

Developing a Provincial Marine Protected Area Network Management Plan for Siquijor, Philippines

Final Report

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Forward

Funding from the NOAA Coral Reef Conservation Program (#NA10NOS4630057) has led to the development of the Siquijor Provincial MPA Network Management Plan. The plan has been approved by coastal resource managers in the province, and forms the first provincial scale management plan in the Philippines.

The process of developing the MPA Network Plan has energized coastal resource management efforts in Siquijor. The Provincial Marine Protected Area Technical Support Group (PMPATS) has reformed, and is taking a lead role in overseeing the development of the MPA network and complementary management activities. Coordination between coastal resource managers (including community groups, local government partners, NGOs and academia) within Siquijor has improved, and links with counterparts in neighboring provinces have been fostered through cross-site visits. Stakeholder engagement activities have been ongoing throughout the project, as have training events focused on building the capacity of local managers. The skills of the Provincial Monitoring Team have been expanded to include new survey methodologies, and new members of the team have been trained.

Interaction between researchers and coastal resource management practitioners has increased the scientific basis for management decisions in the province. Science-based recommendations for MPA network design have been interpreted within the specific ecological and socioeconomic context of Siquijor, and adapted to incorporate local community objectives and priorities. These recommendations provide a roadmap for future development of the MPA network. Steps have already been taken towards improving the ecological effectiveness of the network, through the designation of a new MPA in Bino-ongan, which improves biogeographic representation and explicitly provides for local-scale habitat connectivity. Additional sites are in the process of being designated.

Based on the success of this project, the PMPATS, in partnership with CCEF, secured 30 months funding from GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) to implement the MPA Network Management Plan, commencing July 2012. This follow-up project will include the construction of a dedicated Coastal Resource Management and Learning Center, which will form a focal hub for sharing lessons learned from this project with coastal resource practitioners from the Central Visayas region and further afield.

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Final Report on Project Activities

The Siquijor Marine Protected Area Network (SIMPRANET) Project was a collaborative effort between the Australian Research Council Centre of Excellence for Coral Reef Studies at James Cook University, Australia, and the Coastal Conservation and Education Foundation, Cebu, Philippines. The project was funded by the NOAA International Coral Reef Program (Award Number NA10NOS4630057) and ran from October 2010 till June 2012.

The primary objective of the SIMPRANET project was to apply a systematic conservation planning framework to develop a Provincial MPA Network Management Plan for the Province of Siquijor, Philippines. The objectives of the project were as follows:

- Objective 1:* To improve institutional and coordinating mechanisms between and among MPA managers, local government units and people's associations across the six municipalities in Siquijor Province.
- Objective 2:* To increase the scientific basis, transparency and accountability of coastal resource management decision-making in Siquijor.
- Objective 3:* To increase the management capacity of local governments
- Objective 4:* To enhance stakeholder participation in the management of coastal resources
- Objective 5:* To improve the management effectiveness of existing MPAs
- Objective 6:* To enhance planning techniques utilized by assisting organizations

The following narrative describes the completion of the grant against each of these objectives.

- Objective 1: To improve institutional and coordinating mechanisms between and among MPA managers, local government units and people's associations across the six municipalities in Siquijor Province***

1.1 Provincial MPA network planning team established and meetings held at least every four months for the project duration

During the initial project stages of identifying and involving stakeholders and describing the context for conservation areas, it was discovered that a provincial body for MPA network planning in fact already existed. The Provincial Marine Protected Area Technical Support (PMPATS) Group was created to provide support for MPA management activities (e.g. MPA planning, management effectiveness and biophysical monitoring) and to provide a venue for feedback on issues related to MPAs at the provincial level. Although established in 2006, the group was found to be inactive as of 2010.

At a planning workshop held in December 2010 (see objective 2.1), it was agreed that the PMPATS group should perform the role of the Provincial MPA network planning team. The reactivated PMPATS Group now includes the six municipal agriculture officers, agriculture and fisheries technicians, and the Provincial Monitoring Team (ProMoTe), along with representatives from the provincial agriculture office, national government agencies (DENR

and BFAR), academe (Siquijor State College) and non-governmental organizations (CCEF). During the first six months of the SIMPRANET project the group met monthly (exceeding our target of quarterly meetings), and they have continued to convene regularly to discuss the development of the Provincial MPA Network Management Plan.

