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Contending Claims over Access to Fisheries: A Case Study of the Okavango Delta Panhandle, Botswana

Gagoitseope Mmopelwa[1], Barbara Ntombi Ngwenya[2] & Donald Letsholo Kgathi[2]

[1] Department of Environmental Science, University of Botswana, Gaborone, Botswana

[2] Okavango Research Institute, University of Botswana, Maun Campus, Botswana

Correspondence: Gagoitseope Mmopelwa, Department of Environmental Science, University of Botswana, Gaborone, Botswana. Tel: 267-355-2533. E-mail: gmmopelwa@mopipi.ub.bw

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Abstract

Fishing is one of the key livelihood activities in the Okavango Delta in Botswana. Subsistence fishers, commercial fishers and tourist lodge operators derive material and non-material benefits from fishery. However open access fishing has resulted in intergroup conflicts. The objectives of the study were to describe the nature of the fishing conflict and to suggest feasible conflict management strategies. A questionnaire based survey conducted among subsistence fishers, commercial fishers in four villages and among tourist lodge operators in the Panhandle of the Okavango Delta found that fishing in common grounds was the main source of conflict between commercial and recreational fishing. The paper discusses options for managing the conflict to avoid undesired consequences on the fishery resources of the Okavango Delta.

Keywords: conflict, fisheries, natural resources management, tourism, Okavango Delta

1. Introduction

Conflict over access and use of resources is a common phenomenon threatening sustainable use of resources at local, regional and international levels (USAID, 2005; Adjer & Luttrell, 2000; Mulonga & Murphy, 2003; Arntzen et al., 2003; Kiss, 2004; Buckles & Rusnak, 1999; Bennett et al., 2001). It arises when there are varied interests of people in particular resources (Yasmi et al., 2006; Sigh, 2002; Bennett et al., 2001; Hilborn, 2007). However, the literature on fisheries indicates that the interests of the fishers are quite overlapping. For instance, subsistence fishers do not predominantly harvest fish for own household consumption but they also sell to the market (Arnason & Kashorte, 2006). In many cases conflict is exacerbated by a tendency of other stakeholders appropriating resources in proportion to their social, economic, and political power (Sigh, 2002). In most resource use conflict situations, lack of well-defined property rights is often cited as one of the fundamental causes of the conflict (Pomeroy, 1999; Baskaran & Anderson, 2005; Yandle, 2007).

There is also conflict over the use of fisheries in the Okavango Delta in Botswana. The Delta is one of the largest remaining inland wetland ecosystems in the world today (Ashton et al., 2003). It is a habitat for a variety of flora and fauna. Fishing is one of the key livelihood activities in the Delta and it is an important source of protein, income, employment opportunities, recreational activities and other non-economic benefits for a wide spectrum of the population (Mmopelwa et al., 2008). According to Applied Development Consultants - ADRC (2001), 86% of households in the village of Shakawe, 88% in Sepopa and 90% in Ikoga, were involved in fishing in the Panhandle of the Okavango Delta.

Previous research (ADRC, 2001; Mosepele & Kolding, 2002) shows that the Okavango Delta has abundant fish resources which are not yet threatened by over-exploitation. However, an overlap of commercial and recreational fishing activities on the same fishing grounds could be one of the causes of conflicts in the fishery (Mosepele, 2001; Department of Environmental Affairs [DEA], 2006). In general, conflict situations have adverse effects on sustainable utilisation of natural resources and distribution of their benefits. Resource use conflict and its management are complex issues requiring an understanding of equity issues, symptoms and causes of conflict (Renard, 2004). This paper examines the causes of conflict over fisheries in the Okavango Delta in an attempt to develop more appropriate and effective intervention strategies. The specific research objectives are as follows: 1) to determine the nature and causes of the fishing conflict and 2) to suggest conflict management strategies.

1.1 Property Rights and Natural Resources Management

As already stated, lack of well defined property rights is often cited as one of the causes of conflict. A property right is a three way relationship between the holder of the property, the particular resource and the legitimate authority which gives the entitlement to the resources (Sigh, 2002) and defines what a holder can do with the resource (Baskaran & Anderson, 2005). Property rights may be in the form of use and control rights (Schlager & Ostrom, 1992). Use rights include access rights (e.g. the right to enter the resource domain) and withdrawal rights (e.g. the right to harvest a resource), whereas control rights include the right to regulate resources (management), the right to exclude others (exclusion), and the right to transfer the asset to another individual (alienation). The effectiveness of property rights can be improved when the rights are exclusive, secure and transferable and have duration (Scott, 2000). Exclusivity implies having the right to use and determining who, if anyone else may use under what conditions (Randall, 1987). Transferability implies that individuals who do not have rights must be allowed to make an offer to acquire the rights (Randall, 1987). The individual who is willing to relinquish the right must also have the right to sell.

