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examples from Lake Kariba**

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ISAAC MALASHA

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**CENTRE
FOR APPLIED
SOCIAL
SCIENCES**

A MEMBER OF THE WORLD CONSERVATION UNION
UNIVERSITY OF ZIMBABWE



CENTRE FOR APPLIED SOCIAL SCIENCES*

University of Zimbabwe,

P.O Box MP 167,

Mount Pleasant

HARARE

Zimbabwe

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Opinions expressed herein are those of the author and do not necessarily reflect the views
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Abstract

One of the most enduring arguments for the introduction of co-management arrangements in the utilisation of natural resources is that it enhances the enforcement of regulations and consequently, the sustainability of that resource. This is particularly the case in most inland fisheries in southern African where government departments, for a variety of reasons, have been unable to effectively monitor fishing regulations. Some of the reasons for this inability is the removal of traditional leader's responsibilities over natural resources especially in the post-colonial period and budgetary constraints brought about by Structural Adjustment Programmes. Co-management arrangements are then introduced not only to give fishermen a sense of responsibility over the fishery but to also enable them to monitor each other's fishing behaviour and impose sanctions on those members who violate fishing regulations. With the introduction of co-management in most southern African countries which started in the mid-1980's, changes to fisheries acts have had to do with the need to recognise the involvement of users in fisheries management under various collaborative arrangements with government agents. Co-management has not led to a re-examination of the fishing regulations. Instead, fishermen are still expected to observe the same fishing regulations which some of their colleagues would have been violating prior to co-management.

The purpose of this paper is to explore the manner in which fishing regulations in Zambia and Zimbabwe emerged. It shows that although the fishing regulations were aimed at protecting the sustainability of fisheries from a 'scientific' perspective, their principal purpose was to protect the economic interests of the dominant groups that designed them. In most cases, these interests were at variance with those of local fishermen thereby leading to the continuous violation and ambiguity in the implementation of the fishing regulations. The paper further shows that one of the purposes for introducing co-management in the Zambian and Zimbabwean inshore fishery of Lake Kariba to improve the observance of fishing regulations. However, this did not lead to a re-examination of the relevance of the fishing regulations from the fishermen's perspective. As a result, there has been no substantial change in the fishing behaviour that the co-management process sought to correct.

Introduction

One of the most enduring arguments for the introduction of co-management arrangements in the utilisation of natural resources is that it enhances the enforcement of regulations and consequently, the sustainability of that resource (Pinkerton, 1989). This is particularly the case in most inland fisheries in southern African where government departments, for a variety of reasons, have been unable to effectively monitor fishing regulations. Some of the reasons for this inability to enforce regulations are the removal of traditional leader's responsibilities over natural resources especially in the post-colonial period and budgetary constraints brought about by Structural Adjustment Programmes in the mid-1980's (Machena, 1993 and Mafa, 1996). Co-management arrangements are then introduced not only to give fishermen a sense of responsibility over the fishery but to also enable them to monitor each other's fishing behaviour and impose sanctions on those members who violate fishing regulations. With the introduction of co-management in most southern African countries which started in the mid-1980's, changes to fisheries acts have had to do with the need to recognise the involvement of users in fisheries management under various collaborative arrangements with government agents (IFM and ICLARM, 1997). Co-management has not led to a re-examination of the fishing regulations. Instead, under the new arrangements fishermen are still expected to observe the same fishing regulations which some of their colleagues would have been violating prior to co-management.

The purpose of this paper is to explore the manner in which fishing regulations in Zambia and Zimbabwe emerged. It shows that although the fishing regulations were aimed at protecting the sustainability of fisheries from a 'scientific' perspective, their principal purpose was to protect the economic interests of the dominant groups that designed them. In most cases, these interests were at variance with those of local fishermen thereby leading to the continuous violation and ambiguity in the implementation of the fishing regulations. Using examples from the Zambian and Zimbabwean inshore fisheries of Lake Kariba, the paper further shows that one of the purposes for introducing co-management was to improve the observance of fishing regulations. The process, however, did not lead to a re-examination of the way the fishing regulations emerged in the first place and their relevance from the fishermen's perspective. Consequently, there was no substantial change in fishing behaviour that the co-management process sought to correct. In conclusion, the paper calls for a re-evaluation of regulations governing the utilisation of natural resources as these were designed to meet colonial and discriminatory interests.

The management of fisheries as game

Fisheries regulations in the southern African sub-region emerged as an adjunct of the Game Laws. It was for this reason that in the formulation of fisheries regulations in the early 1940's a fish was classified as an 'animal' and fishing was perceived to be another form of 'hunting.' It followed that the manner in which game was conserved was transferred to the way fisheries were to be regulated. The then Director of Game and Tsetse Control in Zambia justified this transplantation of game laws to fisheries as such:

Because fish are a kind of wildlife, it follows that the fisheries should be managed accordingly: we must rely on the natural resilience of fish populations to make good the depletions caused by our fishing.¹

Hunting restrictions that are a common feature of game legislation were also applied to fisheries. Hunting restrictions through various means such as closed seasons and licensing are meant to protect certain age groups of game species from being over-hunted. Jackson (1961) argued that licences were necessary in fisheries management because they limit the amount of fish to be harvested thereby preventing the depletion of fish resources. While this view is not entirely misplaced from a scientific perspective it conceals the social, political and economic role of fishing licences especially in the southern African region. Licences have been used as a measure to restrict access to natural resources. Only those who are able to meet the requirements for a licence can be able to fish. The rest are compelled to turn to poaching to access natural resources. Fishing licences have also been used as a source of revenue for treasury. In most British colonies local administrative structures known as Native Authorities (NA's) issued licences to fishermen and used the proceeds to meet the cost of running these organisations. In the absence of a proper fish-licensing system it would not have been possible to monitor the number and movement of fishermen and hence the amounts due to the authorities. Gordon (2000) notes that in 1943 chiefs in the northern fisheries in Zambia were eager to enforce the fishing regulations because they benefited from the fish-licensing system. In 1946 the Bemba Superior Native Authority requested that licensing for the purpose of obtaining revenue is applied to all Bemba Native Authority areas.² The Shila and Chishinga Native Authorities from the northern

¹ ZAMBIA NATIONAL ARCHIVES, Ref. No. ML 1/7/19, Vaughan Jones, 'Preliminary Report on the Fishing Industry and Its Markets, 1942'

² ZAMBIA NATIONAL ARCHIVES, Ref. No. Sec 6/570, Correspondence from Provincial Commissioner to Director of Game and Tsetse Control, 1/4/1946

fisheries derived most of their income from this levy. Money obtained from fish licences were used to pay the salaries of chiefs and other employees of NA's.

