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The Fishers of the Pedro Bank, Jamaica: Through the Lens of Their Livelihoods

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The Fishers of the Pedro Bank, Jamaica: Through the Lens of Their Livelihoods

Rachel Allen^α & Dale Webber^σ

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1. INTRODUCTION

In many countries throughout the world, small-scale fisheries are critical for the provision of food, income and livelihoods (Teh and Sumalia, 2005; Andrew et al., (2007), especially to the world's poorest (Allison and Ellis, 2001; Bene et al., 2008). In the face of Climate Change, small scale fisheries in developing countries is described as, at most, fragile and vulnerable (Bunce, et al., 2010, Pomeroy et al., 2006) and is expected to place considerable additional stress on the systems that determine livelihoods security (Ziervogel and Zermoglio, 2009).

Climate Change impacts (as identified by the IPCC[1]) along with increasing dependence on an already heavily exploited fishery as well as a fragile social and economic system, have resulted in a growing concern that the fishing industry which once represented an opportunity for poverty reduction in coastal areas, is fast becoming threatened. This increased burden is largely borne by the fishers who also have to find new and creative ways to adapt in order to diversify their livelihoods to avoid poverty.

The current and standardized solution for building resilience for many developing countries is to employ adaptation strategies through the development of alternative livelihoods. Much of this discussion on the livelihood approach takes place within the confines of building adaptive capacity and enhancing resilience (Adger, 1999, Adger and Vincent, 2005, Allison and Ellis, 2001; Ostrom, 2008). In many cases, these livelihood assessments have been merely a presentation of a "menu" of options to fishers, without a comprehensive understanding of the complex and diverse livelihood strategies which describe and define their lives. Badjeck et al., (2010) further emphasize that many studies have been done on vulnerability and adaptive capacity assessments but "until recently there has been little directed analysis at the local scale of how climate variability and change is affecting the lives and livelihoods of the "tropical majority" of small scale fisherfolk."

Allison and Ellis (2001) propose that a fundamental aspect of the livelihood approach is to "identify what the poor have, rather than what they do not have" and [to] strengthen people's own inventive solutions, rather than to substitute for them." Further, Parvin et al., (2008), highlight the need and importance for understanding the community's unique perceptions and assessments of their own adaptive and proactive capacities.

The Pedro Bank, Jamaica presents one such area in that, although it provides the majority of fisheries based export earnings for the country, the livelihoods of Pedro fishers has never been studied. Numerous studies have been done on the coral reefs, fauna, avifauna, and a draft management plan developed. A designated fish sanctuary has been established on South West Cay, and alternative livelihood projects developed in some of the communities of origin on the mainland Jamaica. Since the work of Espeut in 2006, no comprehensive assessment of the complexities and diversity of the people has been done and no research has included the lives and livelihood options both on the Cays and on mainland Jamaica. Given the distance of the Pedro Bank to the mainland, the fishers of Pedro Bank appear to be misunderstood and marginalized, which according to Ribot (1996) is among the most important determinants of vulnerability. This research sought to characterise the fishers of Pedro Bank by examining their livelihood, priorities and choices. This

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choices. This was achieved by the execution of 154 interviews with fishers on both Cays as well at their homes on the mainland. As well, 34 open ended surveys were conducted with fishers who did not feel comfortable doing a survey, but wished to be included. Open ended conversations were had with families back on the mainland, which assisted in verifying the information given by fishers on the Pedro Bank. This was conducted over a period of 14 months.

While different groups and places within countries differ in their ability to adapt (Kates 2000) this paper highlights the complexities of the lives of the Pedro Bank Fishermen who come from varying places on the places on the mainland. It was this factor that was found to be the determinant of i) ability to adapt, ii) method of fishing, iii) livelihood strategies and iv) perceptions of the environment and climate change.

