

Ownership and co-management: towards the integrated management of Lake Victoria¹

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Abstract: The management of Lake Victoria is a high priority to the riparian countries that benefit directly from its resources. Management regulations have been formulated and implemented with the aim of maintaining the lake's ecological quality as well as sustaining fisheries exploitation for economic gain. Results indicate, however, that the regulations have not been successful in maintaining the state of the lake's ecosystem nor the fisheries. There has been a continuing decline in fish catches as well as declining biodiversity. Currently, the riparian countries are considering the introduction of a co-management regime as an alternative managerial strategy to address the lake's problems. In this paper it is argued that the failure of the former management regulations was because ownership of the lake was not clearly defined. It is further argued that even if co-management were to be successfully instituted, it will yield very minimal results if the problem of ownership is not properly addressed. This paper explores the ownership status of the lake based on data collected in Tanzania, and examines the relationship between, and significance of, ownership and co-management. The research makes recommendations for how these concepts can contribute to an integrated management of the lake.

Introduction

The fisheries of Lake Victoria are as timeless and important as the lake itself. The riparian communities have always depended on this fishery for their subsistence activities, employment and generation of food for consumption. The lake, therefore, has been part and parcel of the lives of the riparian communities for millennia. This traditional guardianship of the lake's resources ended in 1947 with creation of the Lake Victoria Fisheries Service, a central authority established to manage the lake and its resources on behalf of the riparian states. This responsibility was later taken over by the national fisheries departments (Witte and van Densen, 1995), and the strategy adopted by these departments was a top-down management regime in which the Fisheries Departments single handedly implemented national fisheries policy. In 1972, however, the Tanzanian state decided that this system was increasingly unable to cope with local level problems, and power was divested from the centre to District Fisheries Officers who were answerable to their District Development Committees. In Tanzania, Districts are grouped together to form regions, of which three border Lake Victoria. Each region has its own Regional Fisheries Officer (RFO) who is answerable to the Director for Fisheries in Dar es Salaam. In this way, horizontal linkages were created within the Tanzanian fisheries management hierarchy.

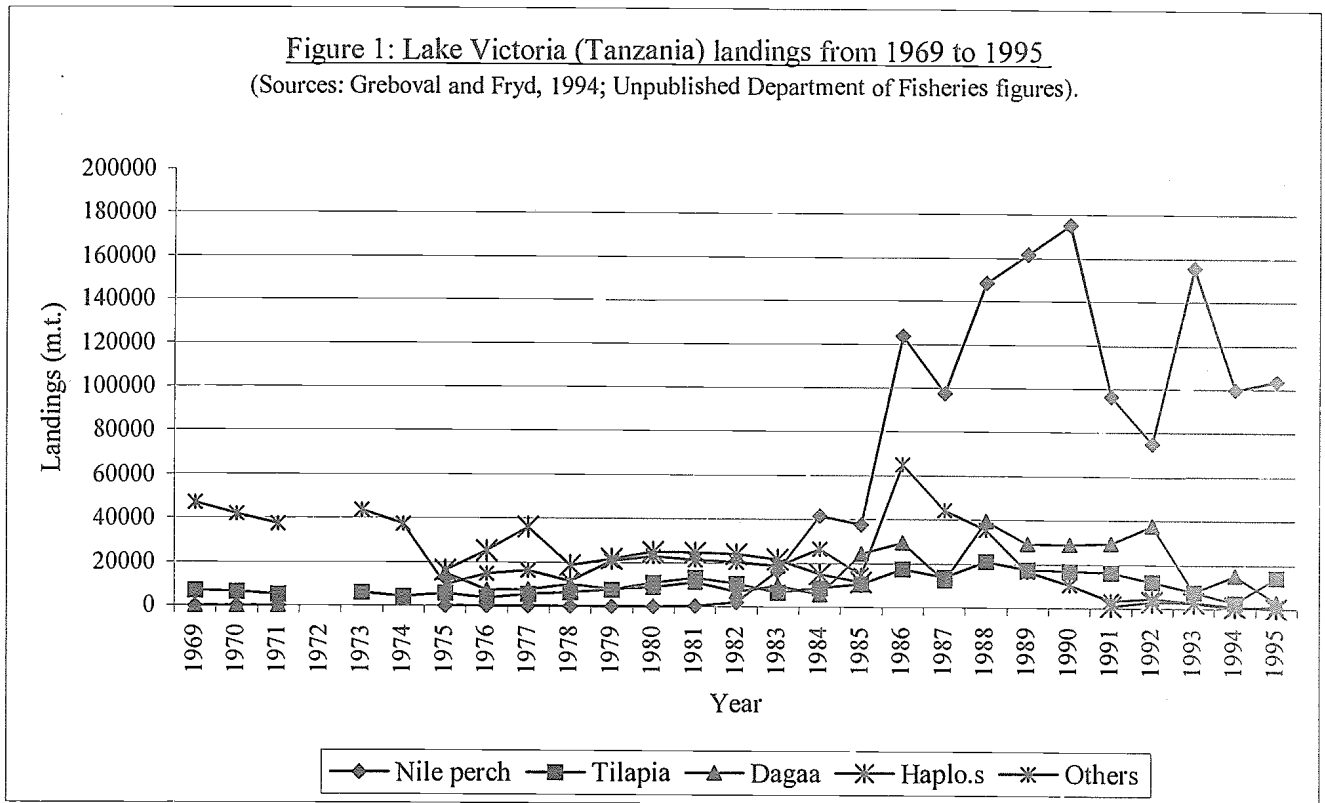
The above strategy did not, however, relocate power to local people but only enabled decisions to be made at much lower (district) levels than previously. In 1997, a further articulation of this strategy occurred with the creation of Beach Management Units (BMUs)². In part, this latter strategy has occurred because of the government's recognition that there are a number of positive benefits associated with community participation in fisheries management. These perceived benefits include recognition of the vital role that the private sector, the community, non-governmental organisations and other non-state actors play in the development, management and sustainable utilisation of the fisheries resource base. Implicitly, the state has also recognised that top-down management regimes are problematic, and hope that the desire to promote the