Natural resources can be held under open access property, private property, common property, and state property (Sigh, 2002; Baskaran & Anderson, 2005). In most cases however, resources tend to be held under overlapping combinations of these four regimes (Pomeroy, 1999). In an open access situation, there are no restrictions or regulations on resource use as the resource is not owned by any person or institution (Pearce & Turner, 1990; Prato, 1998). Under such a regime no one has the legal right to exclude other persons from using the resource (Ostrom, 1999; Gordon, 1954). Many economists consider open access regime to be inefficient because of dissipation of rent as no one owns the resources; high transaction and enforcement costs and, lastly low productivity as no one has an incentive to increase private returns for the group (Ostrom, 1999). According to Gordon (1954), competition between the users quickly dissipates the economic rent of the resources. Garret Hardin's thesis called the "tragedy of the commons" (Hardin, 1968) failed to distinguish between an open access regime and a common property regime. The former is characterized by the absence of rules for governing the use of natural resources and the latter by the presence of rules. Hardin's assumption was that common property resources were open access. In the fisheries sector, common property regimes are common in the Pacific, Japan and Indonesia, where local communities are given rights to fish in certain geographical areas (Stewart, 2004). In the pre-colonial past, fishing and hunting in the Okavango Delta were regulated under common property management regime where different ethnic groups had special laws governing these activities (Tlou, 1985). The rights to designate fishing and hunting grounds rested with each village, and heavy fines were imposed on those who violated these special regulations. However, members of each village could fish on each other's territory with permission (Tlou, 1985). Common property management has hitherto broken down since the country instituted new laws of resource management after 'political' independence from British rule (1884-1966).

In the case of a private property regime, an individual, rather than a community, is given a legal and social ability to exclude others from having access to a resource (Baskaran & Anderson, 2005; Bromely & Cernea, 1989). The rights to exclude others depend on existing rules that are enforced by the rulers (Ostrom, 1999). Economists believe that private property regime is the most efficient resource management regime as those who invest their productive resources are more likely to realise a direct relationship between investments and the level of profits in the long run (Ostrom, 1999). A private property regime in the fisheries is usually in the form of Individual Transferable Quota (ITQ), whereby an individual has exclusive right to harvest a proportion of the annual yield (Stewart, 2004). This system is common in marine rather than in fresh water resources. In the case of a state property regime, resource use is controlled by the state directly through its agencies or indirectly by leasing its resources to certain groups of people or bodies (Bromely & Cernea, 1989). Through legislation that defines rights to resources, the state can convert open access regimes into private property or common property regimes.

1.2 Fair and Equitable Distribution of Benefits

Quite often, it is believed that successful conservation of natural resources depends on creating a sense of people's ownership and subsequent derivation of economic benefits that sustain and improve livelihoods (Arntzen et al., 2003; Mulonga & Murphy, 2003; Naidoo & Adamowicz, 2005; Thakadu et al., 2005). Where two or more parties are involved in sharing the benefits of conservation, a distribution of benefits that is fair and equitable becomes important (Arntzen et al., 2003; Sommerville et al., 2010). The concepts of fair and equitable distribution of benefits are based on individual ethical judgment (Herod, 2003). Fair implies the distribution process itself, while equitable is the outcome of the distribution process (Herod, 2003). According to Adjer and Luttrell (2000), under an equitable distribution of benefits among user groups, there is likely to be successful resource management and less conflict. Wong and Dufrene (2001) developed three test requirements which a fair

distributive procedure must meet. Their model is based on two groups of people: the vulnerable and the dominant. The first test states that 'the interest of the most vulnerable group is better served with the distributive practice than without it.' This implies that a distribution of benefits that is inequitable would be justified if and only if the least advantaged group is better-off with it than without it (Wong & Dufrene, 2001). Thus, if the vulnerable group is treated fairly or justly, it is also most likely that the dominant group will be treated fairly.

