

# Social Influences on Conservation: Lessons from U.S. Recovery Programs for Marine Mammals

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**Abstract:** Marine mammal recovery programs authorized by the U.S. Marine Mammal Protection Act and the U.S. Endangered Species Act face many challenges. In addition to biological uncertainty, social, organizational, and other conditions influence the decision-making behavior of program participants. From 1996 to 1999, I analyzed the decision-making behavior of participants in five marine mammal recovery programs. Based on a literature review and interviews with 90 program participants, I identified, described, and analyzed the principal influences on participant behavior. Results indicate that decision-making and participant interactions are influenced strongly, and in some cases predominantly, by social factors such as leadership characteristics, communication, teamwork, the presence or absence of evaluation, organizational culture, and program participants' ideologies. These findings indicate the need to improve marine mammal recovery programs through training, evaluation, and the development of prototype programs that incorporate and explicitly apply social factors to problem solving and then use their experience as a model for future programs.

Influencias Sociales en la Conservación: Lecciones de los Programas de Recuperación de Mamíferos Marinos en los Estados Unidos

**Resumen:** Los programas de recuperación de mamíferos marinos autorizados por el Acta para la Protección de Mamíferos Marinos y el Acta de Especies Amenazadas de U.S.A. enfrentan muchos retos. Además de la incertidumbre biológica, las condiciones sociales, las condiciones organizativas y otras condiciones influyen en la conducta de los participantes en los procesos de toma de decisiones. Analicé la conducta de los participantes en los procesos de toma de decisiones de 1996 a 1999, en cinco programas de recuperación de mamíferos marinos. En base a una revisión bibliográfica y entrevistas hechas a 90 participantes de los programas, identifiqué, describí y analicé las principales influencias sobre la conducta de los participantes. Los resultados indican que la toma de decisiones y las interacciones de participantes son fuertemente influenciadas y en muchos casos de manera predominante, por factores sociales como las características de liderazgo, la comunicación, el trabajo en equipo, la presencia o ausencia de evaluaciones, la cultura organizativa y las ideologías de los participantes del programa. Estos resultados indican la necesidad de mejorar los programas de recuperación de mamíferos marinos mediante la capacitación, la evaluación y el desarrollo de programas prototipo de recuperación que incorporen y apliquen explícitamente los factores sociales al proceso de resolución de problemas y usar estas experiencias como un modelo para programas futuros.

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## Introduction

Throughout U.S. history, marine mammals have been the objects of continuous research in the natural sci-

ences. Research programs have developed from their associations with the harvest of marine mammals in the last century to current recovery and reintroduction programs mandated under the U.S. Marine Mammal Protection Act of 1972 (MMPA) and the U.S. Endangered Species Act of 1973 (ESA).

Monitoring of marine mammal populations in the nearly three decades since the acts were passed has resulted in a mixed prognosis. Certain species, such as the

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Florida manatee (*Trichechus manatus latirostris*), are increasing in numbers (U.S. Fish and Wildlife Service 2001). Others, such as the northern right whale (*Eubalaena glacialis glacialis*) (Caswell et al. 1999; International Whaling Commission 2000) and California sea otter (*Enhydra lutris nereis*) (Estes & Hatfield 1998; U.S. Geological Survey, Biological Resources Division, unpublished data), have at best remained stable at low levels. Still others, such as the Steller sea lion (*Eumetopias jubatus*) (National Marine Fisheries Service 2000) and Hawaiian monk seal (*Monachus schauinslandi*) (Ragen & Lavigne 1999) have declined. Many species sustain significant annual levels of human-caused mortality (Katona & Kraus 1999; Perrin 1999; Ragen & Lavigne 1999; U.S. Fish and Wildlife Service 2001). Where species are declining or stable at critically low levels, the need for strong recovery efforts is clear. For healthy or increasing populations, the potential for adverse interactions with humans underscores the need to carefully manage human behavior in marine mammal habitat. Thus, regardless of a population's status, strong conservation programs under the ESA and MMPA are needed that promote coordination among stakeholders and cooperative efforts to reduce conflicts (Lavigne 1999; Read & Wade 2000).

Although ostensibly developed to promote both research and management, most marine mammal recovery programs are dominated by research based in the biological or physical sciences (i.e., "biophysical" research). This tendency has been further reinforced by a perception among natural scientists that biophysical research is the "traditional" means by which to inform endangered species recovery programs and that recovery itself is a biological task (Brewer & Clark 1994).

