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Governance in a beach seine fishery: a case study from Lake Victoria, Tanzania

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Abstract

Beach seine gear is one of the prominent fishing gears in Nile Perch fishery. Before Nile Perch was introduced to the lake, beach seines the species targeted with beach seine were *Tilapia*, *Bagrus*, *Haplochromis*, *Protopterus* and *Labeo*. In 1994, beach seines were banned in Tanzania and by 2004, this particular regulation and others, were harmonized and applied to the entire Lake as a result of implementation of Regional Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing on Lake Victoria. The paper describes research findings on how the Nile Perch (NP) beach seine fishery is organized in Lake Victoria, Tanzania. The paper is guided by the following research questions: How is the Fisheries Department in Tanzania trying to govern the fisheries of Lake Victoria? How the beach seine fishery is governed in reality? What are the drivers for its continuity despite the ban? What are the counter-tendencies at local level and how and why do they emerge? We argue that it is the markets and associated graft – that drives coordination between the beach seine fishery; and the networks that depend on individuals' network motivations – to get money, that together shape the fishery's management and governance.

Keywords: Fisheries governance, Beach seine, Markets, Beach Management Units, Graft

Introduction

Lake Victoria (LV) is shared by Kenya (6 %), Uganda (43 %) and Tanzania (51 %) and is the second largest freshwater lake in the world. Prior to 1954, the lake exhibited impressive species diversity, and the fishery was based on two endemic species of *Tilapia*, and over 500 species of *Haplochromis* (Seehausen 1996). *Haplochromis*, indeed, made up 80 % of the fish biomass in the lake (Kudhongania and Cordone 1974; Okaronon et al. 1985) In 1954, a formidable predator, the Nile Perch, was introduced to the lake, yielding impressive changes to the lake's ecology (Goldschmidt 1996) as well as fishing investments. The ready availability of NP, combined with eager overseas and (later) regional markets capitalised the fishery significantly, setting in motion a radical transformation. There are, of course, many ways in which NP can be caught, but the beach seine is a particularly effective method.

A beach seine is a fishing net hauled from the shore. Its use on the lake has been recorded since 1954. In Tanzania, it is known as a '*kokolo*' (pl. '*makokolo*'). The gear is composed of a cod-end and long wings to which hauling ropes are attached. A floated

head rope floats on the surface, while a footrope is in permanent contact with the lakebed, creating a barrier that prevents fish from escaping from the area enclosed by the net. A large number of people are required to haul the seine from the shore. In some cases, a wooden capstan is fixed to the beach to assist with the haul (FAO 2011). The beach seine is an efficient and effective piece of fishing gear. As it is dragged across the lakebed, it scours the latter, scooping up pretty much everything in its path. Beach seines do not provide fish with a 'sporting chance' at freedom, and the gear is widely reviled amongst those who practice fisheries conservation. It is little surprise that that the gear has been banned for almost as long as there has been fishing regulations on LV.

High demand for NP supplies has, we argue, contributed to the proliferation of NP beach seines; the fish's value makes the risk of using this (illegal) gear one worth taking; and redefines the social relations of production and local practices that characterise the fishery and its communities. A number of scholars have provided insights in relation to this argument. Mbenga (1996) shows how fish markets in the Gambia developed within set patterns of relations and influenced the fishing practices, buying and selling, as well as the organization of the fishery. Nayak (2000: 34) considers how shrimp fisheries in India have been organized in a context made vulnerable by international market pressures, undermining effective regulation of access to the fishery whose boom, ultimately, lasted for less than a decade. Likewise, on Lake Chiuta, seine owners were reported to proliferate as a result of the growing demand for fish (Njaya 2002). In this paper we provide some highlights of fisheries regulation and administrative ambiguity in Tanzania's LV fishery. We focus on the establishment of 'Beach Management Units' (BMU) as instruments intended to introduce regulation at community level. We then link with historical perspectives of capitalization of cash economy in Lake Victoria basin, the introduction of NP and the growth of fish markets. Finally, we unveil what happens in practice, drawing on recent research findings, as well as earlier surveys carried out in the late 1990s with which some of us were involved.