II. BACKGROUND

The lives of the Pedro Bank fishermen are dynamic; their relationship with the sea, coral reefs and Pedro Bank, is a web of complexities driven by factors that are not generally understood. These men (and women) travel 80 km to fish on the Pedro Bank, and remain there for periods of up to 8 months. In the absence of potable water, or sanitary convenience, and with cases of piracy, the lives of the people who opt to remain on the Pedro Bank, is not one of ease. Yet, they remain there, and in some cases, prefer to remain there than return to the mainland.

a) Study Site: The Pedro Bank, Jamaica

The Pedro Bank is located approximately 80 km south-southwest of mainland Jamaica. It is a sharp seamount which rises abruptly and stretches from about 500 m and extends more than 161 km east to west. The Bank covers an area of 8040 km² it is one of the largest offshore banks in the Caribbean Basin (Espeut 2006, The Nature Conservancy 2011 and Ainsworth 2011).

i. Insert Figure 1 Here

The Bank is important for regional, social and economic reasons providing US \$34 million in exports (I. Jones, Fisheries Division; Personal Communication. January 24, 2013) as well as a livelihood for up to 1,000 fishers.

Within the area defined as the Bank, the seamount breaks the surface in eight places. Of these four are rocks which are inhabited by birds. Historical reports (Zans 1958) and more recently Espeut (2006) refer to there being a fourth Cay, namely South Cay. However, during the period of this research this Cay was inundated with tide and surge. This is consistent with the more recent findings of Hay (2006) and Ainsworth (2011) which describe South Cay as now existing as shallow shoal with a sandy beach.

This research focused on the two Cays which are inhabited by Fishers; namely the North East Cay and the Middle Cay, referred to "Top" and "Party" Cay, respectively.

ii. Insert Figure 2 Here

b) North East Cay

Commonly referred to as "Top Cay", this is the most northerly of the three cays. This Cay possesses a 10.66 m lighthouse which was erected in 1956. There is 1 dry pit toilet, 1 shop and an empty water tank/cistern. NE Cay was the former location for the Jamaica Defence Force (JDF) which fisher's state was relocated to the Middle Cay in the early 1980's. With the relocation of the JDF base, a number of residents of NE Cay have also relocated to Middle Cay.

c) Middle Cay

Commonly referred to as "Party Cay" by the fishers, this Cay is located approximately 4 km from NE Cay. Measuring approximately 4 hectares (Zans 1958), it is the smallest of all the Cays as well it is the most heavily populated. The Jamaica Defence Force has a permanent post on this Cay in addition to a research station managed by the Fisheries Division. In the "old" part of Middle Cay, the remnants of concrete structures can be seen. Numerous huts adjoining each other extend to the shoreline. There are more than 20 shops, no running water and 2 dry pit toilets which are out of commission. There is also a "mechanics" shop where compressors used for diving are repaired.

d) South West Cay

South West Cay is commonly referred to as "Bird Cay". It measures 15 hectares and is the largest of the three cays. As found by Espeut (2006), Hay (2006) and Ainsworth (2011), there are no permanent residents on this Cay. The remnants of stone shelters built by egg collectors and guano miners are still obvious however a water well, referred to by Zans (1958), was not observed. SW Cay is home to the seabird the rare Masked Booby (*Sula dactylatra dactylatra*). While no fishers reside on this cay, there are occasional short term visits by fishers.

III. METHOD

In an effort to understand the lives of the fishers of the Pedro Bank, 9 trips were made over a period of 14 months, between November 2010 and November 2012. Length of stays ranged from 1, 3 and 7 days. Transportation was facilitated by the Coast Guard as well key fishers with speed boats.

Structured and semi-structured approaches were used to collect data, along with participant observations. During this time, 154 detailed questionnaires were executed, and 34 open ended surveys with fishers who did not wish to do a detailed

questionnaire but who preferred “just to talk”. Basic statistics, demographics and other characteristics were generated from the data collection process.

In an effort to maintain the relationship with fishers, visits were made to them in their fishing communities whenever they returned to the mainland. In an effort to corroborate information given by fishers, open ended interviews were held with the families of fishers. This assisted in the validation of information on livelihood earnings given by fishers out on the Bank.