The overriding emphasis on biophysical research in federal and state marine mammal programs has overshadowed the social factors critical to successfully managing living marine resources. These critical factors affect the operation and evaluation of marine mammal programs and were identified by participants in the programs I studied as the quality of leadership, communication and communication skills, cooperation and cooperation skills, formal teamwork and team-building skills, the presence or absence of evaluation, organizational culture, interagency relations, personal and professional conflict, program structure and design, and program participants' values and ideologies. The central question addressed by my study is how these variables affect decision-making behavior by program participants. In marine mammal programs, social considerations often appear to operate independently of the biological and ecological data that ostensibly drive decision-making. In practical terms, this means that even when data indicate the need for technical management actions (e.g., captive breeding or translocation), those needs may be overridden or ignored as a result of social influences on deci-

sion-making. This phenomenon is well illustrated in endangered species recovery (Yaffee 1982; McFarlane 1992; Alvarez 1993; Clark et al. 1994; Yaffee 1994a; Miller et al. 1996; Primm & Clark 1996; Clark 1997; Lavigne 1999).

The overshadowing of social factors by biophysical research in recovery planning has led to a proliferation of weak management strategies in marine mammal recovery programs. Since the passage of the MMPA and ESA, species conservation in the United States has been inextricably linked to the ability to gather biophysical data. At the same time, the social sciences have lagged behind the natural sciences in their successful integration into species and ecosystem conservation (Saberwal & Kothari 1996; Jacobson & McDuff 1998; Clark 2002). Thus, expertise and strategies necessary to address social problems in marine mammal programs are often weak or absent.

### Approaches to the Appraisal of U.S. Marine Mammal Recovery Programs

I sought to answer two questions: what factors do participants believe affect their recovery programs and how do these factors affect decision-making? I studied recovery programs for the Florida manatee, California sea otter, Hawaiian monk seal, Steller sea lion, and northern right whale. I selected the cases based on a number of criteria representing a broad spectrum of species and programs. These criteria include designation under the ESA (i.e., threatened or endangered), phylogenetic diversity, habitat/ecosystem diversity, and diversity of program structures (i.e., programs of varying levels of complexity and numbers of participants).

My methods of inquiry included 8 years of participant and nonparticipant observation beginning in 1991, a nearly comprehensive review of published and unpublished literature, and extensive interviews with program participants. I modified these aggregate methods from previous studies of participant behavior in government and nongovernment programs (Dornbusch & Scott 1975). These methods allow for a concurrent analysis of several sources of information about a single event or circumstance, one of the strengths of case-study research (Yin 1994).

My primary data-collection method was to interview participants in each recovery program. I developed interview questions based on an analysis of the programs' histories and organizational dynamics and the decision-making strategies of program participants. Questions were directed but not fixed-response; each question required a specific answer (e.g., "Does your agency have a formal process of evaluating its tasks under the recovery plan?"), but following each question I asked respondents to explain their answers in as much detail as possible.

**Table 1. Case-study interviews with participants in species recovery programs conducted for this study.**

<i>Recovery program</i>	<i>No. of interviews, date</i>	<i>Organizations represented</i>
California sea otter	17, spring/summer 1997	U.S. Fish and Wildlife Service (USFWS) U.S. Geological Survey/Biological Resources Division (BRD) Marine Mammal Commission (MMC) recovery team Minerals Management Service California Department of Fish and Game (CDFG) nongovernmental research and advocacy organizations (NGO)* shellfishing industry university and independent researchers
Florida manatee	23, summer 1996	USFWS BRD MMC recovery team Florida Department of Environmental Protection Manatee Technical Advisory Council nongovernmental research and advocacy organizations* university and independent researchers
Hawaiian monk seal	22, winter 1997	National Marine Fisheries Service (NMFS) USFWS MMC Western Pacific Fishery Management Council recovery team Hawaii Department of Land & Natural Resources nongovernmental research and advocacy organizations* university and independent researchers
Steller sea lion	16, fall 1996	NMFS USFWS MMC North Pacific Fishery Management Council recovery team Alaska Department of Fish and Game commercial fishing industry North Pacific Universities Marine Mammal Research Consortium university and independent researchers
Right whale	12, spring 1997	NMFS MMC New England Fishery Management Council other federal agencies* implementation teams Massachusetts state agencies* nongovernmental research and advocacy organizations*

*\*Because of the limited number of individuals representing many of these organizations and the need to protect the privacy of participating individuals, these organizations are not identified by name.*

I interviewed only key decision-makers in organizations that were responsible for carrying out tasks under each recovery plan or that represented the only organization of its type in the program (e.g., state agency, nongovernmental research organization). My purpose was not to sample a subset of the entire population of program participants (which in some cases might have included hundreds of individuals, from seasonal field personnel to agency chiefs) but to interview as many of the principle decision-makers in each program as possible. Ninety of 94 participants I approached agreed to be interviewed, representing the full spectrum of organizations in each program (Table 1).