Methods

The research discussed in this paper is based on fieldwork conducted between 2009-2011 in Sengerema, Ilemela, Magu and Ukerewe Districts along Tanzania's LV shores. Transcripts for narratives, Focus Group Discussions (FGDs) and in-depth interviews were reviewed repeatedly and interpretations of data were verified. Some interviews were preceded by written consent. Context and content analysis was performed through explicit, systematic and reproducible methods, with the aid of NVIOV 2.0 software. Participant observations, repeated contacts and extended length of stay in fishing communities helped to verify findings and to build trust between the researcher and the respondents. The study is supplemented by published and unpublished quantitative data.

Fisheries regulations: administrative and managerial ambiguity

Governance is a contested term and revolves around making decisions about allocating, managing and using resources efficiently, effectively and equitably. It is also the exercise of power by the full spectrum of state, civil society and private sector actors, through formal and informal channels, in domestic and international arenas (Ratner 2003). If we use this definition, then governance processes display regulatory power diffused

across many sectors with equally many interests. It is a persistent characteristic of LV's fisheries that the state attempts to monopolise governance of the fishery (cf. Geheb et al. 2002; Geheb and Crean 2003). Broadly speaking, such regulation has a contradictory mandate: on the one hand, to conserve the fishery for the sake of its sustainability; and on the other hand, to ensure adequate fish supply, especially for the export markets. This regulatory framework is established in law and policy.

The fisheries of Tanzania fall under the Fisheries Act of 1970, which provides the context in which lines of authority are defined. The specific regulations of the Act are to be found in the Fisheries Principal Regulations 1989 (URT 1989). In recent years, new amendments have been made (URT 2009) which stipulate various fishing gear prohibitions, closed seasons, licensing and registration rules, and also touch upon fish trade and transport regulation. In March 1994 commercial trawling, beach seines and small gillnets of less than five inches (127 mm) were banned in Tanzania's LV fishery (Medard 1998; Wilson et al. 1999). While trawling was successfully stopped, many other illegal gear types and techniques continued to be used on the lake, including beach seines.

The Tanzanian Fisheries Department (TFD) falls under the Ministry of Agriculture Livestock and Fisheries Development (MALFD). Organised below it are Regional Fisheries Offices – the relevant ones around LV being Mwanza, Mara and Kagera. Fisheries regulation activities at district or divisional levels, however, fall under the Ministry of Regional Administration and Local Government (MRALG). The Fisheries Department headquarters in Dar es Salaam interfaces with district level fisheries management through regional Monitoring Control and Surveillance (MCS) bodies, that function as an administrative bridge between the TFD and District Fisheries offices. The role of MCS in Tanzania is not entirely clear, but does include attempts to coordinate fisheries' activities mainly through enforcement, improvement of landing sites (by, for example, imposing hygiene standards) and ensuring that a technical dialogue between all the various branches of the administration is maintained (URT 2003).

Discussion surrounding fisheries management in Tanzania in the 1990s was much influenced by broader global discussions that called for greater community involvement in natural resources management. The Food and Agriculture Organization (influential in the TFD) was proposing co-managerial styles of fisheries management, and the Tanzanian Forestry Department articulated an unusual brand of co-management in which forest dwellers were formalised into forestry regulation institutions charged with implementing Tanzanian *state* forestry regulations (cf. Wily 1999). In this way, forest governance in the country could be claimed to be an example of community-based natural resources management (CBNRM) but without any loss of regulatory power and control by the state.

Tanzanian fisheries policy – such as the Tanzania's National Fisheries Sector Policy and Strategy Statement (URT/MNRT 1997) from the time indicated a desire to move in the direction of greater community involvement in fisheries, but again, without devolving power from the state to the citizenry. In 1998, a report entitled 'Co-management in the Mwanza Gulf' (Hoza and Mahatane 1998 (Unpublished)), argued that because weaknesses existed in the enforcement of present regulations, better enforcement might be obtained from including fishing communities in this process. One vehicle for achieving this was co-management which, the report argued, "... has been found to increase the effectiveness of

management by increasing the legitimacy of fishing regulations in the eyes of the fishing communities” (pp. 7-8). Under this interpretation of co-management, the report ‘guarantees’ wise use of resources, ‘guarantees’ long-term income earnings and ‘guarantees’ the rapid recovery of fish species otherwise in danger of extinction (p. 8). The power transfer from state to community, however, is nowhere guaranteed (URT 2003) and portrayals of successful, community-based, co-management of other forms of natural resources management insist on this transfer as a central part of managerial success (Jentoft 1989; Jentoft and MacCay 1995; Pomeroy and Berkes 1997). In this way, the BMUs have in effect become what Blake Ratner (2006) has called ‘community management by decree’.