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² Previously known as Local Enforcement Units (LEUs).

sustainable utilisation of the fisheries resources base for present and future generations may in some measure be met by including fishing communities in the management of the resource. Before mid 1980s catches were steadily, but gently, increasing. In 1986, the Nile perch boom started, which led to a very rapid increase in catches from some 100,000 tonnes in 1985 to over 250,000 tonnes. Since 1994, however, catches have started to decline.



In Tanzania, participatory management has promised to improve the legitimacy of regulations (Hoza and Mahatane, 1998; Jentoft, 1989), and has reoriented the thinking of fisheries managers towards the inclusion of fishing communities in the fisheries management hierarchy. This desire has given birth to over 500 BMUs formed along the entire Tanzanian coastline. In most cases, the creation of each BMU followed a one-day consultative meeting at each beach between the Fisheries Division and the local communities.

The BMUs are, however, an extension of the Fisheries Division and are not a community management regime. They have been formed without community consent nor opinion, but on government instructions. This view that the BMUs have been imposed upon fishing communities from without is one held by fishing communities, particularly members of the BMUs themselves (cf. SEDAWOG, 2000a). Thus, while horizontal changes occurred to the overall structure of the Fisheries Department occurred (intragovernmentally) in 1972, the formation of BMUs served to extend the vertical hierarchy of the Fisheries Department to the lake shore. The regulations the BMUs are expected to implement and enforce, indeed, are state regulations.

The introduction of these BMUs is expected to reverse recent catch declines (see Fig. 1). This paper argues that the decline in catches has been due to the open access status of the lake. Individual fishermen have no rights to exclude others from fishing, and this breeds the idea amongst fishermen that leaving fish to breed and grow, simply leaves these fish for other fishermen to take. The result is, therefore, a 'race-to-fish' and subsequently a decline in catches. So long as the lake is open to all, any management regime will not yield desired managerial goals of sustainable fisheries. The open access nature of fisheries is a fundamental cause

of poor economic performance and biological overexploitation. Co-management, on the other hand, only allows local communities to participate in the management process but not to own the resources of the lake. It does not address the open access state of the lake. This paper proposes that local communities should be allowed to own the lake. This will generate user values as well as user rights, which will lead to sustainable fishery. Towards the end of the paper, a few examples are given of how ownership of fishing areas has produced sustainable fisheries elsewhere in the world.

The tragedy of the commons

Hardin's (1968) theory of the 'Tragedy of the Commons' clearly illustrates the concept of ownership. Hardin develops his theory around a metaphorical pastureland open to all. The fact that the pastureland is open has attracted much comment on Hardin's work because he implies that 'open access' is synonymous with common property. Irrespective of where Hardin places his emphasis, this does not detract from the problem of the resource's ownership status. In many cases, common property has user rights for specified groups associated with it, but such groups have no legal rights to possessing the resource.

