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Intended and unintended outcomes in fisheries learning exchanges: lessons from Mexico and Madagascar

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Abstract

Fisheries learning exchanges (FLEs) bring together fisher communities to exchange knowledge and experiences, with the goal of building social capital and disseminating management techniques. However, the effectiveness of the approach has not yet been widely evaluated and no best practice guidelines have been published. In 2015 two groups of octopus fishers from Bahia de los Angeles, Mexico and Sarodrano, Madagascar travelled to Andavadoaka, southwest Madagascar to learn about the temporary fishing closures for octopus used in the region. Octopus fisheries in Madagascar and Mexico differ in several respects, particularly harvesting techniques. The FLE was qualitatively evaluated through participant observation and semi-structured key informant (KI) interviews. Thirty before-and-after interviews were carried out with 16 KIs including visitors, hosts and organisers. Informants suggested that holding the FLE at the same time as the closure openings allowed for learning benefits but carried an important opportunity cost for organisers and host participants, and that shortcomings of planning and translation capacity limited learning opportunities. Several KIs were concerned about the applicability of the Malagasy management model to the Mexican context concerned, and the FLE may have had unforeseen consequences since Malagasy fishers were excited to learn a new fishing method (trapping) from the visitors: if effective, trapping could negatively impact Malagasy octopus stocks. The exchange of knowledge in the FLE was primarily one-way, from host to visitor, and most organisers did not view themselves as participants. Recommendations to improve the effectiveness of future FLEs include: i) improving facilitation and translation capacity to promote dialogue,

ii) focusing on key messages, iii) selecting appropriate participants and iv) recruiting a specialist to organise and lead exchanges.

Keywords: Community; Fisheries management; Knowledge exchange; Marine conservation; Natural resources management; Social learning

1. Introduction

There is increasing recognition that effective forms of knowledge exchange are required to enhance environmental sustainability (Fazey et al. 2012). Fisheries learning exchanges (FLEs), in which representatives of fisher communities are brought together to exchange knowledge and experiences, are recognised as a valuable tool for improving fisheries management, in particular for sharing management challenges and solutions, empowering fisher leaders, building social capital and communities of practice, and developing conservation solutions (Jenkins et al. In press; Heyman et al. 2011). However, the effectiveness of the approach has thus far received minimal assessment and few guidelines for practitioners to maximise the utility of such exchanges exist (Bretos et al. 2013; Thompson et al. 2016). To help address this, a research collaboration led by the University of Washington and SmartFish International entitled FLExCELL (Fishermen Learning Exchanges for Conservation: an Evaluation of Lessons Learned), was launched in 2013.

The FLExCELL project comprises two phases. Phase 1 consisted of a workshop in May 2013 that brought together 22 participants from 11 countries to establish a

community of practice for FLEs, achieve a shared understanding of what defines an FLE, and compile lessons learned (Thompson et al. 2014). Several outputs from the workshop discuss FLEs in detail, including their scope and history (Jenkins et al. In press), key characteristics of successful FLEs (Thompson et al. In press), and suggested guidelines for conducting an FLE (Thompson et al. 2014). Phase 2 of the project consists of a number of in-depth case studies of FLEs across the world, intended to elucidate best practice for designing and conducting FLEs. This paper presents the findings of the first of these Phase 2 case studies. The objective of the paper is to critically evaluate the effectiveness of the FLE as a tool for learning and generate recommendations for the development of best practice, based primarily on the testimonies of organisers and participants themselves.

2. Methods

2.1 Study FLE

The case study FLE was the result of collaboration between Blue Ventures (BV; UK), SmartFish International and Pronatura Noroeste (Mexico), and took place in Andavadoaka, southwest Madagascar in August-September 2015 (Figure 1). Since 2004, the communities of Andavadoaka and surrounding villages, with the support of BV, have been implementing temporary octopus closures during which defined areas of reef flat are closed to octopus fishing for 2–7 months (Benbow et al. 2014; Oliver et al. 2015). The closures form the foundation of Velondriake, Madagascar's first Locally-Managed Marine Area (LMMA; Harris 2007), which was officially incorporated into the country's expanded protected area system in 2015 and includes a number of permanent reef and mangrove reserves in addition to closure

areas. Velondriake spans 25 villages and is run by a committee of elected village representatives (the Committee of the Velondriake Association) who spearhead fisheries management in their communities, including the selection of reserve and closure sites, the length of the closure period, and the application of rules (Andriamalala and Gardner 2010; Oliver et al. 2015).