In 1997, the Tanzanian fisheries authorities set about establishing so-called ‘Beach Management Units’ (BMUs), first at 93 fish landing sites, and subsequently at all of Tanzania’s LV fish landings (Medard et al. 2002; Kolding et al. 2014). This move coincided with the establishment of seven new NP Export Processing Factories (EPFs) in Mwanza and Mara and, therefore, fish quality and landing site improvements (relating mainly to handling and hygiene) were being emphasised, so that the country could take advantage of the emerging markets in the EU, Japan and elsewhere.

12 years later, perhaps with the benefit of hindsight, the authorities attempted to render BMUs more certain by offering a number of definitions and clarifications. BMUs, they explained, were “an organization of fisher folk for the management of Lake Victoria at the beach within a fishing community, which shall have jurisdiction over an area of land [that] shall be agreed upon by the fisher community, community-based organizations, village councils, Local Government Authorities (LGAs), and the Tanzania Fisheries Department and it may include more than one fish landing site” (URT 2009; LVFO/IFMP 2010).

BMUs are charged with enforcing the Fisheries Act (URT 2003), its various supplements and the its principle regulations. They are expected to generate lists of licensed and unlicensed fishers, boats and fishing gear, while illegal gears are supposed to be surrendered to the relevant authorities. Members of the BMUs must be residents on a beach or at a landing site, should be ‘ardent conservators of fishery resources’, be honest and truthful, and may be members of a vigilante group (*sungusungu*). As for funding, BMUs are expected to raise the funds they require by themselves. Opportunities for this arises through the by-laws they are permitted to create, and generally comprise fees of various kinds, and fines levied.

The BMUs are incorporated into Village Government and are a sub-committee under the Village Security Committee. They are supposed to implement fisheries management plans within their jurisdiction which incorporate ‘community surveillance programmes on which everyone agrees’ (URT/LVEMP 2005; URT/MACEMP/WWF/NEMC 2008). How the BMUs are expected to relate to the TFD is unclear, but as we shall show below, the TFD is often perceived by the BMUs as a threat to their interests. Importantly, the interests of the BMUs and the TFD do not necessarily converge on the management of the fishery.

A short history of the capitalisation of Lake Victoria’s fisheries

Tanzania’s first colonial masters were the Germans, who established it as a colony in 1891. The colony’s economy was dominated by plantation agriculture, for which a labour

force was required. Like the British in neighbouring Kenya, the Germans employed three key strategies to ensure that they did by creating a cash-based economy:

- (a) The introduction of hut and poll taxes, intended to raise funds for the colonial administration, but also to force the indigenous population into the cash economy. As cash became the main medium of exchange, these taxes played an important role in inducing the spread of cash usage.
- (b) As part of their administrative arrangements, and also as a reward for allegiances, the Germans appointed chiefs from the local ethnic communities. Besides being given a title, chiefs were also allowed - and encouraged - to establish market places from which they could exact dues. While these were initially centres for the barter of foodstuffs, they later became centres for cash exchange, particularly as imported consumer items appeared (Ogotu 1979).
- (c) In 1914, the railway line from the coast reached Kigoma; the branch line to Mwanza was completed in 1928. In both cases, these termini allowed the Germans to connect shipping to the railway infrastructure, and to extend their reach into Central Africa. Along the railway route, trading centres were established. The items they offered for sale attracted considerable attention from the inhabitants of these areas, particularly goods such as iron hoes of superior design to local varieties, as well as fishing nets and other consumer items. Christian missions both preceded and followed the arrival of the Germans, and as their influence spread throughout the region, they demanded that their congregations be properly clothed. Traders were able to offer clothes for the faithful to buy, and because these traders only accepted cash in exchange for goods, they, along with the missions, played an important role in the establishment of the cash-based economy.

Cash was divisible and versatile; it freed Tanzanians from the strictures of a barter economy; and it allowed denizens to accumulate. For many, cash allowed them to achieve much sought-after status more rapidly than a barter economy ever could. "...[T]he new [fish] market gave people greater opportunities for wealth. With money, we could buy more livestock and land, and the more cattle and land we had, the more say we had in the community...money made the drive for more power easier." (Kenyan respondent quoted in Geheb 1997 (Unpublished D. Phil Thesis)).