The Hardin example based on pastureland may be equated with access rights to Lake Victoria's fisheries, which have a finite fishing capacity. The implication is that if there are more fishermen than the lake can handle, each fisherman will catch less and the lake's productivity will decrease. Hardin was particularly interested in the economic decision-making process of a rational herdsman who is interested in maximizing his benefits. He argues that, as a rational being, each herdsman will seek to maximise his gain, more or less continuously asking himself what the utility of adding one more animal to his herd will be. Hardin believed that a rational herdsman would always keep on adding animals to his herd.

In the fisheries of Lake Victoria, the rational fisherman will maximise his catch by devising ways and means of increasing the catch, which may imply using illegal gear, and/or increasing his fleet capacity. Drawing on Hardin's argument, since a fisherman receives all the benefits from any catch increase, the benefit of increasing his catch (by adding more boats and or using illegal gear) can be said to be +1, which is a function of the costs created by additional catch. Since the costs of over-fishing are shared by all fishermen, the negative utility for any individual fisherman is only a fraction of -1 (Hardin, 1968: 1244), which is subtracted from his positive benefits. Hardin then concludes that the end result is the collapse of the resource and the 'tragedy of the commons'.

In this theory the underlying issue is that the resource (lake) is 'open to all'. This condition implies that nobody owns it and nobody can be held responsible if it is degraded, destroyed or misused. Everybody, however, potentially enjoys the benefits of it when it is productive. Steins (1999) defines 'open access' as a state in which the common-pool resource has no use rights attached to a specific group, resulting in a general 'free for all'.

Ownership

'Ownership' is the possession, or holding, of a resource with the associated full rights to use. Ownership is a critical factor in management since it determines the linkage between responsibility and authority over the resource, and also determines incentive structures for sustainable use. Barrow and Murphree (1998: 3) emphasise this by stating that, "[i]t is important to create an appropriate, functional framework for community conservation, one primarily based on ownership".

Ownership of a resource basically implies possession and use rights. A right is a claim to a benefit stream that is consciously protected, in most cases, by the state. Rights define the uses that are legitimately viewed as exclusive and the penalties for violating those rights. Rights are exercised following a clearly defined set of rules. For example, a right provides the authority for a fisher to operate in a specific fishing ground.

How the fisher exercises that right through fishing activity is specified by rules which may dictate the type of fishing gear used or the time of year when the fishing gear can be used (Pomeroy and Harkes, 1999).

Schlager and Ostrom (1993) distinguish between different types of rights:

- (a) access rights: the rights to enter a physical property e.g. participate in the fishery.
- (b) Withdrawal rights: the right to obtain the products of a resource e.g. fish catches.
- (c) Management rights: the right to devise operational-level rights of withdrawal. This is where co-management falls.
- (d) Exclusion rights: the right to devise operational-level rights of access.
- (e) Transfer rights: the right to sell or lease all or part of the above collective-choice rights.

When possession and use rights are exercised together, sustainable management is likely to be successful. But when use rights are exercised without possession, the result may or may not be sustainable. For Lake Victoria it has been unsustainable. Why should this happen?

When there are use rights in Common Property (or Pool) Resources (CPRs), then users will be always be affected by the following 'externalities' (Ostrom, 1995):

- (a) subtractability: whatever fish is caught by one fisherman will not be available for other fishermen to catch from the lake. This means that fishers will want to catch as much fish as possible regardless of what this means in the long term. In Lake Victoria this problem is compounded by the problem that access rights are not defined in terms of who can fish, but in terms of what gear is permitted. Nor do there exist limitations on how much fishermen are allowed to catch (quotas).
- (b) Excludability: because fishermen cannot exclude others from the fishery, as many fishermen as possible will join the fishery. This will lead to overexploitation, degradation and the eventual ruin of the resource. This is attributed to user incentives to maximise their own utility (Steins, 1999), and is one of the major causes of degradation of Lake Victoria.

Possession has the tendency to create a feeling of use value. This will lead to the responsible use of a resource or an item. In economics, the responsible use of a resource is equivalent to efficiency. As Swanson and Göschl, (1999) argue, ownership (property rights) has implications for efficiency because property rights are, in themselves, an incentive for the responsible use of resources. From Swanson and Göschls' (1999) perspective, because ownership implies that the costs of maintaining a resource fall upon its owner, it follows that owners will seek to utilise their resources responsibly. In order to achieve the sustainable exploitation of a CPR, therefore, ownership (possession and use rights) must be guaranteed. How does this argument relate to co-management?

Co-management has been defined as a partnership arrangement in which government, a community of local resource users (fishers), external agents (non-governmental organisations, academic and research institutions), and other fisheries and coastal resource stakeholders (boat owners, fish traders, money lenders, tourism establishments etc.) share the responsibility and authority for decision-making over the management of a fishery. The partners develop an agreement that specifies their roles, responsibilities, and rights in management (Pomeroy and Harkes, 1999).