The second test states that 'the welfare of any one group including the most vulnerable should not be increased at the expense of another'. Thus, an inequitable distribution of benefits cannot be ethically justified if a portion of the benefits entitled to one group is distributed to another without the consent of the former group (Wong & Dufrene, 2001). The last test asks that 'assuming that our loved ones could have belonged to any group, is there one group that we would not want them to belong to, given the distributive system in question?' According to Wong and Dufrene (2001), if the response to this hypothetical question is positive (yes), then the distributive practice should be deemed unethical or unfair. Similarly, if the response is negative (no), then the practice is deemed ethical. The tests will, in most cases, indicate the dominant part in most conflict situations. In the Okavango Delta fishery the existence of a dominant and less dominant group in the fishery creates potential for a conflict.

2. Study Sites – the Okavango River Panhandle

The Okavango Delta in Botswana is a large, low gradient alluvial fan which is part of the East Africa Rift system (McCarthy & Ellery, 1998). The Okavango River enters Botswana at Mohembo and has a base flow of about 4000 km^2 which sustains permanent swamps in the upper region which consist of the Panhandle, a papyrus-dominated swamp which runs for 100 km long and 12 km wide before branching into a network of distributary channels system that fans out into the alluvial plains of the Delta proper (McCarthy & Ellery, 1998). The Panhandle is the main source of water for communities living around it. There are approximately 30 village settlements along this 100km long stretch. This survey was carried out in four villages along the Panhandle area in the Okavango Delta (Figure 1) namely, Shakawe, Samochima, Mohembo and Ngarange. Samochima is located approximately 10 km south east of Shakawe. Mohembo is located about 7 km from Shakawe, while Ngarange is located on the eastern side of Panhandle.

There are three main fishing stakeholders in the Panhandle. These are subsistence fishers, commercial fishers and lodge operators. According to Mosepele (2001), there are three types of subsistence fishers namely, gillnet fishers (mainly men), hook and line fishers (mostly school-going boys) and basket fishers (mostly women). The most distinctive feature of subsistence fishers is their simple fishing technology. Some of the subsistence fishers still use traditional fishing technology such as fishing traps and spears (Mosepele, 2001). The preferred fish species for subsistence fishers include tilapia (*Orechromis andersoni*) and tiger fish (*Hydrocynus vittatus*). Commercial fishers use modern fishing technology such as engine powered boats, gill nets and canoes and their catch rates range from a high of 11.34 kg/set to a low of 0.82 kg/set (Mosepele, 2001). Their preferred fish species include three spot tilapia (*Orechromis andersoni*), thin face large mouth or humpback large mouth (*Serranochromis anusticeps* or *Serranochromis altus*), red breasted tilapia (*Tilapia rendalli*), African pike (*Hepsetus odoe*), bull dog *(Marcusenius macrolepico*) and tiger fish (*Hydrocynus vittatus*) (Mmopelwa & Ngwenya, 2008).

Tour operators provide lodge based accommodation services. There are three lodge operators in the Okavango Delta Panhandle and these are Shakawe Fishing Lodge, Drotsky's Cabins and Samochima Fishing Lodge. Tour operators offer recreational fishing as a service to their guests. Recreational tourists hire fishing equipment from the tour operators or bring their own equipment, although the practice of bringing own fishing equipment is generally discouraged because of possible introduction of notorious weeds such as *Salvinia molesta* to the Delta from other water systems. Tourists practice catch and release methods and the most preferred recreational fishing species include *Orichromis andersoni* and the *Hydrocynus vittatus*. Recreational fishing patterns overlap with subsistence and commercial fishing activities. The peak season for recreational fishers occurs during the low flood period (August-November).

