Marine Protected Area Management Capacity Development: Assessing and Responding to Local and Regional Needs

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Introduction

Many challenges affecting coastal and marine ecosystems are exacerbated by limitations in local and regional capacity for conservation planning and management. Observable effects of rapid economic development, consumptive resource use, and global environmental change require new approaches to maintain ecosystem processes and ensure delivery of ecosystem services, vital for ecological integrity and human populations. Marine protected areas (MPAs) are widely considered an effective tool for supporting natural and cultural heritage conservation objectives. MPA management encompasses a wide range of content knowledge, process skills, field applications, stakeholder engagement, and political savvy. On-going establishment of regional protected area networks in many parts of the world has prompted a growing need for capacity development across a broad suite of competency areas.

Targeting coastal and marine resource management professionals from protected areas, provincial agencies, and conservation organizations, the International MPA Capacity Building Program (IMPACBP) works with partners at a regional "seascape" scale to develop local and regional capacity for designation, implementation, and management of MPAs and MPA networks. The conceptual definition of seascape derives from the IUCN Protected Area Management category V, protected landscape/seascape (Dudley 2008), following the definition as "large multiple-use marine areas, defined scientifically and strategically, in which government authorities, private organizations and other stakeholders cooperate to conserve the diversity and abundance of marine life, and to promote human well-being. Seascapes typically have high biological diversity, ecological and economic connectivity, and aesthetic and cultural values. Seascapes may include government-authorized protected areas for addressing special management needs, and provide an opportunity for government agencies to coordinate their efforts voluntarily to secure more effective regional management programmes" (Bensted-Smith and Kirkman 2010: 6). Working at a seascape scale requires consideration of

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complex local, provincial, national, and transnational relationships, regulatory frameworks, social and cultural dynamics, institutional arrangements, and levels of commitment. The IMPACBP emphasizes the challenge and necessity of balancing heritage resource conservation and sustainable use at multiple scales. The instructional approach helps prepare managers and their partners to assess current and future needs; identify target resources (e.g., habitats, species, cultural assets, livelihoods); define program objectives; select, plan, and implement management interventions; and evaluate management effectiveness. On-going evaluation actions during the training program life cycle inform programmatic planning and operations toward achievement of stated capacity development objectives over a multi-year period.

Capacity development demand

Broad recognition exists that to meet and maintain global conservation goals, development of the requisite knowledge, skills, and abilities (i.e., competencies) is necessary at individual, organization, sector, national, and trans-national scales. The joint Global Environment Facility (GEF) and United Nations Development Program (UNDP) Capacity Development Initiative (CDI) was established in 1998 "with a focus on meeting and sustaining global environmental objectives, as framed by the Rio Conventions on biodiversity, climate change, and desertification and drought" (Bellamy and Hill 2010: 7). GEF, UNDP, and the United Nations Environment Program (UNEP) followed with guidance and support for countries to assess their own national capacity, in the context of the Rio conventions, through implementation of the National Capacity Self-Assessment (NCSA) (GEF 2001; 2003). In their analysis of 119 countries that completed their NCSA (out of 153 that were funded), Bellamy and Hill (2010) identified five priority capacity development needs to: "achieve and sustain global environmental outcomes [as]: 1) public awareness and environmental education; 2) information management and exchange; 3) development and enforcement of policy and regulatory frameworks; 4) strengthening organizational mandates and structures; and 5) economic instruments and sustainable financing mechanisms" (p. 9). Additionally, Bellamy and Hill's synthesis of NCSA activities revealed that most countries (75%) list capacity development as a national priority.

