CHECKLIST AND ASSESSMENT OF EFFICIENCY OF SOME TRADITIONAL GEARS AND CRAFTS USED ON RIVER BENUE

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ABSTRACT
The study was carried out in 2006 from January to October. This covered the dry season and the rainy seasons of the year. The work was carried out along the Lower River Benue. The data were collected monthly using questionnaires and taking photographs of the crafts and the gears by visiting the fishing areas of Abinse, Wadata, Agatu and Kastina Ala. More than half of the one hundred and fifty species of fish native to Nigerian waters were caught in commercial quantities using these gears. A few types of selected gears seem to be distributed according to tribal patterns. It is on this basis that one hears fishers saying "why should I use the Jukun, Tiv, or Hausa type of gear". In most cases, fishermen will always choose the most efficient type of gear despite the tribal affiliations. The efficiency and use of the gears and crafts was also seasonally based. The commonest gears observed during the study were scoop net, doubled chamber cane trap, woven trap, and Malian trap. In addition, most of these gears were found to be more efficient on predatory fishes. It was also observed during the course of this study that the cost of making these gears is relatively low compared to the imported types. The commonest crafts observed during the study were spear, knife, machete, planked canoe, dugout canoe and calabash. The traditional gears and crafts were cheaper than the imported ones therefore easily affordable by the local fisher forks. The spears and machetes were used as accessory instruments while fishing. The gears were observed to be either passive or active gears.

INTRODUCTION

According to Reed *et al* (1967), prehistoric fishing is known to have started with hooks and some nets. The early activities must have been limited to streams, riverbanks, creeks and close to shore water bodies. As there was a decrease in shore stock there then arose the use of gears and crafts, but before the advent of these gears, fishing was carried out using crude methods such as forming barriers across water bodies and obstructing the flow of water, fishing extensively with baskets and weapons such as spears and matchets Kumar (1992). As time went on, traditional traps such as Guru came to scene; this trap is set with the aid of a fence built across the river or stream with its catching chambers pointing down streams. This catches fishes moving upstream.

According to Holden (1991), more than half of the one hundred and fifty species of fish native to Nigerian waters are important in the commercial catch. He further stated that owing to the fact that the mode and niches in which these fishes are found are not the same due to the changes in seasons, gears used to capture such fishes; the pattern of fishing must be changed if the fishermen are to be successful in their fishing activities. According to Reed *et al* (1967), changes in season usually necessitate a complete switch-over from one gear to another several times from year to year. When there is a rise in water level, certain types of gears must be used in certain areas. The same areas which may not be fishable with same type of gear may

become fishable when a different type of gear is employed by the same fishermen, Ibrahim (1991).

According to Holden (1991), the efficiency of the local fishermen could be improved by the introduction of a few selected types of gears, but it has been observed that many of these materials also compete favourably with the imported gears when used in the same type of seasonal water bodies.

According to Reed *et al* (1967), some of the selected gears seem to be distributed according to tribal patterns. It is on this basis that one hears some fishers saying "why should I use the Jukun, Tiv, or Hausa type of gear". In most cases, fishermen will always choose the most efficient type of gear (Holden 1991).

MATERIALS AND METHODS

The Study Area

The study was carried out in the Lower River Benue, around Benue State, located at longitude 7º 43' N and latitude 8º32' E. The River Benue exists all year round, though the water volume fluctuates with season. The river overflows its banks during the rainy season (May-October), but decreases drastically in volume leaving tiny island in the middle of the river during the dry season (November-April). The river contains several species of freshwater fishes of different families such as Clariidae, Mormyridae, and Centropomidae etc.

PROCEDURE FOR DATA COLLECTION

Data for this study was collected through personal contact using questionnaires at the designated fish landing sites at Wadata, New Bridge, Abinse and Agatu area. Fishermen were interviewed on the traditional gears they use and questions about the local names, mode of operation, species caught, seasonality and efficiency as well as crafts used in combination with the gears . Photographs of each of the gears and crafts were also taken.

