

The Traditional Approach Towards Sustainable Management of Common Property Fishery Resources in Nigeria

Ade S. Olomola

Nigerian Institute of Social and Economic Research (Niser)

ABSTRACT The search for effective ways of managing renewable natural resources is currently being intensified in many developing countries. In order to attain optimum utilization and renewability of the resources, emphasis is often placed on state regulation and private ownership to the utter neglect of local collective actions. Both approaches have made limited impact on the sustainable development of fishery resources. The root cause of failure has been the misperception of the property regimes under which fishery resources are being managed within the local environment. The study reveals that traditional fishery management under a regime of common property could be effective and so alternative management strategies such as privatization and public control being frequently recommended in the literature will be a misplaced priority.

Introduction

Nigeria is endowed with both marine and inland fisheries resources. It has a coastline of 800 km and a continental shelf of about 37,943 km². With the new regime of the sea, the country's jurisdiction over marine resources covers about 256,000 km². There are extensive inland fisheries in rivers, lakes, estuaries, reservoirs, seasonal flood plains and lagoons. These resources are being exploited by a large number of small-scale (artisanal) fisherfolk whose output account for over 80 per cent of the total domestic fish production in the country. In recent times the trend of output from the artisanal fishery sub-sector appears to be unimpressive and this has generated considerable concern among analysts and policy makers about the sustainability of resource use in the sub-sector in view of the fact that a large number of fisherfolk depend on the fishery resources as their major source of livelihood.

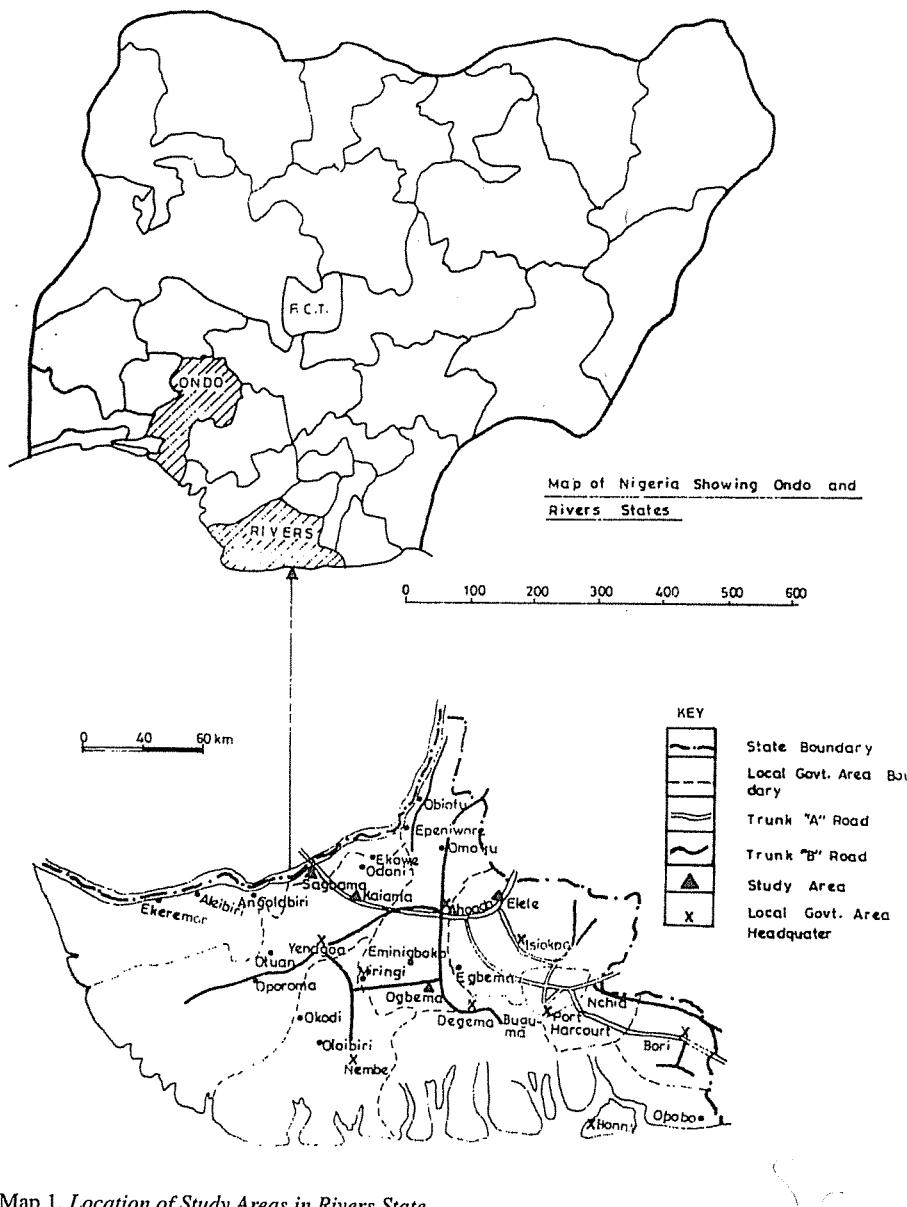
The fisherfolk operate under varying property regimes – from open access in the case of the ocean fisheries to common property regimes with regard to the inland fisheries. Although they have no control or managerial jurisdiction over the ocean fisheries, the same cannot be said about the inland fisheries some of which are owned communally and managed by the fishing communities using traditional methods. Traditional methods of fishery management refer to prudent self-regu-