Capacity development has become a top priority for leading conservation organizations globally (e.g., FAO [Food and Agriculture Organization of the United Nations], GEF, IUCN [International Union for Conservation of Nature], OECD [Organization for Economic Cooperation and Development], UNDP, UNEP, UNESCO [United Nations Educational, Cultural, and Scientific Organization], WWF [World Wildlife Fund]), driving the development and delivery of training in many parts of the world. Capacity development is also widely discussed within scientific, political, economic, and national security forums, as professional development for protected area managers and their conservation partners enhances the ability to meet specific national and regional objectives (Parthemore and Rogers 2010; Steinbruner et al. 2012). Government natural resource and development donor aid agencies and conservation organizations at multiple levels are working diligently to establish effective capacity development strategies in response to the recent growth in protected areas and the resultant need for well-trained protected area site managers and staff. The US Ocean Commission recommended that "the United States should increase its efforts to enhance long-term ocean sci-

ence and management capacity in other nations through grants, education and training, technical assistance, and sharing best practices, management techniques, and lessons learned" (US Commission on Ocean Policy 2004: 455).

The term "capacity" can be defined many ways. In the context of the IMPACBP, the following definition most closely aligns with the overarching aims of the program: "[T]he process by which individuals, groups, organizations, institutions and societies increase their abilities to: (1) perform core functions, solve problems, define and achieve objectives; and (2) understand and deal with their development needs in a broad context and in a sustainable manner" (OECD 1995; UNDP 1998: 6). There are also different levels at which capacity development occurs: individual or micro-level (e.g., site manager, staff team), meso-level (e.g., community, program, sector), and macro- or system-level (e.g., agency, nation, MPA network) (UNDP 1998; GEF 2010). The capacity typology best suited for the orientation of the IMPACBP stems from combined approaches informed by GEF (2003) and UNDP (2009) capacity development approaches (Table 1) (GEF 2011: 8–9).

Developing regional capacity

Most natural and cultural heritage resource stewardship decisions and actions are made at a local scale. In the absence of clear national policies, many managers and local governments look for examples of effective management measures or develop their own approaches, frequently making decisions under scientific uncertainty. Programs that bring managers together to share and learn from each other can be very valuable, as this provides opportunities

Table 1. Capacity development and assessment typology (adapted from GEF 2011).

Measurable Capacities	Description
Capacities for engagement	Capacities of relevant individuals and organizations (resource users, owners, consumers, community and political leaders, private- and public-sector managers and experts) to engage proactively and constructively with one another to manage a global environmental issue.
Capacities to generate, access and use information and knowledge	Capacities of individuals and organizations to research, acquire, communicate, educate about, and make use of pertinent information to be able to diagnose and understand global environmental problems and potential solutions.
Capacities for policy and legislation development	Capacities of individuals and organizations to plan and develop effective environmental policy and legislation, related strategies and plans—based on informed decision-making processes for global environmental management.
Capacities for management and implementation	Capacities of individuals and organizations to enact environmental policies and/or regulatory decisions, and plan and execute relevant sustainable global environmental management actions and solutions.
Capacities to monitor and evaluate	Capacities of individuals and organizations to effectively monitor and evaluate project and/or program achievements against expected results and to provide feedback for learning and adaptive management, and to suggest adjustments to the course of action if necessary to conserve and preserve the global environment.

to showcase strategies that work among peers. Such forums provide structured settings for sharing data, approaches, scenarios, and expertise related to MPA management challenges and offer opportunities for managers to engage in dialogue about best practices that could be replicated in multiple sites across a region or MPA network. These forums also foster dialogue pertaining to emerging issues, new information, and capacity-building needs, and help forge partnerships between regional actors, protected areas, and agency staff in regional seascapes who are challenged with making decisions under uncertainty about the resources under their charge.