Game laws in the sub-region emerged partly as a reaction to the near depletion of big game that had occurred as settlers moved further into the interior in the 1880's (Mackenzie, 1987: 41-61). The new laws, therefore, emphasised the need to protect female species accompanied by the young from being hunted. This was done to avoid the killing of young species as this would eventually lead to the extinction of given specie. It was necessary to only allow for the hunting of animals that had reached such an age that their removal would not have an impact on the ability of the remaining species from replenishing themselves. The protection of young game species is comprehensible in that most game, especially those which the laws sought to protect such as elephants, do not reproduce as rapidly and in large numbers as other small game species or fish. However, this did not deter the transmutation of these clauses to the management of fish. The emerging fishing regulations put stress on minimum mesh sizes of fishing nets and the admissible width of apertures in fishing traps and baskets. Clauses on minimum mesh-sizes were aimed at preventing the harvesting of fingerlings that was likely to cause a depletion of fish species. Other fishing gear such as weirs were legislated against because they were considered to be successful 'only if the fish move, and a fish moves, nearly always, under the impulse of its spawning migration (Jackson, *ibid*).'

Similarly, as legislation for the conservation of game was emerging, calls were made to proscribe certain hunting methods considered to be 'unfair' to the hunted animal (Beinart and Coates, 1995). This was advanced into the public domain as the element of 'sport' in game management began to be pushed to the top of the conservation agenda.³ When hunting game, an animal had to be given an opportunity of escaping in the spirit of 'fair play.' Hunting methods considered as not giving individual hunted species a chance to escape were considered 'unsportman-like' and prohibited. For instance, Section 33 of the Game Ordinance of 1941 specified "no person shall for the purpose of hunting any animal drive, stampede or unduly disturb any such animal for any purposes whatsoever." This "fair chance" approach to the hunting of game proved to have considerable impact on formulation of fisheries regulations.⁴ Under the

³ According to Mackenzie (1987: 22-40) hunters also anthropomorphised animals in attempt to suggest a degree of equality in the contest and therefore emphasise the physical endurance and courage required in the Hunt. Thus, the killing of intelligent animals such as the elephant provided the greatest exhilaration.

section dealing with the management of fisheries, the Game Ordinance of 1941 prohibited the isolation of fish from the main water body for the purpose of catching the fish that would have been isolated. When new legislation on fishing was drawn-up in 1943, fish driving or *kutumpula* at it was locally known, was banned. The argument for banning *kutumpula* was that the driving of fish into nets by splashing and beating of paddles is intrinsically harmful as it operates in shallow and weedy areas where the fish go to breed.⁵ Other methods such as the use of fish-traps were considered to be accounting for a large number of small fish and fry and consequently banned. Even when it was realised that some form of traps were necessary to catch certain species of grown fish, it did not prevent the authorities from maintaining the ban on the use of traps.⁶ While the protection of the young was paramount in banning these fishing methods, they were also considered an easy and hence unfair way of fishing.

While the emerging fisheries regulations were as much based on the way game was managed, it was also a reflection of the colonial authorities ignorance of the effect of local fishing devices and methods on fish stocks. As Chirwa (1996: 351-377) has noted on similar experiences in the Lake Malawi fishery, the new regulations did not take into account some of the positive effects and weaknesses of African's fishing gear and methods. Weirs and traps were employed in shallow waters, and especially during the dry season. During the rainy season when the rivers, marshes and lagoons flooded, the traps were removed for fear that they might be washed away. They were also constructed in such a manner that fish fry could easily pass through. Fish poison could only be used in still or slow moving waters and its effectiveness was limited to a short

⁴ The classification of hunting between 'good' and 'bad' hunting methods was aimed at outlawing the latter methods. The use of traps, baskets and nets, which had been predominantly the preserve of Africans, were proscribed in the new pieces of regulations. The accepted methods were basically modelled on Anglo-Saxon notions of 'good' hunting affording a hunted prey a 'fair chance'. According to Beinart and Coates (1995: 28), this crusade of outlawing local hunting methods gave rise to the emergence of various conservation oriented groups such as the Royal Society for the Protection of Birds whose main concern was to fight against the plumage trade. Such groups emerged in the colonies as well.

⁵ Although *kutumpula* was frowned upon as a fishing method, the authorities were sometimes forced to ignore this fishing method due to the resistance of local fishermen. For instance, the Fish Control (Mweru-Luapula) Fishing Regulations specifically noted that *kutumpula* was to be authorised. (ZAMBIA NATIONAL ARCHIVES, Ref. No. ML 1/7/18, Correspondence from District Commissioner, Kawambwa to Director of Game and Tsetse Control, 1949.)

⁶ While the authorities desired to ban these fishing methods, it was logistically impossible to ensure that local fishermen did not use them. For instance, commenting on the use of fish traps in 1943, the Acting Director of Game and Tsetse Control observed that 'fish trapping is so much a part of native custom that complete prohibition, other than under exceptional conditions would be out of the question.' ZAMBIA NATIONAL ARCHIVES, Ref. No. Sec 6/570

period. The amount, depth, and flow of water could easily reduce its strength. Scudder (1960: 41-49) also made similar observations in his study of Tonga fishing methods on the Zambezi River prior to construction of Lake Kariba.

Once these 'scientific' arguments for the management of fish had been advanced and legislation drawn, their implementation was an entirely different affair. Their strict implementation had to fit into the economic context of the colonial state. The section below explores how this was achieved in the Zambian context.

It was only after 1940 that significant efforts to begin to develop and enforce a local policy for the conservation of fisheries were made. Firstly, while the fishing had been a source of food and employment even before the colonial period, it was now discovered by the authorities that it would benefit the economy more if some measures were implemented to control the industry. This was based on the prevalence of numerous water bodies where fishing was taking place. These water bodies were estimated to have produced fish worth more than one hundred and fifty thousand British Pounds per annum.⁷ The fishing industry was also a major source of employment prompting the Director of Game and Tsetse Control (DGTC) to conclude that 'game and fish, as also tsetse fly, are so much a part of everyday life of Africans.'⁸ Secondly, with an increase in industrial activity following a boom in copper prices that occurred in 1939, efforts began to be made to source cheap food for the large labour force employed in the mines. Although beef was initially used to feed the labour on the mines problems associated with supply that occurred in the early 1940's prompted the authorities and mine owners to begin to explore alternative sources of cheap food supplies for labour. Gordon (2000: 91) observes that severe beef shortages that occurred in 1941, 1943 and later in 1948 compelled mine owners to import five hundred tons of fish from a Congolese supplier to pacify the restless workers. Food prices went up causing instability in the urban areas. This compelled the authorities to impose price controls as a short-term measure. The District Commissioner (DC) responsible for the Copperbelt implored the Director responsible for the fisheries sector to maximise fish production by also suspending the existing section on fishing regulations in the Game Ordinance

⁷ ZAMBIA NATIONAL ARCHIVES Ref. No. Sec 6/190, Correspondence from Acting Director of Game and Tsetse Control to Secretary to Cabinet, 1943.