The questionnaire contained questions seeking (1) demographic information, (2) respondents' perceptions of

the greatest successes and problems in their program, and (3) insight into specific issues in program implementation and evaluation. In almost all cases, discussion of the third point flowed from responses to the questions concerning successes and problems. The following discussion is based on respondents' comments on successes and problems in their programs.

### **Process versus Outcome in Marine Mammal Recovery Programs**

Participants divided their responses into two categories: those concerning the process of programmatic decision-making and those concerning program outcomes. The

Table 2. Successes described by respondents in the five species recovery programs examined.

<i>Recovery program</i>	<i>Outcome</i>	<i>Process</i>
California sea otter	biological research program otter listing under the Endangered Species Act (ESA)	none
Florida manatee	increased public awareness about manatees manatee necropsy program and the Florida Marine Research Institute's manatee pathobiology laboratory boat speed regulations long-term federal/state/academia manatee research program overall interagency structure of recovery program state recovery program infrastructure manatee rescue and rehabilitation program Florida conservation lands acquisition program Florida Manatee Sanctuary Act of 1978 manatee geographic information system Florida county manatee protection plans manatee-themed license plates use of boater registration to raise funds for manatee recovery	communication among key program participants reduced animosity between Florida state agency staff and leadership U.S. Fish and Wildlife Service's use of section 7 of the ESA to mitigate development in manatee habitat
Hawaiian monk seal	"head start" program increased knowledge of monk seal biology and ecology increased program funding increased awareness of monk seal issues among government agencies designation of critical habitat successful recolonization of Kure Atoll closure of U.S. Navy and U.S. Coast Guard facilities in monk seal habitat closure of critical habitat to commercial fishing increase in number of paid program staff	none
Steller sea lion	recognition of problems by fishing industry sea lion recovery plan commercial fishing regulations that promote sea lion recovery sea lion listing under ESA reliable congressional funding allocations	cooperation between National Marine Fisheries Service (NMFS) and fishery management council good working relationships between NMFS staff and recovery team
Northern right whale	early warning system to mitigate right whale/ shipping interactions heightened awareness by government agencies and public rapid-response program to disentangle right whales from marine debris right whale photo-identification catalog right whale recovery plan right whale biological research database growth of whale-watching industry	efforts by nongovernmental organizations to force change in program through legal challenges

distinction between process—how a program functions—and outcome—what it accomplishes—is critical to evaluating recovery efforts (Kleiman et al. 2000). Respondents' division of successes and problems into process and outcome categories underscores the importance of both to evaluation. However, a significant division was revealed by respondents' categorizations of process and outcome variables: program participants clearly measured successes in terms of outcome and problems in terms of process. Across all programs, respondents described 36 of 42 successes as outcomes rather than processes (Table 2). No more than three

process-related successes were noted in any one case study and in two of the five cases no process-related successes were noted. Conversely, respondents across all cases described 32 of 37 problems as process-related rather than outcome-related (Table 3). No more than two outcome-related problems were noted in any one case study, and in two cases no outcome-related problems were noted.

When endangered species programs were evaluated, outcomes were chosen as the focus more often than decision-making processes. This is due to the fact that assessing outcomes is often a more straightforward and



**Table 3. Problems described by respondents in the five species recovery programs examined.**

<i>Recovery program</i>	<i>Outcome</i>	<i>Process</i>
California sea otter	none	<ul style="list-style-type: none"> <li>conflicts between agency staff based on differing values of otters and shellfish</li> <li>lack of leadership in either U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Game (CDFG)</li> <li>lack of teamwork between USFWS and CDFG</li> <li>failure of either USFWS or CDFG to reliably carry out recovery tasks</li> <li>CDFG staff's reluctance to cooperate with USFWS staff</li> <li>USFWS's delays in the regulatory process</li> <li>failure of USFWS staff to follow through on initiated recovery actions</li> </ul>
Florida manatee	human population growth in proximity to manatees and manatee habitat	<ul style="list-style-type: none"> <li>decision-making by Florida agency leaders</li> <li>the reactive nature of government natural resource agencies in Florida and nationally</li> <li>inability of Florida state agency staff to carry out recovery tasks</li> </ul>
Hawaiian monk seal	<ul style="list-style-type: none"> <li>lack of biophysical knowledge</li> <li>human disturbance of monk seals</li> </ul>	<ul style="list-style-type: none"> <li>inability of USFWS staff to carry out recovery tasks</li> <li>conflicting mandates within the National Marine Fisheries Service (NMFS)</li> <li>inadequate program funding</li> <li>lack of clear agency goals for monk seal recovery</li> <li>personality conflicts among NMFS staff in Hawaii</li> <li>tension between NMFS and USFWS personnel</li> <li>public education program insufficient</li> <li>lack of visibility and support for the program within NMFS</li> <li>advanced age of some NMFS program personnel</li> <li>lack of connection to daily events by recovery team and Marine Mammal Commission</li> <li>unwillingness by NMFS staff to critically evaluate themselves</li> <li>insularity of recovery team and NMFS program staff from other program participants</li> </ul>
Steller sea lion	none	<ul style="list-style-type: none"> <li>lack of knowledge about the cause of the decline</li> <li>ineffectiveness of NMFS personnel in agency's Office of Protected Resources, Alaska region</li> <li>inadequate program funding</li> </ul>
Northern right whale	shipping-related injury and mortality effects of pollution on right whales and their habitat	<ul style="list-style-type: none"> <li>lack of biophysical knowledge</li> <li>interactions between right whales and commercial fisheries</li> <li>lack of communication and coordination among program participants</li> <li>adverse effect of federal permitting bureaucracy on research program</li> <li>inadequate program funding</li> <li>lack of sufficient NMFS staff allocation</li> <li>need for vigilance to keep program participants coordinated and cooperative</li> </ul>