Beginning in 2005 in the South China Sea regional seascape, the IMPACBP held its first such workshop and subsequently developed the first seascape-scale capacity-building program. Since then, the IMPACBP has developed capacity development programs in eight different places, with more than 100 courses completed and over 2,500 participants from dozens of countries (Table 2). The IMPACBP serves as a partner in global marine conservation, with mission-driven efforts that result in: (1) networks of more effectively managed MPAs around the world; (2) enhanced visibility of and value to the US system of MPAs; and (3) enhanced protection and increased expertise and experience for US and international MPA practitioners in building their own capacity for effectively managing coastal and marine resources. The IMPACBP works within a regional spatial context to provide a knowledge base for developing local and regional capacity and expertise in designation, planning, management, and evaluation of MPAs. The program works in partnership with experts from many countries to develop modules encompassing a range of protected area skills.

The development of a seascape-scale capacity development program follows a semi-structured ten-step process. In addition, prospective seascapes must satisfy several minimum selection criteria. As a first step, an area must be identified as a priority region for

Table 2. Regional seascapes involved in the International MPA Capacity Building Program.

Regional Seascapes	Countries Involved*
Coral Triangle (Bird's Head Seascape)	Indonesia, Philippines
Eastern Tropical Pacific Seascape	Colombia, Costa Rica, Panama, Ecuador
Gulf of California	Mexico
Mediterranean (MedPAN South)	Albania, Algeria, Croatia, Egypt, Lebanon, Libya, Montenegro, Morocco, Syria, Tunisia, Turkey
Oceania	American Samoa, Fiji, Kiribati, Western Samoa
South China Sea	Cambodia, China, Vietnam
Western Indian Ocean	Comoros, Kenya, Madagascar, Mauritius, Mozambique, Reunion, Seychelles, Somalia, South Africa, Tanzania
APEC (Asia–Pacific Economic Cooperation)	Australia, Brunei, Canada, Chile, China, Hong Kong, Indonesia, Japan, South Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, Philippines, Russia, Singapore, Taiwan, Thailand, United States, Vietnam

* not all currently active

marine conservation and MPAs. In addition, as a criteria for selection, there must be in place a policy framework appropriate for implementation of MPAs, and satisfactory documentation from the appropriate authority (e.g., government agency) in support of MPA capacity development activities (e.g., for MPA, provincial, or nation staff participation). The second step is the establishment of on-the-ground partnerships to support program development and implementation, along with documented commitment from partners to support implementation of the program for a minimum of three years. There must also be physical and institutional infrastructure suitable for supporting a multi-year training program. Next comes the establishment of an engaged and representative (e.g., MPAs, local government, nongovernmental organizations, other stakeholders) regional advisory board, which is essential to support and inform coordination of the program throughout its life-cycle. Once the advisory board is in place, the group works to identify the suitable target audience(s) for conducting a regional needs assessment. The results of the needs assessment then guide several next steps: defining program objective(s), designing the training program (e.g., courses, content, delivery, venues), and creating an implementation plan, communication strategy, and monitoring and evaluation framework.

Training curricula in each seascape are developed in accordance with results of comprehensive needs assessments conducted with regional MPA representatives, yet there exists a substantial amount of common ground, in terms of course content, across different geographical areas (Table 3). Content is adjusted for relevance by location, as appropriate. Training materials are drawn from a wide selection of content resources and delivery techniques appropriate for adult learners. The program structure fosters a nonthreatening learning environment, where all participants are encouraged to share their own experiences and offer examples drawn from their respective MPAs. The training program follows a student-in-residence format, where each participant is required to attend all scheduled daily classroom and

Table 3. International MPA Capacity Building Program training subject-matter areas.

Training Subject-Matter Areas	
Resource Management	***Skill Development for Mentors (TTT*)***
Sustainable Tourism Planning	Facilitation Training
Sustainable Fisheries Management	Communication Skills
Climate Change Adaptation Planning	Conflict Management
MPA-101 Management Fundamentals	Interactive, Participatory Training Skills
Marine Spatial Planning	
MPA Management Plan Development	***Targeted Programs***
Stakeholder Engagement	Developing Network-wide Monitoring Programs
Sustainable Financing	Developing Network-wide Education and Outreach Programs
Law Enforcement	Needs Assessments and Capacity-Building Program Design

