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Locally-managed marine areas: towards a global learning network

Workshop report - World Conservation Congress, Jeju, South Korea, September 2012.

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The Locally-Managed Marine Area (LMMA) Network



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List of Abbreviations and acronyms

ADSEI	Association for the Socioeconomic Development of Itsamia
BMU	Beach Management Unit
CBD	Convention on Biological Diversity
EAWLS	East African Wildlife Society
FFI	Flora & Fauna International
FLMMA	Fiji Locally Managed Marine Area Network
IHSM	Madagascar Institute of Marine Science
IUCN	World Conservation Union
KCMCA	Kuruwitu Community Managed Conservation Area
LLCTC	Lauru Land Conference of Tribal Communities
LMMA	Locally Managed Marine Areas (also LMMA Network)
LWTS	Live With The Sea
MMP	Moheli Marine Park
MPA	Marine Protected Area
PNG	Papua New Guinea
PNGCLMA	Papua New Guinea Centre for Locally Managed Areas
SILMMA	Solomon Islands Locally Managed Marine Area Network
TUMRA	Traditional Use of Marine Resources Agreement
UNEP	United Nations Environment Programme
WCC	World Conservation Congress
WIO	Western Indian Ocean

1. Background

Throughout the tropics and subtropics, coastal communities are increasingly assuming responsibility for nearshore resources under arrangements known as “locally managed marine areas” or LMMAs. Broadly similar to marine protected areas (MPAs), LMMAs are managed for sustainable, long term use rather than biodiversity conservation itself, but typically employ a range of management techniques, including periodic closures, gear restrictions, species-specific reserves and permanently closed, fully protected areas to achieve this aim.

These locally centred approaches have emerged as an effective solution to many of the challenges of small-scale management commonly faced by fishing communities in developing countries. LMMAs have proven to be a cost-effective, scalable, resilient and more socially acceptable alternative to more traditional ‘top down’ methods of marine resource management. They have also shown promise as a means to safeguard food security, address coastal poverty, and help coastal communities to adapt to climate change.

In the Asia-Pacific region, the [LMMA Network](#) has proven effective at facilitating information sharing and peer-to-peer learning amongst coastal communities, whereas LMMAs in other locations such as east Africa have tended to operate in relative isolation, with little communication or coordination between support organisations or implementing communities. Inspired by the success of the Pacific network, UK-based marine conservation NGO [Blue Ventures](#) (BV) has begun working with NGO partners and community representatives to develop similar “learning networks” for Madagascar and the broader Western Indian Ocean (WIO), and to connect these national and regional initiatives to those in other regions worldwide.

As part of this effort, the first global LMMA workshop was held on 10th September 2012 at the IUCN World Conservation Congress in Jeju, South Korea. The meeting, the broadest gathering to-date of LMMA managers, brought together 17 community leaders from LMMAs in the South Pacific, western and central Indian Ocean, Caribbean and Central America. The *Locally Managed Marine Areas: Towards A Global Learning Network* workshop explored best practices, lessons learned and common challenges in LMMA management and laid the foundations for a global network aimed at facilitating the sharing of timely and relevant information to improve LMMA management. The workshop, which was hosted by BV in association with the Pacific LMMA network and the marine research not-for-profit CORDIO, was also attended by 25 representatives from the wider conservation community.

This report compiles recommendations and insights arising from this workshop and two related satellite events. Both the workshop and the satellite events were kindly supported by the John D. and Catherine T. MacArthur Foundation.

2. Workshop Structure

The *Locally Managed Marine Areas: Towards A Global Learning Network* workshop consisted of three events:

1. The core workshop
2. A roundtable discussion, where each of the 17 community leaders talked about the LMMAs with which they were involved. (Biographies of each of the participants can be found in Appendix 1)
3. Semi-structured interviews with community leaders, affording them the opportunity to reflect on their experiences of meeting counterparts from other countries, and the conference in general

The first event to be held was a half-day roundtable session, where each LMMA leader presented a comprehensive overview of their LMMA. Topics discussed included the history and structure of the LMMA management association, the villages the LMMA works in, management techniques, activities within the LMMA and implementation strategies, accomplishments and challenges, and expectations for the workshop's outcomes.

The workshop itself commenced with an overview of LMMAs, which set out a definition and charted their growth, evolution and scope around the world (see section 3). Following this presentation, the 41 participants who attended broke out into six working groups to discuss experiences, challenges and successes within three overarching themes: LMMA establishment, enforcement and conflict resolution, and sustainable financing and alternative livelihoods. As a starting point, participants completed a brief questionnaire to help seed and focus discussion and debate (Appendix 2). The workshop concluded with an overview of key resources to support LMMAs and a wide-ranging discussion on best practice in exchanging information and ideas over large geographical scales.



Figure 1 LMMA leaders at roundtable discussions on September 8th

Toward this end, a new support website was presented during the discussion. The site, www.livewiththesea.org (LWtS), aims to serve as a platform for exchange and dialogue on LMMAs (Appendix 3). The LWtS site includes a database of LMMAs around the world, a directory of resources for LMMAs and support organisations, and

discussion boards for LMMA experts, local leaders, and others involved in LMMAs. A comparison of LWtS and other relevant online platforms for information sharing can be found in Appendix 4.

Three days after the workshop, each of the LMMA leaders took part in a semi-structured interview, during which they were given the opportunity to reflect on key ideas learned and highlight further successes and challenges in LMMA management.

The outputs from the workshop and the two supporting events are presented here in three sections. The first outlines the LMMA definition used by workshop participants and provides the first ever overview of the status of LMMAs across the Indo-Pacific. The next section, which is largely derived from outputs generated by the leader roundtable event, examines some of the LMMAs managed by the community leaders in more detail. The final section explores the crosscutting themes and key lessons that emerged from the discussions and questionnaires of the core workshop and the semi-structured interviews with the LMMA leaders.