less conflict-prone task than assessing decision-making (Kleiman et al. 2000). Recovery outcomes for endangered species are often measured in terms of biophysical variables such as population status, trends in mortality or physiological health, or the extent and quality of available habitat. Perhaps most significant, the ESA and MMPA focus on outcomes, not processes. Thus, the success of the laws is often couched in terms of the number of species listed (or down-listed or de-listed) under the laws, the number of recovery plans completed, or the amount of critical habitat designated.

Evaluating outcomes can be misleading and often unhelpful in making practical recommendations to improve program function because positive outcomes can be the result of inefficient or even damaging processes. Similarly, efficient processes can result in the failure of a

program to reach its biological goals (Miller et al. 1996; Clark 1997; Kleiman et al. 2000). This indicates the need to evaluate both processes and outcomes to determine whether programs are experiencing problems and to focus on processes in order to fashion practical recommendations for improving the programs.

The process-related problems described by program participants are the source of the social variables identified above. The relevance of these problems is underscored by the positions held by the respondents in the programs—all were leaders or other decision-makers. A quick review of the process-related problems identified in the five programs (Table 3) reveals their potential severity and their centrality to the programs. Evaluation of these programs therefore requires a primary focus on addressing problems.

## The Influence of Values on Participant Behavior and Interactions

Social factors influence every aspect of a recovery program: planning, implementation, evaluation, and termination (Brewer & deLeon 1983; Lasswell & McDougal 1992). These phases, simplified here, compose the policy process. Throughout the policy process, social behavior is influenced by participants' values. These values (Table 4) are program participants' attributes or resources, which they use and seek in making decisions and interacting with one another (Lasswell & McDougal 1992).

Participants in any policy process share a common values-related goal: to obtain new or greater values while maintaining those they already have (Lasswell & McDougal 1992). Participant behavior in the case-study programs supported this axiom. In the five case studies, if participants could maintain the values they held (e.g., power or respect) or obtain those they desired (e.g., funding or power) while promoting species recovery, they did. If they could not, species-recovery goals often suffered. Respondents in the case-study programs identified numerous examples in which strong recovery actions were perceived to conflict with the value priorities of agency leaders and staff.

In all the cases, the behavior of federal and state agencies was strongly influenced by the existence in the policy process of industrial interests (e.g., commercial fishing, recreational boating, or coastal development) and a desire to minimize or avoid the loss of values such as power, funding, and respect. Where decisions that adversely affect important industries (e.g., fishing in New England or Hawaii, boating and development in Florida) might result in value losses for the agencies, such as decreased budget allocations from unsympathetic legislatures, the costs of making decisions that adversely affect various industries were often perceived as too great to risk. This is so because the agencies rely on the support of elected officials, and that support is often tied to those officials' satisfaction with the agency's contributions to or lack of interference with local or regional economic gains. Backlash against strong conservation measures that adversely affect economic productivity

can be severe even on a local level, and as a result conflict-avoidance behavior becomes part of agency culture (Lichatowich 1992). This was evident in programs for the manatee, monk seal, sea lion, and right whale, in which recovery measures threatened boating, fishing, or development.

Across the case-study programs, these value conflicts were addressed in respondents' comments on weak leadership, the inability of agency leaders or staff to support, undertake, or complete needed recovery actions, and the lack of programmatic support from agency leadership, among other factors. These sorts of conflicts have also been documented in other endangered species programs (Yaffee 1991; McFarlane 1992; Yaffee 1994b; Margavio & Forsyth 1996; Shogren 1998; for general discussions see Yaffee 1982; Tobin 1990; Clarke & McCool 1996).