The temporary octopus closure model generates net economic benefits when closures are well managed (Oliver et al. 2015), and as a result has influenced national fisheries policy and spread throughout southwest Madagascar as well as elsewhere in the Indian Ocean (e.g. Mozambique, Mauritius, Tanzania). An important tool in the spread of the model has been FLEs, which have seen an estimated 494 representatives of fisher communities from around the region visit Andavadoaka to meet with the Velondriake Association, discuss management issues and attend the opening of a temporary octopus closure (i.e. the resumption of fishing). The case study FLE involved visitors from two small-scale octopus fishing communities, Bahia de los Angeles, Baja California (Mexico) and Sarodrano (southwest Madagascar), and was designed to allow visiting fishers to learn about the temporary closure model used in Velondriake with a view to implementing or improving similar initiatives in their fisheries. The community from Sarodrano had previously implemented temporary octopus closures, although these had been unsuccessful for reasons of inadequate governance structures, and shared many social, cultural and environmental characteristics with Velondriake. Both Malagasy fisheries, however, differed substantially from the fishery in Bahia de los Angeles. The Madagascar fisheries are un-motorised and largely in shallow water, with octopus harvested by

gleaning (primarily women) and free-diving using spears (men) (Barnes-Mauthe et al. 2013; Westerman and Benbow 2013). In Mexico, however, octopus is caught exclusively by men using traps and pump-assisted diving from motorised boats in deeper waters (Valdez and Torreblanca 2008). Octopus and other marine resources are overfished in both southwest Madagascar and Baja California (Cinti et al. 2014; Harris 2007; Sala et al. 2004).

The FLE involved 16 participants, including both fishers and organisers (Table 1). The FLE was timed to coincide with the simultaneous opening of the network of temporary octopus closures within Velondriake; in addition to attending pre-opening meetings of the Velondriake Association and the multi-stakeholder Comité de Gestion de Poulpe (octopus management committee, which brings together fisher associations and private sector buyers to agree on prices), attendees participated in fishing activities during the openings and visited collectors (middlemen between fishers and buyers) afterwards. A range of additional presentations and activities, including a visit to a seaweed aquaculture project initiated as an alternative livelihoods programme to help reduce harvesting pressure on marine resources, were also included in the FLE (Table 2).

[TABLE 1]

[TABLE 2]

2.2 Data collection and analysis

120 The FLE was assessed through participant observation (the first author was present
121 throughout and participated in all FLE activities) and key informant (KI) interviews.
122 Interviews were semi-structured, guided by 'pre-exchange' and 'post-exchange'
123 interview protocols developed for FLExCELL case studies by L. Jenkins and K.
124 Thompson (University of Washington). However logistical constraints meant that no
125 time was available for face-to-face interviews either before or after the FLE, thus all
126 'pre-exchange' interviews were carried out on Day 1 and Day 2 of the exchange, and
127 most (n = 8) 'post-exchange' interviews were carried out on Day 6 and Day 7. All FLE
128 participants (10 men, six women; Table 1) were interviewed twice as key informants,
129 however only 30 interviews (16 'pre-exchange', 14 'post-exchange') were carried out
130 as two participants were not available for post-exchange interviewing. Interviews
131 were either face-to-face (n = 26), or carried out remotely following FLE completion (n
132 = 4), and were conducted in Vezo (the local Malagasy dialect), Spanish, French or
133 English with the assistance of translators. The purpose of the study was explained to
134 each KI before interviews took place and prior, informed consent was received from
135 all informants.
136
137 All interviews were directly transcribed where possible or paraphrased when
138 translation assistance was required. Interview transcripts were analysed qualitatively
139 as sample sizes precluded the use of quantitative methods. Transcripts were coded
140 using an adapted form of categorised content analysis (Bernard 2006), with
141 responses assigned to a coding frame of themes that were roughly equivalent to the
142 interview themes. KIs were grouped by their role in the FLE (organiser, visitor or
143 host) for ease of interpretation, and their identity coded to preserve anonymity.