1.2 Representatives from each of the existing 15 MPAs on Siquijor have participated in cross-site visits to at least one other MPA

The PMPATS group conducted site visits to all existing MPAs within Siquijor in April 2011. These provincial cross-site visits provided opportunity for MPA managers to discuss their experiences of MPA establishment and management, and to identify where they might learn from one another's successes (e.g. the adoption and management of user fees) and common challenges that might be alleviated through closer coordination between MPA managers (e.g. insufficient budget to enable effective enforcement).

In addition, a three-day cross-site visit was organized to the neighboring provinces of Negros Occidental and Oriental in July 2011. A total of 21 participants attended, including the Municipal Agriculture Officers and Agricultural Technicians from the six municipalities, representatives from the Provincial Agriculture Office, Siquijor State College and CCEF.



Members of the Siquijor Provincial Marine Protected Areas Technical Support group enjoy a cross-site visit to Carbin Reef, to discuss coastal resource management issues with their management counterparts in Negros Oriental.

During the trip, participants visited two local governments in Negros Occidental (San Carlos and Sagay City) that are currently implementing programs of coastal resource management and strengthening of MPA management. They also met with members of the BATMAN MPA network – a newly created social cluster in Negros Oriental that are actively conducting enforcement and monitoring of their MPAs with the assistance from the Provincial Environment Management Office (PEMO). The last stop of the tour was for the PMPATS members to learn about the organizational set-up of the PEMO of Negros Occidental in Bacolod City.

1.3 Social network analysis applied to identify the key MPA leaders and routes of information in the province

A social network analysis approach was initially planned to identify existing linkages between stakeholders in coastal resource management throughout the province, and opportunities to strengthen collaborations. However, we found that stakeholder groups in the Province were proactive in achieving these goals with minimal direction, and thus decided that the considerable resources required to undertake a formal social network analysis could be better invested in other project activities, notably the inter-provincial cross-site visit described in 1.2.

Objective 2: *To increase the scientific basis, transparency and accountability of coastal resource management decision-making in Siquijor*

2.1 Workshop on MPA network design and management held

The SIMPRANET project was initiated through a “kick-off” Provincial Planning Workshop held in Siquijor on December 6 – 7, 2010. This aim of this workshop was to equip local participants with knowledge and understanding of the concepts of conservation planning and MPA networking, with the ultimate objective of identifying a vision for a Provincial MPA network for Siquijor. The workshop was attended by 44 participants, with representatives from all six municipalities in Siquijor. Participants included representation from Provincial and Municipal Agricultural Offices, the Bureau of Fisheries and Aquatic Resources (BFAR), Barangay Fisherfolks’ Associations and Marine Management Committees, and Siquijor State College. The workshop was facilitated by CCEF, with presentations from researchers at JCU, the Silliman University Angelo King Center for Research and Environmental Management (SUAKCREM), and the Marine Science Institute at the University of the Philippines (UP-MSI).

The Provincial Planning Workshop was ultimately successful in guiding the direction of the SIMPRANET project, providing key inputs for spatial prioritization (updates resource use maps, proposed conservation features and targets for the provincial MPA network) and establishing an ethos of stakeholder engagement. It also fulfilled an additional goal of the project, which was to facilitate exchange between scientists and those responsible for designing and implementing coastal resource management initiatives in Siquijor. This

interaction ensures that local communities benefit from research that is undertaken in their region, and that results are used to inform MPA network development.

The vision identified for the Siquijor Provincial MPA Network was “*Sustainable marine sanctuaries through empowered communities*”.



Nemensio Paculba presents the successes and challenges of Tulapos Marine Sanctuary in Enrique Villanueva to workshop attendees.

2.2 Systematic review of progress towards MPA network objectives used to inform the Provincial MPA Network Management Plan

Consensus was reached on MPA network objectives at the Provincial Planning Workshop in December 2010 (described in objective 2.1). Participants agreed that the focal conservation features for the MPA network should be coral reefs, mangrove forests and seagrass beds, and set targets for effective protection of 15-20%, 100%, and 10% of their respective current extent, to be achieved by 2020 (Table 1). Subsequently, a gap analysis was performed to assess progress made towards these targets by the existing MPA system. At that time, 8.3% of the coral reef area in the province was within MPAs (Table 1).