But cash problematized Tanzania's LV fisheries. "The absence of a cash market", Scudder and Conelly remark, "tend[s] to dampen any advantage this might give to particular individuals and also inhibit[s] the accumulation of capital" (1985: 18).

"Under this fundamentally new economic order goods are bought and sold, not shared; the fisher finds himself competing for money, and therefore for fish. In order to compete effectively he must buy better equipment and fish harder. This process is self-reinforcing. The need to spend more money to get more efficient gear to harvest more intensely increases as the number of fish decrease. As equipment becomes more sophisticated, the price ultimately rises above the means of the average fisherman" (Johannes 1978: 356).

In 1954, a Uganda Fisheries Scout carrying a bucket of juvenile Nile perch (NP), walked to the end of the pier at Port Bell (in Uganda), and poured its contents into the lake. The fish did not appear in recorded catches until 1977 – first in Ugandan waters,

then in Kenyan and, finally, in Tanzanian waters in 1978. NP is a splendid fish. Its soft, white, flesh is extremely popular amongst consumers, not least in the west. The first Export Processing Factories (EPFs) appeared in Kenya in the late 1980s and then Tanzania and Uganda in the early 1990s. Many of the latter factories were Kenyan investments and both supply and production was heavily integrated amongst the EPFs (Abila 2003: 8). The first processing factory in Tanzania was built in Mwanza in 1992. Nevertheless, demand tended to be highest amongst the Kenya-based factories (where competition between them was fiercest), and smuggling of fish from Uganda and Tanzania into Kenya was common (Medard 2003; 2015).

In 2004, there were 35 EPFs in East Africa. With so many plants competing against each other, the demand for supplies was intense, and structural over-capacity a significant problem in the industry (factories were running at between 30 – 50 % of capacity). Many closed as a result, and by 2012 there were 19 operational EPFs (Mkumbo 2012), nine of which were licensed to export to the EU. With an average production capacity of 50 tonnes of raw fish per day each, the total value of Tanzanian NP exports in 2008 was US\$ 174 million (Bergman and Vieweg 2012). Over 90 % of the fish export from Tanzania is NP from Lake Victoria (UNIDO 2009). In 2013, 47.5 % of NP imported into the EU originated in Tanzania (12,400 tonnes) (Globefish 2014).

But NP is not destined only for export. An immense trade – that competes with the EPFs for supplies – has grown to serve Tanzanian local markets, those distant from the lake, and other regional markets in neighbouring countries. A number of Domestic Cold Storage Facilities (DCSFs) have developed in response. 16 DCSFs are concentrated in Mwanza, and have a total storage capacity of 140 tonnes. Most of their owners are local fish traders, *matajiri* (individuals with command over labour, large fishing camps and/or landing sites, fishing fleets, cargo boats and trucks for transporting fish), former agents of EPFs and other businessmen (Medard et al 2015:184).

These significant capital investments in the fishery were reflected in changes to fishing effort. In 2000, there were an estimated 15,434 fishing craft in the Tanzanian part of LV, growing to 28,470 in 2012. Numbers of fishers also increased from 55,985 in 2000 to 101,250 in 2012. The numbers of outboard motors have gone up from 1451 in 2000 to 8900 in 2012, while paddled craft grew from 11,823 in 2000 to 17,071 in 2012. The number of gillnets targeting NP grew from 226,169 in 2000 to 352,117 in 2012, while the number of small seine nets rose from 1996 in 2000 to 14,178 in 2012. The number of long-line hooks targeting NP grew by almost 18 times, from 356,196 in 2000 to 6,359,887 in 2012. The number of NP beach seines have, however, remained fairly stable from 1996 in 2000 to 2079 in 2012 (URT/MALFD 2012) (perhaps, as will be seen below, because of deliberate under-reporting).

Fish markets – a key driver in shaping governance practices

Fish markets on LV are socially constructed and negotiated spaces. While they are physical places for trade, they are also a place for social gathering and for building up relationships. Networks, in this environment, are an important source of capital, and are coordinated by the mediums of exchange.

NP buyers gave many reasons why they prefer to buy their fish from the beach seines despite their prohibition: they offer 'live fish' (i.e. fish that are still flapping about) and

prices are relatively lower compared to fish caught with other gear, because of lower operational costs and cheap labour. Beach seines can be set and hauled frequently during the course of a day. They are often set at night and in isolated places so that they are harder to detect by BMU staff and other authorities. Women and other traders waiting for fish move from seine to seine, helping to haul them and, when the catch is in, negotiating prices (Medard 2012).