⁸ ZAMBIA NATIONAL ARCHIVES, Ref. No. Sec 6/569, Correspondence from Acting Director of Game and Tsetse Control to Secretary for Native Affairs, 1949. The fisheries sector was managed under the Department of Game and Tsetse Control that was later renamed the Department of Game and Fisheries in 1963.

Act of 1941. The enforcement of the regulations was seen as contributing to the shortage of fish on the Copperbelt. The DC argued that:

We are having some difficulty in keeping our workers contented here owing to short supplies. The point may be reached when discontent will have serious repercussions on copper production, which would be more disastrous even than upsetting the internal economy of Northern Province or depleting its fish supplies for a time. Bangweulu fish supplies have some bearing on copper production.⁹

This statement is evident of the importance with which copper production was linked to the availability of cheap food for the labour. To the owners of the mines the collapse of the fishing industry was not as paramount as long as copper production was sustained. The director of the DGTC concurred with the DC by observing that 'the importance of maintaining a smooth atmosphere on the Copperbelt was so great that fish supplies should be given a high importance relative to that of opposing factors.' Fishing regulations were consequently relaxed and the supply of fish on the Copperbelt temporarily improved.¹⁰ Following the other food shortages that occurred on the Copperbelt in 1943, the authorities responded by invoking Emergency Powers (Control of Fish) Regulations. These emergency measures were designed to control the distribution of food especially fish.¹¹ These regulations gave the Director of the DGTC a wide range of powers to deal with the distribution of fish by prohibiting the importation or export of fish into or from any Fishery Area.¹² They further empowered the Director to issue permits on the export of fish and he could make limitations on weight of fish or the market in which it was supposed to be sold. He was also empowered to seize fish at such time and place as he saw fit if the owner of the fish was paid in accordance with the gazetted fish prices. The emergency regulations further gave the Director of the DGTC authority to enter into contracts for carrying out any work in connection with handling, storage, grading or disposal of fish. The measures made it possible for the government to supply fish

⁹ ZAMBIA NATIONAL ARCHIVES, Ref. No. Sec 6/190. Correspondence from Provincial Commissioner, Western Province to Director of Game and Tsetse Control 1943

¹⁰ Although fish supplies temporarily improved following the suspension of the fishing regulations, the fish-price controls that were also imposed at the same time merely drove fish from the formal market into the parallel market.

¹¹ According to the Provincial commissioner in charge of the Copperbelt, which was then known as the Western Province, beginning in 1943 there was a shortage of various commodities on the Copperbelt, including foodstuffs. The consequence of these shortages was that fish prices went up and controls were introduced. However, this only managed to drive fish off the official market and into the parallel market where prices were high. (ZAMBIA NATIONAL ARCHIVES, Ref. No. 6/190. 1/8/1943).

¹² A Fishery Area was a fishery covered by the Fish Control Regulations.

to the Copperbelt thereby averting a major disruption to copper production. The controls were abolished in 1946 when the distribution of fish improved.¹³

Ambiguity in the application of fisheries regulations

Due to the diverse factors that informed the way in which the fisheries regulations emerged there was bound to be ambiguity and resentment in their application. The DGTC did not also have adequate staff to implement the fishing regulations. In some of the fisheries in remote areas it was the DC's and other colonial officials acting on their own preconceived assumptions of fisheries management who enforced the fishing regulations. The issuing of fishing licences was particularly problematic. Native Authorities issued licences to fishermen who fished from water bodies under their jurisdiction. However, local fishermen could migrate from one fishery to another for different reasons. In some instances, the migration would take the fishermen to fisheries in other NA's. This movement of fishermen across boundaries proved to be a problem in some NA's as it deprived them of much needed revenue.¹⁴

The enforcement of minimum net mesh-sizes and types of nets to be used were also a contentious issue between the authorities and fishermen. The minimum mesh sizes were designed to ensure that all the fish caught in a net were bigger and would have bred once. This regulation ignored the fact that some fish species could reach their maximum size without being caught in the minimum allowed mesh-sizes. In 1949, fishermen in Kasempa in the north-western part of the country complained that the institution of minimum mesh-size for their fishing nets caused them to lose many fish. They argued that the fish species that they particularly targeted were so small even at maturity as not to be captured in the nets that they were legally supposed to use.¹⁵ The

¹³ It was during this period that the Director of Game and Tsetse recommended that fish exports to Zimbabwe be banned. This ban affected the urban population in Zimbabwe that was reliant on fish supplies from Zambia. These fish- exports had amounted to about 5.000 kg's in 1943. However, the ban on fish-exports did not stop Zambian fish-traders from smuggling large quantities of fish into that country. (ZAMBIA NATIONAL ARCHIVES, Ref. No. Sec 6/190, Correspondence from Provincial Commissioner to Chief Secretary, 1944.).

¹⁴ This ambiguity in the British colonial policies has been extensively studied by Berry. She points out that in seeking to maintain social and administrative stability by building on tradition, colonial officials wove instability – in the form of changing relations of authority and conflicting interpretations of rules – into the fabric of colonial administration (Berry, 1993).

¹⁵ ZAMBIA NATIONAL ARCHIVES, Ref. No. SEC 6/570, Acting Director of Game and Tsetse Control, 'Preliminary Report on the Fishing Industry and its Markets, 21/10/1949.

DC disputed this argument and observed that the fish that was not caught in the legally allowed nets was not of economic value and did not warrant the change of the mesh-size regulations (ibid). In 1953, a Fisheries Officer in Kawambwa reported that he was unable to enforce the mesh-size regulations due to resistance by local fishermen. He complained that the mesh system in the fisheries under his jurisdiction was farcical due to non-observance of the regulations by the local fishermen. He recommended that fishing regulations should no longer apply in that fishery.¹⁶ In another example, in 1954 it was agreed that due to resistance by local fishermen and the lack of adequate personnel, fish conservation regulations in the Northern Province be abandoned in all but the following fisheries; Mweru-Luapula; Mweru-wa-Ntipa; Lake Tanganyika and Bangweulu-Luapula.¹⁷ The restrictions on the use of weirs were declared ineffective and impossible to enforce especially in the swampy Bangweulu fisheries. Faced with these problems, the Fisheries Officer for the area unilaterally declared that weirs did not in fact destroy the fry in the lake and called for the relaxation of the ban on weirs. The Fisheries Officer was compelled to take this decision following the Luwingu Native Authority refusal to ban weirs. Fishermen caught using weirs and brought before the authority were merely discharged with verbal warnings and not fined.¹⁸ In some instances, the regulations were relaxed but despite the abandonment or suspension of all or certain provisions of the fishing regulations, the clause pertaining to licensing was always retained. This was meant not to disrupt the collection of revenue for NA's.