Scientific guidelines for MPA network design were reviewed and interpreted within the context of opportunities for MPA Network development in Siquijor in a section of the Provincial MPA Network Plan (included in Appendix A). In addition to highlighting community priorities for conservation (identified at the workshop described under objective 2.1), and identifying science-based priority areas to achieve habitat representation targets (Table 1), the following recommendations for the development of the Siquijor MPA network were proposed:

1. Establish new MPAs in locations that will address gaps in achievement of habitat representation targets;
2. Improve replication of MPAs in Lazi Bay and Maria Bay, as these bioregions currently only have two MPAs each;
3. Establish new MPAs that extend from the coastline to the bottom of the reef slope, protecting habitat connectivity;
4. Where possible, increase the size of existing MPAs, so that they are effective at providing protection for a wider range of species with larger home ranges;
5. Consider alternative management strategies for species that are unlikely to be protected by small MPAs; these might include closed seasons around spawning times, or size limits;
6. Where possible, include critical sites such as spawning grounds, and unique habitats such as offshore patch reefs in the MPA network design;
7. Establish new MPAs in locations where community and science-based priorities align
8. Ensure that the management effectiveness of existing MPAs is not neglected as new sites are added to the network.

Table 1. Gap analysis of marine habitats targeted for protection within the Siquijor MPA network

Habitat	Total Area (km ²)	Conservation Target	% Protected
Coral Reef	12.36	15-20%	8.30%
Mangrove	1.25	100%*	4.20%
Seagrass	10.75	10%	2.88%

* Target for mangrove protection refers to protection through legislation prohibiting any cutting of mangroves, whereas current levels of protection only include the mangrove areas within no-take MPAs

2.3 One new MPA established in Enrique Villanueva following systematic conservation planning principles

Prior to commencement of the SIMPRANET project, Enrique Villanueva was prioritized for the establishment of a new MPA as this municipality had only one existing protected area. Community perception surveys conducted in the municipality demonstrated support for the establishment of a new MPA in Barangay Bino-ongan (see Objective 4.2). Different options for MPA placement, informed by the results of baseline ecological surveys, were presented to the community at a Barangay meeting in June 2011. At this meeting, a 13-hectare site, containing mangrove, seagrass and coral reef ecosystems was selected. This site follows conservation planning principles, in particular those that address the need to protect local-scale habitat connectivity.

The Bino-ongan Marine Sanctuary was officially designated on March 31, 2012 with a ceremony to bless the marine sanctuary and unveil the new billboard. Concurrent to the formal MPA establishment process, assistance was provided in establishing and training a new Bino-ongan marine management committee (MMC), through workshops and cross-site visits.



Mayor Melojean B. Orquillas of Enrique Villanueva unveiling the marine sanctuary billboard on the site of the new MPA in Barangay Bino-ongan

Objective 3: To increase the management capacity of local governments

3.1 Training in basic data management and analysis provided for coastal resource management staff and monitoring team leaders from all municipalities.

Training on data collection, management and analysis for local coastal resource managers and monitoring teams was conducted throughout the project. Key training events are summarized below:

In February 2011, the CCEF biological monitoring team conducted a three-day training course for the Siquijor Provincial Monitoring Team (ProMoTe). Day one reviewed monitoring objectives and methodologies for surveying fish, corals, and MPA management effectiveness; day two was spent collecting underwater visual census data; and day three focused on data processing, analysis and presentation skills.

In September 2011, a Reef Resilience training workshop was provided for ProMoTe members and their counterparts from Bohol, Negros Oriental, Leyte and Cebu. The focus of the training was on how to incorporate the collection of reef resilience information into

existing coral reef monitoring protocols. In July 2012, similar reef resilience training was provided for the local managers, fisherfolk organization members, barangay officials and representatives from municipal government. The training wished to increase the understanding of the community and the local officials on the basic concepts of coral reefs and climate change, basic principles of resilience, and reef resiliency management and established community-based bleach response and monitoring team in each municipality.

In March 2012, ProMoTe members, along with selected members of the Maite MMC, participated in a Coral Bleaching Monitoring training workshop. The aim of this training was to increase the capacity of local monitoring teams in detecting, monitoring and responding to coral bleaching events; methods that will be incorporated into the next round of provincial biophysical monitoring.

In May 2012, new ProMoTe members received SCUBA training, to PADI Open Water level, along with training in survey methodologies used by the team. Existing ProMoTe members undertook further SCUBA training to receive their PADI Advanced Open Water certifications. To further capacitate the local monitoring team, the project continues to provide technical assistance and guidance to the ProMoTe in conducting the annual ecological monitoring of all existing MPAs in the province and in data analysis.