Strong networks of NP buyers have evolved in order to secure fish and market access. NP industrial processors, their agents and fish collectors, bicycle traders, camp owners and local traders, all seek to secure their fish supplies from the beach seines through the provision of financial and material support. In other words, the market for beach seined NP are also credit markets. Similar credit markets have been observed in Kenya, Zanzibar (Crona et al 2010) and Malawi (Njaya 2002), in which, because of the demand for fish, and the desire to monopolise suppliers, fishers have easy access to destructive and illegal gear.

Many of the most prominent NP buyers target the export market, and have their own agents and sub-agents (Medard 2015) operating on their behalf at local levels. These agents are provided with 'fixed price margins' and refundable capital, with which to buy fish and to secure some degree of supply guarantee. Cross-border traders, domestic and local traders from different parts of Tanzania (Medard et al. 2015; Medard 2015) have followed similar strategies. These traders are not necessarily fussy about the fish that they buy (i.e. it does not necessarily have to be 'live'). Large quantities of NP observed in local markets were either juveniles or rejected by exporters due to poor quality. Medard et al. (2015) observed fresh NP (particularly from beach seines) kept and sold on the ground or on filthy tables. Consumers, in turn, buy what is affordable and available with little regard to quality (Medard et al 2015).

Because beach seiners source financing for their nets from fish buyers and credit suppliers, the latter therefore bear some of the risks and the costs associated with gear confiscation, and will cough up the cash to bribe the net back; or front the cash to buy a new one (Medard 2012). Beach seines are not small investments. Medard (2015:87) found three main categories of beach seines. Large nets are between 1200 -1500 m long and cost between TShs 1,500,000 - 3,000,000 (US\$ 1000 -2000); medium size nets are between 900 - 1200 m long and cost between TShs 800,000 - 1,200,000 (US\$ 533 - 800); while small sized nets between 600 - 800 m long, and cost between TShs 450,000 - 600,000 (US\$ 300 -400). Since beach seines are illegal, fish buyers offer to assume some, if not all, of the risk (of, say, gear confiscation), so as to secure fish supply. In some cases, fish buyers may join forces to raise the cash needed to buy a new seine (Medard 2012:563).

"There are many beach seines in this area because patrols and confiscations are rare. Our nine beach seines are protected by officials, as are the 20 we have at Ijinga Island... For the officials, beach seines are their projects, from which they earn income. They are very concerned about their projects, and we must keep them informed about everything. If not, they'll just organise for another BMU election and we will be removed. They get worried about surprise patrols by the regional office, or if their seniors visit us without their knowledge. At such times, their project income ceases for a while. When you came yesterday, after a few minutes I got a call from

our fisheries extension officer who asked what you wanted. When I mentioned research, he asked me how long you would be around. He ordered me to tell the seiners to move to a hidden fishing ground while you're here. They have many informers, including the seine owners and fish traders" (BMU leader, Shinembo Village, 14/6/2010).

When patrols are known to be about, beach seiners often resort to fishing at night, off secluded beaches, or else they move to areas where there are no known patrols. In a worst case scenario, the seines are removed from the water and hidden in tree canopies, in the bush, in homes, shallow lake waters, roofs and sometimes buried. On the islands, however, more freedom was noted, and seines were pulled day and night.

The creation of the BMUs has created tremendous discretionary opportunities for gathering bribes, while devolution has focussed these opportunities in the hands of local administrators, bureaucrats and law enforcement. Fishers and BMUs are caught between a rock and a hard place. They have to act accordingly to survive. The fishery's networks demonstrate how perceived risks are dealt with through these networks that serve to protect fishers' investments and BMU positions on the one hand, but do nothing to protect the fishery on the other.

The art of obfuscating regulations

Tanzanian LV fishing communities know that beach seining is illegal. When asked why they thought the gear persisted, the largest proportion of respondents attributed this to corruption (16 % of 216 responses). Other common responses were the availability of financial and material support from market channels to buy and maintain this gear (13 %), lower labour and other operational costs compared to other gear (11.5 %), a lower risk of theft (11 %), the fact that communities conspire to hide or keep secret the use of the gear (10 %), the fact that beach seines catch a wide diversity of fish sizes, meaning that owners can take advantage of multiple markets (9 %), and poverty (9 %).