* Train-the-Trainer

field activities and participate in team exercises and group presentation development outside the classroom. The course format includes classroom instruction, individual and group work, and field exercises involving local resource-dependent communities (i.e., in the context of sustainable economic development and resource protection for adjacent protected areas). Participants come primarily from local, provincial, and national natural resource agencies/ministries, and conservation organizations, with select experts from academic institutions or private industry to present location-relevant environmental, economic, and resource use information. Courses last 1–2 weeks, during which each participant has several opportunities to lead team exercises and represent their group (e.g., by being a rapporteur). Instructors, mentors, and team leaders meet each evening to debrief the day's activities, identify problems or challenges, and discuss plans for the following day.

Program content development must be flexible and adaptable to address capacity gaps for dealing with new and emerging issues and stressors. For example, climate change-related stressors, such as sea-level rise, increased storm intensity and frequency, altered hydroperiod or freshwater flows, prolonged drought, population and phenological shifts, and other temperature-driven effects have been identified as imminent threats to many coastal and marine protected areas. To effectively prepare for climate change impacts, managers require basic understanding of changing natural and social processes, and specialized knowledge of their effects on local natural and cultural resources, as well as the impacts to local communities, human activities, and livelihoods. While mitigation measures to address such impacts are necessary, a critical need also exists for capacity development for the many complex aspects of adaptation planning.

Training program development

Instructional design for the IMPACBP draws upon effective adult learning approaches to foster content and instruction responsive to identified learner, programmatic, and regional management needs (Hunter 1994). The IMPACBP employs the analysis, design, development, implementation, and evaluation (ADDIE) instructional systems design model (Branson et al. 1975) as the foundation for the development of each seascape training program (Figure 1).

Following the ADDIE model structure, the program employs evaluation measures during all phases of program development and implementation to inform mid-stream progress and course corrections. The IUCN protected area staff guidelines recommend development of a monitoring and evaluation plan using "SMART" (i.e., specific, measurable, achievable, relevant, and time-oriented) indicators to guide assessment of program actions and effectiveness throughout the project life-cycle (Kopylova and Danilina 2011: 73). The front-end evaluation, or needs assessment, provides a broad range of information to guide the capacity development program. The needs assessment process includes working with seascape partners to identify the appropriate target audience(s), surveying regional partners (e.g., through 100-item questionnaire), conducting field visits and group interviews, identifying areas of expertise and capacity gaps, and developing training objectives to drive curriculum development and program design for a multi-year program term. Formative evaluation measures, such as daily debriefings with instructors, mentors, and student team leaders, and post-training assessments for students, mentors, and trainers, are used to gauge delivery pace

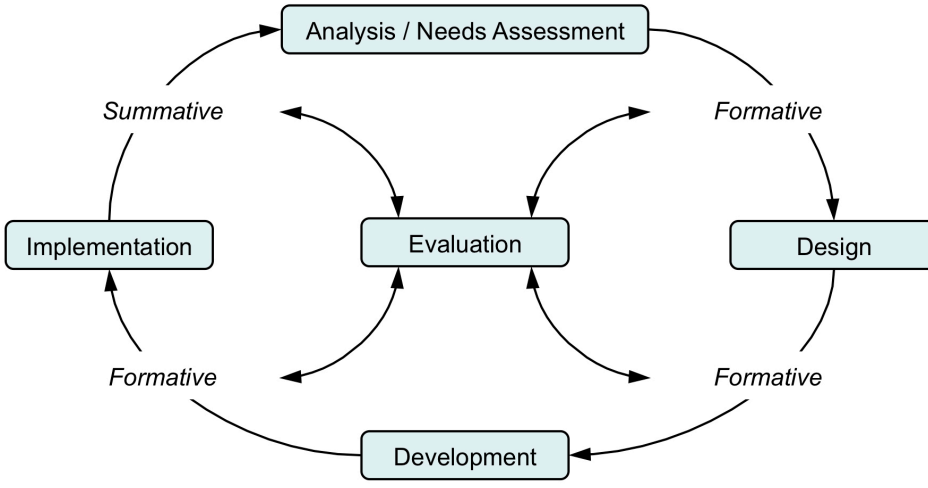

Figure 1. ADDIE instructional design model (adapted from Branson et al. 1975; NOAA 2006).