3. LMMAs in the Indo-Pacific

Definition

In 2000, at meetings in the Philippines and Fiji, regional marine conservation practitioners and community leaders coined the phrase Locally Managed Marine Area (LMMA). The attendees defined an LMMA as:

An area of nearshore waters and coastal resources that is largely or wholly managed at a local level by the coastal communities, land-owning groups, partner organizations, and/or collaborative government representatives who reside or are based in the immediate area.

The word “local” instead of “community” was chosen in recognition of the fact that many LMMAs are often managed collaboratively with the government and/or other external bodies. And the definition makes no mention of “protection” or “protected” because LMMAs are managed for sustainable use rather than for conservation *per se*, employing a combination of management techniques, including periodic closures, gear restrictions, species specific reserves and permanent fully protected (closed) no-take zones.

LMMAs are referred to by several different names in the Indo-Pacific (Table 1).

Status of LMMAs in the Indo-Pacific

By bringing together experts in local management from the Central and Eastern Indo-Pacific (LMMA Network) and Western Indo-Pacific (Blue Ventures, CORDIO), it was possible to develop the first ever inventory of LMMAs across the entire Indo-Pacific. Taken together, the LMMA network and analogous LMMA sites in the Western Indian Ocean comprise almost 500 sites across 12 countries, and help to manage more than 30,000 km² of marine and coastal resources (Table 2).

It should be noted that almost all of this coverage is in near-shore areas, which are recognized as having particularly high social and economic importance compared with offshore marine sites. Near-shore sites have often been neglected by national park systems and regional initiatives in favour of large off-shores sites which are often less intensively used by fewer stakeholders.

Table 1: Names used to describe LMMA tools in the Indo-Pacific

Country	Name
Cook Islands	Ra'ui site
Fiji	Tabu area; Traditional reserve; Community-protected area
French Polynesia	Rahui
Hawaii	Kapu zone; Traditional marine protected area; Cultural marine conservation district
Kenya	Community Conservation Area; tengefu; hifadhi za kijamii and vilindo vya wenyeji
Indonesia	Sasizen; Community-based marine protected area
Malaysia	Community-based marine protected area
Marshall Island	Mo
New Zealand	Rahui
Palau	Bau zone
Papua New Guinea	Tabu area; Customary area
Philippines	Community-based marine protected area
Samoa	Sa
Solomon Islands	Tambu zone; Community-managed reserve; Community conservation area
Tanzania	Collaborative Fisheries Management Area
Tokelau	Lafu
Tuvalu	Tapu
Vanuatu	Tabu
Vietnam	People's marine management area; Village-managed reserve

Source: workshop participants,¹²³

¹ Melita A. Samoily and David O. Obura, *Marine Conservation Successes in Eastern Africa* (Mombasa, Kenya: CORDIO East Africa, December 2011).

² J. E Parks and N Salafsky, *Fish For the Future? A Collaborative Test of Locally-Managed Marine Areas as a Biodiversity Conservation and Fisheries Management Tool in the Indo-Pacific Region* (Washington, D.C: The World Resources Institute, 2001).

³ Govan, H. et al . 2009. *Status and potential of locally-managed marine areas in the South Pacific: meeting nature conservation and sustainable livelihood targets through wide-spread implementation of LMMAs*. SPREP/WWF/WorldFish-Reefbase

Table 2: LMMA learning networks in the Indo-Pacific

Network	LMMA Network	WIO
Region(s) covered	Central Indo-Pacific, Eastern Indo-Pacific	Western Indo-Pacific
Countries in network	7: Philippines, Indonesia, Papua New Guinea, Palau, Solomon Islands and Fiji	5: Comoros, Kenya, Madagascar, Mozambique, Tanzania
Other countries/territories in region with LMMAs	American Samoa, Cook Islands, French Polynesia, Guam, Niue, Marshall Islands, Federated States of Micronesia, Samoa, Tokelau, Tonga, Tuvalu, Vanuatu	
Number of sites in network	420	71
Area managed in LMMAs	13,000 km ²	17,893 km ²

Source: Databases of the LMMA Network and Blue Ventures

Contribution of LMMAs in the Indo-Pacific to international biodiversity targets

In 2002, international leaders at the World Summit on Sustainable Development set the first target for the establishment of a global system of Marine Protected Areas (MPAs). This target was formally quantified four years later, when the parties to the Convention on Biological Diversity (CBD) committed to effectively conserving



Figure 2 LMMAs in the Indo-Pacific

Source: Based on Govan *et al.*⁴, together with databases of LMMAs from the LMMA Network and Blue Ventures

10% of each of the world’s ecological regions by 2012.

In 2010, the parties pushed back the deadline to 2020 and adopted the Aichi Biodiversity Target 11, with a revised goal of conserving “at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures.”

⁴ H. Govan *et al.*, *Community Conserved Areas: A Review of Status & Needs in Melanesia and Polynesia* (CENESTA/TILCEPA/TGER/IUCN/GEF-SGP, 2009).

To establish to what extent LMMAs in the Indo-Pacific could contribute to this 10% target, we combined data from the BV and LMMA Network databases with outputs from Govan *et al.*³ (Table 3). Progress was assessed by calculating the percentage coverage by LMMAs of the continental shelf to 200 m depth for each country/territory. Note that the analysis includes all LMMAs identified in Polynesia and Melanesia, not just those in the LMMA Network.