Many advocacy organizations leveled substantial criticism at the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS)—the two lead federal agencies for marine mammal recovery. Their defensive and at times antagonistic behavior in response compounded the perception of their leadership as weak. In comparison, industry participants, because of the support of elected officials, were usually in a position of strength, and there was little impetus for them to change their strategies for influencing agency decision-making. This dynamic perpetuated a cycle of actual and perceived weakness in the agencies. This weakness was characterized by the perceptions of agency staff and other program participants that agency leaders made decisions that increased their power or respect or reduced the likelihood of the loss of power or funding, regardless of the effect on species recovery. Recovery-minded participants then lost respect for program leaders, leading to a sense of disenfranchisement or lack of loyalty by staff to the agency.

Program participants in the five cases all wanted to operate from a position of strength, protecting and augmenting values whenever possible. But because of the threat of loss of power, funding, or respect and agency leaders' desire to maintain those values, in all but one of the cases strategies to increase values such as power, re-

Table 4. Values held and sought by individuals or organizations (adapted from Lasswell & McDougal 1992).

<i>Value</i>	<i>Definition</i>
Power	ability to make enforceable decisions
Wealth	funding, staffing, logistical and physical resources
Knowledge	gathering, processing, and disseminating data and information
Skill	acquisition and exercise of capabilities in research, management, advocacy, and other pertinent fields
Respect	freedom to make responsible decisions, equality, recognition for decision-making
Affection	loyalty, friendship, intimacy
Well-being	safety, health, and comfort in personal or professional undertakings
Rectitude	participation in forming and applying norms of responsible conduct

spect, or funding resulted in weak approaches to species and habitat conservation.

The organizational structure of both the NMFS and the USFWS also affected relationships among staff and leadership. Both agencies are highly decentralized. Regional directors oversee state or local offices, which house recovery-program coordinators and staff. However, both agencies also have national offices in Washington, D.C., charged with overseeing protected species programs. Program participants believed that this dichotomy between regional and national leadership often weakened the programs. Program participants perceived national leadership in the federal agencies as distant and detached from day-to-day program activities or, at times, as counterproductive to program goals. This lack of national leadership undermined the ability of the staff of regional and local programs to provide leadership at the program level. It also explained the disdain for national leadership expressed by many regional and local agency staff, who believed that agency goals at the national level often impeded agency recovery goals at the local level. This goal displacement or lack of support by national agency leadership was noted by agency staff at the field and regional level in every case-study program.

Overall, agency leaders at all levels made decisions in complex circumstances of high uncertainty and incomplete information, besieged by vocal advocates of one or another outcome, and often under the explicit or implied threat of legislative or internal budgetary sanctions. Leaders' decision-making in these circumstances rarely promoted species recovery goals.

### Communication among Program Participants

Related to leadership and value interactions is the ability of program participants to work well together. Coordination and teamwork begin with effective communication. Several common barriers to communication occurred to varying degrees in the five programs. They included differences in interpretation and intent of communications between senders and receivers and the influence on communication of organizational culture. Respondents identified these problems in their comments on ineffective teamwork, personality conflicts, insularity of program participants, and ineffective coordination, among other areas.

Problems in interpretation occur when discrepancies exist between the intent and perception of the sender and receiver of a communication. Successful communication therefore stems from an open, two-way rapport (Stodgill & Coons 1957; Tannenbaum et al. 1961; Perrow 1986). "The receiver must share the sender's views about what aspects of the intended message need to be transmitted, and the receiver must share the sender's beliefs about the meanings attached to communication"

(Northcraft & Neale 1990:117). Participants in the recovery programs came from various backgrounds (e.g., biology, management, economics, advocacy), had different perspectives that conditioned their perceptions of the problems at hand (or, indeed, that may have caused them to perceive entirely different problems in a single event), and lacked a common understanding of the policy process (Clark et al. 1992). Because of these circumstances, the meaning or purpose of communications between participants may have been misconstrued or willfully distorted. Participants in all five programs claimed that such miscommunications occurred and impeded decision-making. Conflicts that resulted were identified by respondents in their comments on communication, coordination, and participant relations.