Inadequate knowledge of the biological status of the local fisheries by authorities was also another source of ambiguity in the application of fishing regulations. In 1942, the seine net was banned after it was observed that the net was destructive and would lead to depletion of fish.¹⁹ The problem with the 'evidence' was that it was based on perceptions and not actual experiments. In 1942, the then Director of the DGTC wrote to a Game Warden based in Fort Rosebery (Kasama):

¹⁶ ZAMBIA NATIONAL ARCHIVES, Ref. No. SEC 6/570 Correspondence from Fisheries Officer, Fort Roseberry to District Commissioner, Kawambwa, 1953.

¹⁷ ZAMBIA NATIONAL ARCHIVES, Ref. No. SEC 6/570 Correspondence from Director of Game and Tsetse Control to Fisheries Officer, 1954.

¹⁸ ZAMBIA NATIONAL ARCHIVES, Ref. No. SEC 6/570, Correspondence from Fisheries Officer to Director of Game and Tsetse Control, 1954.

¹⁹ ZAMBIA NATIONAL ARCHIVES, Ref. No. SEC 6/508, Correspondence from District Commissioner, Gilbert Phillips to Provincial Commissioner, Kasama, 7th November, 1942.

Labeo and *Hydrocyon* (sic) are agreed as being in need of control so far as trade in immature specimens is concerned. I feel that *Auchenglanis* (sic) is badly in need of protection, though I have no data at present to support this general opinion. *Chrystichthis* is perhaps fairly safe; if, however, it is likely to have to come into this restriction within the fairly near future, it had best be put in now. Are there any other species which should be considered in this connection?²⁰

To conduct biological research, it was argued, was not necessary in the face of a perceived catastrophe in the fishing industry. Proper research would take time and the results might be too late to prevent a tragedy in the colony's fisheries:

We cannot proceed very far without proper research, but as, even if commenced now, that would take some time to give results, I consider that our present action on empirical lines is fully justified in view of the urgency of the fishery problem in the territory.²¹

In the absence of a full-fledged research framework it is not clear what the Director of the DGTC referred to as 'empirical lines' in terms of the policy towards the fishery sector. It can however be assumed that since the authorities were generally of the opinion that local fishing methods had a negative effect on fish stocks, they deemed it necessary to impose restrictions even in the absence of scientific proof. It was thought prudent to impose these conservation measures, under the given circumstances, due to the importance of the fishing industry to the economy of the country. The other reason why the authorities could not wait for scientific research was the perception by staff of the DGTC that their primary function was to protect the destruction of natural resources and not that of conducting research. For instance, in a memorandum concerning the foundation of the DGTC, the person who was later to head this same department argued that 'general scientific research did not imply that the department was to possess the qualifications of a research institute.'²²

²⁰ ZAMBIA NATIONAL ARCHIVES, Ref. No: SEC 6/158, Director of Game and Tsetse Control to Fisheries Officer, Fort Rosebery, 1941.

²¹ ZAMBIA NATIONAL ARCHIVES, Ref. No. SEC 6/10 Correspondence from Acting Director of Game and Tsetse Control to member for Agriculture and Natural Resources, 16th January, 1951.

²² Vaughan-Jones, T.G.C., 'Memorandum on Policy Concerning the Foundation of a Game Department and the Conservation of Fauna in Northern Rhodesia.' Government Printers, Livingstone, 1938.

Differences in the relevance of the fishing regulations were not only between the colonies and the fishermen but also within the colonial establishment itself. In 1953, a biologist from the Commonwealth Office in London challenged the manner in which fisheries regulations were designed and implemented in the colonies. He observed that fisheries regulations in the colonies were modelled on United Kingdom Fisheries Regulations of 1866 and on game laws and thus faulty.²³ He said that these 1866 laws had borrowed heavily on game laws and the analogy between game and fish was dangerous because stocks of game can be watched and even enumerated and their breeding rate is slow. On the contrary, fish stocks had an extremely rapid rate of breeding, and they cannot be directly watched, but only indirectly by conclusions drawn from the results of commercial fishing and of biological research:

Wide fluctuations in the abundance of fish or even their complete disappearance, may occur naturally, and have no connection with man's activity. Such catastrophes might result from changes in climate and rainfall, from landslides blocking rivers, from changes of ocean currents and variations of prevailing winds. Huge unexplained mortality of fish is reported from time to time. The wide variations from year to year of herring and other fisheries are now in many cases understood, and can even be predicted. Nevertheless, they cannot be regulated by any remedy at present foreseeable (ibid).

He concluded that most of the restrictions and prohibitions currently in use in the colonies were of a doubtful nature. The licensing of gear or nets required large and expensive enforcement staff. Other measures such as closed seasons, mesh-size restrictions and size of fish regulation were not very useful either. Fish fences were also harmless because if only a small number of fish suffice to replenish stocks, then there was no need in allowing excessive numbers to spawn and the capture of the surplus was an economical exploitation. He argued that mesh-size regulations, which were designed to take only the largest category of fish, must result in the dysgenic removal, for generation after generation, of the best-growing strains.²⁴ This left future breeding increasingly to the poorer strains and the result of attempts to restrict capture only to the larger fish might be fewer and fewer large fish to be caught.

²³ While it may be true that some of the provisions of the fishing regulations were modelled on the United Kingdom Regulations of 1866, I however, think that the largest influence to local fishing regulations were mostly the game conservation policies developed in the Cape Province during the 1800's. (ZAMBIA NATIONAL ARCHIVES, Hickling, C.F., 'Memorandum on Fisheries regulations,' Colonial Office, London, November, 1952.)

²⁴ ZAMBIA NATIONAL ARCHIVES, Hickling, C.F., 'Memorandum on Fisheries regulations,' Colonial Office, London, November, 1952.

The reaction to the biologists' observations by officers in the DGTC was mixed but generally reflected the government's policy towards the fishing industry. While agreeing to the biologists' general thesis, a Fisheries Officer in the DGTC observed that the biologist did not take into account "factors important in Central Africa." He said that fishing methods of Africans were "so primitive that weirs across tributaries allowed no fish to escape and that some river-pools fished communally by spears and baskets had no survivors".²⁵ The African fishermen were so primitive that to them it only became uneconomic to continue fishing when there was no fish left and not when the fish were merely diminished (ibid). While this argument sought to respond to the biologists' argument on scientific grounds, the Director in the same department was more open about the actual objectives of the type of fishing regulations in the colony. He argued that the reasons for the existing regulations were that licensing was a source of revenue to support the NA's.²⁶ Secondly, it was argued that fishing was the major industry in which most of the Africans in rural areas were employed and that Africans were so dependent on fishing and had not developed alternative economic activities. Consequently, there was a need for the existing fishing regulations to avoid an unemployment catastrophe in the event that the fishing industry collapsed. Such fishing regulations were "not only reasonable but positively desirable."²⁷ Thirdly, the Director acknowledged that the mesh size regulation may or may not be an unnecessary restriction, but as it already existed it was going to be a psychological error to abolish it until it was quite certain that it was not necessary. The position of the department was summarised in this manner:

²⁵ ZAMBIA NATIONAL ARCHIVES, Correspondence from Fisheries Officer to Director of Game and Tsetse Control, 'Dr. Hickling's Circular on Regulations, 1953.