By calling for partners to develop an agreement that specifies their roles, responsibilities and rights in management, co-management has ownership implications which it confines to managerial roles and not to the resource base itself. It covers various partnership arrangements, degrees of power sharing, and the integration of local (informal, traditional, customary) and centralised government management systems. Co-management involves various degrees of delegation of managerial responsibility and authority between the local-level (resource users, stakeholders and community) and the state level (national, provincial, municipal and village government).

It seeks equity in fisheries management and strives for more active fisher participation in the planning and implementation of fisheries management. Its major theme is that self-involvement in the management of the resource will lead to a stronger commitment to comply with management strategies and sustainable resource use (Pomeroy and Harkes, 1999). By delegating the ownership of the management process to local communities, co-management is a first step towards property ownership.

Co-management in its entirety places the resource users as external to the resource. They only exercise management rights, which may have to do more with their skills. This is not, however, sufficient if a sustained fishery is sought. This is because co-management, just like any management system, may drive the manager to strive for (personal) benefits. This may be compounded if the marginal costs incurred for any adverse decisions made are perceived as lower than the marginal benefits to be obtained. This ensures that the positive benefits of co-management may not be felt in the immediate future, and the marginal benefits initially gained from co-management's implementation may ultimately decline. Because the co-manager remains external to the resource itself, and does not own it, s/he may eventually become excluded from the management system, and the sustainable management of the fishery cannot be considered to have been achieved. If, however, the co-manager is the principle user of the resource, and has no other major alternative source of livelihood, the situation becomes considerably more complex, and it is for this reason that it is argued here that there is need to move ahead from co-management to full property ownership.

Efforts being made to co-manage Lake Victoria have already been initiated through an approach that raises a lot of questions. This approach places the community external to the lake, and it uses the community to enforce government regulations which have been made with no input from communities. The argument here is that any management approach that relegates the community to a position external to the lake, does not address possession and use-rights jointly, and will not achieve sustainable fishery. This is because such a regime will not recognise lake users as the best custodians of the lake. When the community views itself as external to the lake, any sense of responsibility will not be developed. For the sustainable fisheries of Lake Victoria, there has to be a sense of responsibility generated from a transfer of ownership or proprietorship from the state to the community and the resource-user level (Barrow and Murphree, 1998).

Moreover, these co-managerial approaches have not taken into account survey findings, which examined the suitability of Lake Victoria for co-management, and which found that the criteria proposed by Ostrom (1990) and Pinkerton (1989) for the successful implementation community involvement in management were met on several counts along the shore of the Tanzanian section of Lake Victoria (SEDAWOG, 2000b). In addition, the survey identified a series of major the major problems, which can be used to define the basis on which the collective action of fisher folk can be established for the creation of a solid co-management regime. The three major problems identified in Tanzania were: use of illegal fishing techniques, gear theft, and lack of regulation (SEDAWOG, 2000b).

The ownership status of Lake Victoria

The complexities associated with managing Lake Victoria are directly related to its status as a common-property resource. One may consider the lake zone as having no clearly defined boundaries. At best it can be described as a band of land and water on either side of the shoreline, which is defined in different ways in different localities and national contexts according to physical, biological and cultural criteria (Steins, 1999).

Perceptions of the lake present a frustrating atmosphere for the development and implementation of management strategies. It is perceived as a 'free for all resource'. 43% of Tanzanian fishermen surveyed by SEDAWOG (2000b) believed that nobody or everybody owned the lake. From the survey, however, it could also be deduced that local fishermen perceived government ownership as synonymous with open access. Moreover, the fishermen believed that they could fish from anywhere in the lake, and believed that everybody should be allowed to fish and that nobody should be prevented from fishing (SEDAWOG, 2000b).

On the other hand, the government perceives the lake as a revenue-generating resource. The Local District Councils in Tanzania generate income from licenses charged to fishermen and fishing boats. Thus the more fishermen and boats which can be registered, the more income will be generated. Anybody with the recommended equipment is not refused entry into the fishery.

The open access state of the lake is one of the reasons why local fishermen perceive an increase in the number of fishermen and boats in 1999 compared to 1994. In fact over 80% of the fishermen interviewed agreed that there had been an increase in the number of fishermen and boats (SEDAWOG, 2000b). Disobedience of regulations is yet another response of fishermen to open access conditions, and 54% of fishermen interviewed for the SEDAWOG (2000b) study said that they saw more fishermen using illegal fishing techniques in 1999 than they did in 1994.