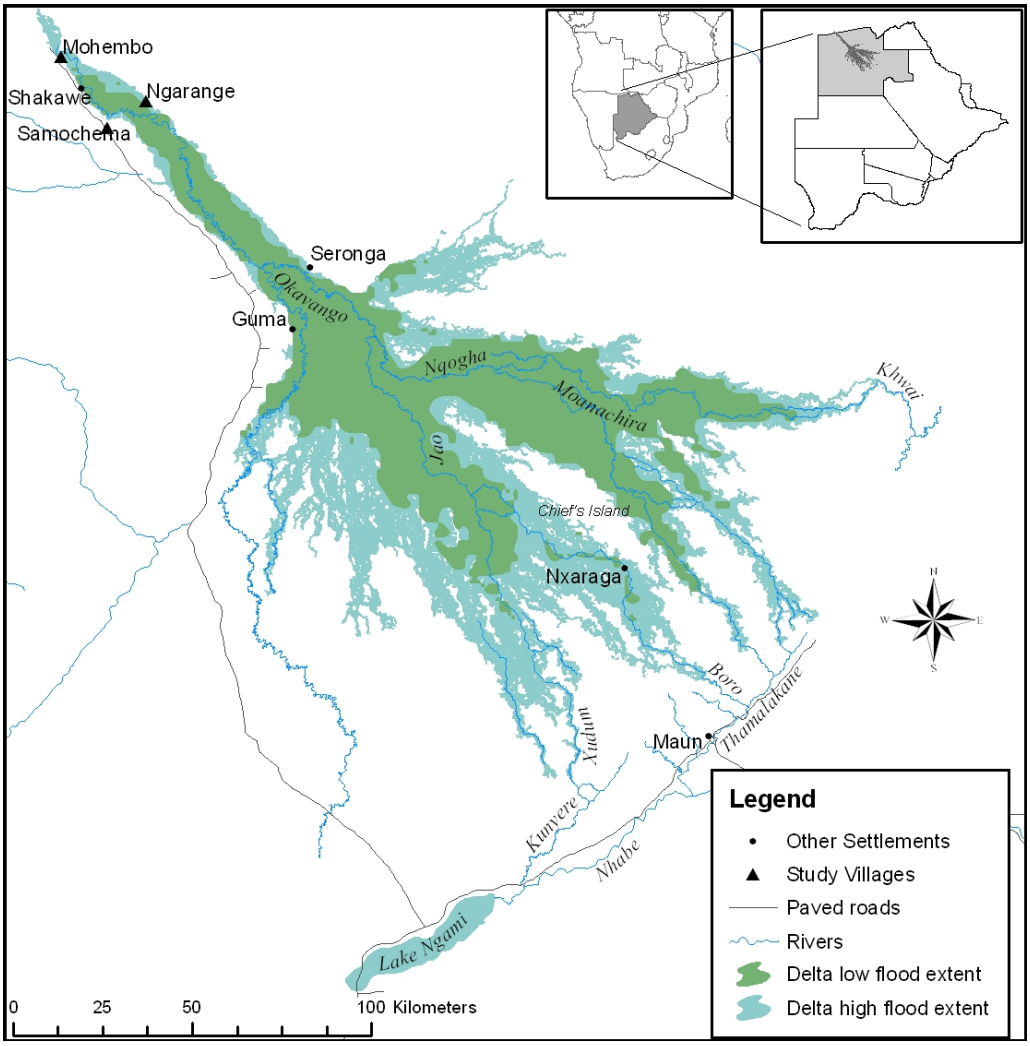

Figure 1. Map showing the study sites in the Okavango Delta, northwestern Botswana within Southern Africa region

3. Methods

3.1 Sampling

In all the study sites, all households involved in fishing (insert 'including' other livelihood activities) were identified and listed. A total of 132 households involved in fishing were listed. There were 40 fishing households in Ngarange, 42 in Shakawe, 29 in Mohembo and 21 in Samochima. All of these fishers were interviewed.

3.2 Data Collection

Primary data were collected using two structured questionnaires. The first questionnaire was administered to subsistence and commercial fishers, while the second questionnaire was administered to the three lodge operators. Prior to the survey, the questionnaires were pre-tested in Maun. The main issues in the first questionnaire included socio-economic characteristics of respondents, fishing seasons, types of gears used, species of fish caught, catch rates of fish, preferred species, patterns and access to fishing and conflict. Issues covered by the tour operators' questionnaire included types of business ventured in, perceptions on the abundance of fish stocks, and open access fishing and conflict.

In addition to the questionnaires, focused group discussions were held with some commercial and subsistence fishers in all the sites to verify some of the questionnaire-based data, as well as to get in-depth information on key issues identified. The group comprised between 3 and 10 fishers. The discussions lasted for just over two hours and covered the following themes: 1) fish species harvested 2) nature and causes of conflict over fish resources and 3) suggestions on the resolution of conflict.

4. Results

4.1 Fisher Household Characteristics

From the 132 fishers, majority (67%) were males. The average family size of the fisher households ranged from 2-12 members. Most fishers (47%) were in the age range of 30-49 years, followed by those in the age range of 19-29 years (25%). As expected, only a few respondents (9%) were in the less active age range of above 65 and below 18 years. More than half (52%) of respondents did not have formal education and only 32% had primary education. Only 15% and 1% of the respondents had secondary and tertiary education, respectively.