New members of the Provincial Monitoring Team (ProMoTe) receive their Open Water SCUBA training

3.2 Provincial guidelines for data management and analysis produced.

A Marine Protected Area Monitoring Handbook was developed to help train new ProMoTe members, and provide a reference for existing team members between trainings. The information contained in the handbook is sufficient to enable the team to effectively conduct ecological monitoring and interpret the data collected. Chapters include those on rationale for coral reef and MPA monitoring, monitoring survey design, reef fish and benthic survey methodologies, data analysis and presentation. Identification guides for reef fishes, coral lifeforms and invertebrates are included in appendices, as are example survey data sheets. Handbooks were distributed to new and existing ProMoTe members at a training event in May 2012 (see objective 3.1).

Objective 4: Enhance stakeholder participation in the management of coastal resources

4.1 Fisherfolk registry produced for all coastal barangays and collated at provincial level, with mechanism in place to ensure annual updates.

Whilst fisherfolk registry data (the number of fishers and small fishing boats) had been collected sporadically at the municipality level, these data were considered to be an outdated representation of small-scale fishing effort in the province, and unreliable as a socioeconomic indicator for use in coastal resource management planning. Significant challenges to improving these data include the reluctance of many fishers to pay the fees associated with registering, and the lack of a coordinated mechanism for collecting and updating data.

Alongside a province-wide fish stock assessment undertaken by the Siquijor Bureau for Fisheries and Aquatic Resources (BFAR) and Siquijor State colleagues, efforts have been made to update fisherfolk registries in all six provinces, and to compile these data at the provincial level. This process is ongoing.

4.2 High level of attendance at barangay consultation meetings to establish a new MPA in Enrique Villanueva and good support for the MPA, measured through perception surveys.

Perception surveys conducted in barangay Bino-ongan, Enrique Villanueva, indicated strong support for designation of a new MPA, with 72% of households in support of implementation. This support was confirmed by good attendance at barangay consultation meetings, resulting in agreement to designate a 13-hectare MPA in June 2011.



A barangay meeting in Bino-ongan, Enrique Villanueva, where Darell Pasco, leader of the Siquijor provincial Bantay Dagat, and Reann Catitig of CCEF presented proposed locations for a new MPA.

4.3 Increase in community members' understanding of MPAs and MPA networks, measured through perception surveys.

Community perception surveys are used to obtain information on the performance of the management body and the impacts of the MPA on the community. In April 2011 PMPATS members were trained on how to use the community perception and MPA Monitoring Effectiveness Assessment Tool (MEAT), developed by the Philippine MPA Support Network. With assistance from local management groups and fisheries technicians, the team has since completed community perception surveys for 12 MPAs. All respondents were aware of their respective MPA. Most perceived that illegal fishing activities, such as the intrusion of commercial fishing boats into municipal waters, had declined following MPA establishment, with enforcement support from the provincial *bantay dagat* contributing to the reduction in illegal fishing. However, when asked about the impacts or the benefits of the MPA, such as increase in fish catch, community members had conflicting opinions. Whilst the majority have observed increases in fish catch since their MPA was designated, others thought that their catch had not increased, or were unsure. 88% of respondents felt that their respective marine management group was functional, and 98% of the respondents expressed willingness to support efforts to improve protection and management of the MPA.

Objective 5: To improve the management effectiveness of existing MPAs

5.1 MPA management effectiveness ratings sustained or improved

Management effectiveness was assessed for all MPAs in Siquijor in April 2011, using the MPA Effectiveness Assessment Tool (MEAT) (Table 2). This was the first year that MPAs in the province were assessed using the new rating system, which unfortunately means that the resulting scores are not comparable with previous assessments of management effectiveness. However, with six MPAs rated as “Excellent” and seven as “Very Good”, it is apparent that management effectiveness of MPAs in Siquijor compares favorably to elsewhere in the Philippines.

Based on the MEAT assessments and site visits conducted by representatives from CCEF, Siquijor State Collage and PMPATS, the best-managed MPAs in the Province were identified and recognized at an awards ceremony held during “*Araw ng Siquijor*” (a provincial festival). There are plans to make the Siquijor MPA Awards ceremony as an annual event.