IV. RESULTS

This study examined the lives of Fishers on the Pedro Bank, and highlighted the correlation between place of origin on the mainland, age of Fishers, Cay selection for habitation, dishing should be fishing practices and livelihood strategies employed.

a) Mainland Origin and residence on NE Cay and Middle Cay

Of the total 154 respondents the 40 residents of NE Cay were interviewed of which 85% originated from St. Elizabeth, a Parish considered rural. The remaining 15% of residents on NE Cay came from other Parishes but were also from “rural” fishing communities, specifically, Westmoreland (5), Manchester (7), St. Thomas (4) and Portland (1). All fishers who resided on NE Cay identified themselves as only being Pot fishers. At no time during the time of this research did the population on NE Cay surpass 45 persons which is a significant decrease from the 70 recorded by Espeut in 2006. The dwellings were not densely packed together and many dwellings were identified as being abandoned, empty and padlocked.

On Middle Cay, this research found the predominant respondents (67.5%) originating from urban mainland communities in the Parishes of Clarendon (29) St. Catherine (28), Kingston & St. Andrew (17). A smaller proportion of the Middle Cay population (32.5 %) originated from rural communities such as Westmoreland but this was still more than found by Espeut in 2006. Additionally, unlike the findings of Espeut (2006) there was increased representation from other rural Parishes, such as St. Ann, St. Mary and Portland. St. James, the second city of Jamaica, and St. Ann, are both tourism areas. Portmore, St. Catherine has also been designated City status. Other parishes identified as rural are agriculture based.

b) Insert Figure 3 Here

Map of Parishes¹ of Jamaica indicating rural and urban areas.

i. Type Of Fishing

All fishers who lived on NE Cay were identified as only Pot Fishers with occasional line fishing. In contrast, the fishers on Middle Cay engaged in a variety of fishing types with the main type being the hookah. Where a compressor (placed in the back of a boat)

supplies air to a diver via a small tube, which is placed in the diver's mouth. Specifically, fishers used the hookah to engage in spear fishing and diving for lobster and conch. The fishers on Middle Cay from Westmoreland, St. Ann, St. Thomas, Kingston and St. Andrew identified their primary method of fishing as hookah diving but also participated in some amount of pot fishing. This differed from the Westmoreland fishers on NE Cay, who were strictly pot fishers, and who were unlike their fellow Westmorelander's who resided on Middle Cay and engaged in all fishing methods. The fishers from the rural fishing communities of Manchester and St. Elizabeth who reside on Middle Cay remained primarily pot fishers. Urban fishers all (100%) listed free dive spearfishing as their second choice of fishing method after hookah spear fishing while only 10% of rural fishers identified spearfishing as a second choice of method and 50% viewed it as the third choice if necessary.

When the lobster and conch seasons were opened a significant increase in the number of fishers from Clarendon, St. Catherine, St. Elizabeth and Westmoreland came to the Pedro Bank to participate in hookah diving. At this time they used “lobster wires” to catch lobster and their hands (and knives) for conch.

ii Age of Fishers

The oldest fishers interviewed were all from rural fishing communities in St. Elizabeth, Manchester and Westmoreland with an average age of 31, 32 and 35 respectively (Table 1). The oldest fisher on the Pedro Bank during the time of this research was 65 years old, from Westmorland and who lived on NE Cay. The average age of all the fishers on NE Cay (of rural origin) was 31 which was much higher than the average age of the fishers on Middle Cay (predominantly urban) which was 23 with St. Catherine, Clarendon and Kingston and St. Andrew being 19, 21 and 23 respectively (Table 1). It is important to note that the highest average age of fishermen originating from urban communities (27 years old) is the same as the lowest average age for fishers originating from rural communities.

c) Insert Table 1 Here

i. Livelihoods and Choices

Although many fishers had been coming to Pedro Bank for an average of 7 years, approximately 65.48% of urban fishers on Middle Cay had no prior training or work experience in fishing. In contrast 56% the fishers from the rural fishing communities in St. Elizabeth, Manchester, St. Thomas and Portland were in engaged in some form of fishing activity before coming to Pedro. The reasons purported by the Pedro Fishers for deciding on the Pedro Bank fishing as livelihood rather than staying on mainland Jamaica were ranked as follows: i) to avoid getting into crime, ii) to seek employment as none was available on land and iii) they

enjoyed the party and easy life which is less stressful than on the mainland.