lation by communities based on traditional practices with the aim of controlling fishery exploitation conditions (Weigel 1985). However, the extent to which traditional management strategies can enhance the productivity of the fishery resources, arrest the declining trend in fish production or prevent over-exploitation of the resources in the country remain largely unsubstantiated. Yet, unless there is adequate information concerning the effectiveness of such strategies it will be difficult to take sound decisions on the appropriate line of action that could assist in achieving optimal utilization and renewability of the fishery resources.

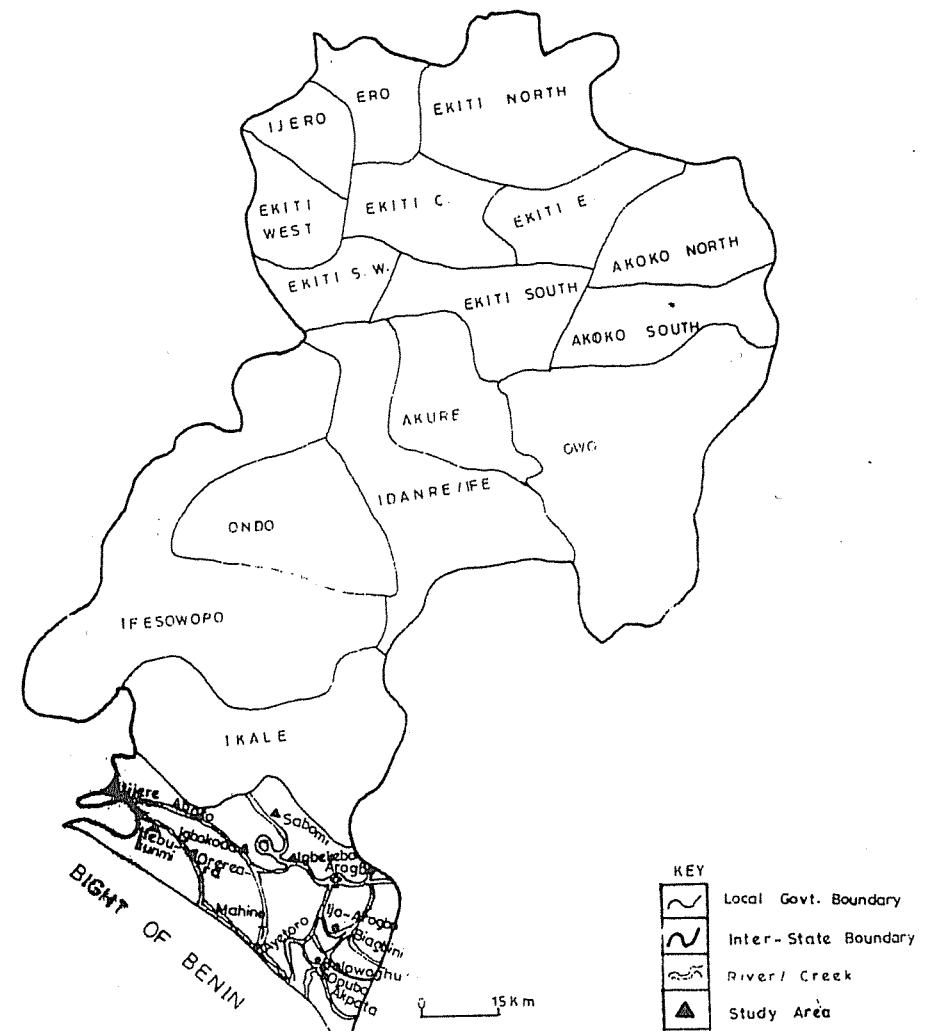
The purpose of this study is to examine the role of traditional resource management in fostering sustainable use of fishery resources in the artisanal sub-sector. Specifically, we shall (a) examine the incentives from common property rights; (b) identify the mechanisms of fishery management by the fishing communities, (c) determine the factors influencing the compliance with the rules mutually agreed upon by the resource users, and (d) assess the effectiveness of the management mechanisms.

