Socio-economic impact assessment of the shark fishing ban in Maldives
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Socio-economic impact assessment of the complete shark fishing ban on former shark fishermen

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Ministry of Fisheries and Agriculture
Executive summary

The commercial shark fisheries began in the late 1970s. Shark fisheries; deep-water gulper shark fishery, oceanic shark fishery and reef-associated inshore shark fishery focused exclusively on export markets. Except for gulper shark fishery, which collapsed in a decade, shark fisheries expanded in the 1990s peaking at 2 700 tonnes in 2004. Since the 2004 peak, shark fisheries began showing considerable declines in catches. The decline in status of shark fisheries combined with growing conflicts with other stakeholders, in particular with the diving tourism, led to the ultimate decision to completely ban shark fishing in the EEZ of the Maldives.

After the shark ban, the main impact mitigation strategy adopted by government was a compensation scheme for shark fishing gear. Another initiative by the government was a Shark trust fund. The fund was created to assist fishermen with alternative livelihood options. The tourism industry, the most direct beneficiary of shark ban, was also invited to contribute to the trust fund. However, only little contribution was realized from the tourism industry.

With three years passing after the shark ban, the study was done to assess the level of socio-economic impact of the shark ban on the former shark fisher folk. From seven prominent shark fishing islands; Haa Dhaal Kulhudhuffushi, Shaviyani Goidhoo, Baa Kendhoo, Alif Alif Thoddoo, Alif Alif Himendhoo, Alif Dhaal Dhan’gethi and Dhaalu Meedhoo, 125 fishermen took part in the study. The surveyed group comprised of more than 60% of the shark fishermen, as the most recent shark fishermen estimation being 184 in 2008.

In the surveyed group, the majority of the fishermen, 39% was between the ages 50-59. After the shark ban, 47% of the surveyed group was involved in other types of fisheries. The most opted for livelihood was reef fishing followed by tuna fishing. For the majority of the surveyed group, 34.5%, current income levels were less than US$260, whereas during shark fishing times, 34% of the fishermen received a minimum income level of US$625. Hence, for the majority of the group, income levels had reduced by over 60% since the shark ban.

A large part, 60% felt difficulties in finding income opportunities mainly due to reasons such as limited opportunities for income generation at their islands and also due to low fishing. From the 44% of the group having an additional income, the majority 47% received an income which was less than MVR2 000 (US$130).

For compensations from the gear buy back scheme, the largest group, 33% received compensations between MVR10-25 000. Only 9% of the fishermen, received compensations over MVR75 000 and these fishermen were from Kulhudhuffushi, one of the most prominent island for shark fishing. Majority, 28% spent it on daily basic needs, while 21% invested it in another business or fishing activity. Many complained it was not a meaningful compensation as it got expended in daily basic needs.

Another impact mitigation strategy was to prioritize the former shark fishermen in government’s soft loan schemes. When questioned about it, 49% did not apply and 44% was not even aware of the decision. The fishermen showed little interest in soft loan schemes. Some expressed their interest in larger loans provided with lowered interest rates, which would enable them start a livelihood such as tuna fishing which can be taken as an alternative to shark fishing.

A significant number of fishermen, particularly from Dhan’gethi greatly criticized the tourism industry for not assisting in compensating their lost livelihoods. Criticism towards the tourism industry was due to the fact that dive tourism industry would be the main beneficiary of the shark ban. The Shark trust fund, established to alleviate the impact of the ban, was not well received by the tourism industry. This could be due to insufficient negotiations between the tourism and fisheries sector before declaring the ban and also could be due to inadequate publicity of the trust fund. With many fishermen disheartened by the lack of support from tourism industry, this could be taken as an opportunity to strengthen the Shark trust fund and establish a mechanism where funds flow back to previous shark fishing communities.
Acknowledgements

First, I would like to thank Bay of Bengal Large Marine Ecosystem (BOBLME) Project for their generous funding for this survey. My sincere thanks go to my fellow colleagues of Marine Research Centre and Fisheries Management Agency and Mr Mohamed Ali of CDE for their work in undertaking the surveys at various islands. I would also like to thank all my colleagues of Marine Research Centre and Fisheries Management Division and Ms Shahaama A. Sattar for their assistance in designing the questionnaire.