Corruption, writes Paul Robbins (2000:424), "...is quite often the predominant organized system governing the use of nature". It is often defined as the abuse of public office for private gain, and bribery may be understood as an insurance policy taken out to avoid paying penalties for illegal activities. The size of a bribe is said to be equal to the cost of the penalty multiplied by the probability of being caught and punished (Cohen 1999, cited in Smith et al. (2003). This is, in part, true, but the concept is broader than this. Corruption is the cost of political negotiation, between one more powerful than the other, whether this is a government official and a small-scale farmer, two families debating bride price, or a woman who skilfully obtains cash from her husband in return for sex (Geheb and Mapedza 2008). As Olivier de Sardan (1999:35) comments, "[t]here is a continuum rather than a gulf between bribing someone and thanking someone for services rendered". In any case, "...the price of open conflicts is too high. It is unthinkable to denounce to the police a relative, a neighbour, the relative of a friend, that is, someone with whom one has a personal tie, even a weak one: social disapproval would be too heavy" (Olivier de Sardan 1999:30). Bribery and corruption, therefore, are much more than an economic, rent-seeking exercise. The markets for corruption are often deeply socialised, and contingent on political (power) networks that serve to obfuscate regulations and the boundaries between authority and society.

What must be remembered, however, is that money is but one ingredient amongst many others in the successful negotiation of resource access. Bribes, like power, are relational – it depends on the relationship between the bribe taker and the bribe giver and the entitlements that they respectively command (Geheb and Mapedza 2008).

BMU leaders find themselves in a Gordian knot. Charged as they are with spearheading Tanzania's regulation of its LV fisheries, the pressure from above is immense. So too is the pressure to send income derived from fines, fees and other means up the hierarchy. In the meantime, they wrestle with the conceptual and institutional ambiguities of the country's fisheries policy and legislation: they must both regulate the exploitation of the LV's fisheries, while also assuring fish supplies; they must both report to the TFD, as well as local government. If only to confuse things further, BMU staff are drawn from the very communities that they are expected to police. Amongst community members are many who can claim greater powers than the BMU. For example, *matajiri* and owners of fish collection boats and trucks, labour and fishing grounds, and who are well networked with beyond the landing site.

Creating the bylaws needed to raise funding for their activities has been difficult for the BMUs. At Ntama, the BMU worked hard to formulate bylaws and associated fines and fees to raise the cash needed to improve hygiene at the landing site, and to implement other activities prescribed by the TFD. Efforts to collect 'fish landing fees' for NP fish cargo destined for the export market failed because of weight underestimation and cheating by EPF agents.

“When the BMU was created, we identified a number of village bylaws which would allow us to impose a variety of fees and fines. We were very enthusiastic. We did that knowing that the money could fund fisheries management, and to incentivise ourselves. Rather than charge fees by fish weight, we decided to focus on loads. Weighing fish was too difficult – we were being cheated all the time. So, we'd charge a fee of TShs. 3000- for a load of Nile Perch going to the factories; we charged bicycle traders TShs. 500- per basket, and 100- per sack of Dagaa [a small sardinella caught in immense quantities].

The factory agents and their local fish collectors have made us [the BMU] redundant because we can't inspect what they have. You can be told it's 1.5 tonnes when it is 3 or 4 tonnes and we have neither the power nor the methods to follow up. NP are stored in cargo boats floating off shore. But we don't own a boat, so we can't inspect the size, quality and tonnage of fish already packed into iced storage containers out there on the water. The majority of us have no investments or specific jobs on this island. We feel like comen, dealing with fishers and actors who are wrongdoers while nothing positive happens to our community. The cash we get we have to share among ourselves and we also have to host district officials and other visitors [which also costs money]” (Ntama, Kome Island 12/11/2009).

“The BMUs are like chameleons. When fisheries officials are present, they become serious, but in their absence they're just part of the illegal process. They don't dare to confiscate beach seines because they have no strength to do so. They live here and are helped by people from this community in so many ways. It is hard for them to offend someone with whom they have relationship or friendship. Our fisheries officer almost

died. Once, the beach seiners almost cut his arm off. On another occasion, he was very ill - his legs swelled, and he could not walk for almost a year. We know why he suffered. He was hexed. To survive, he was forced to befriend a powerful fisher who obtained counter-spells from within his networks. When BMUs and officials hear such stories, they get worried and don't want to be too harsh. Nowadays, everybody is searching for money. BMUs work as go-betweens: they collect cash from us and they share this with their seniors. Money is asked for openly regardless of gear used. BMUs are close-knit. They can't work on their own because they have no power. They are protected from the top, otherwise they would be excluded" (Mabula Machenulo, Makobe Island 18/8/2010).

