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

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1 Figure

2 Tables

## 2 **Abstract**

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

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

27

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

30

### 31 **1. Introduction**

32 There is increasing recognition that effective forms of knowledge exchange are  
33 required to enhance environmental sustainability (Fazey et al. 2012). Fisheries  
34 learning exchanges (FLEs), in which representatives of fisher communities are  
35 brought together to exchange knowledge and experiences, are recognised as a  
36 valuable tool for improving fisheries management, in particular for sharing  
37 management challenges and solutions, empowering fisher leaders, building social  
38 capital and communities of practice, and developing conservation solutions (Jenkins  
39 et al. In press; Heyman et al. 2011). However, the effectiveness of the approach has  
40 thus far received minimal assessment and few guidelines for practitioners to  
41 maximise the utility of such exchanges exist (Bretos et al. 2013; Thompson et al.  
42 2016). To help address this, a research collaboration led by the University of  
43 Washington and SmartFish International entitled FLExCELL (Fishermen Learning  
44 Exchanges for Conservation: an Evaluation of Lessons Learned), was launched in  
45 2013.

46

47 The FLExCELL project comprises two phases. Phase 1 consisted of a workshop in May  
48 2013 that brought together 22 participants from 11 countries to establish a

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

60

## 61 **2. Methods**

### 62 *2.1 Study FLE*

63 The case study FLE was the result of collaboration between Blue Ventures (BV; UK),  
64 SmartFish International and Pronatura Noroeste (Mexico), and took place in  
65 Andavadoaka, southwest Madagascar in August-September 2015 (Figure 1). Since  
66 2004, the communities of Andavadoaka and surrounding villages, with the support  
67 of BV, have been implementing temporary octopus closures during which defined  
68 areas of reef flat are closed to octopus fishing for 2–7 months (Benbow et al. 2014;  
69 Oliver et al. 2015). The closures form the foundation of Velondriake, Madagascar's  
70 first Locally-Managed Marine Area (LMMA; Harris 2007), which was officially  
71 incorporated into the country's expanded protected area system in 2015 and  
72 includes a number of permanent reef and mangrove reserves in addition to closure

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

78

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

97 gleaning (primarily women) and free-diving using spears (men) (Barnes-Mauthe et al.  
98 2013; Westerman and Benbow 2013). In Mexico, however, octopus is caught  
99 exclusively by men using traps and pump-assisted diving from motorised boats in  
100 deeper waters (Valdez and Torreblanca 2008). Octopus and other marine resources  
101 are overfished in both southwest Madagascar and Baja California (Cinti et al. 2014;  
102 Harris 2007; Sala et al. 2004).

103

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

115

116 [TABLE 1]

117 [TABLE 2]

118

119 *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

167 been. (“[It]’s the proof that the closures are effective, it’s not just a theory” Interview  
168 16, 31.08.2015).

169

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

177

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

187

Interview 29, 19.09.2015

188

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

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

200

### 201 *3.2 Participant roles and expectations*

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

212

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

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

218

### 219 *3.3 Intended and unintended learning outcomes*

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

236

237 Some knowledge exchanged, however, may have unintended consequences for  
238 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

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

271

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

282

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

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

290

### 291 *3.5 Gender*

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

300

301 Post-exchange, most respondents felt that the participation of women had  
302 benefitted the FLE – their participation was thought to be critical given that they play  
303 such an important role in the fishery, and because they may have different or  
304 complementary ideas to men. Three respondents (one host, one visitor and one  
305 organiser) specifically mentioned that there had been exchanges between the  
306 women from Sarodrano and those from Ampela tsy Magnavake (outside of formal  
307 FLE activities) which they had learned from – no such exchanges between the men  
308 from Sarodrano and those from Velondriake were mentioned. Respondents also  
309 mentioned that gender-related learning was not limited to fisheries management, as  
310 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*



334 Much of conservation is about behaviour change (St John. et al. 2013), and in many  
335 cases involves conservationists expecting rural people to do things that may not be  
336 in their immediate economic interests. In this context, one of the keys to the success  
337 of Velondriake and the viral replication of temporary octopus closures in southwest  
338 Madagascar and elsewhere is the close alignment of interests between NGOs and  
339 fishers: both benefit from the increased productivity of fisheries (Gardner et al.  
340 2013; Pollini et al. 2014). Despite this apparent alignment, however, this research  
341 suggests that the interests of fishers and the NGOs working with them remain  
342 somewhat divergent: in essence, while the purpose of the FLE (from the organisers'  
343 point of view) was to catalyse the spread of fisheries management techniques, the  
344 principal interest of many participating fishers from both countries was to learn new  
345 fishing techniques. In other words while organisers sought to promote fisheries  
346 sustainability, fishers may have been more interested in learning how to improve  
347 short-term productivity (i.e. increase their harvests).

348

349 Given the divergence of interests between fishers and NGOs, any forum for  
350 information exchange between small-scale fisher communities risks unintended  
351 consequences, i.e. the exchange of information that will work against, rather than  
352 towards, the goal of improved fisheries sustainability. In the case of the Mexico-  
353 Madagascar FLE this may have occurred with the introduction of the concept of  
354 octopus trapping to Vezo fishers. Traps are one of the two techniques employed in  
355 the Mexican octopus fishery, and their use was consistently the most talked-about  
356 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

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

384

385 Although FLEs are conceived as exchanges of knowledge between two or more  
386 groups, knowledge exchange in the case study FLE was explicitly intended to be one-  
387 way – from hosts to visitors. This objective was reflected in the perceptions of  
388 participants (whether visitor, host or organiser), who tended to feel the visitors were  
389 there to learn, and the role of the hosts was limited to sharing their experiences.

390 While it is natural for FLEs to focus on the hosts' experiences in situations where the  
391 imbalance would be rectified on a future reciprocal trip to the visitors' community, in  
392 one-off FLEs opportunities for learning by host communities will be limited if  
393 mechanisms for reciprocal knowledge exchange are not programmed into the  
394 agenda, and if hosts do not perceive the learning opportunities available to them.

395

396 Similarly, organisers tended not to see themselves as FLE participants in initial  
397 interviews, perhaps reflecting a lack of clear goals and expectations in FLE planning:  
398 post-exchange, however, some indicated they had gained knowledge that  
399 contributed significantly to their personal and professional development. Building  
400 the capacity and experience of participating NGO staff could be a major secondary  
401 benefit of FLEs, particularly as these individuals may have multiple opportunities to  
402 work with and influence small-scale fisheries during the course of their careers.  
403 However, maximising the benefits accruing to participating staff will depend at least  
404 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

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

451

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

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

483

#### 484 4.2.2 Focus on key messages

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

494

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

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

508

#### 509 4.2.3 Selection of participating communities

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



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

533

#### 534 4.2.4 Dedicated human resources

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

547

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

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

579

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586

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678

679 **Tables**

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

<b>Role</b>	<b>Andavadoaka</b>	<b>Mexico</b>	<b>Sarodrano</b>
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)

682

683



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

<b>Date</b>	<b>Location</b>	<b>Activity</b>
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

691

692

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