Some cases where ownership of resource has led to better-managed common-pool resources

- (a) Tagba Lagoon (Ivory Coast) (Hviding and Jul-Larsen, 1995): the ownership regime here is based on territorial user rights. These are clearly defined and allocated according to family groups. This lagoon is divided into three family territories, and the families manage their territories on the basis of three different principles: control over access by foreigners through establishment of quotas and fees; the limitation of fishing efforts through regulating seine setting and through the prohibition of fishing on certain days and in certain areas; and organising collective production and marketing types, which effectively control the effort of participants. It is reported that while this tenure system has created a range of conflicts, it has prevented the exhaustion of the resource and the impoverishment of the villagers.
- (b) Lake Chiuta Malawi (Normann *et al*, 1998): the management of the fishery of this lake had initially been under customary tenure. The fishery was managed and regulations enforced by the Chief and fishers' committees. Their roles were to limit entry and to monitor the stocks of the lake. The result of this management system led to increase in catches and the maintenance of stocks.
- (c) Zeeland province, Eastern Sheldt, the Netherlands (Haandrickman, 2000; Ginkel, 1989). In this area, there is a multi-species fishery. One of the species is the mussel, which is farmed off the coast of the Sheldt. The cultivation takes place on designated plots, which are owned by the government but leased for about ten years to companies and farmers. Each plot is clearly demarcated with floating logs. Thus each farmer or company manages its own fishing ground. The result of this has been an increasing stock.
- (d) Viti Levu, Fiji Islands (South Pacific) (Jennings and Polunin, 1996; Cooke *et al*. 1996). On this island there is a well-established system of traditional rights to fishing grounds known as '*qoliqoli*', officially known as Customary Fishing Rights Areas (CFRA), which are owned by local community members. These people manage their own fishing areas through committees. Management issues differ from one place to another but basically focus on access restrictions, closed seasons in certain areas in order to alleviate bait-fishing pressure, protect corals, protect the fragile vegetation of the small island, and stop uncontrolled béche-de-mere fishing, amongst others.

There are two themes that are common to the above case studies: firstly, there is some form of ownership system in which resource users have rights to identified areas of fishing ground. These rights appear as territorial user rights in fisheries (TURFs), customary tenure designated plots and customary fishing rights areas. The second is the beneficial effect of these strategies on marine stocks and the economic performance of exploiters. In all these case studies, community ownership of these common-pool resources have led to either increases in stock, better incomes for the communities and/or a high management index.

Lake Victoria will not be an exception to the above studies if some form of ownership can be introduced. The lake is surrounded by local communities who are organised in form of villages recognised by the riparian governments.

Each village has some form of leadership which can tackle most village problems, such as conflicts, security and administration. Just as in Viti Levu and Lake Chiuta, these villages can be vested with powers to control access to the lake and exclude others from fishing. By patrolling their beaches, these villages can implement this management strategy. Furthermore, these villages can also participate in monitoring fish stocks through taking daily catch data. As already discussed above, what would be fundamental to the success of such a strategy would be to introduce ownership (not only use-rights, but also possession rights) of the lake by the local communities. The formation of co-management units, which has already commenced in Tanzania, is a strategy which attempts to ensure that local fishermen own the management process. This nascent management system can be built upon to allow communities to own the lake. What is required is to reorganise these Beach Management Units (BMUs) so that they may have local support and backing.

Conclusion

In order to sustainably manage Lake Victoria, its ownership status has to be addressed. There is a tendency within the Tanzanian fisheries management community of wanting to involve local communities within a top-down framework, in which the government imposes Beach Management Units upon fishing communities. In essence, this only serves to increase the degree of vertical integration inherent within the management hierarchy, and does not create any horizontal linkages. Managing the lake requires real partnership alliances, principally between the government and the communities. Moreover, communities should play a pivotal role in this partnership. In order to achieve this, the management system adopted should not be simplified to the mere provision of benefits, but has to relate to wider issues of land use and tenure together with local and national economic needs and aspirations.

Recommendations

- (a) The government is principally the owner of all natural resources. Local communities do not, however, perceive themselves as part of their government but as its subjects. This perception needs to be changed.
- (b) Ownership transfer: the Fisheries Division should transfer ownership of the lake from itself to the local fishing communities. These communities should be allocated territories from which they can fish.
- (c) A law should be enacted to create ensure that only those fishermen who are members of fishermen's organisations can fish. This will facilitate the transfer of ownership to fishing communities, as well as control entry to the lake.
- (d) Fishermen should be given exclusive rights to the lake. These should pertain not only to rights of withdrawal, but also to exclusion rights and transfer rights.
- (e) Co-management efforts already in place should be reviewed based on new facts emerging from various field studies.

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