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Conversion factors for US$ to MVR

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Source: Statistical Year Book of 2013, DNP; MMA 2014

Acronyms used

BOBLME    Bay of Bengal Large Marine Ecosystem Project
DNP       Department of National Planning
EEZ       Exclusive Economic Zone
FAO       Food and Agricultural Organization
FMD       Fisheries Management Division
MMA       Maldives Monetary Authority
MRC       Marine Research Centre
MoFA      Ministry of Fisheries and Agriculture
MVR       Maldivian Rufiyaa
US$       United States Dollar
1. Introduction

Shark fishing has occurred in Maldives for centuries. In olden days, there was a great demand for shark liver oil. The first ever shark fishery was a traditional one where Large tiger sharks (*Galeocerdo cuvier*) and Bluntnose six gill sharks (*Hexanchus griseus*) were targeted for their liver oil. Fishing boats of Maldives were made of wood and were subjected to constant decay and during those days, liver oil of sharks was used as a decay deterrent (Anderson and Ahmed 1993). It was only in the 1970s, a commercial fisheries for sharks developed. During this time, a great number of vessels were motorized and new developments in trade and new fishing methods were introduced (Anderson and Ahmed 1993). By the early 1980s, three types of shark fisheries had developed. They were a deep-water benthic shark fishery, a reef associated shark fishery and offshore oceanic shark fishery (Sinan et al., 2011).

Maldives has always been a tuna fishing nation and fisheries is the second most important revenue generating industry. Compared to the massive pole and line tuna fishery, which directly involves over 12,000 fishers, shark fishing was carried out by roughly 500 fishermen scattered around the Maldives. Within the shark fishing community, there were variations in shark fishing periods among the different islands. In some islands, the shark fishery was a seasonal activity and was carried out during calm season or during reversal of seasons when calmer weather was experienced. Some fishermen exclusively did shark fishing during the North-east monsoon (Iruvai moosun¹) when seas were calmer. In some places, full time shark fishermen went offshore for shark fishing during calmer seasons and resorted to inshore shark fishing when rough weather was experienced during South-west monsoon (Hulhan’gu moosun²).

The benthic shark fishery targeted mainly Gulper sharks (*Centrophorus spp.*) for their liver oil abundant in squalene³. The high price fetched for the liver oil of Gulper sharks, was an incentive to increase the effort on the fishery. However, the fishery was not able to sustain the increased effort and collapsed in less than a decade from its development (Sinan et al., 2011). Gulper sharks live in deeper waters at about 250-800 m. Maldives is a long and narrow atoll chain rising from abyssal depths and so the outer atoll slopes are sloped steeply. As a result the habitable depth is very narrow throughout the Maldives, and this could mean that the stock was small. This was consistent with the reasonably low catch from high fishing pressure which eventually led to the collapse of the fishery in 1990s (Anderson and Ahmed 1993).

In the reef shark fishery, the reef associated sharks such as Grey reef (*Carcharhinus amblyrhynchos*), White tip (*Carcharhinus longimanus*), Black tip reef sharks (*Carcharhinus melanopterus*) and Bignose sharks (*Carcharhinus altimus*) were caught using gill-nets and longlines. In the offshore fishery, oceanic sharks such as the Silky shark (*Carcharhinus falciformis*), Oceanic white tip (*Carcharhinus longimanus*) and Black tip sharks (*Carcharhinus limbatus*) were caught on longlines. As the shark fisheries were minor fisheries, less emphasis was placed on collection of catch information. Except for the traditional shark fishery in earlier times, sharks were never really used for food as a source of protein and the commercial shark fisheries were developed for the sole purpose of export and the whole shark catch was assumed to be exported. As a result, export statistics of shark fins, were used to determine catches. Catches were determined for both the oceanic and reef shark fishery combined. Both oceanic and reef shark fisheries showed steady catches from 1970-2004. The fishery