Table 3: LMMAs in the Indo-Pacific and progress towards achieving international targets

Country	No. of LMMAs	Total LMMA Area (km ²)	LMMA coverage (%) ¹
American Samoa	10	2.6	
Comoros	1	404	28.5
Cook Islands	23	18.1	
Fiji	217	10,816	55.5
French Polynesia	7	441	8.9
Kenya	14	109.6	1.3
Madagascar	39	11,746.10	12.2
Mozambique	1		
Niue	4	0.6	
Papua New Guinea	86	59.4	0.0
Samoa	59	119.5	20.5
Solomon Islands	113	940.9	3.6
Tanzania	16	5,633.1	31.5
Tokelau	5	1.8	
Tonga	6	92.9	2.9
Tuvalu	10	75.6	
Vanuatu	44	58.1	0.4

¹: Percentage of continental shelf within LMMAs. Please note that not all countries have continental shelf, and some countries not covered by WRI dataset which was used here.

The analysis reveals that Fiji, Madagascar and Tanzania have the largest areas of LMMA coverage in the Indo-Pacific, together accounting for 92.4% of total coverage. At 55.5%, more than half of Fiji's continental shelf is under local management, 24 percentage points higher than second-placed Tanzania, which has 31.5% of its shelf in LMMAs.

In all, five countries in the Indo-Pacific region have more than 10% of their continental shelf in LMMAs: Comoros, Fiji, Madagascar, Samoa and Tanzania. Whilst we cannot be sure that all of these areas are effectively and equitably managed as in the definition above due to the fact that management effectiveness is highly variable within LMMAs and between LMMA sites, this analysis provides strong *prima facie* evidence of the potential of LMMAs as a mechanism for marine resource management.

4. Participant LMMA profiles

The 17 LMMA managers who attended the conference came from 12 countries spanning 252 degrees of longitude and 38 degrees of latitude. Seven came from Africa, four from the Pacific Islands, three from Asia, two from Latin America and one from Australia. Fourteen of these participants had previously taken part in exchange trips with other fisher communities and 10 have participated in national LMMA networks. Twelve of these managers are primarily fisherman and five primarily work for NGOs or other institutions.

At the leader roundtable event, where the representatives discussed a wide range of aspects about their LMMAs, two in particular spoke in great detail about their sites. These LMMAs are profiled here, the rest are covered in the participant biographies (Appendix 1).

Velondriake Community Managed Protected Area

Representative: Mr. Roger Samba

The Velondriake Community Managed Protected Area in southwest Madagascar is the county's oldest LMMA. Velondriake spans 650 km² of coral reefs, mangroves, lagoons, beaches and sea grass beds, making it one of the largest marine managed areas in Madagascar. Home to around 7,500 semi-nomadic Vezo people, Velondriake unites 25 coastal villages in the co-management of local marine resources. It is legally recognized as an IUCN category V MPA and achieved temporary protected status by inter-ministerial decree in late 2010. Velondriake began as an initiative to improve the sustainability of the local octopus fishery – the region's most economically important catch - but has since expanded to include aquaculture, temporary crab fishery closures and the designation of eight permanent no-take marine reserves totalling 0.8 km² protecting both coral reef and mangrove habitats within the broader Velondriake area.

The initiative is largely guided and managed by local communities, through the Velondriake Association and its president Mr. Roger Samba. BV provides technical and financial support and training. Resource use and access rights within the area are governed by a legally recognised *dina*, a community law. The *dina* bans destructive fishing practices including beach seining and poison fishing, regulates temporary and permanent closures of octopus and crab fisheries, and grants conflict resolution and enforcement powers to local communities, allowing them to impose fines and utilise the regional court system in cases where conflict resolution is unsuccessful.

Velondriake's success has triggered widespread replication of the LMMA approach nationwide. Over the last seven years, 37 LMMAs have been established along Madagascar's northern, western and southern coasts, many of these encompassing a number of villages. Taken together, these initiatives presently cover 7.7% of Madagascar's marine area, four times more than national marine parks.

Kuruwitu Community Managed Conservation Area Representative: Mr. Dickson Juma

The Kuruwitu Community Managed Conservation Area (KCMCA) is Kenya's first LMMA, established in 2006. Through a local umbrella organisation, the Kuruwitu Community Welfare Association, for which Dickson Juma is Project Manager and former Vice Chairman, residents designated a 0.29 km² zone where fishing is prohibited. Since establishment, live hard coral cover within the LMMA has increased by an estimated 30%, while fish abundance has grown by 200%.⁵

Pre-dating the 2007 Beach Management Unit (BMU) regulations, which provide a framework to establish LMMAs in Kenya, Kuruwitu lacked legislative support and depended on acceptance from nearby communities and support from the East African Wildlife Society (EAWLS). Nonetheless, the reserve's success has attracted interest from other fishing communities along the Kenyan coast, and it is likely that Kuruwitu, along with community exchange visits to the Collaborative Management Areas in Tanga, northern Tanzania, helped to catalyse the development of the 2007 BMU regulations and the designation of further LMMAs.

There are currently 14 operational LMMAs in Kenya, covering 109.6 km². Of these, seven are on the southern coast of Kenya, near the Tanzanian border, including Wasini Community Conservation Area, where fellow LMMA leader Omar Abdullah Juma lives and works. These LMMAs, established with the assistance of EAWLS and Flora & Fauna International (FFI) cover an area of 104.9 km², 96% of total LMMA coverage in Kenya.

⁵ Nelson, F. 2012. Recognition and Support of ICCAs in Kenya. In: Kothari, A. with Corrigan, C., Jonas, H., Neumann, A., and Shrumm, H. (eds). *Recognising and Supporting Territories and Areas Conserved By Indigenous Peoples And Local Communities: Global Overview and National Case Studies*. Secretariat of the Convention on Biological Diversity, ICCA Consortium, Kalpavriksh, and Natural Justice, Montreal, Canada. Technical Series no. 64.