4.2 Livelihoods

While all respondents were involved in fishing and other livelihood activities, 40% of them felt that fishing was the most important economic activity. Subsistence fishers reported that on average a fisher catches 22 fish per day. Using fish catch and sale records, the value of fish to a commercial fisher was calculated to be BWP (Note 1) 14 400 per month. The income from commercial fishing is used to purchase basic commodities such as food, clothing and for payment of school fees. Figure 2 shows the percentage of subsistence and commercial fishers that benefit from fishing. While subsistence and commercial fishers have extensive knowledge pertaining to productive fishing sites and migration patterns of fish, they are unable to venture into recreational fishing because they lack the necessary fishing assets, finance and business skills.

A significant number of fishers (80%) were also involved in arable farming, and 49% of these fishers reported that arable farming was their most important economic activity. Other households were involved in cattle farming (66%), formal employment (2%), beer brewing (16%), veld products utilisation (51%) and temporary jobs. Lodge operators reported that the peak period for recreational fishing is between June and October and their visitors come mainly from South Africa and European countries. Lodge operators benefit from the income generated from hiring of boats, accommodation and meals.

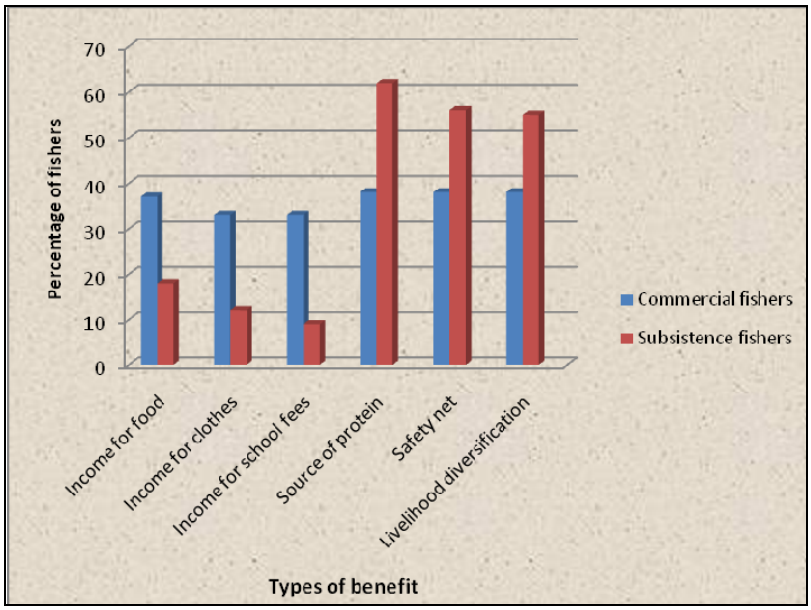

Figure 2. Percentage of commercial and subsistence fishers deriving different benefits from fishing

4.3 Nature of the Fishing Conflict

Fishers and lodge operators were asked to indicate their views (agree, disagree or neither agree nor disagree) on the statement that open access fishing in the Okavango Delta has a negative effect on sustainable utilisation of the fisheries. "Open access" was defined or explained to the respondents as a resource regime where resources can be accessed by anyone at any time without restraint; everybody's or nobody's resources; resources for which there are no defined group of users. "Sustainable utilization" was defined as the use of resources by the current generation without impinging on the availability of the resources for future generations. Thirty four percent (34%) of the fishers believed that open access fishing can have negative effects on sustainable utilisation of fish (Table 1).

Focus group discussions revealed that the fishing conflict is between commercial fishers and tour operators and is caused by fishing from the same ground. Commercial fishers reported that lodge operators claim ownership of certain fishing areas such as lagoons, and prevent them from accessing these fishing zones. The fishers also cited many incidences of lodge operators destroying their set fishing nets. One of the concerned fishers said 'local lodge operators and recreational fishers from the neigbouring South Africa use powerful fishing boats that cause large water waves which wash off fish eggs, and therefore disrupting the breeding cycle of fish'. Lodge operators, on the other hand, contend that they do not benefit to their expectation because of the over-exploitation of fishery by commercial fishers. They also cited the 'beating of water at night' by fishers to drive fish into the set nets as a very disturbing practice. They also claim that there were 'too many' fishers dependent on few lagoons, thus hindering fish regenerative capacity.