Organizational culture is the system of beliefs and understandings about how an organization operates that provides an organizational identity for those who work for or interact with the organization (Duncan 1989; Daft 1992). Organizational culture "conditions attitudes towards communication and communication processes" (Brown & Starkey 1994:811). Where organizational culture fosters or rewards insularity or penalizes open communication, both communication and coordination suffer. In the case-study programs, participants claimed that agency culture in regional and local offices of both the NMFS and the USFWS discouraged open communication. This tendency protected agency offices against a loss of values such as power or funding by masking bad news or reducing the potential for conflict. Information indicating a lack of progress or failure of the programs to meet their mandates would reflect badly on agency staff and potentially result in sanctions (such as reduced funding or other support in the future). In a number of the programs, for example, the results of agency research—which is in the public domain—were withheld from the public or even other involved agencies, sometimes for years. This occurred most often when data analysis was long delayed or research results reflected a failure of management actions.

There are several steps necessary to improve communication in recovery programs. Northcraft and Neale (1990:119) suggest that "because communication is essentially a perceptual process, communication can be improved by increasing the probability that the receiver will accurately perceive a sender's communication attempt." They suggest two approaches to overcoming communication blockages: increase sender empathy and promote active listening by recipients.

Increasing sender empathy requires assigning to people who initiate communications responsibility to consider the perspectives of the people with whom they are attempting to communicate. By considering the receiver's perspective and values, the sender can frame and structure the communication in ways that will increase the likelihood that it will be well received.

In the case-study programs, there were many examples of communications that failed because the sender neglected to consider the perspective of the intended receiver. Specific examples included misperceptions of the receiver's workload, false expectations of the receiver's ability to address the issue at hand, and attempts to communicate with someone whose interests in the issues were at odds with that of the sender. Most failures of communication in the case-study programs were the result of misconstrued or misjudged workloads or slight (as opposed to stark) differences in perspectives; for example, failure of individuals to meet task-specific expectations in a timely fashion was a problem encountered often in all of the recovery programs.

In specific instances in the manatee and monk seal programs, however, certain agency staff members who attempted communication with their superiors were faced with such willful disregard for the staff members' perspectives that open communication became either hostile or impossible. In these situations, increased sender empathy was futile, and changes in the status quo came only when one or the other of the individuals involved left his or her job.

The second approach to improving communication requires recipients of a communication, rather than senders, to modify their behavior. This alternative, called active listening, "is the mirror image of sender empathy. Sender empathy means the sender accepts responsibility for ensuring proper transmission of intended meaning. Active listening involves the receiver accepting responsibility for ensuring proper transmission of the intended meaning" (Northcraft & Neale 1990:120).

According to program participants, active listening rarely occurred in the five recovery programs when the receiver was an agency leader. In these instances, particularly among key participants in the manatee, monk seal, and sea otter programs, differences in perspective and interpretation of communications regularly undermined attempts to further recovery goals because recipients of communications rarely listened "actively" to what senders had to say. This resulted in poor coordination, reduced respect among program participants, perceptions of conflicting mandates and, not surprisingly, tense relationships among program staff members. Among recovery staff at the field and middle-management levels of the administrative agencies, and between these agency staff members and the staff of nongovernmental organizations, dedication to the goals of the recovery effort was high and active listening occurred more regularly.

When sender empathy and active listening occurred in the recovery programs, communication usually resulted in more productive decision-making behavior. The clearest example of this in the recovery programs is the Marine Mammal Commission's involvement in the manatee and sea otter programs. The commission is a small federal agency responsible for overseeing and providing advice on all federal marine mammal programs. In these programs,

commission staff and leaders were able to directly influence program decision-making by communicating openly and candidly with agency leaders and staff, exercising both sender empathy and active-listening techniques while clearly delineating agency accountability for expected recovery actions. In most cases, however, even when these techniques were utilized they rarely influenced the policy process beyond the field or middle level of research or management decision-making. This, again, was due to the nature of leadership in the administrative agencies.

Agency leaders at the highest levels, in the administrative headquarters in Washington, D.C., are subject to many political and bureaucratic pressures to which lower- and middle-level staff are not exposed. These pressures—including interactions with the federal Office of Management and Budget, members of Congress and their committees, and Washington, D.C. lobbyists—create a "disconnect" between agency leaders who have ultimate authority over recovery programs and staff at the field and regional levels. Field- and regional-level agency staff members were aware of these pressures and in every case-study referred derisively to their effect on decision-making in recovery programs, often blaming agency leaders for poor judgment or lack of rectitude.

Open communication between agency leaders and staff members is not likely to result in greater influence of the latter on leadership decision-making. But sender empathy and active listening on both sides would reduce the antagonism toward national leadership that field and regional staff displayed in each case study by making interactions more respectful. This in turn would reduce the discord that occurs between the two sides in their many required interactions concerning recovery programs.

Training in communication techniques will help facilitate open communication in the recovery programs at all levels. Explicit involvement by agency leaders or staff, nongovernmental personnel, or neutral third parties skilled in communication strategies and not vested in program outcomes is needed to increase stakeholders' communication skills and to teach them to recognize values shared among program participants. On this common ground communication can be built that will promote or facilitate cooperation (Axelrod 1984).