The study was conducted in Ondo and Rivers States in Southwest of Nigeria. Four villages were covered in each state. Rivers State is located approximately around latitude 4°12' N and 5°50' N and longitude 5°22' E and 7°36' E. The four villages selected for the study in Rivers State are Ogbema in Ahoada Local Government Area (LGA), Sagbama in Sagbama LGA, Kaiama in Yenagoa LGA and Elele Alimini in IKwere LGA (see Map 1). Ondo State lies entirely within the tropics between longitudes 4°30' E and 6° E and latitudes 5°45' N and 8°15' N. The four villages selected from the state are Igbekebo, Itebukunmi, Orereara and Sabomi; all in the Ilaje/Ese-Odo LGA in the southern part of the state where fishing is most widely practiced (see Map 2).

Data for the study were collected between July and December 1991 following a reconnaissance survey conducted in the study area early in the year. Data collection involved key informant interviewing and participant observation. For the purpose of collecting data on types of traditional authority, patterns of water tenure system, lineage patterns associated with the use of the fishery resources and management strategies, the traditional rulers, chiefs and other community leaders as well as experienced fishermen were chosen as key informants. Information relating to resource characteristics and exploitation techniques were obtained by means of participant observation. All the key informants were used as a vital source of information on a variety of topics including kinship, lineage-affiliation, inheritance, alienation and other factors which influence the management of the fishery resources.



Map 1. Location of Study Areas in Rivers State



Map 2. Location of Study Areas in Ondo State

Conceptual Issues in Common Property Fishery Management

In many local settings around the developing world, fishermen depend on the available fishery resources as means of livelihood and have been involved in managing the resources as their common property. However, this role has been misinterpreted by some economists as the primary source of inefficiencies in fishery production (Gordon 1954; Bell 1972; Christy 1975; Blomquist and Ostrom 1985; Randall 1983).

Although the bulk of the economic literature tends to blame the problem of inefficiency in fishery production on the common property condition of the resource, current thinking among researchers and development agencies indicates that such a literature is flawed on account of the inherent illogicalities; historically and analytically. Evidences abound which consider the interpretation of the 'economic theory of common property resource' as an inadequate conceptual tool for the solution of fishery management problems; and which are in support of the role of the common property approach in providing remedy to overfishing (Ciriacy-Wanrup 1975; Bromley and Cernea 1989). The seeming confusion stems from the initial misunderstanding of the concept of common property such that common property resources and open access resources are actually regarded as synonymous (Gordon 1954; Demsetz 1967; Alchian and Demsetz 1973; Johnson and Libecap 1980; Libecap 1981).

Unfortunately, policy decisions and efforts in search of effective management strategies in respect of common property resources have been based on this notable misperception. Indeed, conclusions arising from the economic interpretations of the initial misunderstanding of the concept of common property resource have been used to justify far-reaching proposals for changing the way some common property resources are managed (Ostrom 1985; Runge 1986; Lawry 1990). One school of thought suggests the creation of full private property rights in the commons as a necessary condition for avoiding over-exploitation (Gordon 1954; Demsetz 1967; Johnson 1972; Picardi and Siefert 1976; North and Thomas 1977; Moloney and Pearse 1979). Nonetheless, studies have shown that privatization of the commons offers no protection against sub-optimal management or outright annihilation (Page 1977; Bromley 1982) and that property rights tend to be more effective in assuring conservation if they reflect the joint interests of a community of users rather than isolated individuals (Ostrom 1977; McCay and Acheson 1987).

According to another school, the intervention of the state is necessary in order to alleviate the management problems of the common property resource (Hardin 1968; Bell 1972; Carruthers and Stoner 1981). But this approach has been found to be ineffective because in many instances where it has been applied, the problem seems not to have been properly diagnosed. There are situations where policy makers rushed to substitute state control for what has been misperceived to be no control; and in the process they ended up destroying the common property mech-

anisms that did exist. Such interventions have achieved nothing but the conversion of a common property regime to open access; thus worsening the depletion of the natural resource (Cordell and McKean 1986; Messerschmidt 1986; Kanbur 1992).