5.2 Marker buoys and information signs in place at all existing MPAs

MPA billboards with illustrated information on the MPA network, and also the unique features and ordinance details for individual MPAs have been designed and will be placed at MPAs and by the ports in Larena, Siquijor and Lazi (entry points to the island). The first of these has already been erected, at Bino-ongan MPA. Marker buoys have been installed and/or replaced at Canmunag, Maite, Luyang-Banban and Bino-ongan MPAs. In addition, a patrol boat was purchased for the newly formed Marine Management Committee at Bino-ongan, to facilitate enforcement of the MPA.

Objective 6: To enhance planning techniques utilized by assisting organizations

6.1 Training provided to CCEF staff on the application of systematic conservation planning frameworks and decision support tools to develop MPA networks.

Marxan is a freely available conservation planning software package that provides decision support to a range of conservation planning problems, including the systematic design of protected area networks to achieve explicit biodiversity conservation and socioeconomic objectives. Marxan was developed during the rezoning of the Great Barrier Reef Marine Park in Australia, and has since been used to help design MPA networks worldwide. At present there are few examples where Marxan (or similar software) has been used in a developing country context. However, this is changing, with recent applications in Indonesia, Fiji and the Solomon Islands. These examples demonstrate that decision-support can be used in conjunction with community-based decision making. Nevertheless, obstacles to the use of decision-support tools in these regions remain, including: uncertainty regarding the technological and data requirements of software; the perception that software is difficult to use; that software is difficult to communicate with stakeholders; and the misconception that decision-support tools are only relevant to top-down, centralized planning.

In December 2010, Dr Rebecca Weeks gave an introductory presentation on how Marxan might be used for marine conservation planning in the Philippines at the CCEF office in Cebu. Subsequently, a two-day “*Introduction to Marxan*” course was held in Cebu in June 2011. The course was attended by 18 CCEF staff members, who hope to use the software to assist with MPA network projects in Siquijor and Danajon Bank, Bohol.



CCEF staff members participating in an “Introduction to Marxan” course held in Cebu.

The Siquijor Provincial MPA Network Management Plan

The primary output from the SIMPRANET project is a Provincial MPA Network Management Plan document (Appendix A), written by the project investigators with extensive input from the PMPATS. The plan has been approved by the PMPATS and will be presented to the provincial legislature for endorsement at their next meeting. The MPA Network Plan provides for the sustainable management of marine and coastal ecosystems in Siquijor by providing a roadmap to develop existing MPAs into an ecologically and socially effective network. The plan addresses management issues that apply throughout the Province, identifying common resource threats and management challenges, along with opportunities to overcome these more effectively through coordination and exchange of knowledge and ideas.

Table 2. Marine Protected Area Management Effectiveness Scores for MPAs in Siquijor, 2011

Municipality	MS Name	Area (ha)	Date Established	Survey Date	Overall Score	Management Status	MPA Level
<i>San Juan</i>	Paliton MS	6.5	2008	11-Apr-11	44	Very Good	Level 2
	Maite MPA	6.3	2009	11-Apr-11	44	Very Good	Level 2
	Tubod MS	8.1	2003	8-Apr-11	69	Excellent	Level 3
	Cangmunag	12	2010	11-Apr-11	16	Fair	No Level
<i>E. Villanueva</i>	Tulapos	27.22	2001	12-May-11	65	Excellent	Level 2
<i>Lazi</i>	Lalag-Bato	8	2003	5-May-11	66	Excellent	Level 3
	Napayong	6.08	2003	5-May-11	65	Excellent	Level 2
<i>Maria</i>	Minalulan MPA	14 ha	2003	1-Jul-11	33	Good	Level 1
	Candaping MPA	17.84	2003	1-Jul-11	50	Very Good	Level 2
	Olang MPA	21.36	2002	1-Jul-11	63	Excellent	Level 3
	Bogo MPA	10	2007	1-Jul-11	37	Good	Level 2
<i>Larena</i>	Taculing and Canmalalag	13.38	1998	7-Jul-11	56	Very Good	Level 2
	Sandugan MPA	10	2003	7-Jul-11	65	Excellent	Level 2
	Nonoc MPA	4.13	1996	7-Jul-11	60	Very Good	Level 3
<i>Siquijor</i>	Caticugan MPA	14	2003	6-Jul-11	54	Very Good	Level 3
	Banban-Luyang MPA	10	2003	6-Jul-11	40	Very Good	Level 2

Sharing lessons learned

Lessons learned (summarized below) from the SIMPRANET project were shared with an international audience at the 12th International Coral Reef Symposium, 9th – 13th July 2012, Cairns, Australia. The ICRS, held every four years, is the foremost conference for coral reef science, management and conservation, and was attended by more than 2,500 participants in 2012. Rose-Liza Eisma-Osorio gave an oral presentation, “*Breaching regional-scale initiatives with local-scale actions: Marine Protected Area networking in the Philippines*” as part of the Coral Triangle Initiative “*Regional-scale design & local-scale actions for marine conservation*” mini-symposium.