In one Focus Group Discussion (FGD), BMU representatives revealed that beach seine owners paid income taxes to the District Authorities, which, to them, legitimised their activities.

"We have private tax collectors in this district and all our landing sites have been changed to markets. These are individuals who have won district tenders to collect levies and taxes on behalf of the District Treasurer. These collectors submit about TShs 500 million (\$312,500) per year to the district treasurers from fish and fisheries products alone. More income is also generated from forest products, livestock, farm products, transport and other minor sectors. When the BMUs were formed, we were told to identify sources of funding in our locality to pay for our activities. By October 2006, we had identified 41 fund sources of through taxes, fees and fines. In November 2006, we sent our proposal to the District Council through the district fisheries office for approval. Unexpectedly, everything we wrote was hijacked by the district fisheries office. They submitted it as if it was their proposal, so as to gratify their bosses because if the sector has more funding sources and contributes more cash to the district, the officers tend to be favoured and protected. Now, we're helpless. We don't have a source of funds and we cannot confiscate any of the gear because seiners pay taxes as well as bribes" (BMU leaders, Ntama 18/11/2009).

It is important to note that district tax collectors are in favour of income generation and not regulations (such as the beach seine ban) that would otherwise interfere with taxable income. The Hon. Fred Mukisa, the Ugandan minister in-charge of fisheries commented on this apparent contradiction between fisheries regulations and tax collection: he blamed district authorities for creating a 'free for all' in the fisheries by licensing all actors regardless of their status. *"The problem on Lake Victoria is huge. We have many players licensed to go fishing by local governments. To mitigate this, we are planning to again centralise licensing because local governments are more interested in the revenue not conservation"* (Source: New Vision/IRIN (Integrated Regional Information Network), Kampala: 1/8/2008). Moyo (2012) in her study on the economic implications of China's ascendancy as the leading buyer of the world's resources argues that once governments are guaranteed cash inflow, they do not care about what their domestic constituents want and focus, rather, on collecting revenue. This certainly seems to be the case on LV, where local tax authorities perceive the taxable incomes being generated by the fishery, whether by legal or illegal means and where taxes from other sectors are on the decline – such as agriculture, affected by drought and low yields.

If BMUs are unable to impose fees and fines upon their constituents, it follows that income must come from elsewhere. While the beach seine owners might be feared, they are also a potential income source. In FGDs at Mihama village, respondents said that some police and fisheries officers knew all the beach seine owners. They knew what the pulling schedules were, and had the owners' phone numbers. When it was enquired about the role of BMUs in regulating seines, one remarked that, 'they all belong to the same corrupt networks'. Respondents alleged that the local patrols in Mwanza involved the BMU chairman whose area was constantly full of beach seines. The BMU representative's role in the patrol team was to direct fisheries and police officers to beach seines whose owners had not paid him off, and to direct them away from beach seines whose owners had. If BMU officers knew of impending raids, they would warn those beach seine owners who bribed them regularly, but not those who declined to make payments or who were confrontational. In the latter case, if such beach seine owners wanted to get their nets back, they would have to bribe to have them released.

BMUs, needless to say, are keen to protect these income streams. One way of doing this is to create ambiguities as to the size and scope of the income 'pool':

"We were supposed to have 'zero tolerance' of beach seines, and to have eliminated them by the end of 2009. We are now trying to compile a list of all the beach seine owners, but it's a complex game. When I order my extension officers to provide me with these names and locations, they compile a few names and sometimes they provide the wrong locations. Later, during the patrols, they may claim that the person migrated to another location. I also used BMU leaders and other individuals to verify the list and to obtain more names. Right now, the list comprises 119 beach seine owners in my district, but the list I got from the Ward fisheries officers had only 62 people on it. In addition, other districts claim that they have fewer beach seiners than there really are to show that they work hard to confiscate them. We are cheating ourselves: we'll never get rid of the beach seines" (District Fisheries Officer at Sengerema (now retired), Shang'wabo 28/9/2009).

In one interview, a former beach seiner explained that he had decided to quit because of corruption. The cost of bribes was rising, and the demand for them was more frequent. He also claimed to have been ambushed and to have had his net seized many times. To get it back, he paid between TShs. 50,000-100,000. (US\$33-67) depending on the number of officials in the raid. One fisher claimed to have become an 'extra salary provider' to fisheries staff and police officers.