²⁶ Officially this was not put so openly. It was usually said that the main reason for licensing was 'to stimulate the Native Authorities interest in the conservation of fish' (ZAMBIA NATIONAL ARCHIVES, Correspondence from Fisheries Officer to Director of Game and Tsetse Control, 'Dr. Hickling's Circular on Regulations, 1953).

²⁷ ZAMBIA NATIONAL ARCHIVES, Ref. No. 6/190, Correspondence from Colonial Office, London, to Governor of Northern Rhodesia, 18th May, 1944.

We are designing a new set of regulations. The proposed regulations provide a wider basis for licensing: including licensing of weirs and 'general' fishing methods, on principle that such wealth would be useful to the Native Authority. On the other hand, present restrictions on basket traps, which are somewhat irksome and technically not very useful, will be abolished. The minimum three inch mesh will provisionally be retained, more as a general guide to what is, on available evidence, a satisfactory size than a categorical minimum, for there is provision to make exceptions.²⁸

Following this debate, a number of changes in the management of fisheries were instituted. These amendments separated the management of fisheries from that of game. The other reason for separating the management of fish from game was that the number of fishermen had increased and the quantity of fish caught had increased to such an extent that there was a need for effective control. It was also observed that there was a need for coming up with a new act dealing specifically with fish so as to introduce 'minor fishing licences' for methods of fishing other than by nets such as spears, baskets, scoops, mats and weirs. In terms of weirs it sought to remove the law leaving a gap in a weir. It was reasoned that licensing weirs would in itself be a hindrance to the making of the same gear and would automatically cease to be used.²⁹ This new act became known as the Fish Conservation Ordinance of 1955. The principal objectives of the new ordinance remained the same as those of the previous ones. It regulated fishing appliances, placed restrictions on minimum mesh sizes and also prescribed that offences and penalties to be meted out to those fishermen who violated the ordinance. In particular it also specified that licensing would have to be imposed on all fishermen operating from fisheries under the control of the various NA's.

Post-colonial fisheries regulations

In 1963, the DGTC was renamed the Department of Game and Fisheries. It was also transferred to the Ministry of Lands and Natural Resources following the abolition of the Ministry of Native Affairs under which it had been located. In 1965, the Fish Conservation Ordinance and the Fish Control (Mweru-Luapula Fisheries Area) Regulations were amended. In 1974 all the different pieces of regulations such as Fish Conservation Ordinance and the Fish Control (Mweru-Luapula Fisheries Area) Regulations were combined to create the Fisheries Act of 1974.

²⁸ ZAMBIA NATIONAL ARCHIVES, Ref. No. 6/570, Correspondence from Director of Game and Tsetse Control to Member for Agriculture and Natural Resources, 27/2/1953.

²⁹ ZAMBIA NATIONAL ARCHIVES, Ref. No. 6/570, Director of Game and Tsetse Control, Notes on New Features in the Draft Fisheries Conservation Bill, 11/12/1952.

In the same year, the Department of Fisheries (DoF) was also established. The Fisheries Act still provides for the development of fishing, control of fishing. The enforcement of the act is supplemented by periodical Statutory Instruments. However, due to the manner in which the regulations emerged in Zambia coupled with the inadequate government funding to DoF, the implementation of fishing regulations has not been very effective. Almost all fishermen interviewed admit that the fishing regulations are not an inconvenience to their fishing activities and the flouting of the regulations is widespread.

Fisheries regulations in Zimbabwe

Like in Zambia, the BSAC led the colonisation of Zimbabwe in 1890. It was during company rule that efforts to control access to and the manner of harvesting natural resources were made. In a Proclamation of 10th June, 1881 issued under Order-in-Council of 9th May, 1891, the Game Law Amendment Act, 1886 of the Cape of Good Hope became the game of law of Zimbabwe. This piece of legislation was aimed at protecting big mammals such as elephants that were considered to be in danger of being over-hunted by ivory hunters, missionaries and builders of railway lines and roads.³⁰ In 1923 the white settlers in Zimbabwe declared self-rule and six years later in 1929 they passed the Game and Fish Preservation Act. It was in this new act that there was a direct reference to the way fisheries resources were to be utilised in Zimbabwe.

The Game and Fish Preservation Act of 1929 attempted to consolidate and amend the law for the better preservation of game and to design an act that would reflect the realities in Zimbabwe. The amendments dropped all references to Cape Province that had remained in the previous pieces of regulations. The Game and Fish Preservation Act of 1929 provided for indefinite periods for which protection may be given to animals and birds other than game. The act also increased the amount of fines to be paid by those who hunted game without obtaining a licence from an administrator in the district. For the first time, a section dealing with artisanal fishing was also included. As in the way that game was conserved, the section on fish in the act prohibited the use of drag, cast, stake or other nets and determined that any under-sized fish shall be returned to the water. The act also prohibited the use of dynamite or chemicals or fishing

³⁰ It is during this phase of colonial penetration into the interior that Mackenzie has associated with the transformation of hunting into the Hunt for the benefit of a few people from among the settler community (McKenzie, 1987: 41-62).

without a licence. As with other pieces of regulations on natural resources, these restrictions on hunting methods marginalised Africans' access to fisheries or game. Most of them could not afford to obtain the required licences and did not have resources or time to utilise the required hunting or fishing implements and methods.

Reflecting the emerging land tenure system in the country, the act made it a punishable offence to enter or trespass the land of another person in the pursuit of game or fishing without the authority of the landowner. The ordinance allowed any person to have capacity to prosecute as a private prosecutor any person charged with any offence under the Ordinance. This gave wide range of powers by those who had private properties to prosecute anyone who poached or trespassed on their properties with the intention of poaching. This provision protected the emergence of a strong lobby-group from among the settler community that were importing exotic fish species for stocking local waters. With the strengthening of the trespass laws in the Game and Fisheries Preservation Act of 1929, there was an increased private initiative to introduce exotic fish-species in the country that started in earnest in the late 1920's. The new act gave powers to the territory's administrator to authorise any association or person to introduce, in defined waters any fish not native to such water as well as making provision for that introduced fish to grow to exploitable levels. This provision saw a tremendous increase and growth of a sport-fishing industry in the territory from among the settler community. Between 1936 and 1946 a total of seventy-three government notices were made in relationship to the Game and Fish Preservation Act of 1929. Most of these notices were to authorise an organisation known as the Rhodesian Angling Society to introduce alien fish into the waters of the colony and also to ban fishing for a period of five years to allow the introduced fish to breed. In 1938, the Game and Fish Preservation Act was renamed the Game and Fish Amendment Act. The amendments were a result of strong pressure that was being exerted on government by associations with an interest in angling, sport and fly-fishing who now wanted direct government funding for their activities. Institutions such as the Flyfishers Association of Southern Rhodesia lobbied government to provide financial assistance to angling clubs that wished to import exotic fish species from outside the country. The society also asked for more powers to control the manner in which the exotic species were stocked and harvested.