Experiences in developing the MPA network in Siquijor are also being shared with the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF), a multilateral partnership of six countries (Philippines, Indonesia, Malaysia, Solomon Islands, Papua New Guinea and Timor Leste) formed in 2007 to address the urgent threats facing the coastal and marine resources of the region. Rebecca Weeks attended the CTI-CFF Regional Exchange on Designing and Supporting National and Regional MPA Systems in the Coral Triangle, 26th – 30th March 2012, Bali, Indonesia, as a scientific advisor.

Finally, the PMPATS and the community MMCs in Siquijor will be able to continue to share lessons learned with each other and their counterparts in the region through a dedicated Coastal Resource Management and Learning Center in the province. The construction of this center, which commenced in June 2012, has been funded by a grant from GIZ to implement the MPA Network Plan developed under this project.

Summary of lessons learned

Decentralized coastal resource management can appear an impediment to the implementation of MPA networks at ecologically meaningful scales; however, it is possible to grow these from the ground up. Social and economic incentives can encourage communities (in this case municipal LGUs and barangay community organizations) to coordinate management efforts, resulting in management actions that are applied across broader spatial scales, and are applied more extensively. Powerful incentives in Siquijor were: opportunities for MPA managers to interact with their peers to realize shared challenges and learn new ways of overcoming them; opportunities to leverage access to resources, i.e. a grant awarded to the PMPATS group for MPA network management, which would not have been available to an individual municipality; and good-natured competitiveness, in the form of awards for well managed MPAs, and pressure on municipalities to “keep up with” their neighbors in terms of MPA designation. This cooperation at the provincial scale forms a sound basis for consideration of ecological processes, such as habitat complementarity and connectivity, in further expansion of the network.

We found it surprisingly easy to persuade stakeholders in the province of the benefits of coordination. In fact, coordination mechanisms, such as the provincial marine protected areas technical support group, were already existent, although inactive. This suggests that the primary impediment to coordination of coastal resource management in Siquijor was not motivation, but a lack of time, resources and opportunity. For example, the municipal agricultural offices responsible for preparing coastal resource management plans have a

broad remit which also includes all aspects of agricultural production and livestock management, and are generally understaffed. This project provided necessary resources and created opportunities for coordination.

This prompts the question of how to ensure the sustainability of provincial coordination on coastal resource management after the project concludes. A key lesson learned by the PMPATS group at their inter-provincial cross-site visit to Negros, was that their counterparts had a dedicated provincial office for coastal resource management. In comparison, CRM resources in Siquijor (including key personnel, information and funds) are spread across fisheries and agriculture offices in the province and the six municipalities. A key element of the follow-up grant awarded to the PMPATS and CCEF to implement their management plan is the construction of a dedicated coastal resource management office and learning center. We are hopeful that this will help to sustain coordination further into the future.

Momentum for developing the MPA network was easily gained, through introductory presentations and workshops. However, it takes effort to maintain this momentum, to ensure that stakeholder groups continue to meet, and discussions progress. The presence of a community liaison officer in Siquijor to facilitate these meetings was invaluable. Committed “local champions” in the Siquijor Bantay-Dagat Task Force and Provincial Monitoring Team were also vital to this process.

Scaling up from individual MPAs to a provincial scale MPA network has proven to be a viable approach in Siquijor. However, it should be noted that the context for CRM in the province lends itself to positive outcomes: the provincial governor and legislature are supportive of conservation and environmental management (not always the case in the Philippines, where political leaders are often influenced by powerful commercial fishing or mining lobbies); there is relatively little conflict over resource use; and the province is a manageable size, with only six municipalities. The approach to developing an MPA network described here might be replicated in other regions with a similar context. However, alternative approaches are likely to be required in regions which require coordination of a larger number of municipalities, potentially across multiple provinces (which therefore have no existing regular venue for coordination and discussion) or have high levels of conflict over resource use and management.