5. Key lessons learned

To understand the key lessons learned from the workshop, we used qualitative data derived from two sources: i) the sentiments expressed on the workshop questionnaire; and ii) the semi-structured video interviews with the LMMA leaders. The interviews yielded over 90 minutes of video, with each interview averaging around 6 minutes. The recordings were fully transcribed and imported into NVivo10 for analysis, along with the responses extracted from the workshop questionnaire.

The analysis involved coding transcripts and responses into a thematic framework derived from the questions asked and themes covered in the respondents' answers. Four primary crosscutting themes emerged from this analysis, along with a total of 35 messages and sentiments. The key lessons learned, defined as sentiments expressed by more than five participants, are summarised in Table 4, after which follows a brief discussion of results split by theme (best practice, challenges, scaling up/online resources and miscellaneous).

Table 4: Top recommendations for LMMAs

Theme	Sentiment	Frequency
Best practice	Community needs and priorities should drive the LMMA establishment process at all stages so that the community retains overall ownership.	12
General	Bringing together local managers from different LMMAs is an effective way to highlight different approaches to locally centred marine resource management.	12
Scaling	One of the best ways of helping encourage replication of LMMAs is to bring leaders from different communities together to learn from each other.	12
Best practice	Many LMMAs would benefit from an enforcement committee with community judges/arbiters and community-based surveillance, underpinned by clear rules and regulations and government support where practical.	9
Best practice	Awareness raising programmes within the community can ensure continued buy-in and help to increase knowledge about the declining state of the resource.	8
Best practice	Adaptive management with purpose/plans and underpinned by community-based monitoring can be vital ("seeing is believing").	8
Best practice	It is beneficial to partner with NGOs or governments over the long-term to help ensure necessary technical and financial support.	7
Challenges	Lack of start-up funding and long-term sustainable finance can impede LMMA effectiveness and inhibit expansion to otherwise willing communities.	7
Scale/Resources	Videos and written information on best practices, general newsletters, radio, brochures, DVDs, websites and teaching materials for schools are useful for improving awareness and exchange of LMMA best practices.	7
Challenges	Legislative overlap and conflict between customary tenure (where it exists) and top-down state management is a challenge.	5
General	LMMA is a catch-all term and varies hugely from area to area.	5

Source: workshop participants

Best practice

Of the four themes, participants showed the highest level of agreement over what constituted best practice in LMMAs. The most frequently cited approaches, which are set out in Table 4, centred on: the need to ensure that the processes of establishing, monitoring, adaptively managing and enforcing an LMMA are driven by the community throughout; the need to maintain awareness-raising programmes to underscore the benefits of the LMMA within the community; and the need to build robust, flexible and sustained relationships with NGOs, businesses and governments.

Challenges

Despite the variety of LMMA models, the multitude of countries in which they are active and the variety of geographic and temporal scales over which they exist, it is clear from this analysis that the challenges of establishment, management and enforcement are surprisingly similar. Participants most often cited a lack of funding as a key challenge, followed by conflict and overlap between local, regional and national legal frameworks. It was also observed that even in countries without the necessary legal frameworks for 'official' devolved coastal management such as the Comoros and Costa Rica, LMMAs still existed – often set up in the absence of legal instruments or government support.

Other, less frequently stated challenges included the geographical remoteness of some communities, which prevented them from collaborating with governments and other communities effectively, and conflicts between tourism and fishing, as well as between local and migrant fishers. Table 5 explores these challenges and their root causes in more detail, and gives examples of best practice to demonstrate how they can be overcome.

Scaling up of LMMAs and online resources

The progress seen in growth and replication of LMMAs over recent years has been highly variable in different countries and regions of the Indo-Pacific. These differences are due to a broad range of factors and enabling conditions, which may or may not be present in a particular context. For example, the rapid lateral replication of community-managed fisheries closures seen in Madagascar in recent years has been driven in large part by the presence of a lucrative market for octopus, whereas in other geographical and socioeconomic contexts, such a particular market or stimulus may not be present. As well as the varying socioeconomic contexts, there are also political and structural barriers to scaling up. These issues were discussed at length throughout the proceedings, and many participants suggested that they would benefit from broader sharing of best practice and experiences to better understand the preconditions to replicating LMMAs.

There was a general agreement that, whilst social marketing initiatives could be useful, they weren't always required to help ideas spread. Where social marketing campaigns were needed, participants felt they should be context specific, and draw on whatever educational and training resources were available in a country.

Frequently cited educational and training resources which are in demand included videos and written information on best practice, general newsletters, radio, brochures, DVDs, websites and teaching materials for schools. The websites of the LMMA network (www.lmmanetwork.org), Live with the Sea (www.livewiththesea.org), Seacology (www.seacology.org), and Open Channels (www.openchannels.org) were all identified as potential sources of materials. See Appendix 4 for a comparison of the various features of these online resources.