Once the fishers did arrive on the Pedro Bank, they were afforded an opportunity to earn a living, take care of households on the mainland and support other livelihoods strategies (Table 2). The fishers from rural fishing communities identified and ranked their spending priorities as: i) send children to school and ii) repair/make new fishing pots and iii) buy grain, seeds for farming. In contrast the fishers from the urban fishing communities ranked their spending priorities as: i) "buy and sell" goods and ii) "set up a shop". They highlighted their desire to make "quick money".

Surprisingly even though 53 of the 57 respondents from Clarendon and St. Catherine, had at least 1 child, they did not rank education of their children a priority or consider it an investment. In contrast, the fishers from rural fishing communities identified education of their children as first priority of the spending of income. Secondly, their "Pedro income" was used to reinvest in fishing through the fixing and making of new pots.

While responses were varied, there is a clear distinction between rural and urban fishers, and the priorities of livelihoods (spending of their earnings). Fishers from rural fishing communities engaged in farming as a secondary livelihood, and used earnings to invest in this. They cited the impacts of drought and flooding as agents that make it harder for them to stay in farming. Respondents also attributed the hurricanes in the recent past as having set them back financially. This was in direct contrast with the younger fishing population who found running a store/business or having "pay parties" more entrepreneurial and less labor intensive than farming. In an abnormal case in Clarendon (urban), farming only became an option due to the ease with respondents could grow the cash crop Callaloo and sell to a nearby Callaloo factory. Most respondents by the 3rd choice of livelihood activity, indicated that activities on the mainland were not as "sure" as on Pedro, but that they would do anything to earn an additional income when not on Pedro Bank (Table 3).

d) Place Tables 2 & 3 here

The population on Middle Cay was observed to be at a low of 150 persons during the month of January to an increased average of 350 persons during hurricane season, based on the number of licenses granted by the Fisheries Division. However, during the Conch and Lobster seasons, the population on the Cay increased to an estimated 1,200 persons². The most populated months were February, March and July which were identified as the time when both lobster and conch seasons overlapped. During this time, Middle Cay was

heavily populated, and up to 150 persons were observed sleeping on make shift beds on the ground.

V. DISCUSSION

Typically the Pedro Fishers are treated as "renegade fishers" and decisions on the management of the resources at Pedro Banks are made without much understanding of the complexities of life on the Bank, fisheries behavior or the direct and indirect drivers that guide their decisions. The direct and indirect drivers of the decisions that they make on the Cays and on the mainland are determined by a number of variables. The diversity of livelihood strategies is in part due to where they are from on the mainland, specifically, urban or rural fishing communities. This factor, correlated with age, both determined the type of fishing activity in which they engage. This research explores those drivers and explains the reasons for some of the behavior and presents a measure of the complexities.

The fishers on NE Cay are predominantly from St. Elizabeth, older and are pot fishers. Many who moved from NE Cay to Middle Cay indicated that they would prefer to live on (return to) NE Cay, but cited firstly, the lack of safety as a deterrent since the move of the JDF based from Top Cay to Middle Cay, as well as increased piracy. This corresponds with the findings of (Ainsworth, 2011) that the presence of the Coast Guard on the Middle Cay was a contributing factor to the increase in population. Secondly, it was increasingly more difficult to access the packer boats to sell their fish from NE Cay, as the packer boats go mainly to Middle Cay. Thirdly, they cited the cultural differences between rural fishers and urban fishers. Specifically, the noise level at Middle Cay from the music and constant party atmosphere attracts the younger fishers regardless of origin but does not find favour with the older usually rural fishers. Furthermore the lack of cleanliness by spear fishers and the lack of regard for fishing environment as seen in actions such as spear fishing at night by the young, (urban) fishers, killing the sleeping fish are thought to be depriving the pot fishers of catching fish. This was also a reason cited for the increased altercations on Middle Cay between rural pot fishers and "urban" hookah divers. It was observed that an "understood" yet, subtle boundary was present on Middle Cay, which confirmed the divisions.

There is a clear correlation that has been established between where fishers originate on the mainland, age, the Cay on which they choose to settle, method of fishing and how earnings generated on Pedro are used. Based on these correlations, two groupings of fishers on Pedro Bank were identified.