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¹ Iruvai moosun, the North-east monsoon from November to April which brings hot weather, little rain and calmers seas
² Hulhan’gu moosun, the South-west monsoon from May to October which brings heavy rain, rough seas and strong winds
³ Squalene, an organic substance used for cosmetic and pharmaceutical purposes primarily obtained from shark liver oil
peaked in 2004, when 2,700 tonnes were caught. However after 2004, a substantial decline in export of sharks took place. This coincided with the timing of numerous reports received from the dive tourism industry on diminishing reef shark sightings (Sinan et al., 2011).

Shark fisheries were not only in conflict with the tourism industry, the pole and line tuna fishermen had issues with oceanic shark fisheries. Tuna fishermen believe that removal of sharks associated with tuna schools such as the Silky sharks (*Carcharhinus falciformis*) tend to disrupt the tuna aggregations and result in lower tuna catch rates. These conflicts resulted in a series of management measures over a timeframe of 20 years. A ten year moratorium on reef shark fishing in seven atolls was declared in 1998. The moratorium was greatly criticized by the dive tourism industry as it did not help to reduce the decline of reef shark sightings. Immense pressure from the tourism industry for a complete stop of reef shark fishing led to a total ban on shark fishing within 12 nautical miles from the atoll rims in March 2009. A year later, in March 2010, a total ban on shark fishing from the Exclusive Economic Zone (EEZ) of Maldives was declared (Sinan et al., 2011). This abrupt management decision to completely ban reef shark fishing left the reef shark fishermen, especially the full time shark fishermen, with inadequate time to adopt new livelihood activities. Due to the suddenness of the reef shark ban in 2009, many fishermen continued shark fishing for some time (Sattar, 2010).

The purpose of this study was to determine the social and economic impacts of shark fishing ban on the former shark fishermen. The study focused on seven islands which were famous for their shark fishing.

2. Methodology

The survey was conducted in seven islands that used to undertake shark fishing. Islands were chosen on the basis of the response to the shark fishing gear-buy-back scheme introduced by the government after the complete shark ban was announced. The shark fisheries of Maldives were never a licensed fishery and there was no way of knowing the actual fishermen who were involved in fishing. Consequently there was no mechanism to establish the number of shark fishermen in the country. But a study done by MRC in 2008, determined the number of shark fishing boats and hence estimated the number of shark fishermen to be 184 (MRC, 2008). Following the shark ban, the gear-buy-back scheme was introduced and the shark fishermen willing to trade their fishing gear took part in the scheme. The islands with the highest number of applicants for the scheme were assumed as the islands with highest numbers of former shark fishermen. These islands were chosen for the survey.

From the North of Maldives Haa Dhaalu Kulhudhuffushi and Shaviyani Goidhoo were chosen for the survey. From the Central atolls, Baa Kendhoo, Alif Alif Thoddoo, Alif Alif Himendhoo, Alif Dhaal Dhan’gethi were surveyed and from the Southern atolls, Dhaalu Meedhoo (Figure 1).
Socio-economic impact assessment of the complete shark fishing ban on former shark fishermen in Maldives

Figure 1. Atoll of the Maldives with islands surveyed in this study

The survey was conducted from 1 April 2013 to 5 May 2013. Prior to the survey, an announcement was made at each island and the people involved in shark fishing at the time of the shark ban, were requested to participate. The surveys mostly took place in island/atoll councils or at island schools. A staff of Marine Research Centre (MRC) or Fisheries Management Division (FMD) asked the questions in the survey and the respondents were asked to answer based on the choices given in the questionnaire. As the respondents answered, the staff of MRC or FMD filled out the questionnaire. A total of 125 former shark fishermen from the seven islands took part in the survey, a 68%.