The emergence of a strong sport-fishing lobby in the country is due to a number of factors. Firstly, the country had a much larger settler-community compared to colonies such as Zambia. Most of the settlers were from Europe and made efforts to see the development of fis

angling as a sport in the country. They formed associations and lobbied government for funding to import ova from the Cape and further north as Scotland. In 1938 trout ova were imported from Scotland for the stocking of the colony's fisheries (Bell-Cross and Minshull, 1988). Later an umbrella organisation known as the Trout Acclimatisation Society was formed to co-ordinate the operations of associations interested in the importation of Trout ova. When the imports of ova from Scotland became expensive efforts were made to obtain the ova from South Africa. Imports from South Africa consisted mostly of the Largemouth Black Bass, Carp, Rainbow and Brown Trout. One common feature of these imports is that they were meant to improve the fish-angling facilities in Zimbabwe and little attention was paid to their potential as food (Toots, 1970: 1-6). Secondly, the land tenure system, which was introduced through the Land Apportionment Act (LAA) in 1930, benefited the settlers at the expense of the local people. It was on these private lands that most of the dams were built to provide irrigation water for agricultural activities. These dams and other water bodies on National Parks and Wildlife Management estates proved invaluable in the emergence of fishing as a sport.

In 1944, the Southern Rhodesia National Anglers Association was formed. By 1947 similar associations had become so politically entrenched that they began to lobby government to amend the Game and Fisheries Act to give more responsibilities on the management of water bodies to its members. These amendments were made towards the end of 1947 when the act made members of the Angling Societies into Honorary Fish Wardens. The wardens had powers to prohibit fishing and apprehend those doing so in water-bodies located on private property³¹. Those caught were liable to fines ranging between five and twenty-five Rhodesian pounds. The various angling associations also established research stations in the country to improve the strain of imported fish species to local conditions. Some of these research stations were privately run while others relied on government subsidies. These included the Mashonaland Highveld Research Centre at Lake Mcllwaine, Trout Station at Nyanga, Matopo's and Southeast Lowveld at Kyle. The research station at Kyle was responsible for research on Bass. It was only in 1966 that the Department of National Parks and Wildlife Management assumed responsibility for all fish research in the country.³²

³¹ Zimbabwe National Archives, Ref. No. S482/637/39, Correspondence from Parliamentary Secretary to the Secretary, Department of Agriculture and Land, 2/4/1942.

³² Government of Southern Rhodesia, Ministry of Mines and Lands, 'Reports of National Parks Advisory Board and Director of National Parks and Wildlife Management for 1966,' Government Printers, Salisbury, 1967.

The settler government's pre-occupation in Zimbabwe was on the development of settler agriculture. In this regard, it left the development of the fishing industry to private lobby-groups. The fishing regulations that emerged were driven more by individuals, associations and clubs with an interest in sport fishing. The lack of interest in fishing as an industry can be seen from the fact that government lacked adequate capacity to monitor the sector. It was only in 1949 through the passing of the National Parks Act came into force that the government employed officers specifically responsible for fisheries. However, even with these changes the policy thrust of the National Parks Board was to support sport angling. The board decreed that angling could be done in all water bodies in the country's national parks except the Hwange National Park where the facility was rendered unsafe due to the danger from wild animals.³³ Prior to the creation of the board the government had in 1948 hired a consultant from South Africa to advise the territory on the potential of inland fisheries.³⁴ He observed that the country already had waters that were well stocked with fish and recommended that a sound fisheries policy was necessary for the creation of new fisheries department and the maintenance of waters which had already been stocked with exotic species. His major recommendation was that fisheries policy should put emphasis on sport fishing to attract tourists (Hey, 1948). He observed that the restocking of some of the country's water bodies should concentrate more on fishes that "have virtues of superiority in fighting ability." To his credit, however, he also recommended that a fisheries department be created to specifically deal with fisheries. The primary responsibility of this department was to create breeding pools, hatcheries, and a central experimental fish farm to serve the dual function of producing fish for stocking and conducting experiments in fish farming. He also recommended that a Department of Fish be created. This was seen as a means of avoiding swamping fisheries issues under other portfolios such as agriculture and veterinary (Hey, 1948).

The policy on sport fishing marginalised local fishermen in a number of ways. Firstly, the sport was carried-out on private properties where local people faced prosecution for trespassing and poaching. This placed most of the water bodies out of reach of local fishermen. Secondly, due to the high cost involved and the racial policies that prevailed at the time, local African fishermen could not form Angling Associations or join existing ones. In any case, even they managed to form associations they would still have problems in accessing water bodies from where to do the

³³ Federal Ministry of Agriculture. 'Memo on Fishing' Salisbury, 1955 pp1-6.

³⁴ Hey D., 'Report of A Survey During July-August 1948 on the Potentialities of Inland Fisheries in Southern Rhodesia. Stellenbosch, Inland Fisheries Department, Cape Town, 1948.

fishing. Other non-white races were treated much better. In 1952, it was decided that no restrictions should be placed on the rights of Asiatic and Coloured people to fish in park waters on the same basis as Europeans who were not members of particular Angling Societies concerned.³⁵

The emphasis on sport fishing meant that fish caught by members of the angling clubs was largely for sport and not for commercial purposes or consumption. The argument was that the settlers already had an occupation and enough food to eat and thus did not bother to make fish as a staple. Even the consultant who had been hired to draw a fisheries policy for the country recommended that sporting species be introduced into the territory's water bodies and that undesirable (or unsporting) species such as catfishes should to be got rid of (Hey, 1948: 9). The view from most members of the angling clubs was that the country had been forced to adopt this type of fishing regulations to prevent the total collapse of fisheries resources through the bad fishing methods employed by Africans. Africans were accused of using explosives and throwing poisonous plants and remnants of local-beers into the water and scooping out all sizes of the dazed fish. These methods, it was argued, did not give fish a 'sporting chance', and hence needed to be banned.³⁶ These views completely ignored the importance of fish as a means of food or employment for the majority of the local African fishermen. It merely re-emphasised the prejudices of the settler-community towards local fishing methods.