The misconception of the nature of common property resources originates from the famous work of Hardin (1968) which he termed the 'tragedy of the commons.' Hardin's metaphor has engendered critical debates on natural resource management under common property regimes. Several writers who have contributed to the debate (Ciriacy-Wanrup and Bishop 1975; Dasgupta and Heal 1979; Dasgupta 1982; Gardner, Ostrom and Walker 1990; Dasgupta and Maler 1991; Bromley 1991) emphasized the need to distinguish between the physical properties of a resource and the institutional arrangements for managing it because a common property is not 'everybody's property.' Hardin's thesis was faulted for failing to distinguish between common use situations characterized by an absence of defined property rights governing access and use, typically referred to as open access, and common property, defined as a distribution of property rights in resources in which a number of owners are co-equal in their rights to use the resource (Ciriacy-Wanrup and Bishop 1975).

Open access in the case of fisheries implies that each potential fisher has complete autonomy in respect of use since no one has the legal ability to keep others out; the natural resource is subject to the rule of capture and belongs to one until it is in someone's physical possession (Bromley and Cernea 1989). In open access there are no property rights; there is only possession. In other words, property – a social contract that defines an individual and an object of value vis-a-vis all other individuals – cannot exist when an individual must physically capture the object before it is brought under effective control. Under common property, however, the rights of the co-equal owners are not lost through non-use of the resource. But potential resource users who are not members of a group of co-equal owners are excluded. Common property is private property for the group and to that extent the decision regarding who shall be excluded belongs to the group. In view of the foregoing, Hardin's hypothetical pasture would fit into a regime of open access whereas the freshwater fisheries in our study area, as we shall see, could be characterized as common property resources.

Incentives for Common Property Rights in the Freshwater Fisheries

Our investigation of the management strategy of the freshwater fisheries in Southwest Nigeria reveals that these renewable natural resources are being managed under common property regimes through local collective actions. The rights of ownership of lakes and rivers in the area has been traditionally assigned from time immemorial and the age-long socio-cultural values of the fishing villages are strongly in favour of collective actions in fishery management. The ownership of

open waters in the rivers, creeks and lakes is communal. The indigenes of each village claim descent rights over the use and management of the fishery resources. Communal ownership implies that the resources are subject to the rights of common use by all indigenous members of a particular village. As descendants of the founder of a particular village, the indigenes regard themselves as having equal rights to fish in any of the aforementioned fishing grounds. Even if an indigene of one village is engaged in any occupation other than fishing, his or her ownership rights cannot be denied. Such a person is free to enter into fishing whenever he or she decides to do so; and to participate in decisions relating to the management of the resources including the defence of the territorial fishing boundaries when the need arises.

Members of the village who presently have ownership claims over the fishing grounds become owners by virtue of their membership of the particular lineages through which the villages were founded. Invariably, their heirs would also become co-equal owners through the same lineage affiliation. The owners demonstrate strict compliance with the inheritance rules and practices, maintain exclusive rights over the resources and uphold the principle of inalienability so as to ensure ease of transferability to their heirs. It is worthy of mention that the right of an individual under the communal ownership system covers only the use of the resource and not its alienation. No individual has the right to transfer any portion of the fishing ground in the rivers, creeks or lakes permanently or even temporarily in any form whatsoever.

Besides, certain features of the fishery resources and the rural economy provide strong incentives for collective actions at the local level. For instance, it is difficult to establish private property rights in the riverine fisheries because the associated transactions costs will appear to be too exorbitant and can hardly be borne by any member of the fishing community. Consequently, no objections have been raised against communal ownership of fishery resources by individuals within the community. In addition, in view of the seasonality of fish production activities and variations in the productivity of the fisheries from one location to another (Olomola 1991), private property rights cannot be effectively established. This is because it will be difficult for an individual to have access to varying portions of the resources from time to time and to bear the costs that will be involved in demarcating specific sites and in guarding against poachers. It is inevitable therefore, that fishery management in the area tends to persist under common property regimes.

Moreover, the procedures for establishing and enforcing common property rules do not encourage free-riding. The mechanisms of management make it possible for the behaviour of a fisherman to be easily detected. All the resource users depend on fishing as a means of livelihood and there is widespread understanding that the benefits of proper management in terms of increased catch and earnings will accrue to them almost to the same degree. The authority to regulate resource use and to protect the fisheries in the interest of the past, present and future members of a

particular village lies with the village head and the council of elders acting as representatives of the villagers. In each village, such elders are appointed in a manner that is reflective of the geographical spread and lineage affiliations of the resource owners. The elders command tremendous respect from the fisherfolk as dictated by tradition and culture. Any infringement of the common property rules is promptly detected and sanctioned without fear or favour. In view of the foregoing, the fisherfolk did recognize and accept the community as the decisionmaking unit and have discouraged the role of individuals in matters relating to the access to and control of the fishery resources commonly owned by them. In what follows, we examine the mechanisms of fishery management and the extent of compliance with common property rules.