2.1. Limitations

In the shark fishery, two main methods were employed; longlining and gill netting. In both types of shark fishing, it was the fishermen who were involved in processing of shark products. Except in one or two islands (Kulhudhuffushi and Raa Kan’dhohudhoo\(^4\)) where fishermen sold the catch to local processors (Anderson and Ahmed 1993), in most shark fishing communities, it was the fishermen who were involved in processing of shark catches. In gill net fishery for sharks, the fishermen used to go out for about two whole weeks and would partly process the sharks and store the fins and fillets in the brine tank set up in a compartment in the boat’s hull while out at the sea. As the processors of shark products were mainly fishermen themselves the study was focused on the shark fishermen.

\(^4\) Raa Kandhohudhoo was not an inhabited island at the time of the survey in 2013 as the inhabitants were relocated after 2004 Tsunami
3. Results and discussion

Table 1 shows the demographics of the surveyed group of former shark fishermen. The majority of the fishermen, 63.2% were between the ages of 40 to 59. Of the surveyed group, 64% were skippers, while 36% were crew members. Fishing vessel owners comprised 71.2% of the respondents. While 23.2% did inshore shark fishing, 40% took part in offshore fishing and 36.8% were involved in both inshore and offshore shark fishing. The majority, 57.7%, of the surveyed group were part-time shark fishermen while 42.3% fished full time. When inquired about their opinion on the status of shark fishery at the time of shark ban, 45.5% stated no change, while 35.5% stated the fishery had declined and 19% replied the fishery was doing well.

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<td></td>
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<td></td>
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<td>55.7</td>
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Of the respondents, 70.5% took part in the gear-buy-back scheme. A minority of the group, 6.7% took part in soft-loan schemes, 49.2% did not apply for soft-loans and 44.2% stated they were not aware of the introduction of a soft-loan scheme in which former shark fishermen were given priority.

3.1. Current income generation

Figure 1 shows the main livelihood activities reported by the former shark fishermen who took part in the survey. A large number of respondents, 28% were involved in activities that were not specified by the questionnaire. From the survey, it was found that fishing was the most opted for livelihood. Reef fishing was the commonest livelihood, 24.8%, whereas the second most common livelihood, tuna fishing, was carried out by 21.6% of the respondents. Farming was the main livelihood for 10% of the surveyed fishermen, whereas construction work and carpentry were the least opted for livelihoods. Of the former fishermen, 7.2% were not involved in any income generating activities (Figure 1). More than half of the respondents, 55.7%, stated they were not involved in any additional income generating activity (Table 1).

Regarding income, 34.5% stated having monthly earnings of less than MVR 4000 (US$260\(^5\)) at the time of the survey. For 44.2% of the fishermen monthly income ranged between MVR4-10 000 (US$260-650) while an income above MVR10 000 (US$650) was only enjoyed by 21.2% of the former shark fishermen (Figure 2).

\[\text{Figure 2. Shows main income activities by the surveyed group of shark fishermen}\]

\[^5\text{US$1 was equivalent to MVR15.37 on April 2013}\]
Figure 3. Shows current earning levels by the surveyed group of former shark fishermen

Figure 3 shows the percentage of shark fishermen involved per income bracket in each island. As stated before, from the options given in the questionnaire, reef fishing and tuna fishing were the main livelihoods opted for by most fishermen from the surveyed islands. From the surveys it was seen that none of the respondents from Dhan’gethi were involved in tuna fishing, while none from Thoddoo were involved in reef fishing as the main livelihood activities. As expected, the majority of farmers were found in Thoddoo, one of the most important farming islands in the country. Surprisingly, none of the respondents were involved in grouper fishing as their main livelihood. Similarly, none were involved in post-harvest fishery activities such as cooking and drying of fish and none of the respondents answered working in a resort as a main livelihood activity.

