agencies) (NOAA, 1998).

6. Putt and Springer (1989) used the term "impact evaluation" rather than "outcome evaluation." We prefer the term "outcome" since it better implies the immediate change in social or physical condition, whereas "impact" implies a longer time horizon in our view. For example, the outcome might be a redeveloped waterfront or a protected wetland, whereas the impact would be the increased enjoyment of the public at the new waterfront, or the improved productivity of the protected wetland. Hastings (1997) referred to these second-order outcomes as program "effects."

7. A full literature review was beyond our scope. Future work is needed to synthesize the findings of the CZME with previously published evaluations.

8. The CZME study was conceived and paid for by OCRM in NOAA (supplemented by other NOAA units and local Sea Grant programs), and OCRM played an important role in developing the structure of the study and assisting in its conduct. The "Announcement of Availability of Funds," dated May 18, 1995, circulated by NOAA, called for a study of the effectiveness of CZM with respect to the identified core objectives. Also, the study was to determine individual and collective contributions of state coastal programs to achieving the core objectives. Exemplary state and local programs were to be identified as well as recommendations that would improve the ability of states to effectively address the core objectives. The Announcement outlined a framework for the study, which was the starting point for the research team.

9. The CZMA articulates 11 specific policy objectives in section 303, but only four were addressed in the CZME. (One of the four, "protection of natural resources," was divided into two parts—estuaries and wetlands; beaches, dunes, bluffs, and rocky shores—and studied separately; hence five studies were done addressing four core objectives.) The seven not directly studied are management of development in hazardous areas, management of development to protect water quality, streamlining of government decision making, federal agency consultation and participation, public and local government participation, comprehensive planning, conservation and management of living marine resources, and the study of and planning for relative sea level rise.

10. The idea for the CZME originated with Jeff Benoit, the director of OCRM, who started

his position in 1993 and wanted a fresh perspective on the program and its results as his tenure started. He also had in mind preparation for the CZMA reauthorization process that occurs about every five years, and a renewed emphasis on "accountability" in government reflected in the Government Performance and Results Act of 1993. OCRM decided to work cooperatively with the National Sea Grant program in the conduct of the study. Ultimately three Sea Grant colleges and six primary investigators (the authors of this article) joined together in the successful proposal to undertake the study.

11. The CZME did not address the activities of the OCRM directly. The OCRM is evaluated by government evaluators such as the Office of Inspector General of the U.S. Department of Commerce (U.S. Dept. of Commerce, 1997).

12. This specialization led to a sharp focus on how state program actions affected a specific objective, and resulted in less attention to how state program actions might influence or achieve multiple objectives simultaneously. A number of factors contributed to this: the structure of the study, the geographic separation of study team members, and the broad scope of each individual study. These factors led to less-than-hoped-for time to examine cross-cutting issues and themes.

13. At this point in the study, as well as at subsequent stages, we received considerable guidance from advisors. These advisors included four experienced coastal program managers (Wayne Beam, SC; Sarah Cooksey, DE; Eldon Hout, OR; James Tabor, PA), two academic experts (David Owen and Tom Leschine), and OCRM officials (notably Bill Millhouser).

14. Profiles are on file with OCRM. Some investigators did separate profiles for the California outer coast and the San Francisco Bay region, since they are distinct programs even though located within one state.

15. These reports are Good, Weber, Charland, Olson, and Chapin (1998); Bernd-Cohen and Gordon (1998); Pogue and Lee (1998); Goodwin and Hastings (1998); and Hershman (1998). For availability, reference www.nos.noaa.gov/ocrm and search for "Coastal Zone Management Effectiveness Study."

16. Interview data are on file with M. J. Hershman, first author of this article.

17. Interview data and summary of this work are on file with Hershman, first author.

18. In this regard, it is important to note that the structure of the CZMA allows program amendments to be offered by the states but does not authorize the federal agency to require that state programs be amended to increase stringency, or change or add goals. Such requirements come from the legislative policy makers. Incentives are authorized to encourage program improvement, such as the CZMA, section 309 program (Bernd-Cohen et al., 1995).

19. A reviewer of this article suggested other indicators of performance that are less directly related to the policy goals of the CZMA yet could show enormous success. These include the ability of the program to survive when funding sources are reduced or eliminated; the diffusion of the CZM goals into other programs separately enacted and funded such as the National Estuary Program; the enormous growth of nongovernmental organizations and general public awareness of the coast and its values; and the spread of the CZM concept to nations around the world. Although hard to measure, there is a strong intuitive sense among CZM insiders that the U.S. CZM program has had the kind of impacts listed above.

20. Described at http://state-of-coast.noaa.gov/

21. The Clinton administration sponsored the National Ocean Conference at Monterey, CA, June 10 and 11, 1998, at which a number of ocean and coastal initiatives were announced.

22. During the 105th Congress, the Senate and House considered bills to create an "Oceans Act," which would establish a Commission on Ocean Policy to study and recommend national ocean and coastal policy for the United States (S. 1213, 105th Cong., 1st Sess. (1997); H.R. 3445, 105th Cong., 2d Sess. (1998)). If bills such as these are enacted, we believe the national CZM program will play a significant role in this policy initiative because it is a long-standing program with considerable experience and much success. It also is one that is truly intergovernmental in that it brings federal, state, and local interests together within a single framework. Undoubtedly, it will be seen as an important vehicle for the next generation of coastal and marine policies, since intergovernmental relations will be a paramount issue.

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