In 1975, a Parks and Wildlife Board was created. This followed the repealing of various acts related to the conservation of wildlife among them the Fish Conservation Act of 1960. The new act became known as the Parks and Wildlife Act of 1975. In terms of fish conservation the act still retained provisions on how fishing is to be conducted and the fishing methods that were not authorised. These still remained the same as from the previous acts. The act authorised the minister responsible for the country's fisheries to declare any person to be the Appropriate Authority for any waters in the country. The act further empowered the minister to declare any waters as Fish Conservation Areas if it was considered that there was a threat to the fish in those particular waters. However, further controls on actual fishing were instituted: no person was allowed to fish in any waters without a permit with the exception of those given Appropriate

³⁵ Government of Southern Rhodesia, Ministry of Mines and Lands. "Report of the National Parks Advisory Board for the Year ended 31 December 1953." Government Printers, Salisbury, 1954.

³⁶ Bulawayo Chronicle. 'Letter to the Editor,' 28th June 1948.

authority. Other prohibitions included the use of poisons, chemicals or explosive devices in the killing of fish. It was also an offence to disturb any fish on its spawning run or in such areas as spawn is deposited. The provisions on the introduction of alien fish were retained from the previous acts. A number of gear was totally banned. These included spears, spear guns or basket traps. To date, the Parks and Wildlife Act of 1975 governs the conservation of fish in Zimbabwe.

Fishing regulations for Lake Kariba

Lake Kariba is an artificial water body located on the Zambia/Zimbabwe border. Before the Zambezi River was impounded to create Lake Kariba fishing was largely for subsistence by the local population. The various fishing regulations and legislations that were emerging in the two countries did not apply to the Zambezi River. The Fish Conservation Ordinance and subsequent ones in Zambia could only be applied to fisheries that had been prescribed by the director responsible for fisheries. The Zambezi River was not a prescribed fishery and consequently the ordinances did not apply to it. Similarly, the Game and Fish Preservation Act in Zimbabwe did not apply to the Zambezi River. It was argued that the act was meant to regulate inland waters only and could not be applied to internationally shared water-bodies such as the Zambezi River.³⁷ The major reason is that fish production from the river was seasonal and relatively marginal compared to much more productive fisheries such as the Kafue and Mweru/Luapula system. The authorities were not duly concerned with controlling fish products from such a marginal fishery. Secondly, the Zambezi River was a malaria-prone area with poor access roads compared to other fisheries that were closer to urban areas and had all weather roads. As such, the river did not attract the attention of either fishermen or government authorities at the time.

In preparation for the full exploitation of the new Lake Kariba fishery, the Zambian authorities began to conduct a number of biological experiments. By 1960 results from these experiments began to be available. It was on the strength of these experiments that the Zambian authorities began to advocate for the type of regulations that they felt would suit the fishery. At the time there wasn't much official biological research that was being conducted on the Zimbabwean side. The first difference was on the size of mesh to be used in the fishery. The

³⁷ Zimbabwe National Archives, Ref. No. S1194/1647/12. Correspondence from Conservator of Forests to the Secretary, Department of Agriculture and Lands, 1945.

results of the Zambian experiments indicated that there was no need to have a mesh-size restriction on gill nets to be used.³⁸ They argued that the initial ten centimetres mesh size had been an arbitrary size meant to protect species during the stocking exercise as the lake was filling up. This measure was interim and had to be modified when results of the experiments had been analysed. They argued that the dominant species caught in the five and seven centimetres mesh-size nets were *Alestes imberi* and *Hydrocynus vittatus* (Tiger Fish), which, between them, comprised eighty six percent of five centimetre net catches and thirty-eight percent of the seven centimetres net catches in experimental netting (ibid). Neither of these species was commercially attractive and that the effects of using five and seven centimetre mesh-size nets was not harmful. These nets did not affect dominant commercial species of *Tilapia*, *Labeo* and *Distichodus* to a significant extent because when these species were caught in these nets they would already have spawned (ibid). The nets would not affect *Alestes imberi* either as this fish has already bred before being caught in even a five centimetre net. The nets would, on the other hand, remove large quantities of the voracious *Hydrocynus vittatus* that would be of considerable benefit to the fishery (ibid). It was further argued that the prevailing emphasis of removing vegetarian species tended to produce an imbalance in the predatory/prey proportions of the fish population.³⁹ It was observed that the continued use of hundred millimetres mesh-size nets was allowing a constant removal of the bigger fish and best breeding stock, reproduction of the race being left to the small and poorer stock. The Director of Game and Fisheries argued that:

In the light of information from research, it was fully agreed that there was no necessity whatsoever for continuing to impose the four-inch mesh size as a minimum. If anything, encouragement should be given to the use of smaller meshes in an endeavour to achieve a more balanced take-off from the fish population. It is not known on what evidence Southern Rhodesia bases its desire to persist with the four-inch minimum restriction.⁴⁰

The Zimbabwean authorities rejected this proposal arguing that they did not favour any changes to the proposed mesh size of hundred millimetres. They counter-proposed that the hundred millimetres mesh size should be adhered to until commercial fishing on the lake as a

³⁸ ZAMBIA NATIONAL ARCHIVES. Ref. No: ML 1/15/17 Correspondence from Director of Game and Fisheries to Permanent Secretary, Native Affairs, 20th July 1962.

³⁹ ZAMBIA NATIONAL ARCHIVES. Ref. No: ML 1/15/17 Correspondence from Director of Game and Fisheries to Permanent Secretary, Native Affairs, 20th July 1962.

⁴⁰ ZAMBIA NATIONAL ARCHIVES. Ref. No. ML 1/15/17. Correspondence from Director of Game and Fisheries to Permanent Secretary, Native Affairs, 20/7/60.

whole had been in operation for a minimum of six months.⁴¹ Secondly, the Zimbabwean authorities argued that they did not have adequate data to support the Zambian argument on mesh-sizes because information collected from commercial fishing concessionaires was confidential and not for public use. Thirdly, the Zimbabwean authorities said that they felt it undesirable to remove restrictions 'to avoid confusion to African fishermen.'⁴²

The question of allowing for full-exploitation of the fishery became another problem in designing regulations for the fishery. The authorities on the Zambian side sought to allow for full-scale commercial fishing using gill nets even before the lake had reached its maximum extent. This was largely designed to raise fish-levies for the local Native Authority in line with colonial policy at the time. The Zimbabwean authorities did not accept full-scale commercial fishing at that time. They argued that there should be no net fishing in the fishery until stocks had stabilised.⁴³ This restriction on the use of nets, however, applied to African fishermen only. It did not extend to the white-owned fishing concessionaires who had been demarcated their own fishing grounds. This discriminatory act was justified on the grounds that the concessionaires had different contracts with the government and were also assisting in the collection of data and could thus not be restricted from fishing (ibid). Consequently, gill net fishing for African artisanal fishermen on the Zimbabwean side was not allowed until the passing of the Fish Conservation (Kariba Controlled Fishing Area) Regulations in 1962. This contrasts with the Zambian side where fishing had commenced as soon as the lake began to fill-up.