When questioned about their perception (Figure 5), more than half, 54% responded it was difficult to find income generating activities and when inquired the reasons for it, 45% stated few job opportunities on the island as the main reason (Figure 6).
3.2. Additional income generation

More than half of the respondents (56%) stated that they were not involved in any additional income generating activity (Figure 7). Of the 44% involved in additional income generation activities, reef fishing is the most opted for additional income activity, while farming and tuna fishing are the second and third most (Figure 7). Some of the respondents mentioned that they do additional work depending on the demand for it such as electrical installations and construction work. Respondents who mentioned they do farming as an additional activity stated that they farm when it is close to the fasting month of Ramadan due to the high demand for crops during this period. A large part of respondents, 47% stated they receive less than MVR2 000 (US$130) as monthly income from additional activities (Figure 8). When inquired about other sources of income, most of the fishermen, 65%, responded they have no other income sources apart from their main livelihood (Figure 9). 12% responded they receive some financial assistance from their children while 5% said they receive old age allowance by the social welfare scheme of the government (Figure 9).
Figure 7. Additional income generating activities

Figure 8. Income levels from additional activities
3.3. Shark fishing period

A total of 42.3% of the fishermen were full time fishermen, engaged in shark fishing throughout the year, while 57.7% were part-time shark fishermen engaged in shark fishing during periods of calm weather during the North-east monsoon (Iruvai moosun) and during inter-monsoon periods (Table 1). The percentages of full time versus part-time shark fishermen from each island were analysed (Figure 10). The majority of fishermen from Dhan’gethi, Goidhoo, Himendhoo and Meedhoo were full time shark fishermen. The highest number of full time shark fishermen was found in Dhan’gethi (89%), while the second and third highest full time fishermen were found in Goidhoo (81%) and Himendhoo (58%). During periods of no shark fishing, the part time shark fishermen were mostly involved in tuna fishing (34.3%) and reef fishing (29.4%) and a 2% said they were not involved in any income generating activity during the non-fishing period (Figure 11).
3.4. Average monthly income

During shark fishing periods, the average monthly income for 34.4% of respondents was between MVR8-15 000 (US$625-1 172) (Figure 12). The second most common income level was between MVR15-25 000 (US$1 167-1 953). An income level lower than MVR4 000 (US$312), was reported by 15% of the respondents (Figure 12). The largest portion of the fishermen (27%) stated an average monthly profit for boat above MVR50 000 (US$3 906) and the second portion (26%) stated a monthly profit of MVR25-50 000 (US$1 953-3 906) (Figure 13).

Figure 12. Shows average monthly income from shark fishing by individual fisherman

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US$1 was equivalent to MVR12.80 at year 2008.
3.5. After shark fishing ban

The surveyed group was asked about their opinion on how long it took for them to find gainful employment with meaningful livelihood. More than two thirds, 70.5%, stated it took them six months after the shark ban. Most stated though that their current livelihoods provide for their most basic needs, in comparison to earnings from shark fishing, it cannot be considered as an alternative to shark fishing. Furthermore, for 16.1%, there has been no meaningful livelihood as an alternative to shark fishing (Table 1).

3.6. Change in income levels

From the surveyed proportion of the shark fishermen, the greater group, 34.5%, stated that their current monthly average income levels were less than MVR4,000 (US$260) (Figure 14). It is to note that, this same level of income was received by only 14.8% of the surveyed group during shark fishing periods (Figure 15). Prior to shark ban 34.4% of the fishermen enjoyed an income between MVR8-15,000 (US$625-1,172) (Figure 15). If the devaluation of Maldivian currency is taken into account, 34.4% had a lowest monthly income of US$625 during shark fishing times, while 34.5% now have an income level less than US$260 (Figure 14 and Figure 15). This means for 34% of the surveyed group, the income levels has been reduced by over 50%. During shark fishing era, the lowest income level, MVR4,000 (US$313), were received by only 15% (Figure 15). Considering the devaluation of the local currency and high inflation rates in Maldives, the shark ban seems to have had a significant impact on the livelihoods of the fishermen.
Figure 14. Shows current income levels