Mechanisms of Fishery Resource Management under Common Property Regimes

As the role of common property resource management is becoming increasingly important in promoting sustainable development of the rural environment in the developing countries, there is need to fully understand the capability of local collective action in the management of natural resources. The rampant cases of policy shifts from common property to privatization or government control should not have arisen if there had been a clear understanding of the social, economic and cultural factors which jointly promote collective actions in managing these resources.

The theory of collective action, also known as the theory of public goods, can provide the basis for understanding the conditions under which users of common property resources (such as fisheries) will act in order to prevent over-exploitation. Collective action is action by more than one person intended to achieve a common goal or satisfy a common interest; which goal or interest cannot be obtained by an individual alone. Achievement means that a public or collective good has been provided. According to Wade (1987), the collective action might be setting and observing a rule of restrained access to a common property resource, and the public good might be the sustainable exploitation that results. Objections have been raised concerning the viability of this theory on the ground that rational, self-interested individuals will not act to achieve their common or group interests unless there is coercion of some other special device to make such individuals act in their common interest (Olson 1971). It appears, however, that there is no strong basis for this pessimism since several studies have shown that local level collective actions are effective in the management of common property resources without the imposition of punishment by external agents (Runge 1985; Ruddle and Johnson 1985; Scudder and Connelly 1985; McKean 1984; Ostrom 1986; Wade 1987) as implied by Olson's proposition.

Our study of the formulation, enforcement and effectiveness of common property rules concerning the lake and riverine fisheries in southwest Nigeria reveals that the members of the fishing communities act in a manner that is consistent with the theory of collective action. There are four ethnic groups in the seven communities covered in the study. They are Abuan (in Ogbema community), Ijo (in Kaiama and Sagbama communities), Apoi (in Sabomi and Igbekebo communities) and Ilaje (in Itebukunmi and Orereara communities). The communities have a long history of existence ranging from 200 to 600 years and all along fishing has been the dominant occupation of the inhabitants. Fishing is carried out in rivers and creeks as well as lakes in the case of Kaiama and Sagbama. Over the years several rules have been laid down by members of the communities to promote sustainable use of these resources.

First, the prohibition of immature catches in the riverine fisheries of Kaiama, Itebukunmi, Orereara and Igbekebo. The major fish types involved are the snake head (*Ophiocephalus Obscurus*) and the bony tongue fish (*Heterotis Niloticus*). Women were in the habit of gathering the fingerlings during the rainy season using baskets. The fish was used for household consumption and was particularly regarded as a delicacy for the young children. Experience has shown, however, that the season following the one during which the practice was rampant often witnessed a lower level of catch of the mature fish (which was indeed highly priced in the area) than would normally have been the case in the absence of widespread harvesting of the fingerlings. It was therefore, realized that the harvesting of fingerlings was adversely affecting the productivity of the fisheries. To remedy the situation, the elders of each community met, examined the problem and imposed a ban on the harvesting of immature fish in the area. With the authority of the head of the community it was easy to communicate such a decision to all members of the community through the appointed 'town crier.'

Second, is the restriction of the use of particular fishing gears either permanently or temporarily. This has been done in Itebukunmi and Igbekebo. The practice of using castnets for capturing large fish, like the bony tongue fish, sprang up in Itebukunmi in 1988 when the fish was noted to be in abundance during the rainy season. Several members of the community frowned at this practice because of its tendency to cause rapid depletion of the particular fish stock and the detrimental effects it could have on their economic well-being. Notably the bony tongue fish is the second most highly priced fish in the areas (second only to the trunk fish (*Gymnarchus Niloticus*)). A mature fish of about 4-8 kg could be sold for between ₦50 and ₦200 as at the end of 1991. The fisherfolk abhor a situation where a large quantity of such fish will be available at a particular point in time whereas at another time during the same season it disappears altogether. They prefer a situation whereby the availability of the fish spreads over the season rather than being limited to a month or two through the use of castnets; at which time prices are likely to be depressed and thus engendering lower level of earnings. Their preference means