An additional lesson learned from the project was that when given the opportunity to interact with scientists, community MPA managers quickly grasped concepts of spatial planning, habitat complementarity, connectivity and larval dispersal. Information on the ecological processes driving MPA network design should be shared with local stakeholders to empower them to participate in the planning process, and does not need to be overly simplified for this purpose.

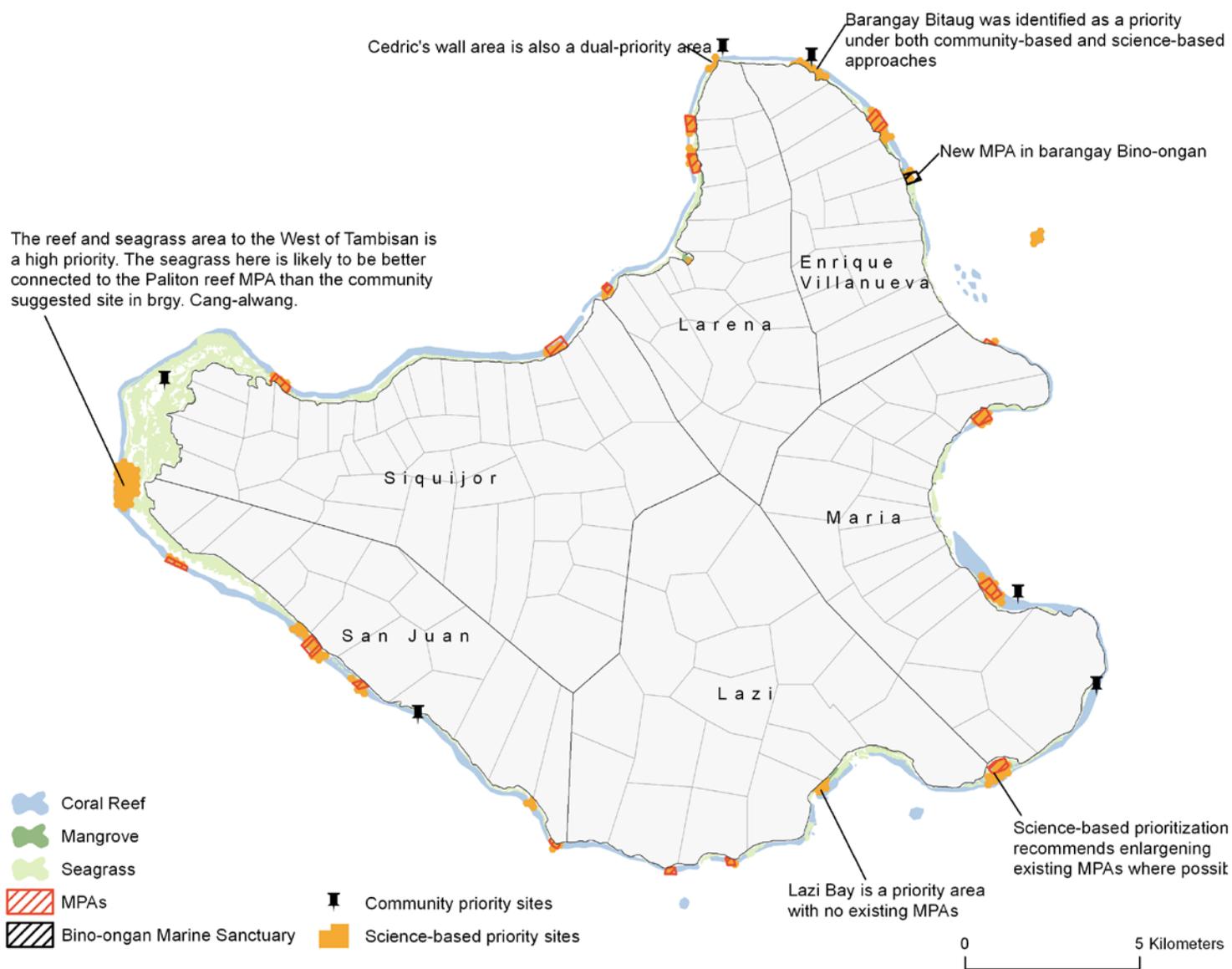


Figure 1. Map showing existing marine protected areas in Siquijor province, the newly established MPA in barangay Bino-ongan, and community and science-based priorities for future development of the MPA network.

Appendix A: Siquijor Provincial MPA Network Management Plan

The final version of the Management Plan will be forwarded to NOAA once endorsed by the Siquijor Provincial legislature (expected October 2012).