Figure 15. Shows income levels during shark fishing times

3.7. Gear buy back scheme

In order to reduce the impact of the ban, the government introduced a MVR5 million gear-buy-back scheme in August of 2010. From the gear buy back scheme, 33% received a compensation of MVR10-25 000. A compensation of more than MVR75 000 were received by only 9% (Figure 16)
Figure 16. Shows compensation levels received by fishermen

Figure 17. Shows how the compensations were spent

A breakdown of compensations per island (Figure 18) shows that more than MVR75 000 was received only by Kulhudhuffushi fishermen (9%). A minor percentage of fishermen from Kulhudhuffushi, Kendhoo and Dhan’gethi reported they have not received compensations, while all of the fishermen interviewed from Meedhoo stated not receiving any compensation for the gear. Figure 17 shows how the compensation was spent by the fishermen. The highest number of respondents, 28% stated they spent it on personal needs, while 18.9% stated they distributed it among the crew. Another 20% stated they used it for other purposes not specified in the questionnaire. Surprisingly, a small minority spent it on a business, other type of fishing or saved it for future use. Many fishermen did not consider this as a meaningful compensation, stating the compensation was too small and hence it got used for daily basic needs.
When inquired on the current status of vessels earlier used for shark fishing, 43% stated they had sold their vessel (Figure 19). Most stated that the shark fishing boats were not suitable for other types of fishing and hence the reason for selling it. 26% reported that the boat is used for a purpose not stated in the questionnaire. Some of these include the use of the boat for sea cucumber fishing and some stated their boat is used for scuba-diving now. Reef fishing was found as the most common type of fishing done by the boats now (21.1%)

Figure 18. Comparison of compensation levels within each surveyed island shark fishing vessel

Figure 19. Shows current use of shark fishing vessel
3.8. Soft loan schemes

After the ban, the government introduced a soft loan scheme where former shark fishermen were given priority. When asked if they took a soft loan, 7% responded that they had applied for the scheme (Figure 20). Almost half of the respondents, 49%, stated they did not apply for a soft loan, while 44% stated they were not aware of the soft loan scheme (Figure 20). Out of the 7% who applied for a loan, 80% stated they were not able to get the loan and 20% stated they still have not received the payment (Figure 21). A large number of fishermen were unaware of the announcement of a soft loan scheme. Many fishermen commented that a soft loan would not be sufficient for them to start a meaningful income generating activity that could be considered as an alternative to shark fishing.

Figure 20. Shows percentage of fishermen who applied for soft-loans

Figure 21. Shows the purpose of applying for soft-loan
A fairly equal percentage of fishermen ranging from 24-28% responded they were interested in receiving training for tuna longlining, farming and mariculture (Figure 22). A similar percentage, 24%, responded they were not interested in receiving any livelihood diversification programmes (Figure 22).

4. Conclusion

The survey results showed, banning the entire shark fisheries of Maldives had a considerable impact on the income levels of former shark fishermen. From the surveyed group of fishermen, the percentage of fishermen who enjoyed a higher income has decreased by 44.1% after the shark fishing ban.

During shark fishing times, the majority of surveyed group stated they gained a monthly income of MVR8-15 000 (US$625-1 172). This suggests that shark fishing was a lucrative activity among the fishing community and provided individual fisherman with higher earnings compared to other income generating activities available on the islands. In most islands of the Maldives, income generating options are quite limited and mostly dependent on the ocean resources and fishing is the main livelihood activity in the islands. However, though there are limited income opportunities other than fishing, an almost equal majority of the surveyed group felt there is no difficulty in finding income activities on the island (Figure 5). But this could be also due to the fact that if one type of fishing is not allowed, then they are able to move on to another type of fishing, and which majority did and tuna fishing and reef fishing were shown to be as the top two chosen livelihoods (Figure 2).