that consumer demand can better be satisfied while producer income is stabilized and maintained at a satisfactory level. To allow castnetting therefore is tantamount to offering a licence for killing the goose that is laying the golden egg. The problem was nipped in the bud by the elders in the community who reviewed the development and reversed the trend by imposing a ban on capturing the bony tongue fish through the casting of nets. The mesh size of castnets has been under control since 1988. No one is allowed to use a castnet whose mesh size is wider than 5 cm within the territorial boundary of the community. This restriction is to continue on a permanent basis. Gear restriction in the other community (Igbekebo) affects pole-and line-fishing. The ban on the use of the pole-and-line technique for capturing *Ophiocephalus Obscurus* was being periodical imposed to last for one year on each occasion whenever it was observed that the level of catch was far below expectation based on their fishing experience in the locality. The fisherfolk recognize the prodigious reproductive potentials of the fish and they believe that if the stock remains untouched for one year (in addition to the ban on the harvest of fingerlings) the productivity is likely to improve to their own satisfaction.

Third, is the prohibition of fishing in some creeks in Ogbema and Sagbama. In Ogbema such creeks include *Oone*, *Eghololo* and *Ubaghan*; while the notable ones in Sagbama are *Ndoro* and *Bomadi* creeks. These creeks are regarded as sacred grounds and are reserved only for making sacrifices to some deities which are believed by the worshippers to be playing useful roles in protecting the lives of the inhabitants of the communities. It is also the belief of the people that once the sacrifices are made promptly and properly the deities would release a large quantity of fish from such grounds to other locations where the fisherfolk will be free to harvest. The prohibition is therefore inadvertently protective of the fish stocks in such grounds.

Fourth, is the prohibition of fishing on the days of festival. This is not a common regulatory mechanism. Nor is it intentionally meant for fishery management. It is applied during the days of the yam festival (usually in September) in Kaiama and the one-week festival (usually in May) in remembrance of their late hero who was in indigene of the community. Nonetheless, the prohibition implies that the fish which should have been caught annually during the period would remain untouched. To that extent its indirect contribution to the conservation of the stock of fish in the area cannot be regarded as negligible.

Fifth, is the prohibition of the use of chemicals as a means of catching fish in Ogbema and Sagbama. This is a recent development which is detested by the majority of the members of these communities. In view of the health hazards and environmental degradation associated with the use of toxic chemicals it was not difficult for a consensus to be reached among the inhabitants regarding the imposition of a ban on this obnoxious fishing technique.

Sixth, is the prohibition of the use of magical power in fish harvesting. The ban is in force in the Ilaje communities (Itebukunmi and Orereara) where it has been

discovered that some of the fisherfolk engaged in the use of secret power to increase their catches extraordinarily to the disadvantage of their counterparts. The users of charms and magical power are detected in two days. When someone within the group of fisherfolk in a particular fishing ground is observed to have a catch which exceeds that of any other person several-fold and which is not in conformity with the low variance in catch often observed among them, the person will be accused of using magical power. Also, if, some fish species are observed in the local market or at home to have unusually high rate of spoilage and abnormally low shelf life when smoke dried, such fish would be regarded as a product of magical harvest. The source of supply of such fish could easily be traced and in some cases the procedure is more or less a confirmation of the initial suspicion. The use of charms and magical power is considered to have similar devastating effect to that of chemicals and has therefore been prohibited in the Ilaje communities.

Seventh, is the emphasis on ritualism for the replenishment of fish stock. This is a widespread phenomenon in all the fishing communities. When the level of catch appears to be very low based on the comparison of the catch from season to season it is believed that the solution lies with the water spirits who must have been offended through neglect or infringement of certain totemic taboos. The community members would therefore decide to seek the favour of their ancestral spirits and also appease the water spirits so that fish could be released in abundance. In this circumstance all members of the community are involved one way or the other in the ritual celebrations. Besides, the worshippers of specific deities offer sacrifices in the sacred grounds from time to time and pray for increased availability of fish. A manifestation of the annoyance of the deities is the lack of adequate rainfall during the rainy season as it is the case sometimes in Ogbema. The problem is usually solved by performing rituals for four days to appease the gods and to invite rainfall. At the end of the season another four days would also be devoted to ritual ceremonies for the flood to recede and for fish to be available in large quantity. In Sagmaba special sacrifices involving beating of drums, dancing, wining and dining by members of the community are offered to their ancestral spirits and water spirits for increased fish availability on an annual basis. There are some lakes in Sagmaba (e.g. Tungbe, Akpolokia and Akpayia) which could not be entered for fishing unless permission has been sought through special rituals to the water spirits believed to be controlling the lakes. In Itebukunmi elders in the community decided in 1983 to invite a spiritualist to perform rituals in their territorial waters in order to increase the productivity of their fisheries. As the rituals were performed the spiritualist warned the inhabitants against pilfering of fish within their territorial waters. They were made to believe that the low level of catch at that time was a penalty by the water spirits against pilfering which was becoming rampant among the members of the community.