and format appropriateness, content comprehension, and other adult learner requirements to inform necessary changes to course schedules or instructional materials. At the end of the multi-year program term, a summative evaluation is conducted to assess the effectiveness of the program toward meeting specific learning objectives, bridging MPA knowledge and competency gaps, fostering long-term collaborative learning (Feurt 2008), and bolstering regional capacity for the MPA network.

The IMPACBP uses a "train-the-trainer" model for enhancing regional capacity during the program life-cycle and into the future. Regional MPA professionals, interested in becoming mentors, are identified from the seascape protected areas and allied agencies and regional conservation organizations. Mentors serve as student team liaisons; conduct program coordination activities (e.g., classroom and field exercises); assist with simultaneous translation during content delivery, small group activities, and discussions; and make themselves available as regional contacts for post-training projects and technical assistance. As mentors become familiar with the training course content and activities, they are encouraged to take a more active role in overall program coordination. Mentors also play a key role in organizing and maintaining on-going communication among participants. Establishment of social networks to foster on-going communication and collaborative learning are essential for keeping members of the group connected once they return to their own MPA sites.

The course design and curricula include a variety of instructional methods (e.g., lectures, role play, games, case studies, hands-on exercises) to foster interactive and engaging learning and to accommodate different learning styles. Participants are encouraged to bring their own experiences and challenges into the classroom to share and learn among the group. All teaching materials are prepared in both in English and in the language of the participants to enhance the learning experience across different English proficiency levels. Field exercises and guided visits to nearby protected areas are arranged with local managers and community leaders to highlight on-the-ground management issues and allow interaction with local

stakeholders. Mentors and student team leaders have shared responsibilities for planning and implementing their respective group field exercises. Daily debriefings and evening sessions are also used for more in-depth planning for external activities and guest presenters.

MPA management planning

The overarching process structure of the training program comprises foundational landscape carrying-capacity planning frameworks from the US—for example, the limits of acceptable change framework (Stankey et al. 1985)—along with elements drawn from other salient planning, management, and assessment material (Eagles et al. 2002; Pomeroy et al. 2004; Hockings et al. 2006; IUCN-WCPA 2007). The combination of resources provides students with fundamental concepts, theory, and practical field applications, coupled with locally or regionally relevant case study or field-based examples, where practicable. The dominant framework stems from the contexts of iterative protected area planning, ecosystem-based and adaptive management, and management effectiveness assessment. The process includes standard protected area management planning steps as reflected in Figure 2—setting objectives; determining key biophysical, sociocultural, or managerial assets; selecting indicators; establishing management targets for resource conditions (e.g., standards, thresholds, desired conditions); inventorying current resource conditions; selecting and implementing management actions; and evaluating the effectiveness of management through monitoring.

In the end, management of protected areas exists within a framework of informed trade-off decisions. The operational concept derives from the predominant management principle of balancing two competing goals—natural/cultural resource protection and sustainable use—where managers recognize and ultimately decide, aided by the best available information, which goal must outweigh, or constrain, the other. For example, one might consider the competing goals of providing access to a particular natural site, while maintaining an acceptable level of resource conditions. When monitoring indicates an unacceptable change in resource conditions, a management decision must be made regarding which goal will be compromised, and the resultant cost of such a decision. Decision support tools can be employed to aid in the decision-making process through careful consideration of desired and existing resource conditions, threats, management interventions, and associated social and/or ecological ramifications.