### More Concerns about Leadership

All five of the recovery programs would benefit from leadership behavior that more adequately considers problem-oriented actions—those that address the root causes of species recovery problems—and less habitually promotes defensive or conflict-avoidance behavior. Achieving this will be difficult. To promote effective policy processes, "agency leaders must foster and reward the good ideas of their staffs [and] look for opportunities to promote innovation in their organizations" (Yaffee 1995:403). This implies that agency



leaders must shift from defensive decision-making strategies—even if they are easier, protect job security, and satisfy the fiscal desires of superiors or legislators—to a problem-oriented approach in which problems are defined and alternatives selected based on the conservation needs of the endangered species or its habitat (Clark 1997; Wallace & Clark 1999). Then program participants can be identified and the range of alternatives available to address the problem can be realistically assessed.

Improving leadership also implies leaders recognizing and supporting, as opposed to stifling or ignoring, staff who provide data-based and problem-oriented decision choices through their knowledge of the species, its habitat, or the social factors that influence recovery efforts. In each of the case-study programs, such staff were underappreciated, sometimes ignored, and in exceptional cases reprimanded or forced from their jobs. Examples of leadership in the case-study programs hindering program goals have been chronicled elsewhere (Wallace 1994; VanBlaricom 1996; Lavigne 1999) and in other conservation programs (Bella 1992; Lichatowich 1992; Cook 1997; Hutchings et al. 1997). This sort of leadership rewards staff members who are least likely to rock the boat, but it rarely leads to timely or strong recovery actions.

The cultures of the participating organizations do not provide much hope for change. When faced with conflict caused either internally (by staff who may shun the status-quo defensiveness) or externally (by advocates of organizational change or supporters of strong recovery actions), there is a tendency by agency leaders “to retrench into the objective of holding onto the past, resist change, and maintain short term control of their organizations at all costs” (Yaffee 1995:403). When problem-oriented staff members are supervised by defensive and conflict-averse leaders, they are at risk of becoming demoralized; at worst, an “occupational schizophrenia” sets in in which staff members find themselves working at cross-purposes with leadership (R. B. Gill, “Wildlife management agency image and professionalism: an insider’s view,” talk presented at a meeting of the Colorado Chapter of The Wildlife Society, 29 January 1988). In these instances, which occurred often in all five case-study programs, the quality of the staff’s contributions to the recovery effort suffered. What is needed is leadership that provides both opportunities and a supportive environment for creativity and risk-taking in addressing endangered species recovery problems (Yaffee 1995). Thus, stronger leadership is needed in each of the five programs.

### **The Interrelatedness of Social Factors in Marine Mammal Recovery Programs**

The role of values in the behavior and interactions of program participants, the quality of agency leadership,

and communication skills and strategies influence decision-making in every stage of the policy process. Even where biophysical data strongly influence decision-making, the case studies indicate that leadership, communication strategies, and values had a profound effect on decision-making.

In each of the case-study programs there were instances in which agency staff members or other participants chose alternatives to addressing conservation problems, in response to which agency leaders either rejected or substantially modified the selected alternatives. In most cases, these conflicts stemmed from differences in value priorities or from ineffective communication between agency staff and leadership. When alternatives were selected in this atmosphere, implementation was usually a contentious process and outcomes often failed to promote recovery goals.

In the five cases, ineffective or flawed decision-making affected program outcomes, often negatively, by impeding research, management, or regulatory progress toward the goals of increasing population sizes, decreasing mortality, reducing disturbance, or restoring habitat. These impediments occurred most often when recovery actions threatened values held by agency leaders, such as power, funding, or respect from peers or legislators. Differences in value priorities between staff and leaders involved conflicts between the pursuit of knowledge, funding, power, or respect by staff and the defense of power, funding, or respect by leaders. These differences in value priorities underlie differences in perspectives on decision-making. Differences in perspectives often led to communications failures in each of the case-study programs.

Decision-making in endangered species programs is never simple, straightforward, or unconditionally effective. There are simply too many variables in play for this to be so. For policy processes to run relatively smoothly and recovery outcomes to be achieved, necessary variables will include strong leadership, communication free of confusion or conflict, and, ultimately, participants who can overcome value conflicts to undertake productive, professional, and problem-oriented decision-making.

### **Steps toward Improving the Policy Process**

The difficult question remains of how to promote effective decision-making behavior in biophysically oriented research and management programs. This promotion should take at least two forms.