The eighth regulatory mechanism (although inadvertent) is the incidence of taboos. Some of the fisherfolk regard the eating of some fish species as a taboo,

especially in Ogbema, Kaiama and Sagmaba. In Ogbema, it is forbidden (on totemic grounds) for the village head and his second in command to eat certain fish species. Thus, members of the ruling house who are fishermen often refrain from catching those fish species. There are also individual taboos in these communities which are reinforced by the belief that frequent ailments will bedevil the lives of those who violate them. The management implication of taboos is that the fish species which are not being caught by some fisherfolk, because it is forbidden for them to eat such fish, are apt to remain protected until they have the misfortune of being caught by those who are free to eat them.

The ninth and the last mechanism is the use of closed seasons in the lake fisheries of Kaiama. There are eight natural fishing lakes (Boulala, Beinmolala, Amagbale, Opomu, Awere, Akarawaruba, Eniaka and Ou) owned by the Kaiama community. In each of these lakes, with the exception of lake Ou, fishing is allowed only twice in a year. The first fishing season corresponds with the rainy season while the second one usually comes up at the onset of dry season when the water level begins to fall. Fishing is done in a particular lake only for one day in each of the seasons. The particular day of fishing and the name of the lake concerned are announced by the appointed 'town crier' with the authority of the community head. Fishing in Lake Ou is closed for a rather prolonged period of time. The fishing season comes up once in seven years. This is in keeping with the injunction of the water spirit which occupies the lake. The spirit is referred to as 'Ou'. It is believed by the members of the community that whoever breaks the injunction and enters the lake with the intention of fishing will be killed by crocodiles. Fishing in Lake Ou at the appropriate time is indeed a remarkable event. The fishing season is open only for two consecutive days. The dates are well publicized within Rivers State through radio announcements authorized by the head of the community. The event has drawn hundreds of participants (fisherfolk) from within and outside the community over the years. Prior to the commencement of fishing, rituals would be performed including the display of masquerades and prayers to their ancestors so that the exercise could be undertaken without hitch. An indication that the water spirit has actually been appeased would be the absence from the lakes of crocodiles and any harmful creatures. All the crocodiles would have turned into sticks and no unfortunate incidence would occur during the occasion. However, to avoid unpleasant consequences participants at the two-day fishing expedition should abstain from sexual intercourse at least one week from the commencement of fishing and must be convinced that they have not been involved in any devilish acts. Furthermore, female participants should not be in their menstrual period. The people believe that anyone who fails to adhere to the injunctions would be attacked by crocodiles and would not be alive to witness the following fishing season.

During the fishing period participants are accommodated in fishing camps constructed around the lake. Fishing is usually declared open by the head of the community by firing a gun shot into the air. The occasion is a source of high income

to both the individuals and the community as a whole. Whereas the indigenes have the right to operate freely, the non-indigenes have to pay access fees ranging from ₦10 to ₦50 each depending on the type of gears employed. For instance, users of matchets are to pay ₦10 per day each while drag netting attracts ₦20. The fee for spear fishing is ₦30 per day per person while set netting and castnetting attract a fee of ₦50 per person per day. The fees are collected by accredited representatives of the community and are paid into the community's purse.

Factors Influencing Compliance with Fishery Management Mechanism

The foregoing regulatory mechanisms adopted intentionally and inadvertently by the fishing communities are indicative of the reasonable extent to which the fisherfolk understand the principles of conservation and the due regard given to the avoidance of over-exploitation of their fishery resources. For instance, by protecting the fingerlings today for a better harvest in the future, they have demonstrated an understanding of the need for sustainable development in the management of their fisheries. This and other regulations enjoy widely acceptability among the fisherfolk through the influence of traditional customs, belief and culture of the people as well as the socio-economic setting in which fishing activities are being carried out. The communities have considerable fishing experience and there are well established social systems based on kinship and virile institutional arrangements. These and other factors account for the limited emphasis on extraordinary measures for the enforcement of rules. In many of the communities, everyone accepts the responsibility of being his brother's keeper; thereby making it possible for deviant behaviour to be detected and penalized effortlessly. Usually the penalty for non-compliance is the payment of fines by the offenders. Anyone who detects an encroachment on the fishery resources by external bodies promptly brings the matter to the notice of the community members and decisions would be taken speedily to ward off the aggression. In this circumstance, every adult readily accepts the challenge to defend the community's territorial waters, which in many cases have a clear-cut boundary. It is only in the lake fisheries of Kaiama that special guards have to be constituted from among the community members to enforce the closed seasons. The guards were empowered by the council of elders to watch out for offenders and expose them or make 'arrests' where necessary. Such an action has been taken so as to discourage free-riding and thus ensure that the substantial benefit that is accruable to the community consequent upon this management mechanism can actually be seen to be accessible to all the fisherfolk who have chosen the right path of abiding by the stipulated rules.