The highest common earnings per fishing vessel were found to be above MVR50 000 (US$3 906). In 2008, the earnings per shark fishing vessel were estimated to be MVR39 800 (US$31 095) (MRC, 2009). In 2004, a fishing vessel earned a monthly income of about MVR20 000 (US$15 625). Although the shark fisheries were showing a declining status since 2004 from export data of shark fins (MRC, 2009), the earnings per fishing vessel had increased from 2004-2008. This was due to the increase in prices fetched for shark fins (MRC, 2009). Hence, even though shark fisheries were declining, the high income levels due to high demand for fins could be the reasons behind the statements made by fishermen on no change in the status of the fishery or even the fishery doing well at the time of the announcement of shark fishing ban.

Compensations for fishing gear were the main impact mitigation strategy employed by the government. A large number of fishermen from the surveyed group did register for the scheme and received compensations. However, there were complaints about compensation being too small, almost being equivalent to their one month’s income from shark fishing, and most of the respondents stated that the compensations was used for their daily basic needs.
It is also of noteworthy that the surveyed group of fishermen was not keen on soft loans. The fishermen from Dhan’gethi expressed their interest in larger loans to start up tuna fishing, provided they get loans with low interest. Fishermen suggested such loan schemes could assist them in creating livelihoods alternative to shark fishing.

Considering that the tourism industry is the main beneficiary of the shark fishing ban, a large number of survey respondents criticized the tourism industry for not assisting with compensating for their lost livelihood after the shark ban. With the interest of assisting fishermen to attain an alternative livelihood, MoFA initiated a Shark trust fund where all the tourist resorts were asked for contributions (Sinan et al., 2011). Unfortunately, the fund was not well received by the resorts and only two resorts contributed to the fund. Lack of support for the fund could be due to insufficient consultations between the fisheries and tourism sector prior to the declaration of shark fishing ban and low publicity for the trust fund by MoFA. A willingness to pay for the shark watching survey in 2010, suggested that a resource user fee should be taken every time a tourist dives or snorkels or a one-off conservation fee be paid by the tourist (Sattar, 2010). This could be taken as a good opportunity to strengthen the Shark trust fund where such conservation fees for sharks can be deposited to the Shark trust fund and establish a mechanism where the funds flow back to the previously identified shark fishing communities.

5. References


Sattar, S. A., 2010. Willingness to pay survey on shark watching, management and conservation in Maldives, Male’: Marine Research Centre, pp.24

Appendix I  Survey form

Survey form
Marine Research Centre
Ministry of Fisheries and Agriculture

Socio-economic status of former shark fishermen

Atoll: __________________________ Name of the interviewee: __________________________
Island: __________________________
Date: __________________________ Address: __________________________
Interview name: __________________________ Contact: __________________________

1. The main current income generating activity
   a) Tuna fishing
   b) Reef fishing
   c) Grouper fishing
   d) Cooking and drying of fish
   e) Cultivation of crops
   f) Works at a resort
   g) Construction work
   h) Carpentry
   i) Others
   j) None

2. Income levels from the activity specified in question 1
   a) less than MVR 4 000
   b) MVR 4 000 - 7 000
   c) MVR 7 000 - 10 000
   d) above MVR 10 000

3. Number of dependents in his family
   a) less than 5
   b) 5 - 7
   c) 8 - 10
   d) above 10
   e) None

4. Any additional income generating activity he does now?
   a) Tuna fishing
   b) Reef fishing
   c) Grouper fishing
   d) Cooking and drying of fish
   e) Cultivation of crops
   f) Works at resort
   g) Construction work
   h) Others (Specify)
   i) None

5. Income levels from the activity specified in question 4
   a) less than MVR 2 000
   b) MVR 2 000 - 4 000
   c) MVR 4 000 - 7 000
   d) Above MVR 7 000

6. Any other sources of income?
   a) House rent
   b) From children
   c) Shop
   d) Dhoni (boat)
   e) Others
   f) None
   g) Social welfare

7. Opinion on finding income generating activities?
   a) Difficult
   b) Not difficult
8. If answer to 7 is "A", then what are the difficulties faced?
   a) Fishing is low  b) Less jobs