Table 1. Commercial and subsistence fishers' views on open access fishing

Fisherman	Response		
	Agree	Disagree	Neither agree nor disagree
Commercial	11	26	1
Subsistence	23	35	4
Total	34	61	5

Fishers and lodge operators were also asked to indicate their views (agree, disagree or neither agree nor disagree) on the statement that 'the extent to which fishers depend on fish for livelihood can have undesirable consequences for its sustainable utilisation'. 27% of the fishers agreed that the dependence on fish for a livelihood can have undesirable consequences for its sustainable utilisation and hence on its distribution of benefits among all other users of fish (Table 2).

Most fishers (69%) disagreed that the dependence on fish for a living can affect its sustainable utilisation. During the focus group discussions fishers argued that they would be acting irrationally if they were to destroy the basis for their living. A significant number of fishers (82%) also mentioned that in addition to their dependence on fish for a livelihood, fishing tradition also played a major role in shaping their cultural identity. This historical association is revealed, firstly, by the fact that fish has always been an important component of the traditional diet, including the methods of preparing it as food, Thus, among these communities fish consumption has become a societal habit. Secondly, knowledge of fishing as an activity, such as when to fish, how to fish and where to fish, is shared or transferred from one generation to the next giving a societal identity. The accumulated fish exploitation experience has also resulted in fishers' knowledge on breeding times and sites, feeding sites as well as migration patterns for the various fish species. Because of the many cultural values of fish, the fishing communities had a responsibility to conserve the fishery resources to avoid the erosion of the fishing culture.

Table 2. Commercial and subsistence fishers' views on dependence of fish for a livelihood

Fisherman	Response		
	Agree	Disagree	Neither agree nor disagree
Commercial	7	30	1
Subsistence	20	39	3
Total	27	69	4

The views of lodge operators on the impact of dependence of fish for a livelihood on sustainable utilisation of fish were different. Two of the lodge operators were of the view that commercial fishers were not fishing sustainably because they over-exploited the fishery. According to one of the lodge operators, rather than use their close association with the fishery to conserve it, commercial fishers abuse this close association to over-exploit these resources. Commercial fishers were also accused of fishing continuously throughout the year without any consideration of other stakeholders and all the time striving for maximum yield by whatever means.

A different view from one of the lodge operators was that fishers would not destroy a resource that they have a natural affiliation with.

5. Discussion

5.1 Significance of Fish to Fishers and Lodge Operators

This study has shown that almost all fishers of all ages participate in fishing, indicating the inter-generational socio-cultural significance of fishing among these communities. The financial health of a household is often assessed by its income and expenditure, and fishing has become an important livelihood in this respect. Households are therefore sensitive to fish related income variation, and hence their propensity to harvest fish sustainably. This finding goes against one of the oldest and most persistent narrative in fisheries science that links poverty with over-exploitation of the resources (Bene et al., 2010). The capacity of commercial and subsistence fishing to provide labour, high-nutrient low-cost food for lower income or resource poor households in the Okavango Delta cannot be underestimated. Mmopelwa et al. (2008) for instance, found that most households participate in fishing because fish is harvested on open access basis and abundant and available almost all year round. McGoodwin (2001) also observed that in most fishing societies, fishing becomes a way of life for the people, resulting in their occupational pride, tenacity and influencing all the cultural aspects of the people including political, social and economic organisation. Ngwenya and Mmopelwa (2008) also found that children of fishing communities start fishing as early as the school-going age. Fishing activities especially for subsistence fishers intensify during dry hot summer (August - December). Studies have found that this period is when most households experience food shortage (Mmopelwa et al., 2008; Mosepele & Ngwenya, 2010; Ngwenya & Mosepele, 2008). These studies concur with other research that point to the safety net function of small scale fishery and its contribution to maintaining minimum living standards in Africa (Bene et al., 2010).

As already indicated, recreational fishing is as important to lodge operators (source of income and tourism experience) as consumptive fishing is to commercial fishers. The presence of a conflict is therefore likely to negatively affect the many tangible and non tangible benefits that both commercial and lodge operators derive from fishery. Sources of conflict subliminally revolve around the quest for exclusive access (to lagoons for tour operators, for example). The exclusive rights approach, as Allison & Ellis (2001) observed, does not recognize open access fishery. According to Prowse (2003) subsistence fishing in particular, contributes to poverty prevention (by helping households maintain a minimum standard of living) through various mechanisms and creating safety nets in the general context of vulnerability (the ability to or lack thereof, to adapt to or cope with or recover from the impacts of external shocks.