Table 5: Common challenges, route causes and best practices in LMMAs

Challenge	Cause	Potential solution
Lack of funding	Although LMMAs can be a cost-effective alternative to top-down approaches to marine resource management, there is still a need for financial support. In particular, there are costs associated with initial establishment, as well as with ongoing administration of the community institutions that underpin the LMMA.	Project partners provide seed funding, as well as technical and financial support. Promote long-term sustainable financing mechanisms, using income sources such as fees from vessels, fishers and tourists and fines for transgressions.
Lack of supportive legal framework	Many countries do not have legal structures that allow communities to manage marine resources directly or to take part in enforcement efforts. In some places, community management is allowed, but specific procedures are not clear or conflict with other legal processes.	Lobby for greater decentralisation of marine resource management at national level and / or work with local leaders to create local laws that specify a community role in management and enforcement.
Migrant fishers	Because successful well-managed LMMAs often have higher numbers of fish and invertebrates, fishers from outside the area are more likely to exploit them.	Appoint community wardens with powers to apprehend/educate offenders.
Geographical remoteness	LMMAs in more remote locations may have added enforcement pressures and lower potential revenues from tourism. For example, in Menai Bay, Zanzibar, the village of Kizimkazi-Dimbani has benefitted more from the establishment of the collaboratively managed MPA than the neighboring village Fumba. This is attributed to Fumba's location far from the patrol boat station. Further, the poor condition of Fumba's access road means few tourists visit.	Where available, telephone networks can reduce the effects of isolation and make it easier for communities to organise together and with government agencies to work together (for example, to combat poaching). When this isn't possible, BLU (ham radios) have been used by some community associations to improve enforcement and collaborate with government.
Lack of title or land ownership	In many areas in the WIO, communities do not hold secure title over their land. In Kuruwitu, Kenya, for example, the community association is keen to establish a community-run ecolodge to accommodate visiting tourists. However, it has so far found it impossible to obtain rights to coastal land to construct it on.	Communities may be able to partner with development or rights organisations to improve access to titles and to diffuse information about securing individual land titles.

Source: workshop participants

Miscellaneous

There was wide agreement, particularly from the LMMA representatives, that exchange trips were the best way to highlight potential new approaches to community based marine resource management. Many representatives were also encouraged to learn that LMMAs could contribute to international targets for increasing protected area coverage. Finally, it was observed that paying communities for participation in LMMA efforts was rarely in the long-term interests of conservation and contradicted the ethos of collaborative community management by focusing communities on external payments rather than the productivity and sustainability of local fisheries. It also risks eroding community support, and serves as an effective way of reducing goodwill contributions from the community.

6. Conclusions and next steps

LMMAs are emerging as an effective solution to many of the challenges of coastal management commonly faced by fishing communities in developing countries. They have proven to be a cost-effective, scalable, resilient and more socially acceptable alternative to more conventional methods of marine resource management. They have also shown promise as a means to safeguard food security, address coastal poverty and to help coastal communities adapt to climate change. However, LMMAs are highly heterogeneous in nature and employ a variety of models and management approaches across different regions, cultures, and latitudes. They also suffer from a number of challenges, including scarce or inadequate funding and legal complications in governance, especially overlapping or ambiguous management authority.

Overcoming these challenges may best be achieved by building on the spirit of international exchange pioneered during this forum, and creating a global information-exchange platform modelled on the Indo-Pacific LMMA network. Such a network would enable LMMA practitioners worldwide to share experiences and best practice, and offer training, resources, exchange visits, and an online information clearing house. The network could also promote local management to other communities and governments (especially in countries that have yet to establish effective mechanisms to devolve marine resource management to the local level), and work to establish regional conservation trust funds to support LMMA development in the long-term.

The network could work to cascade best practice down to the local level, where there is a particular need to ensure that the processes of establishing, monitoring, adaptively managing and enforcing LMMAs is driven by the community throughout; to maintain awareness-raising programmes on the benefits of LMMAs within communities; and to build robust and flexible long-term relationships between communities, NGOs and governments. Experience from the Indo-Pacific suggests that the most effective use of networks is to ensure appropriate scale, thus a global network would encourage regional, national and local networks to ensure most effective support through a “cascade of networks”.

For example, Fiji formed a national network in 2002 and subsequently has formed provincial networks to provide more effective and decentralized support to communities. This approach of sub-national networks has also been adopted in Solomon Islands and Papua New Guinea.

A global network would require significant time commitments from participating institutions and would need long-term donor support. Importantly, the network would need to respond to the needs of local communities and partners, which will be variable across different regions and countries. The lack of a common language between LMMA communities and practitioners around the world will also present a major challenge.

An online questionnaire has been developed and will be diffused in June 2013 in order to investigate more fully the feasibility of a global network and to gather more information on the possible functions that it might fulfill. The results of this survey will be distributed by email to workshop participants and will be available upon request info@blueventures.org.



Figure 3 Group photo of sponsored participants and the Blue Ventures team. Back row: Shawn Peabody, Davon Baker, Paulo Kolikata, Gildas Andriamalala. Middle Row: Selarn Kaluwin, Dickson Juma, Msoli Daan-ouni, Omar Abdullah Juma, Nguyen Viet Nghi, Samba Roger, Ke

7. Appendices

Appendix 1: Participant biographies

These biographies cover those participants supported by the Blue Ventures travel scholarship to attend the IUCN World Conservation Congress and the LMMA-related events.

Omar Abdullah Juma | Kenya

Omar Abdullah Juma is the Secretary of the Wasini Beach Management Unit in Mombasa, Kenya. He attended the conference to share knowledge of community conservation of mangrove and coral reef habitats. His community has succeeded in forming bylaws for the operation of the BMU and has successfully introduced seaweed farming, the provision of snorkelling and diving services to visitors to the area, and protection of the fishery and breeding grounds for populations of turtles and dolphins.

Moussa Antonjara | Madagascar

Moussa Antonjara is the President of the Association of the Ankarea LMMA in Nosy Be, Madagascar. The LMMA association has succeeded in participatory implementation of a local management committee, raising awareness within local communities of key conservation issues, and participatory development of marine resources and sustainable use regulations.

Davon Baker | Grenada

Davon Baker is the Chairman of the Co-Management Board of the Sandy Island/Oyster Bed Marine Protected Area (SIOBMPA) in Carriacou, Grenada in the eastern Caribbean. Davon has been chairman since the inception of SIOBMPA two years ago and has faced considerable challenges with limited human and financial resources. He spent several years planning the establishment of the LMMA and since its implementation, has worked to increase community outreach with a website and a newsletter, as well as training MPA personnel and community members in climate change adaptation, enforcement and Reef Check.