144

145 **3. Results**

146 Informant interviews generated data on a range of issues: the following analyses
147 focuses solely on aspects of relevance to management, i.e. data that can contribute
148 to the development of FLE best practice. The data are presented in five themes: i)
149 timing, organisation and preparation, ii) participant roles and expectations, iii)
150 intended and unintended learning outcomes, iv) participant selection, and v) gender.

151

152 *3.1 Timing, organisation and preparation*

153 Holding the FLE at the same time as the simultaneous opening of the network of
154 temporary closures entailed both costs and benefits, according to different
155 respondents. Both BV organisers and two hosts suggested that it greatly increased
156 organisational complexity and stretched the human resources of both BV and the
157 Velondriake Committee. For example, one organiser felt that Velondriake members
158 should have accompanied the visitors during the opening, but instead they were all
159 busy fishing and it was "*each one for himself*" (Interview 29, 17.09.2015). In addition,
160 one host felt that the timing of FLE activities had interfered with the closure opening,
161 causing it to open after the best tides, and suffer perceived reduced landings as a
162 result. On the other hand, all visitors from Mexico felt that visiting the opening and
163 the collectors afterwards had been amongst the best activities, since it had given
164 them a better understanding of the fishery. Three hosts and a visitor from Sarodrano
165 further highlighted the importance of visiting the collectors at the end of opening
166 day, as it gave the visitors an opportunity to see how successful the closures had

been. ("*[It']s the proof that the closures are effective, it's not just a theory*" Interview 16, 31.08.2015).

One organiser stated that preparation is hampered by a lack of guidelines on conducting FLEs. Furthermore, one BV informant noted that organising the FLE entailed a significant opportunity cost for the rest of the BV fisheries programme in terms of the human resources diverted away from it. Despite appreciating the opportunity to participate in the exchange, they felt that hosting visitors from abroad was not a priority activity for fisheries management in the region and thus that they would rather focus their efforts closer to home.

> *"There is still a lot of work to do before Velondriake is fully functional. Not everyone in Velondriake believes in closures, so I would rather invest my energies in them rather than people from abroad. I just feel a bit guilty because our slogan is 'communities first' – communities here, Vezo communities – and there are many villages in Velondriake that I haven't visited yet, because of the lack of time. I've spent one full month involved in international exchange trips. I could have used this time to visit these villages and learn important things for my project, as I do every time I'm in the field".*
>
> Interview 29, 19.09.2015

Several informants suggested that organisational shortcomings had limited the potential for learning during the FLE. For example, four hosts (and one organiser)

lamented the lack of translation capacity or stated that there were other questions they wanted to ask but had been unable to. Two hosts and three visitors (including both from Sarodrano) further suggested that the visit to the seaweed aquaculture project had not been worthwhile given the time necessary to reach it (an entire day). In addition, three visitors from Mexico and both BV staff felt that either the visitors or all participants were under-prepared, either lacking an understanding of the objectives of the FLE or lacking information that would have been useful for the visit. As one respondent stated: "*Not being fully aware [of the objectives] becomes a barrier for people and stops them being fully involved*" (Interview 27, 11.09.15).

3.2 Participant roles and expectations

In pre-exchange interviewing, five hosts felt that their role was to share their knowledge or teach the visitors, one felt that they were there to learn from the visitors, and one believed their role to involve both teaching and learning. This suggests a perceived imbalance amongst the host community, that the FLE is primarily to allow the visitors to learn from the hosts, rather than a two-way knowledge exchange. Only one visiting participant suggested that their role also involved sharing their own knowledge/experiences with the host community, suggesting that the imbalance in host-visitor knowledge exchange is also perceived by the visitors. Both Mexican fishers stated that they came to learn about fishing techniques, not management techniques.

All organisers stated that their role involved planning, organisation, facilitation and associated tasks. Only one mentioned any role in learning, sharing or other aspects

related to their own personal role in knowledge exchange. In other words, most organisers did not appear to perceive themselves as participants in, or beneficiaries from, exchange activities.