5.2 Open Access Fishing and Dependence on Fish for a Living

As has been demonstrated in this study both commercial and recreational fishing activities in the Okavango Delta are undertaken on open access and the quest for exclusive right of access exacerbates conflict ridden social and institutional relations. Clearly under this regime, there are no institutional arrangements regulating access, use, management and ownership of the fishery resources (Thé & Nordin, 2006). Perceptions of lodge owners that commercial fishers get 'lion's share' when it comes to accessing and using fishery resources, aggravates the conflict. These perceptions are likely to continue as long as the underlying conflict factors revolving around the subliminal text of exclusivity and including ways in which 'inequitable distribution of benefits of fish resource among user groups' claims are juxtaposed in asymmetrical power relations. As Wong and Dufrene (2001) have observed, there will always be a dominant group and less dominant group in benefit distribution, a situation which can negatively affect sustainable utilisation of fish resources.

Notwithstanding these perceptions, no scientific evidence exists to show that there is over-fishing of the main fish stocks of the Okavango Delta (Mosepele & Kolding, 2002). Furthermore, Mosepele and Kolding (2002) indicated that the present effort in the fishery can be at least doubled before the main species of the Okavango commercial fishery (*Orichromis andersoni* and *Tilapia rendelli*) may be subjected to biological over-exploitation. Fishers also argued that it would be foolhardy to destroy the cornerstone of their life and cultural affinity which has, hitherto enabled them to develop sustainable practices of fishing based on their extensive ecological knowledge of fish biology, habitats, feeding, breeding, migratory patterns and distribution in the Delta. Such practices include, inter alia, fishing only when need arises, fishing during particular times of the year, and multi-gear technologies targeting different fish species (tilapia species targeted by commercial fishers, tiger fish targeted by gillnet subsistence fishers and many small- sized fish species targeted by basket fishers). Mosepele et al. (2007) found that fishers in the Okavango Delta used traditional knowledge of the biology and migration patterns of fish to manage their fishing. Thus, while perceptions of over-fishing (which apparently have led to

the tension between commercial and recreational fishers) exist, over-fishing is not a problem in the Okavango Delta.

Claims that one party (lodge owners) denies another (commercial fishers) access to the fishery resources in certain areas shows that there is also an element of power play between these two groups. Incidences of destruction of set fishing nets by one party are a clear example of power play. Even though lodge owners do not have the legal right to exclude commercial fishers from fishing in certain sites, they do so because they have 'self-assigned' control over certain lagoons. Fishers generally regard tour operators as having the economic power which they abuse everywhere. The nature of this conflict is in some respects, similar to that studied by Majanen (2007) in some parts of the Philippines, where tourism resort managers prevent fishers to fish in front of their property even though the tourism resort managers did not have the legal right to exclude the fishers from fishing.

5.3 Managing the Conflict

Differences in interests and views about fishing methods, boundaries and power underlie current fish conflict in the Okavango Panhandle. These can be attributed to a number of factors including commercialisation of fishery and pre-colonial and post independence Botswana development changes in traditional common property resources management. As regard development changes, it is common knowledge that common property resource management has a long history in Botswana (Taylor, 2007) and new developments found these systems already in operation. For example, lodges were established long after communities had been practicing common property management of the fisheries in the Delta, and their establishment and operation did not take cognizance of this form of management. This resulted in conflicts in the fishery. The replacement of traditional management systems by top-down management systems has also contributed to natural resource conflicts. For example, in 1968 the Government stripped off the powers of chiefs relating to land management and other related natural resources and entrusted these powers with the Land Board (Arntzen, 2006). Traditional management of resources was essentially common property resource management and not open access.

6. Conclusion and Policy Implications

This study has found that there is conflict over the fisheries in the Okavango Delta, particularly between commercial fishers and tour operators. The main factor underlying the conflict is open access property regime. Given this situation, it is likely that this conflict will increase in the future. There is need for intervention in order to reduce the conflict and risks of overcapitalization in the future. Therefore, it is necessary to develop a strategy for conflict resolution and a set of appropriate property rights in order to establish cooperation among fish stakeholders and ensure sustainable management of the fishery in the Okavango Delta.