Dickson Juma | Kenya

Dickson Juma is the Project Manager and former Vice Chairman of the Kuruwitu Conservation and Welfare Association in Kenya. Kuruwitu is Kenya's first LMMA, and Dickson hopes to replicate his association's efforts elsewhere in the country. The association has developed by-laws accepted by community members to govern the LMMA and has established effective monitoring and surveillance of the LMMA by trained community scouts, which seek to curb illegal fishing practices by outsiders. The association has also documented the recovery of fish populations and degraded corals. The area has succeeded in becoming a popular snorkelling spot, attracting tourists who pay fees that contribute to the financing of the LMMA's management.

Selarn Kaluwin | Papua New Guinea

Selarn Kaluwin is the Executive Director of the Papua New Guinea Centre for Locally Managed Marine Areas Inc. (PNGCLMA). He is also a member of M'Buke Islands LMMA in the Manus Province in Papua New Guinea. Selarn is a passionate leader in his community and believes in the LMMA approach and its principles. In M'Buke, Selarn and his community members use the traditional

governance system together with the LMMA. All the M'buke community members living away from the island are also invited to get involved in the LMMA affairs. To address food security concerns, Selarn and his community brought traditional yam planting experts from an island in the Milne Province in the east to help them plant and harvest yams, an alternative to marine resource use. Selarn's community also works to replant corals and mangroves. The Manus provincial government was the first in the country to come up with a ridge to reef conservation plan and signed a stakeholder agreement between NGOs, national government, universities and PNGCLMA.

Jimmy Kereseka | Solomon Islands

Jimmy Kereseka is the Environmental and Development Officer for the Lauru Land Conference of Tribal Communities (LLCTC) in the Solomon Islands. As a result of the organisation's work, communities have seen resources begin to replenish over time. Jimmy belongs to the national Solomon Islands Locally Managed Marine Area Network (SILMMA) and is an LMMA Network councillor.

Paulo Kolikata | Fiji

Paulo Kolikata is the chairman of the Kubulau Resource Management Committee in Fiji. He has been involved in community conservation work for the past five years and has chaired the committee for the last four years. Paulo has helped establish protected areas in four different ecosystems: forests, fresh water, mangrove and marine. His community has established the largest LMMA in Fiji, called Namena. He has also helped to set up two other permanent areas and 17 traditional tabu areas. The Kubulau Resource Management Committee implemented Fiji's first reef to ridge management plan, which has since been adopted by four adjacent districts. Kubalau is a member of the Fiji Locally Managed Marine Areas Network (FLMMA) – the oldest of the national LMMA Networks.

Kenneth Lango | Vanuatu

Kenneth Lango is the chairman of the Emua Community Locally Managed Area Committee. The LMMA was established in 2005. The community is working to create incoming generating opportunities through ecotourism. Kenneth emphasizes the necessity of bottom-up approaches to marine resource management.

K.G. Mohammed | Minicoy Island, India

K.G. Mohammed is a member of the Maluku Development Society, a community-based organisation that works with the Centre for Action Research on Environmental Science and Society based in the Funhilol Village of Minicoy Island off the coast of India. The Maluku Development Society is in the process of developing a locally managed marine area and is currently seeking legal backing. The LMMA encompasses ten villages and local fishermen are in charge of marking out exclusive areas for tuna bait fishing. They have raised awareness of the need to protect corals, mangroves and birds and have succeeded in declaring 100-year old shipwrecks as marine cultural heritage sites, marking the marine protected areas with buoys. The LMMA uses customary law to manage fishing practices, nearby forests and mangroves.

Laura Morales | Costa Rica

Laura Morales is the Local Fisheries Database Assistant for the Partnership for the Ocean in Puntarenas, Costa Rica. Tárcoles' LMMA, the Marine Area for Responsible Artisanal Fishing, seeks to

incorporate marine conservation perspectives of local coastal youth and the "lujadoras", or women who untangle fishing lines. These social groups are important contributors to food security and the artisanal fishing work in the area. The LMMA has increased the number of fish and invertebrates. The organisation has also banned shrimp trawling from the area and promoted responsible fishing practices.

Daan-Ouni Msoili | Comoros

Daan-Ouni is a member of the Association for the Socioeconomic Development of Itsamia (ADSEI) at Moheli Marine Park (MMP) in Comoros in the WIO. In 2001, MMP became the first marine area to be officially protected by the Comoros government. While MMP is an autonomous institution, it is co-managed by the Comoros Ministry of Environment and local communities. ADSEI is one of the ten community associations located in the park. ADSEI was created in 1985 and it is focused on the preservation of green and hawksbill turtles. The communities have successfully decreased poaching of these species and have also successfully conserved sea cucumbers populations. The association is also working on reforestation of acacias and sandragons to fight coastal erosion.

Jacqueline Razanoelisoa | Madagascar

Jacqueline is a professor of fisheries science at Madagascar's Institute of Marine Science (IHSM). She has played a key role in advising Madagascar's nascent LMMA movement, which is most active in her local region of SW Madagascar. Through her research and lobbying efforts, Jacqueline has become a staunch advocate of the local marine management model in Madagascar.

Phillip Rist | Australia

Phillip Rist is the Executive Officer (Traditional Owner of the Nywaigi tribal group) of the Girringun Aboriginal Corporation along the Great Barrier Reef in Australia. Phillip represented nine traditional groups who use the marine area at the World Conservation Congress. They joined together to form an organization that advocates for traditional rights in using and managing natural resources. The group is the first organization of Traditional Owners of the Great Barrier Reef to be recognized by the federal and state governments of Australia as the custodians of their marine environment, through the signing of the Traditional Use of Marine Resources Agreement (TUMRA).