3.3 Intended and unintended learning outcomes

Most visitors felt that they had learned something that they could apply in their lives or their work, and all participants were generally positive about their experiences of the FLE when interviewed. Nevertheless, KI testimonies suggest that the impacts may differ between Mexican and Malagasy visitors. Several informants shared concerns regarding the applicability of the closure model to the Mexican context: one Mexican fisher felt that they could apply nothing they had learnt back home because the context was so different (although they did feel a renewed commitment to resource conservation), while one organiser also felt that differences between the fisheries were so great that short-term closures could perhaps not be replicated. A further organiser felt that their initial idea that two fishermen could go back to their communities and transform the fishery in an area that historically lacks social cohesion was unrealistic. The two visitors from Sarodrano, on the other hand, both talked enthusiastically about octopus closures when asked what they had learnt: one felt that their effectiveness had been clearly demonstrated by the landings on opening day while the other stated that they would try and implement closures again if their community agreed.

Some knowledge exchanged, however, may have unintended consequences for management of the Madagascar octopus fishery. Specifically, knowledge of the

239 octopus trapping technique used in Mexico was consistently the most talked about
240 aspect of the FLE by all (non-organiser) Malagasy respondents (both hosts and
241 visitors), who all stated that they would try using them and may even try to adapt
242 them to other species, such as lobster. One informant was pleased that, since
243 trapping seemed less time-consuming than gleaning, even people with jobs could
244 carry it out.
245
246 Apart from new fishing techniques and a little about life in Mexico, host informants
247 did not believe that they had learnt anything from the visitors.
248
249 "*I didn't really learn about how they conserve octopus, only how they*
250 *catch them*"
251 Interview 20, 31.08.15
252
253 In addition to the potential impact of octopus traps on the local fishery, one
254 organiser was further concerned by potential problems between the Velondriake
255 Committee and the private sector buyers once the hosts had learnt of the much
256 higher landing prices received for octopus in Mexico.
257
258 *3.4 Participant selection*
259 The four NGOs/supporting agencies involved in the FLE had different approaches for
260 selecting participants. Participants from Mexico were selected on the basis of their
261 availability and attendance on a leadership course, although few community
262 members had been willing to participate in the FLE due to the high opportunity costs

involved – they would not be fishing and would thus be unable to earn any income during the time they were away and, unlike their Malagasy counterparts, were not compensated for their time. Participants from Sarodrano were selected by the community according to criteria from GIZ; i) must include one woman, ii) must be able to communicate well, iii) must not have previously participated in an FLE. Likewise, BV asked that women be represented (two from Ampela tsy Magnavake and one from the Velondriake Committee) but otherwise left the selection process to the Velondriake Committee.

Of the two Mexican fishers one stated that he "always wins such things" (i.e. is always selected to represent his community) while the other suggested that nobody else wanted to come because of their lost earning potential while away. Of the two visitors from Sarodrano, one was previously in charge of the local closures there, while the other felt that she was selected because she was a woman. Amongst hosts, one stated that it is their job (as President of the Velondriake Association), while two stated that they are always selected as they are members of the Velondriake Committee. Of the remainder, all suggested that they were selected either because they are well known in their communities or because they are good at communication.

One BV organiser stated that the same people – members of the Velondriake Committee – always participated in all meetings and exchanges, and expressed a concern that this may create jealousies and political problems within the community (Interview 10, 29.08.15). One host stated that they had been disappointed by the

lack of enthusiasm on the part of the other hosts selected, while one Mexican visitor felt that, while the hosts were willing to share their experiences with the visitors, they did not seem particularly interested in learning from them.

3.5 Gender

Female participants differed in their opinions as to whether their gender brought something different to the exchange, depending on their role. Two female hosts and the female visitor from Sarodrano all felt that their attendance was important because women play such a big role in the octopus fishery, and thus should also have the opportunity to learn and share their experiences. Female NGO participants, however, held mixed opinions as to the relevance of their gender – one respondent felt that, as a woman, her organisational skills had been helpful in organising the FLE, but two others felt that their gender was irrelevant.