While international capacity development continues to be an emerging area, combining elements of assessment, planning, technology transfer, and evaluation science, there are several broad collaborative efforts already underway. One is the Global Partnership for Professionalizing Protected Area Management (GPPPAM), coordinated through the IUCN World Commission on Protected Areas (see Reynolds and Dudley, this issue), with the objective of "increasing effective management of protected areas by addressing capacity development needs of national governments toward achievement of CBD Programme of Work on Protected Areas goals and targets" (IUCN-WCPA 2013). The efforts of the GPPPAM are organized in four main areas: (1) competence standards for protected area professionals at site, system, and sector levels, published on-line; (2) open-access protected area capacity development curricula for adoption by education and training institutions worldwide; (3) a pilot certification program implemented for site-level protected area professionals; and (4) a mentorship

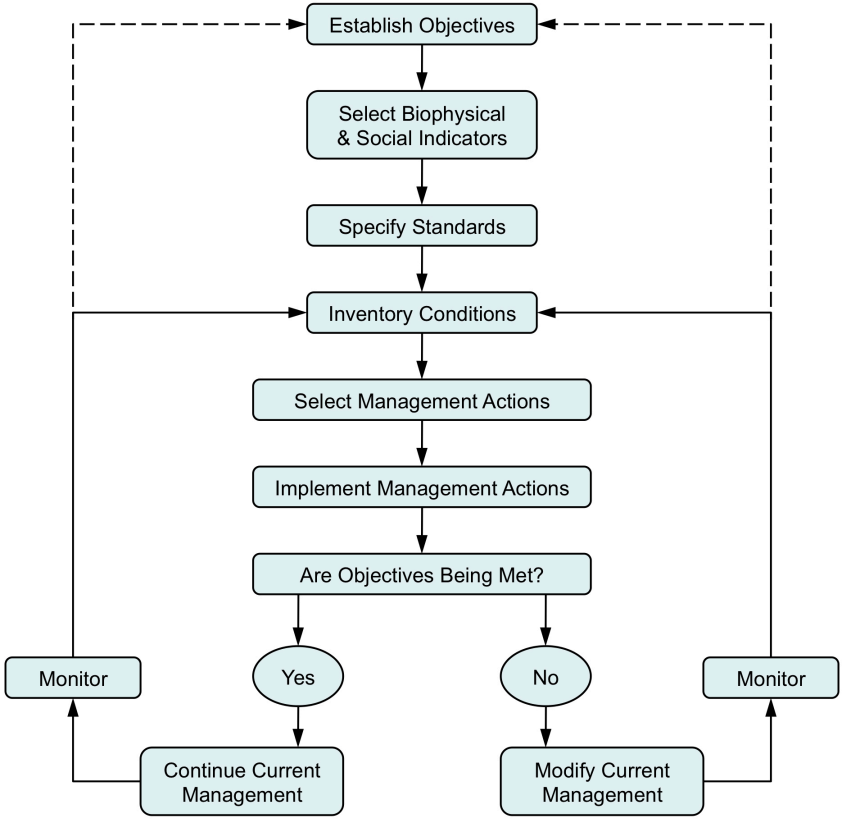

Figure 2. Protected area management planning framework (adapted from Hammitt and Cole 1998; Leung and Marion 2000).

program for protected are staff with on-the-job training assignments and position exchanges.

The capacity needs and best practices will continue to evolve as the diverse community of protected areas grows and changes over time and as new information is brought to light with regard to the effects of particular human activities, climate change, natural hazards, and other natural or social stressors on coastal and marine protected areas—and their coupled natural and human systems. There is tremendous value in examining differences and similarities in a cross-cultural context (i.e., observing and recording differences between different MPA geographies), where unique opportunities exist for much learning and improvement toward best practices, as well as potential for not repeating painful mistakes. Building strong partnerships and institutional bridges today will help address capacity needs for protected areas and other conservation actions tomorrow.

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