Other factors which have contributed to the high degree of compliance with the management mechanisms include the homogeneity of the fisherfolk, linguistically, culturally and economically, the cohesiveness of the social relations, the display of

a good sense of value in terms of respect for elders and commitment to the belief system as well as the existence of a powerful and respectable traditional authority. Once the elders meet and take a decision, such a decision is binding on all community members because of the respect which the elders deserve and the belief that they will always act in the best interest of the community. Besides, nobody is exempted from obeying the common property rules. The rules are designed for the benefit of all and sundry within the community of co-equal owners of the fishery resources; and not for a particular set of fisherfolk. The feature of equalitarianism appears to go down well with the generality of the fisherfolk and has tended to reduce dissensions to the barest minimum.

Furthermore, the mechanisms appear to be yielding desired results. Both the intentional and inadvertent mechanism are found to be effective in the sense that they have resulted in an improvement in the level of output or are believed to be capable of doing so. For instance, the fisherfolk interviewed in the course of the study confirmed that there has been an improvement in the level of catch since the ban on fingerling harvest was imposed. Similar results were obtained in respect of gear restriction, mesh size control and ritual ceremonies to replenish the fish stock. Since the expectations of ritualism such as adequate rainfall, recession of flood and abundant catch are also being fulfilled from time to time, the belief of the fisherfolk tends to be strengthened. By implication therefore, continued compliance with such a mechanism can be expected in all the fishing communities.

Concluding Remarks

This study provides empirical evidence in support of the effectiveness of collective actions in fishery management as demonstrated in some Nigerian fishing communities. The evidence has come up in contradistinction to the emerging pessimism concerning the effective management of common property resources in Sub-Saharan Africa. In a recent article, Lawry (1990) argues that communal resources are becoming increasingly marginal to the economic well-being of many individual villagers and that the ability of user groups to assert control over all users is limited in view of the variation in the relative importance of communal resources to household income. This incentive problem coupled with the claim that traditional authorities have lost or are losing their legitimacy are the major factors, according to the author, militating against the viability of local-level resource management. These arguments and similar pessimism about the role of collective action are contradicted by our findings. Truly the Nigerian rural society is undergoing some modernization but the level of transformation and diversification of economic activities which has been attained provides insufficient incentives for the creation of a variety of job opportunities. Thus, the economic environment is permissive of local collective actions in the management of communally owned natural re-

sources on which many rural communities depend for the livelihood of their members.

In all the communities included in the study there is mutual agreement among the fisherfolk regarding the design of management mechanisms. There is no problem of enforcement because every member of the community is his brother's keeper. Those who violate rules are easily detected and social pressures are brought to bear upon them. Evidently, the mechanisms adopted are effective in engendering sustainable development of the fisheries. The traditional belief system, cohesiveness of the social system, homogeneity of the fisherfolk and their commitment to the socio-cultural values of the communities are the main determinants of the effectiveness of management mechanisms. The dearth of requisite knowledge concerning the role of these factors has been responsible for the changes in institutional arrangements for fishery management within the local communities of many developing countries. In many instances, such changes are informed by theoretical models and development orientations of external agents rather than empirical evidence regarding the capabilities and incentives of local-level collective actions. It is disheartening, however, that the changes have not only failed to achieve the desired results but have also led to the frustration of local initiatives and heightened the inefficiencies in the use of fishery resources.

In Nigeria, any emphasis on the alternative management strategies such as privatization and government regulation being frequently recommended in the literature will be a misplaced priority. The unfolding results are in support of management under common property regimes. The economic, social, and cultural settings in the fishing communities are in favour of local-level collective actions. The communal ownership of riverine fishery resources and local-level actions for managing them need to be encouraged and reinforced in Nigerian fishing communities. The government can play a facilitating role by assisting to define the boundaries of each fishing community on the territorial waters where they are currently in dispute or non-existent. Policy actions should also be geared towards recognizing and strengthening the traditional authority systems so that they can continue to be effective in the formulation and enforcement of common property rules at the local level.

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