The first and most predominant grouping of fishers on the Pedro Bank is from the "urban" fishing communities of Clarendon and St. Catherine. This

² Estimate generated by opinion of researcher, Coast Guard and Fishers themselves.

grouping represents the youngest population and the ones that had the least experience in fishing prior to coming to the Pedro Bank. Their eagerness to make a living is evidenced by i) their choice of fishing method, i.e. hookah/spear fishing (even at night), ii) use of earnings to 'buy and sell' and have "quick rewards" on the mainland. This young, majority group of hookah divers and spear fishermen which have chosen to settle on Middle Cay have indicated that this represents a level of freedom and security not felt on the mainland.

The second grouping of fishers on the Pedro Bank is from the "rural" fishing communities on the mainland. This grouping represents the oldest population on the Cay. They were found to engage in traditional pot fishing and lived on the NE Cay. Their relocation from NE Cay to Middle Cay is not one of choice, nor done willingly and has resulted in 'forced integration' of fishing cultures on Middle Cay. They use their earnings to support livelihoods on the mainland. Their investment is in education for their children.

Any attempt at reducing the fishing pressure on the Pedro Bank will have to consider the complexities of the lives of the Pedro fishermen, which suggest that neither the proposed fish sanctuary nor the alternative livelihoods programme will be sustainable without comprehensively considering the age and corresponding fishing practices of the fishers. The greatest numbers of fishers are hookah/spear fishers from urban fishing communities on the mainland. As such, education and management plans for the Pedro Bank should be tailored to this dominant group. Further, the alternative livelihood options provided to the fishers have to take into account the communities from which they originate on the mainland so as to consider sustainability.

Numerous fish sanctuaries and marine protected areas being established across the Caribbean, without any real comprehensive understanding of the fishers who use the resource. The very popular adaptation strategy of providing alternative livelihoods should necessarily consider those activities which are already being employed by fishers and support given to these.

The approach offered by the paper is one that can be replicated across the Caribbean so as to ensure higher success of measures being implemented to reduce fishing pressure as well as alternative livelihood adaptation strategies.

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Figure 1 : Location of the Pedro Bank