Post-exchange, most respondents felt that the participation of women had benefitted the FLE – their participation was thought to be critical given that they play such an important role in the fishery, and because they may have different or complementary ideas to men. Three respondents (one host, one visitor and one organiser) specifically mentioned that there had been exchanges between the women from Sarodrano and those from Ampela tsy Magnavake (outside of formal FLE activities) which they had learned from – no such exchanges between the men from Sarodrano and those from Velondriake were mentioned. Respondents also mentioned that gender-related learning was not limited to fisheries management, as the visitors were able to see how the women's association organised themselves,

311 while the hosts learned that women in Mexico work in other jobs unrelated to the
312 sea.
313
314 **4. Discussion and recommendations**
315 If the stated purpose of the FLE was to facilitate learning about the success of
316 temporary fishery closures used in Velondriake by fishers from Mexico and
317 Sarodrano, then it can be deemed at least a partial success on the basis of
318 participants' testimonies: most visitors felt that they had learned something that
319 they could apply in their lives or their work, and all participants were generally
320 positive about their experiences of the FLE when interviewed. However, these
321 opinions should be treated with a degree of caution since they may have been
322 influenced by a desire on the part of respondents to provide answers that meet the
323 approval of the interviewer, a form of acquiescence bias or 'yea-saying'.
324 Furthermore, many of the benefits thought to accrue from FLEs, such as building
325 social capital and communities of practice and empowering fisher leaders, are
326 somewhat intangible and may only become apparent in the medium- to long-term,
327 and thus the success or otherwise of the exchange should only be assessed at the
328 relevant timescale and using appropriate metrics (e.g. observed behaviour change).
329 Irrespective of the eventual impact of this FLE, however, the case study has
330 generated a range of insights that may contribute to the development of best
331 practice.
332
333 *4.1 General findings*

Much of conservation is about behaviour change (St John. et al. 2013), and in many cases involves conservationists expecting rural people to do things that may not be in their immediate economic interests. In this context, one of the keys to the success of Velondriake and the viral replication of temporary octopus closures in southwest Madagascar and elsewhere is the close alignment of interests between NGOs and fishers: both benefit from the increased productivity of fisheries (Gardner et al. 2013; Pollini et al. 2014). Despite this apparent alignment, however, this research suggests that the interests of fishers and the NGOs working with them remain somewhat divergent: in essence, while the purpose of the FLE (from the organisers' point of view) was to catalyse the spread of fisheries management techniques, the principal interest of many participating fishers from both countries was to learn new fishing techniques. In other words while organisers sought to promote fisheries sustainability, fishers may have been more interested in learning how to improve short-term productivity (i.e. increase their harvests).

Given the divergence of interests between fishers and NGOs, any forum for information exchange between small-scale fisher communities risks unintended consequences, i.e. the exchange of information that will work against, rather than towards, the goal of improved fisheries sustainability. In the case of the Mexico-Madagascar FLE this may have occurred with the introduction of the concept of octopus trapping to Vezo fishers. Traps are one of the two techniques employed in the Mexican octopus fishery, and their use was consistently the most talked-about subject during the FLE, and that which elicited the most excitement and interest

357 amongst Malagasy fishers from both communities. The potential spread of traps was
358 also cited as a concern by organisers.
359
360 The introduction of octopus traps to the Madagascar fishery could prove
361 problematic, since the use of this technique may have caused the collapse of stocks
362 in Mexico, and indeed is one of the reasons for the instigation of management
363 actions by fishers and NGOs in Bahia de los Angeles, including their attendance at
364 the FLE (Key Informants, pers. comm.). The successful employment of traps in
365 Madagascar could have numerous deleterious consequences for the fishery,
366 including i) allowing fishing at greater depth than is currently possible, thus
367 eliminating the deep refugia that are thought critical to maintaining the octopus
368 population (Raberinary and Benbow 2012); ii) physical destruction of deep-water
369 corals that are currently undamaged by gleaning, and iii) opening up the fishery to
370 those that do not currently participate in it, such as people from inland who lack the
371 knowhow and materials to fish using conventional methods, or those that have jobs
372 and therefore no time to glean or dive. On the other hand, the traps may provide a
373 conservation opportunity if they reduce rates of reef destruction by gleaning, since
374 this practice is the principal cause of local reef damage (Andréfouët et al. 2013). If
375 traps prove effective and are widely adopted, ensuring that they do not reduce the
376 sustainability of the fishery will require the strengthening and expansion of existing
377 management measures.
378
379 A second potential unintended consequence concerns the differences in landing
380 price for octopus between Bahia de los Angeles and Andavadoaka: one respondent

was concerned that this knowledge may stimulate demands for higher prices in Madagascar, which could cause problems with private sector partners that buy the catch.