9. What were his main income generating activities 5 years back?
   a) Tuna fishing  d) Shark fishing  g) Construction work
   b) Reef fishing  e) Cooking and drying of fish  h) Resort work
   c) Grouper fishing  f) Cultivation of crops  i) Others (specify)

10. Reason for starting shark fishing?
    a) A good income source  d) Shark fishing has been a family tradition
       g) Others
    b) As an additional income generating activity  e) Livelihood activity
    c) Cause going for shark fishing allows him to stay on his island

11. Number of years spent shark fishing?

12. Did he go for shark fishing as a "skipper" or as a "crew"?
    a) Skipper  b) Crew

13. For shark fishing, he went in his own vessel or someone else?
    a) Own vessel  b) Not his own vessel

14. Area where shark fishing was done?
    a) Inside atolls  c) Both areas
    b) Outside atolls

15. Period of shark fishing
    a) Whole year  b) Certain time of year

16. If shark fishing was done at a certain time of the year, what did he do when he didn't go for shark fishing?
    a) Went reef fishing  d) Did not do any work
    b) Went tuna fishing  e) Involved in another income generating
                         f) Cultivation of crops
    c) Went grouper fishing

17. Average income/month from shark fishing?
    a) MVR2 000-4 000  d) MVR15-25 000
    b) MVR4-8 000  e) above MVR25 000
    c) MVR8-15 000

18. Average number of sharks caught, per fishing trip?
    Number  Days

19. Average profit for dhoni per month, from shark fishing?
    a) MVR5-10 000  d) MVR20-25 000
    b) MVR10-15 000  e) MVR25-50 000
    c) MVR15-20 000  f) Above MVR50 000
20. Opinion on status of shark fishery in 2010?
   a) Fishing was good  
   b) Fishing was low  
   c) No change in fishing

21. After shark ban, time taken to find a meaningful income generating activity alternative to shark fishing?
   a) less than 6 months  
   b) 6-12 months  
   c) 12-18 months  
   d) 2-3 years  
   e) Not yet found

22. Applied for the shark fishery's gear-buy back scheme?
   a) Applied  
   b) Did not apply

23. If answer to question 22 is "A", how much was the compensation?
   a) less than MVR5 000  
   b) MVR5-10 000  
   c) MVR10-25 000  
   d) MVR25-50 000  
   e) MVR50-75 000  
   f) MVR75-100 000  
   g) Above 100 000  
   h) Still has not received compensation

24. If answer to question 22 is "A", and have received compensation, what did he do with the compensation?
   a) Spent on another type of fishing  
   b) Spent on a business  
   c) Distributed it among crew  
   d) Spent on a personal use  
   e) Saved it for future use  
   f) Others

25. If answer to question 22 is "B", for what is the gear used for now?
   a) For longlining in reef fishery  
   b) For fishing with nets  
   c) Not using it for any activity  
   d) Not his gear  
   e) Others (specify)

26. Current use of the dhoni that was used for shark fishing?
   a) for reef fishing  
   b) For grouper fishing  
   c) For tuna fishing  
   d) Not using for any purpose  
   e) Not his own vessel  
   f) Sold it  
   g) Others

27. After the shark ban, the government introduced soft loan schemes for small-scale businesses, where former shark fishermen were given priority. Did he apply for a soft loan?
   a) Applied  
   b) Did not apply  
   c) Not aware

28. If answer to question 27 is "A", for what types of activities did he invest the loan for?
   a) Opened a shop  
   b) Maintenance of the boat  
   c) Opened a café/restaurant  
   d) Farming  
   e) Was not able to get it  
   f) Still not received  
   g) Others (specify)

29. Fields in which he wants training for more income generation?
a) Tuna longlining  
b) Farming  
c) Mariculture  
d) Operation of cooperatives  
e) Does not want  
f) Others (specify)
Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand are working together through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project to lay the foundations for a coordinated programme of action designed to better the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

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