6.1 Conflict Resolution

Based on the nature of the conflict as found in this study, the following options may offer solutions to the existing conflict. Firstly, the disputing parties should engage a third party in resolving their differences. A third party should be an outsider who is also neutral. According to the alternative dispute resolution (ADR) model, the first strategy in resolving a conflict entails a combination of three approaches; conciliation, negotiation and mediation (Buckles & Rusnak, 1999). Conciliation involves a neutral party communicating separately with the disputing parties to reduce the tension; negotiation involves bringing concerned parties face-to-face, or in a dialogue in order that they reach a mutually acceptable resolution to the conflict. Accordingly, a consensus building must be reached between the parties and concerned parties may have to reach a compromise by trading off some of their opportunities (Warner, 2000). Mediation involves a neutral third party helping the concerned parties to jointly reach an agreement in a negotiation process without influencing them to a particular direction (Buckles & Rusnak, 1999).

Conflict resolution institutions at different levels should be established. An example of an institution at the first level of organisation is the Okavango Fishers Management Committee (OFMC) which is a co-management structure whose membership include, Okavango Fishermen Association (OFA), Land Board, Department of Water Affairs, Okavango Research Institute, Fisheries Division, Private Sector representative, Police and the Department of Tourism. If given statutory powers, the OFMC or OFA can play a major role in conflict management and resolution including broader development intervention recognizable legislatively. These community level institutions could receive Panhandle specific rather than Delta wide cases of conflict regularly, examine them and provide solutions. Where the concerned parties failed to reach a compromise, the case could be referred to the second level institution (the Department of Wildlife and National Parks).

6.2 Property Rights

It is necessary for all individuals, groups or the communities with interest in benefiting from the Delta fishery to institute a common property regime in fishery management. Under this arrangement all stakeholders in fishing, including subsistence fishers, commercial fishers and tour operators would be expected to follow the set rules for improved management of fisheries. Such rules and practices could include, for instance, setting aside lagoons and other sensitive areas or sections of the river as protected areas where only non-exploitative hook and line fishers would be allowed to enhance the sustainability of the fish resource. According to Ahmed (2006), centralized fishery management or top-down management which drew largely from biological models of maximum sustainable yield of selected fish species, have not yielded any positive results in most situations because as the regulations are imposed on resource users, they also find ways of evading them. Community based fishery is a decentralized fishery management in which a community is allowed exclusive rights of use and strategic interaction between well defined users rather than subtractible use so that they can clearly see the benefits of managing fishery resources (Baskaran & Anderson, 2005; Adger & Luttrell, 2000). According to Pomeroy (1995), when communities of fishers are left to their own devices, and under certain conditions, they can regulate access and enforce rules through community institutions. Successful implementation of such a program will depend on development of legal, administrative and institutional arrangements for defining the legal status rights and authorities. Under this system there is an incentive for individuals to adopt strategic behavior and to circumvent any deviant behavior such as private gain (Baskaran & Anderson, 2005).

One example from which all fishing stakeholders can learn is the case study of common property resource management in the Buritizeiro rapids of the Sãn Francisco River in Brazil (Thé & Nordin, 2006). The Government of Brazil believed that fishing in the rapids had the potential of causing over-exploitation of the fisheries and as a result established a new fishing order in 1972 where access to fishing was more restrictive (Thé & Nordin, 2006). In response, fishers organized themselves into groups associated with each of the fishing sites that have access to and use rights for specific entry day and night hours. The entry hours in each site (respected by all fishers) were also the periods in which fish passed in the water fall as established by their indigenous knowledge (Thé & Nordin, 2006). In this way common property management proved to an effective model for resource management. In Ghana, Bennett et al. (2001) found in 62 surveyed villages that strong and informal institutional framework manages access to the fishery effectively. The authors found that while beaches are used on open access basis, custom dictates that no person shall fish off a beach unless they have obtained permission from the village chief.

In Uganda, community based organizations for fisheries co-management, working in partnership with government, recognize and reflect diversity of interests, power and influence between and within stakeholder groups in communities, and empower the marginalized to claim rights through existing and new structures (Nunan, 2006). The legally empowered Beach Management Units under the Fish Regulation empower communities to manage fish resources (Nunan, 2006). Empowerment therefore involves inclusion of multiple interests affected by rules over fish resource in institutions making rules (Agrawal & Gibson cited by Nunan, 2006). In the context of Botswana this would imply resuscitating the Okavango Fishers Association (OFA), and energizing and empowering the nascent in Okavango Fisheries Management Committee (OFMC).

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Note

Note 1. IUS$= BWP6.60