"You get attuned to the system and sometimes you just give them money without being asked in order to fish; otherwise they will confiscate your net" (Name withheld, Mihama beach 13/6/2011).

At Mihama, fishers praised their BMU leaders for resolving local conflicts among the fishers and creating peace and order unlike those from Kigoto landing site. But they also mentioned the existence of unregistered and unlicensed fishing boats. Some patrol boats that *matajiri* used to protect their fishing fleets against theft and piracy were reportedly unlicensed but they were never seized by officials. Such boats were reported to be 'non-profit fishing units' by boat owners because they did not bring fish to their

camps. Likewise, most boats used by beach seiners, bait fishers and monofilament fishers and pirates were reported to be unlicensed and unregistered. Such boats were continuously protected by officials. Often, district treasurers did not even know the total number of boats in their jurisdiction or whether or not they were registered or licensed. One respondent remarked, *“an annual district boat license costs about TShs 85,000 (\$57). If 300 fishers bribe officials TSh 40,000 (\$27) for each boat to avoid paying the full license fee, then the district loses TShs 12,000,000 (\$8000). Such money goes into individuals’ pockets and fisheries officials always score during the annual licensing exercise (FGDs, Mihama 13/6/2011).*

In so far as regulating Tanzania’s LV fishery is concerned, BMUs are remarkably hampered institutions. The regulations they are supposed to enforce are the dictates of a far away state, and which have little or no applicability within the functioning context of local fishing communities. If BMUs have any loyalty to the fisheries regulations they are expected to enforce, it lies in the rents they can extract by applying these. Seine owners can push back against the BMUs by bringing to bear spells and magic, but more normally simply by paying bribes. At certain times and in certain places, beach seine owners may see the BMUs as a (small) risk to their operations, diminished – if not annulled – by the bribes they regularly pay. In this way, conservation is lost in a money-making spree, and the networks that form around these income-raising efforts become the predominant way in which the fishery is governed.

Conclusion

This paper has argued that there is little relationship between Tanzania’s fisheries regulations and the activities that characterise the LV fishery. Management and governance of this fishery is driven by financial interests. In the absence of devolution of powers and responsibilities to the communities, local level institutions are neither endorsed nor empowered.

Corruption emerges from imbalances in power, and not from the absence of strong law. Corruption has become fundamental to the fabric Tanzanian fisheries management and governance. It represents the penetration of non-state relations of power into the state, as well as the community. At a lower levels, communities and BMUs have been deputized to oversee the actions of corrupt officials by imposing upon them the responsibility of implementing state law. In this way, the law itself has become corrupting. It has created new community-level institutions who employ it in their pursuit of graft. Such community reform efforts are predicated on a traditional conception of corruption and a lack of legitimate state power.

It is the markets and livelihood needs that coordinate activities at the local level and, in turn, they shape the organization of fishing (incl. which gear to use) and govern the resource use. This is driven by actors’ interests to meet their livelihood and income needs (money) through markets (local and global) and not necessarily fisheries management objectives. The point to understand here is that the markets represent a staggering power that shapes governance system at national, intermediate and local scale, and transforms the way in which resources are exploited and managed. These markets are both internal (local) and external to LV. The local and global markets are interconnected to form one reality: ‘complex fisheries governance’ because the ability of the state to discipline people is weak and the power of market agencies is stronger. If

conservation objectives are to be addressed in the management of this fishery, the TFD must now consider market based instruments to shape the fishery's governance and management.

The beach seine is likely to remain a permanent characteristic of the fishery because of the opposing forces (counter-tendencies) between compliance and non-compliance are built into the social systems and networks of this fishery. These problems have led to related difficulties in implementing fisheries laws and regulations, state-community dichotomies, lack of trust between local communities and government, an underestimation of the abilities of fishing communities and, finally, government failure to govern the users of this resource base.

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Authors' contributions

MM is the corresponding author and she conducted all of the research as part of the PhD studies and drafted the manuscript. She has made a substantial contribution to the design of the research, data collection, analysis and interpretation. All other authors have contributed in terms of literature suggestions, read the various drafts, performed minor edits and approved the final manuscript.

Competing interests

"The authors declare that they have no competing interests". Data and information presented in this article are not influenced by personal or financial relationship.

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