Although FLEs are conceived as exchanges of knowledge between two or more groups, knowledge exchange in the case study FLE was explicitly intended to be one-way – from hosts to visitors. This objective was reflected in the perceptions of participants (whether visitor, host or organiser), who tended to feel the visitors were there to learn, and the role of the hosts was limited to sharing their experiences. While it is natural for FLEs to focus on the hosts' experiences in situations where the imbalance would be rectified on a future reciprocal trip to the visitors' community, in one-off FLEs opportunities for learning by host communities will be limited if mechanisms for reciprocal knowledge exchange are not programmed into the agenda, and if hosts do not perceive the learning opportunities available to them.

Similarly, organisers tended not to see themselves as FLE participants in initial interviews, perhaps reflecting a lack of clear goals and expectations in FLE planning: post-exchange, however, some indicated they had gained knowledge that contributed significantly to their personal and professional development. Building the capacity and experience of participating NGO staff could be a major secondary benefit of FLEs, particularly as these individuals may have multiple opportunities to work with and influence small-scale fisheries during the course of their careers. However, maximising the benefits accruing to participating staff will depend at least partly on having the appropriate approach and mindset, and in future it might help

405 to emphasise that organisers are participating as much for their own professional
406 development as for facilitating the learning of fishers they accompany. Careful
407 organisation and sufficient resources are also required to allow organisers to
408 participate, since the added and ongoing burden of organising and facilitating on top
409 of other duties diminished the opportunities for staff to fully engage with FLE
410 activities.
411
412 All participants agreed that the participation of women was beneficial or even critical
413 to the FLE, because they play an important role in the fishery and because they have
414 ideas or perspectives that are different and complementary to those of men.
415 Although sample sizes are small, interviews and observations also provide some
416 preliminary indications that women may be important participants in FLEs for two
417 other reasons: i) female hosts appeared to display a greater concern for fisheries
418 sustainability than male respondents, who were more concerned with productivity
419 (i.e. how to catch more), and ii) female hosts appeared more engaged in the FLE and
420 willing to grasp the learning opportunities arising from it. Specifically, three
421 respondents stated that the female hosts had learned from informal discussions with
422 female visitors from Sarodrano, but no such inter-group discussions were reported
423 by men. Although no conclusions can be drawn and these perceptions should be
424 treated with caution on account of the sample sizes, the notion that women may be
425 more willing, engaged and receptive participants in FLEs or other social learning
426 merits further investigation.
427

With regard to participant selection, both organisers and hosts made it clear that the same small number of community members – the Velondriake Committee – were always selected to participate in meetings and FLEs. This makes sense in that these are elected representatives of their villages, they presumably have some capacities that others may lack (e.g. ability to communicate well, respect), and they are experienced in the role and know what they are doing when presenting their community and their management initiatives. In addition, selecting the same individuals is convenient, averting the need for a potentially complex and sensitive selection process. However, selecting the same people may have negative sides, including causing jealousies and political problems within the host community (Interview 10), and reducing the opportunities for learning by other members of the host community who do not participate. In addition, it may be that the 'automatic' selection of the same Velondriake members reduces the willingness of those individuals to fully engage with the experience and make the most of the opportunities presented. If individuals had to 'compete' for the right to attend, this may serve as a filter so that only those with a desire to do so would be selected. For example, the visiting Mexican fishers paid a high opportunity cost (i.e. lost revenue) to attend the FLE, and were noticeably more keen to partake in learning activities than their Malagasy counterparts who received a *per diem* payment for attendance. The question of compensating FLE participants for their time may trade off reduced participation for increased enthusiasm, and warrants further investigation, since we are unaware of any research on this issue in community-based natural resource management or social learning.

452 *4.2 Improving the effectiveness of FLEs*

453 4.2.1 Communication and animation capacity

454 Several participants lamented their inability to communicate with members of the
455 other parties, and recommended that more translators be involved in the FLE. The
456 only translators available were NGO staff, but since these individuals were constantly
457 engaged in organising either FLE events or the openings, they were not available to
458 translate outside of formal FLE activities. However, the FLE was punctuated by
459 frequent break periods which could have been used for fruitful, informal discussions
460 between parties. Such informal discussions did take place between the participants
461 from the local women's group and female visitors from Sarodrano (who did not
462 require translators), and these were said to have been highly productive by
463 respondents. However, few such interactions appeared to take place between
464 Malagasy and Mexican groups.