The first is education. Graduate programs in conservation biology and training programs in federal and state natural resource agencies must train professionals in the social dimensions of conservation biology. The literature in conservation biology has reflected and explored this need (Touval & Dietz 1994; Cannon et al. 1996; Saberwal & Kothari 1996; Clark 1997, 2001, 2002; Meffe 1997,

1998; Jacobson & McDuff 1998; Inouye & Dietz 2000). Until methods of problem solving and managing human interactions are an explicit part of the practice of conservation biology, mistakes, crises, and failures in the management of protected species programs will occur.

Given that agency leaders are rarely trained in conservation biology, the lack of recovery program participants trained in practical problem-solving methods compounds an already weak decision-making process in most recovery programs (and in all of the case-study programs in this study). It is unlikely that many agency leaders in the future will be well-versed in the broad, interdisciplinary tenets of conservation biology. Therefore it is critical that the graduate programs responsible for training future agency staff promote practical problem-solving methods. Without them, there is little likelihood that a smooth decision-making process will be nurtured and promoted at any level within the agencies.

The second step in promoting effective decision-making behavior is to illustrate and formalize straightforward standards for practical problem solving. Numerous articles and books have presented theoretical and applied methods for improving species conservation (Kellert & Clark 1991; Brewer & Clark 1994; Clark & Cragun 1994; Clark et al. 1996; Brunner & Clark 1997; Clark 1997, 2000, 2002; Clark et al. 2000). These works provide critical guidance but must be given credence by practitioners not already predisposed toward the approaches they espouse. Other methods and forums are also needed for promoting practical problem solving that would complement these works and provide a bridge between them and practitioners in the programs who could most benefit from practical problem-solving tools.

One such method is for practitioners and analysts to publicize and model efforts by recovery program participants who successfully incorporate social factors in the recovery policy process. These efforts are made regularly by individuals and organizations outside the community of analyst-practitioners who normally publish on these topics in this and other journals. Many prominent examples exist from the marine mammal policy arena. Following are five examples.

- (1) The U.S. Marine Mammal Commission, including its staff and its committee of scientific advisors, have promoted excellence in marine mammal recovery programs. For three decades the commission has undertaken the positive approaches to leadership, communication, and coordination I have describe and has, to varying degrees and with varying outcomes, attempted to instill them in every marine mammal recovery program.
- (2) In the 1990s, forward-thinking individuals were hired as policy and program coordinators for the Steller sea lion and large-whale research and management programs at the NMFS. These and other

agency staffing changes are rarely couched in terms of promoting the integration of social, policy, and biophysical factors to improve problem solving, but their practical effect is to move the involved programs substantively toward appropriate goals.

- (3) An external evaluator provided a candid and incisive assessment of the ad hoc and often unseemly organizational response to the 1996 mass mortality of Florida manatees (Work 1996). This individual accurately identified and described the nearly catastrophic influence of social factors on the organizational response to the die-off, and his evaluation contributed in part to the restructuring of program staff at the state level to better address social factors in recovery efforts for marine protected species in Florida.
- (4) A contingency plan to help participants in the manatee recovery program in the event of another mass mortality was commissioned by the lead Florida state agency in the aftermath of the 1996 die-off (Geraci & Lounsbury 1997). It was prepared by experts in marine mammal pathobiology who were not directly involved in the manatee recovery program. This document has been adopted into the USFWS's guiding documents in the event of another die-off. It provides a clear and explicit strategy for addressing social factors in the crisis atmosphere of a mass mortality and should serve as a model for planning efforts in crisis and noncrisis situations alike.
- (5) The National Marine Fisheries Service commissioned an evaluation of marine mammal take-reduction teams (NMFS 1999). The teams are convened to address one of the most complex tasks that the NMFS oversees involving coordination and cooperation for marine mammal recovery: determining, ostensibly with the input of all stakeholders, methods for reducing the take of marine mammals in commercial fishing operations. This is a rare example of an internally sanctioned, formal process evaluation in a government agency.

Learning from the efforts of others who have effected change is a necessary step toward improving the policy process. These and other strategies must be promoted as prototypes for improving the policy process (Clark et al. 1995).

To bring about the positive change necessary in recovery programs, we must combine the lessons from others' experiences with a continuing discussion of how best to teach and learn practical problem-solving skills in conservation (Clark 1997). By continuing to develop a language and understanding of the tools for practical problem solving and providing prototypes of them in practice, we can begin to formalize standards for improving the policy process. These standards will be



comprised of discrete steps: undergraduate and graduate education, prototypical examples in practice, modeling of programmatic decision-making on effective prototypes, and feeding the lessons learned back into education and evaluation. We must recognize that these standards are being met by practitioners with whom we work and we must emulate their successes. These are the first steps toward achieving more effective conservation by promoting this cycle and its progression toward the goals of marine mammal recovery programs.

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