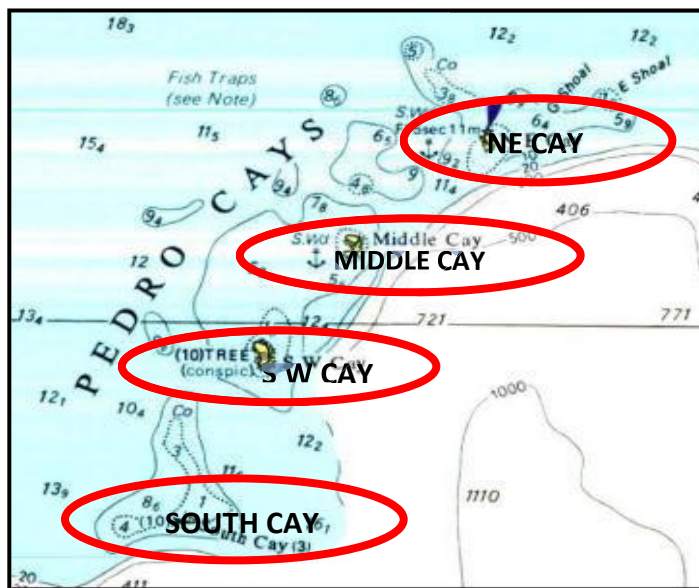


Figure 2 : Location of Cays on the Pedro Bank

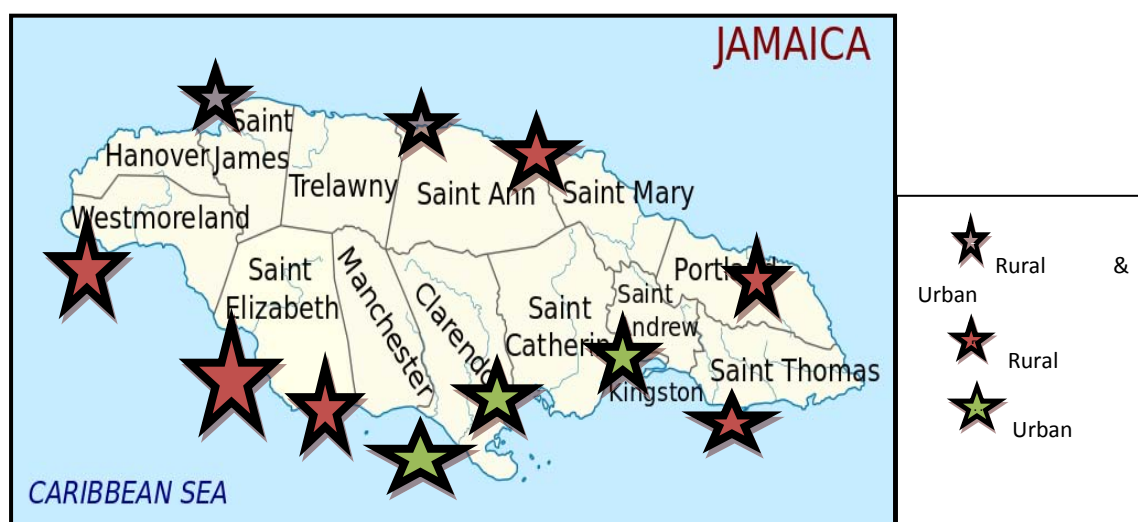


Figure 3 : Map of Parishes³ of Jamaica indicating rural and urban areas.

Table 1: Place of Origin on Mainland, Age of Fishers and Type of Fishing Method used

Parish Mainland	Fishing Community	N=154	Top Cay	Middle Cay	Avg Age	1 st	2 nd	3 rd
St. Elizabeth	Rural	27	23	4	31	Pot	Line	Spear
Manchester	Rural	12	7	5	32	Pot	Line	Spear
Westmoreland	Rural	18	5	13	35	Hookah	Pot	Line
St. James	Urban	3	0	3	27	Hookah	Spear/FD*	FD
St. Catherine	Urban	28	0	28	19	Hookah	Spear/FD	Line
Clarendon	Urban	29	0	29	21	Hookah	Spear/FD	Line
KSA	Urban	17	0	17	23	Hookah	Spear/FD	Pot
St. Thomas	Rural	12	4	8	27	Spear	Pot	Line
Portland	Rural	5	1	4	26	Pot	Spear	Line
St. Mary	Rural	2	0	2	27	Pot	Spear	Line
St. Ann	Rural	1	0	1	26	Pot	Spear	Line

* FD = Free Dive

Table 2: How earnings generated on Pedro are spent

Parish	How Earnings made on the Pedro Bank are Spent		
	No. 1 Rank	No. 2 Rank	No. 3 Rank
St. Elizabeth	School/Children	Make/Fix Pots	Seeds/Farm
Manchester	School/Children	Make/Fix pots	Seeds/Farms
Westmoreland	Education	House/Fix Pots	Farm/S. Cane
St. James	Fix House	School/Children	
St. Catherine	Buy for shop	Farm* Callaloo	School/Children
Clarendon	House/Shop	School/Children	Farm
KSA	Boat Repairs	School/Children	House
St. Thomas	Farm	School/Children	Save
Portland	Children	Family	Farm
St. Mary	Children	Farm	Save
St. Ann	Children	Buy things to sell	Farm

Table 3: Additional Livelihood Activities on the Mainland, when not fishing on Pedro

Parish	Additional Livelihood Activities of Fishers		
	No. 1 Rank	No. 2 Rank	No. 3 Rank
St. Elizabeth	Farmer	Make Pots	Misc. A/T *Carpentry
Manchester	Farmer	Painter	Mechanic
Westmoreland	Farmer	Cut/Farm Cane	Mechanic/Pots
St. James	Buy and Sell	Farm	Misc Anything
St. Catherine	Shop Keeper	Mechanic	Entertainment
Clarendon	Shop Keeper/bar	Farm*	Misc Anything
KSA	Buy and sell	Mechanic	Painter
St. Thomas	Farmer	Misc. A/T	Misc Anything
Portland	Farmer	Painter	Misc. Anything
St. Mary	Farmer	Misc A/T	Misc. Anything
St. Ann	Buy and Sell	Misc. A/T	Misc. Anything