465

466 Several respondents stated that there were other subjects that they would have
467 liked to discuss, but that the opportunity to do so had not arisen. While this may
468 partly be due to a lack of translators, it may also reflect the natural reluctance of
469 each group to overcome cultural and linguistic barriers and genuinely mingle and
470 engage with other parties. Some efforts were made to overcome this, e.g. by asking
471 people to seat themselves next to someone they didn't know during the
472 introductory meal, and playing an 'ask any questions' game during the closing
473 session, but these appear to have been insufficient. Much depends on the attitude of
474 the participants – if they are genuinely thirsty for knowledge then they will find a
475 way to communicate and ask questions, but if they are simply content to be there

then it is easy to coast through without making any effort to interact. In such cases the role of facilitator becomes critical – they must constantly probe and encourage participants to engage and participate in order to facilitate the active exchange of knowledge between parties, if it is not happening passively. Ideally there should be several such facilitators for such a large group, allowing small groups to break off into discussions pertinent to their interests. Organisers must devote sufficient resources to FLEs if they are to derive maximum impact from them.

4.2.2 Focus on key messages

Both organisers and visitors sometimes appeared unsure as to what the purpose of the exchange was, and several respondents had expectations that were not met, perhaps because they were never communicated to the organisers. To overcome this, the objectives and agenda for FLEs should be clearly articulated during project design, ideally through a participatory process involving at least some participants, to help ensure that the expectations of all parties are integrated into planning. Even when FLE design is not participatory, ensuring the effective communication of the objectives and agenda to all participants prior to the start of activities should ensure shared understandings and expectations.

In addition, organisers have to decide on the key messages to be transmitted and ensure that sufficient time and appropriate learning activities are built into the agenda, to ensure that these messages are effectively transmitted. For example, this FLE was focused on temporary closures, and there were many subjects associated with the topic (such as community organisation, private sector partnerships,

relationships with the authorities, and rule development and enforcement) that visitors expressed an interest in exploring in greater detail. Given this, it seems illogical that one third of the available time in Andavadoaka was dedicated to visiting a distant seaweed aquaculture project. More thorough, critical and participatory planning would have helped ensure that only priority activities that contribute to meeting participant goals and expectations were included within the available time, and that participants understood what each activity contributed to the goals of the exchange.

4.2.3 Selection of participating communities

Given the effort and expense that goes into the planning and carrying out of fisheries learning exchanges, every effort must be made to ensure that the most appropriate fisher communities are selected to participate. At the individual level, participants should either be fishers who have a high probability of changing their behaviour as a result of the exchange, or community members of sufficient standing to be able to convince others to alter their behaviour. At the community level, the fisheries context must be sufficiently similar that the specific interventions that participants see and learn about can be replicated when they return home. If the initiatives they visit are not appropriate for them, then there is little opportunity to catalyse change in the fishery and it is difficult to justify the value of the FLE. Previous exchanges to Andavadoaka have largely focused on communities with low awareness of community-based marine resource management (CBMRM) and have used the octopus closures as a demonstration of the economic and social benefits of such approaches, with a view to catalysing broader management and conservation

actions (Oliver et al. 2015). For this case study, since the Mexican visitors had already expressed interest in no-take closures and gear restrictions prior to arrival, the value of the FLE lay less in demonstrating the need for and potential benefits of CBMRM, and more in building community interest in it to level where it would spill over into action. The distinction is a subtle one and both approaches appear to have value, but in order to maximise the utility and cost-effectiveness of future FLEs identifying the characteristics of small-scale fisher communities that make them good candidates for behaviour change triggered by such FLEs should be considered a research priority.

4.2.4 Dedicated human resources

FLEs entail a major cost to organising institutions in terms of human resources, affecting existing staff duties. One BV organiser felt strongly that their role in the FLE negatively impacted their duties with regard to fisheries management in southwest Madagascar, as it did not help to meet their programme objectives. Both BV organisers also stated that holding the FLE at the same time as the opening of the temporary octopus closures caused an important logistical problem, as openings are the most important day in the calendar and require much organisation. There are benefits to hosting FLEs on opening day, as visitors experience the 'pay-off' from the management intervention by witnessing impressive landings, which can act as a persuasive argument for adopting the management measure. However, the scheduling does stretch the capacity of both organisers and hosts, and can have negative impacts on the smooth implementation of both the opening and the FLE.