Roger Samba | Madagascar

Roger Samba is the President of the Velondriake Association, which governs the Velondriake Locally Managed Marine Area in southwest Madagascar. Velondriake covers 650 square kilometres of marine and coastal area, is home to 7,000 people, and is the largest LMMA in the WIO. Roger is well versed in conservation issues and very much respected across the region as he has been involved in the management of Velondriake since its creation in 2006. He was awarded the J. Paul Getty Award for Conservation Leadership from the World Wildlife Fund for his role in the establishment of the world's first temporary octopus closure in Andavadoaka, the heart of Velondriake. As the President, he oversees Velondriake's many activities including establishing permanent and temporary fishery reserves and creating and implementing *dina*: community-generated laws that ban destructive fishing practices within the LMMA.

Alifereti Tawake | Fiji

Alifereti Tawake is the Chairman of the Council of the Locally Managed Marine Area Network and is based in Australia. The Council is the governing and decision-making body of the Indo-Pacific regional network made up of community representatives who are nominated by each of the seven countries that are formally part of the Indo-Pacific Network: Indonesia, Philippines, Papua New Guinea, Fiji, Palau, Solomon Islands and Pohnpei. The Council makes policy decisions, which ensures that the network is community-driven and accountable to the needs of the people. Currently, Alifereti chairs the Council as a representative of Fiji and is a research student at James Cook University. The LMMA Network is well developed and its communities are well organised with a strong sense of social cohesion. Results show that their LMMAs have resulted in reports of higher numbers of fish and an increase in household incomes of at least 30%.

Nguyen Viet Nghi | Vietnam

Nguyen Viet Nghi is the project manager for the community based mangroves reforestation and management project in Vietnam. He works with CARE International in Vietnam. He is currently learning how to combine mangrove conservation with clam aquaculture projects, benefiting both the mangrove ecosystems and the people who rely on them. At the WCC, he shared methods his community association has used to set up rules and regulations on mangrove management and protection. He has established a mangrove nursery garden with 139,000 seedlings, planted 335 hectares of mangroves and manages over 1,000 hectares of mangroves.

George Waweru Maina | Kenya

George Waweru Maina is a Fisheries Scientist for CORDIO based in Mombasa, Kenya. He works with communities throughout the Kenyan coastline and has improved ecological health and fish population densities in some community MPAs where enforcement has been strict. He has also worked to reduce turtle and hatchling mortalities in some community MPAs; increased fisher revenues from tourism; and brought together various marine resource groups to manage marine fisheries together. He is also working with communities on the southern coast of Kenya to protect fish spawning aggregation sites. George also served as the English-Swahili translator during the WCC's LMMA workshops.

Appendix 2: Participant questionnaire

Worksheet for Session 0757

Locally managed marine areas, towards a global learning network

Participant Name

Organisation

Organisation Website

Member of LMMA? Y/N

Small Group Discussion – What Works?

Please note 2-3 best practices or ideas you feel are working with regards to local marine management

1

2

3

Please note any resources that you are aware that can be used to support communities with local marine management

1

2

Full Group – So What?

Would there be value in transferring these ideas / resources to other communities?

A lot of value

A bit of value

No value

How could these ideas be spread to other communities? (top 2 ideas)

1

2

What would be some of the major challenges to spreading these ideas?

Full Group – Now What?

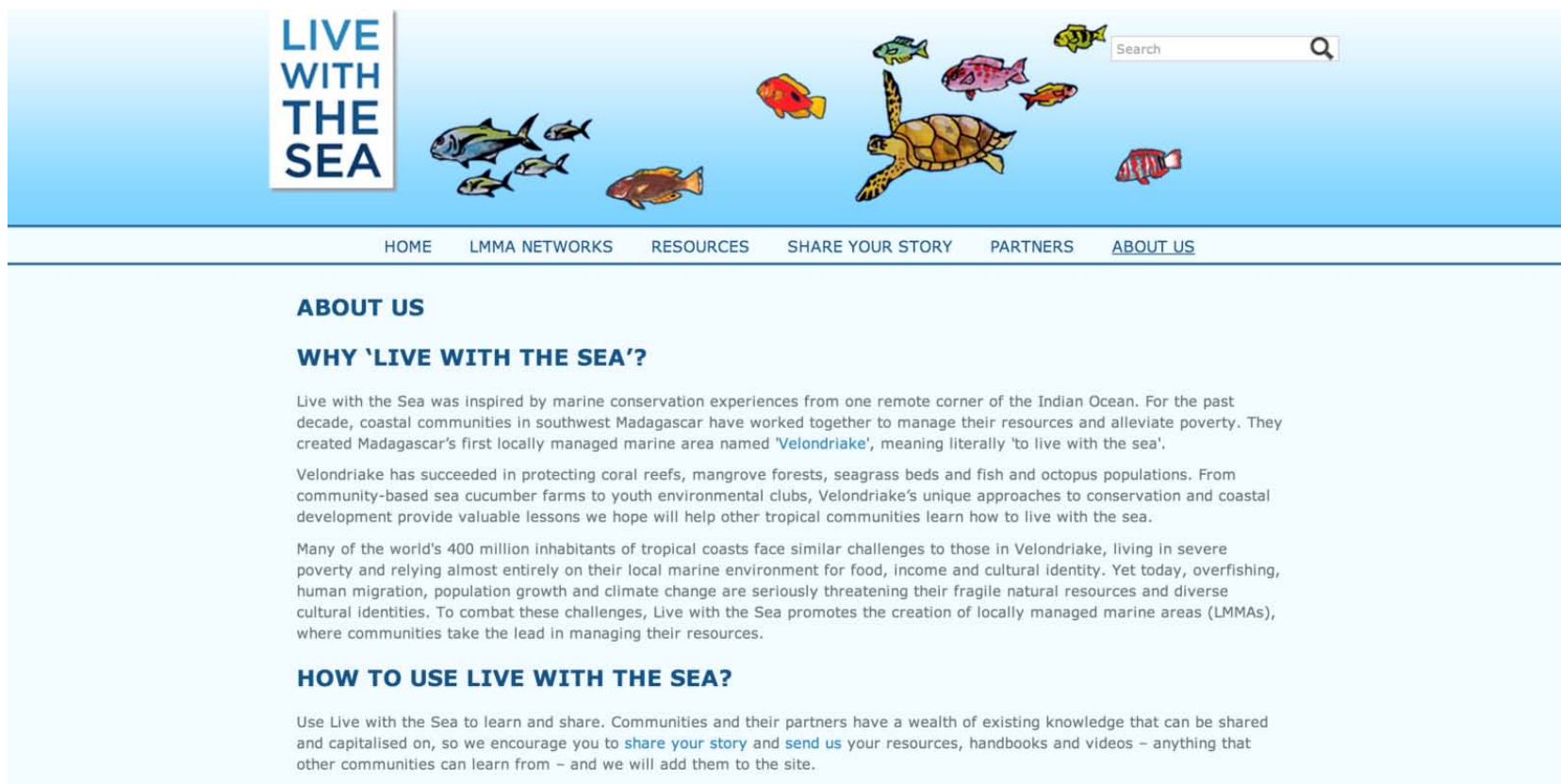
What steps would need to be taken to support community information exchanges at a large scale?