The caution taken by the Zimbabwean authorities was borne out of a number of historical factors in the way fisheries policy had developed. Prior to Lake Kariba sport fishing had been the main pre-occupation of the fishing industry in the country. This emerged after long years of importing exotic species and protecting them against perceived poachers. Not much research had emerged in artisanal fishing and it is most likely that the authorities were cautious not to allow for full commercial exploitation of the fishery to protect the new fishery. The authorities were also wanted to make the fishery a source of tourism with sport angling being a part of the sector.

⁴¹ ZAMBIA NATIONAL ARCHIVES, Ref. No. ML 1/15/17. Correspondence from Secretary of Lake Kariba Co-ordinating Committee to Permanent Secretary, Native Affairs, Northern Rhodesia. 27/6/62.

⁴² Lake Kariba Co-ordinating Committee. 'Technical and Organisational Matters relating to Fishing in Lake Kariba, 21/3/1963.

⁴³ ZAMBIA NATIONAL ARCHIVES, Ref. No. SEC 5/201. Summary Record of a Meeting of Ministers Held in Salisbury on 29/2/60. Kariba Lake Development Company.

Removing mesh-size restrictions would have led to the removal of even smaller-sized fishes thereby reducing the value of the fishery to sport anglers who require more fishes that "have virtues of superiority in fighting ability." While the Tiger Fish was perceived not to be economically viable by the Zambian authorities, this was the most-prized specie for sport-anglers because of its fighting abilities. Secondly, from the time of colonial conquest the Zimbabwean authorities had not developed a policy of using natural resources to fund the administration of local administrative structures such as NA's. In Zambia fish was used as a source of cheap food and employment and to generate revenue for the running of NA's. In Zimbabwe fish did not emerge as a source of cheap food. Instead, livestock produce such as beef were promoted. There was no agreement reached and different sets of fishing regulations were applied on each shoreline.

Introduction of co-management in the Lake Kariba fishery

In 1989, the DoF in Zambia and the Lake Kariba Fisheries Research Institute (LKFRRI) on the Zimbabwean shoreline of the lake, obtained donor funding to coordinate research and development activities in the fishery. It was under the auspices of project that co-management was conceptualised and implemented. The rationale for introducing this new management system, *inter alia*, was to enforce fishing regulations. The evidence of this destructive exploitation was given as 'indications of a decline in fish size and an increase in fishing in breeding areas and catching of juveniles and use of prohibited fishing methods such as fish-driving.' (Chipungu and Moinuddin, 1994: 3). On the Zambian shoreline new institutions at the fishing camp level were created. It was through these institutions that the authority for fishermen to monitor each other's fishing behaviour was to be delegated. Similar institutions were also created on the Zimbabwean shoreline. In addition, some fishermen on both shoreline were selected as fish scouts or resource monitors to assist in the implementation of the fishing regulations. On both shorelines the fishermen were still expected to monitor the Fisheries Act and the Game and Wildlife Act respectively. The manner in which the co-management arrangements were conceptualised and implemented on both shorelines did not provide any avenue to re-visit the fishing regulations and the reasons why the artisanal fishermen. The regulations were considered to relevant to the fishery. What the co-management sought to achieve was to convince the fishermen to observe them through the delegation of monitoring authority.

Evidence from both shorelines, however, indicates that there has not been a substantial

change in fishing behaviour. Fish driving, or *kutumpula* is still widely practiced by artisanal fishermen. The fishermen interviewed contended that from their point of view this fishing method is not harmful to the fishery. They observed that without employing the method they would not catch the fish species that they targeted through *kutumpula*. They argued that the system was not harmful to the fishery because they used bigger mesh-sizes that only caught big fish and not those which were about to spawn. On the Zimbabwean side the violation of fishing regulations such as fishing from closed areas or using small mesh-sizes is also rampant. On this shoreline it was observed that fishermen have formed well-organised networks to assist them in the violation of fishing regulations. These networks report the presence of fish guards. Once the guards are spotted all the illegal fishing implements are hidden.

The institutions created under the co-management arrangements have not been as effective in monitoring the fishing regulations as was envisaged. The reasons for the non-activity of these institutions range from various threats from artisanal fishermen engaged in illegal fishing methods and lack of incentives to enforce them. As the resource monitors operate from fishing grounds with other fishermen, they are under various pressures to desist from reporting their colleagues who are engaged in illegal fishing practices. What was observed is that the co-management on either shoreline was designed to protect the interests of other actors in the two inshore fisheries and not primarily to improve the observance of fishing regulations (Malasha, 2001). The irrelevance of the fishing regulations from the fishermen's perspective remained even after the introduction of the new arrangements. As a result, there was no incentive for the fishermen to change their fishing behaviour.

Conclusion

This paper has questioned the relevance of existing fishing regulations under the co-managerial arrangements in the Zambian and Zimbabwean inshore fisheries of Lake Kariba. The paper shows that the existing regulations borrow heavily from the manner in which game was managed. Additionally, these fishing regulations had to fit into the economic and social interests of the colonial and settler states in the two countries. In Zambia fishing became vital to the sustainability of the copper industry. The fishing regulations that emerged sought to maximise the availability of fish while at the same time ensuring that fishing was not disrupted through perceived destructive fishing methods. The need to balance these sometimes contradictory interests saw a continuous and ambiguous implementation of the fishing regulations. Fishing

regulations could be enforced or lifted whenever particular social and economic interests were threatened. In Zimbabwe the fishing regulations that emerged reflected the interests of the settler class. Fish angling as a sport was encouraged by a burgeoning sport-fishing lobby from among the settler community. The land tenure system further alienated local fishermen as most water bodies were on private or state land where access was strictly enforced. The fishing regulations that emerged were biased towards creating a fishing industry that reflected the interests of this settler class. The regulations promoted fishing as a sport for both recreation and tourism and not subsistence.

The differences in the approach towards fishing regulations between the two countries manifested themselves when efforts were made to draw regulations for the Lake Kariba fishery. While the Zambian authorities favoured a relaxation of the regulations in line with the existing policies in their country, the Zimbabweans were more cautious. The latter advocated for tighter regulations to protect the fishing stock from indiscriminate fishing by African fishermen. The regulations further promoted the fishery as a major tourist attraction with sport angling being one of the major attractions. In the mid-1980's both countries introduced co-management arrangements in their respective inshore fisheries. One of the objectives of this co-management arrangement was to ensure that artisanal fishermen observe the existing fishing regulations. However, this did not occur as fishermen on either side keep flouting the existing regulations.

It is suggested that one of the reasons is that fishermen do not see the relevance of the existing fishing regulations from their perspective. The regulations are perceived as being punitive and hence, are constantly ignored. It is proposed that when instituting co-managerial arrangements there is need to re-visit the regulations governing the utilisation of natural resources. As has been presented above, in most southern African countries regulations emerged to meet colonial interests. The principal reason for these regulations has not changed and this could be a reason why regulations keep being flouted. Given an opportunity under the various co-management arrangements, there is need to re-examine the relevance of the existing regulations to make them more applicable to current situations.

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