548 If FLEs were to increase in frequency, one solution to the staffing problem would be
549 to recruit a dedicated staff member to manage FLE planning and execution. This
550 would not only reduce the organisational burden on other programmes, but also
551 permit recruitment to be carried out on the basis of experience and capacities that
552 would benefit the role, such as facilitation, education and languages skills. In
553 addition, a dedicated manager would assist learning and development of best
554 practice between FLEs, ensuring that future exchanges are designed and executed to
555 ensure maximum benefits for all parties. Learning exchanges could subsequently be
556 extended beyond fisheries to other types of resource management, such as
557 community-based mangrove management.
558
559 **5. Conclusions**
560 As a preliminary evaluation of an FLE, this case study contributes to the development
561 of best practice through participant observation and the testimonies of a range of
562 FLE participants including hosts, visitors and organisers. Although sample sizes were
563 small, findings suggest that the exchange was at least a partial success, as all
564 participants felt they had learned something of value to them. However, there is the
565 possibility that unintended consequences may arise if Malagasy fishers adopt
566 effective or destructive fishing methods used in Mexico. Nevertheless, the
567 effectiveness of the exchange should only be judged on the basis of future behaviour
568 change on the part of participating fishers. Initial indications are positive: on their
569 return to Bahia de los Angeles, the participants from Mexico held a village meeting
570 to share their news and learning from the exchange with the rest of the community.
571 As a result of this meeting, the village agreed to close part of its octopus fishing area

for 3 months to see what effect this would have on stocks. Participant responses also provided a number of insights into how future exchanges could be improved, including ensuring sufficient translation and facilitation capacity, clearly defining objectives and focusing on key messages, ensuring the selection of appropriate participants, and professionalising the role of FLE organiser. Adoption of these lessons learned should allow the implementation of more effective and efficient fisheries learning exchanges in future.

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Tables

Table 1. Breakdown of participants in case study fisheries learning exchange on the basis role and the community they represent/work with. F = female, M = male.

Role	Andavadoaka	Mexico	Sarodrano
Visitor		2 (2M)	2 Association TAMIA (1F 1M)
Host	5 Velondriake Committee (1F 4M) 2 Ampela tsy Magnavake (2F)		
Organiser	2 Blue Ventures (1F 1M)	1 SmartFish International (1F) 1 Pronatura Noroeste (1M)	1 GIZ (1F)

Table 2. Simplified programme of activities for participants from Bahia de los Angeles (Mexico) and Sarodrano (Madagascar) visiting Andavadoaka as part of the Mexico-Madagascar fisher learning exchange, August-September 2015. In addition to the formal activities shown, communal mealtimes provided the opportunity for informal interaction between hosts, visitors and organisers. CGP = Comité de Gestion de Poulpe (a multi-stakeholder platform through which private sector buyers discuss prices with fisher associations).

Date	Location	Activity
24.08	Antananarivo	Arrival in Antananarivo
25.08	Antananarivo	Meeting at Ministry of Fisheries Travel to Toliara
26.08	Toliara	Meeting with Murex (seafood export company) Presentation about Blue Ventures Meeting and Ministry of Fisheries
27.08	Toliara	Further presentations about BV and the fishery in Bahia de los Angeles Attendance at CGP (Comité de Gestion de Poulpe) meeting
28.08	Andavadoaka	Travel to Andavadoaka
29.08	Andavadoaka	Presentations on i) Tsinjoriake protected area and local associations (by GIZ), ii) Bahia de los Angeles octopus fishery, iii) History of octopus reserves and Velondriake LMMA, iv) Structure of Velondriake and octopus reserve management Visit to data collectors, intermediate buyers and collectors Attendance at pre-opening community meetings
30.08	Andavadoaka	Attend reserve opening at Nosy Fasy, gleaning for octopus Visit to intermediate buyers and collectors post opening Meeting to announce the day's catch data
31.08	Andavadoaka	Visit to seaweed aquaculture and octopus closure site in Lamboara Debriefing meeting
01.09	Antananarivo	Travel to Toliara and Antananarivo
03.09	Antananarivo	Departure

693 **Figures**

694 **Figure 1.** Map of southwest Madagascar, showing location of Sarodrano and

695 Andavadoaka, as well as the boundaries of the Velondriake locally managed marine

696 area.

697