1

2

3

Appendix 3: Profile of LWTS



The screenshot shows the top portion of the 'Live with the Sea' website. The header features the logo 'LIVE WITH THE SEA' on the left, a search bar on the right, and a central illustration of various marine life including a sea turtle, several colorful fish, and a squid. Below the header is a navigation menu with links for HOME, LMMA NETWORKS, RESOURCES, SHARE YOUR STORY, PARTNERS, and ABOUT US. The main content area is titled 'ABOUT US' and contains two sections: 'WHY 'LIVE WITH THE SEA'?' and 'HOW TO USE LIVE WITH THE SEA?'. The 'WHY' section explains the organization's inspiration from Madagascar's Velondriake and its mission to help other coastal communities. The 'HOW TO USE' section encourages users to share their stories and resources.

LIVE WITH THE SEA

Search

HOME LMMA NETWORKS RESOURCES SHARE YOUR STORY PARTNERS ABOUT US

ABOUT US

WHY 'LIVE WITH THE SEA'?

Live with the Sea was inspired by marine conservation experiences from one remote corner of the Indian Ocean. For the past decade, coastal communities in southwest Madagascar have worked together to manage their resources and alleviate poverty. They created Madagascar's first locally managed marine area named 'Velondriake', meaning literally 'to live with the sea'.

Velondriake has succeeded in protecting coral reefs, mangrove forests, seagrass beds and fish and octopus populations. From community-based sea cucumber farms to youth environmental clubs, Velondriake's unique approaches to conservation and coastal development provide valuable lessons we hope will help other tropical communities learn how to live with the sea.

Many of the world's 400 million inhabitants of tropical coasts face similar challenges to those in Velondriake, living in severe poverty and relying almost entirely on their local marine environment for food, income and cultural identity. Yet today, overfishing, human migration, population growth and climate change are seriously threatening their fragile natural resources and diverse cultural identities. To combat these challenges, Live with the Sea promotes the creation of locally managed marine areas (LMMAs), where communities take the lead in managing their resources.

HOW TO USE LIVE WITH THE SEA?

Use Live with the Sea to learn and share. Communities and their partners have a wealth of existing knowledge that can be shared and capitalised on, so we encourage you to [share your story](#) and [send us](#) your resources, handbooks and videos – anything that other communities can learn from – and we will add them to the site.

'Live with the Sea' is a new website inspired by this LMMA networking event, to provide a space for tropical coastal communities and their partners to share experiences with innovative, locally based marine conservation projects – from youth environmental education and reproductive health to aquaculture and marine reserves.

Users can share their stories on the discussion board or submit content like videos or community handbooks to help encourage adoption of the LMMA approach and combat challenges threatening those coastal communities who rely on their marine environment for food, income and cultural identity. LWtS welcomes submissions from communities, NGOs, fishing companies, academics and conservationists worldwide.

Appendix 4: online platforms for LMMA information exchange

Name	Address	Target Audience	Target Region	General Marine Resources	LMMA Resources	Videos	Contact directory for LMMAs	Discussion forums	Courses / Webinars	Supported Languages
Live With the Sea	www.livewiththesea.org	LMMA experts, field agents, community leaders	Global, Western Indian Ocean, Madagascar		Handbooks, guidebooks, videos	Yes	Under development	Yes, but not yet active		English, French, Malagasy (others in development)
Seacology	www.seacology.org	MPA managers, academics	Global	Case studies, teaching resources		Yes				English
Open Channels	www.openchannels.org	Academics, Conservation staff, MPA managers	Global	References, guides, links	Case studies			Actively facilitated	Yes	English
LMMA Network	www.lmmanetwork.org	Academics	Indo-pacific, Global		Guidebooks, monitoring manuals, references	Yes				English
DLIST	www.dlist-asclme.org	Conservationists, Academics	Western Indian Ocean	Limited resources on non-LMMA topics	Case studies		For DLIST sites, and partners	Actively facilitated	Yes	English

Appendix 5: Organising committee

Name	Organisation	Contact details
Alifereti Tawake	LMMA Network	alifereti.tawake@my.jcu.edu.au
Alasdair Harris	Blue Ventures	al@blueventures.org
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