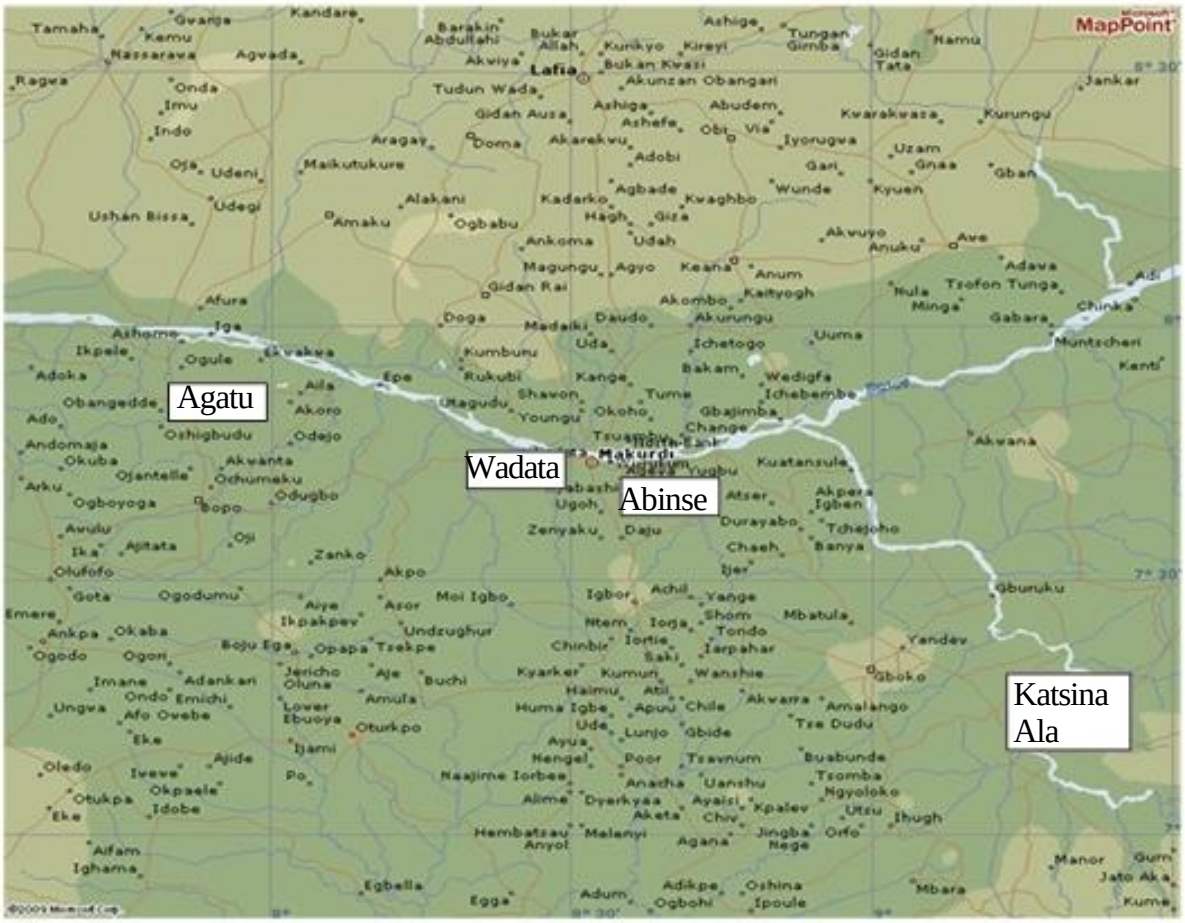

Fig. 1: Map of study areas.

RESULTS

Result of the commonest traditional fishing gears observed during the study period is shown in Table 1 while Table 2 shows the result of the commonest crafts observed during the period of study.

Table 1: FISHING GEARS OBSERVED DURING THE STUDY PERIOD

ENGLISH NAME	LOCAL NAMES		
	Jukun	Hausa	Tiv
Scoop net	Aga	Homa	Kpe u kase
Doubled chamber cane trap	Xjini	Ndurutu	Ikya
Woven trap	Agura	Gura	Ikyoonugh
Malian trap	Agire	Mali	Ikese

Table 2: COMMON CRAFTS OBSERVED DURING THE STUDY

ENGLISH NAME	LOCAL NAMES		
	Jukun	Hausa	Tiv
Spear	Odaji	Mashi	Dagi
Knife	Akwe	Daga	Iho
Machete	Aberaba	Ada	Shom
Planked canoe	Giriginruwa	Taboo	Tso u Manden
Dugout canoe	Ako	Ambra	Tso u Gban
Calabash	Apo	Gwora	Gber

The results show that the different traditional fishing gears and crafts used had their local names, seasonality of operations and gear selectivity. The various gears and crafts observed in the cause of the investigations are shown in plates 1-10.

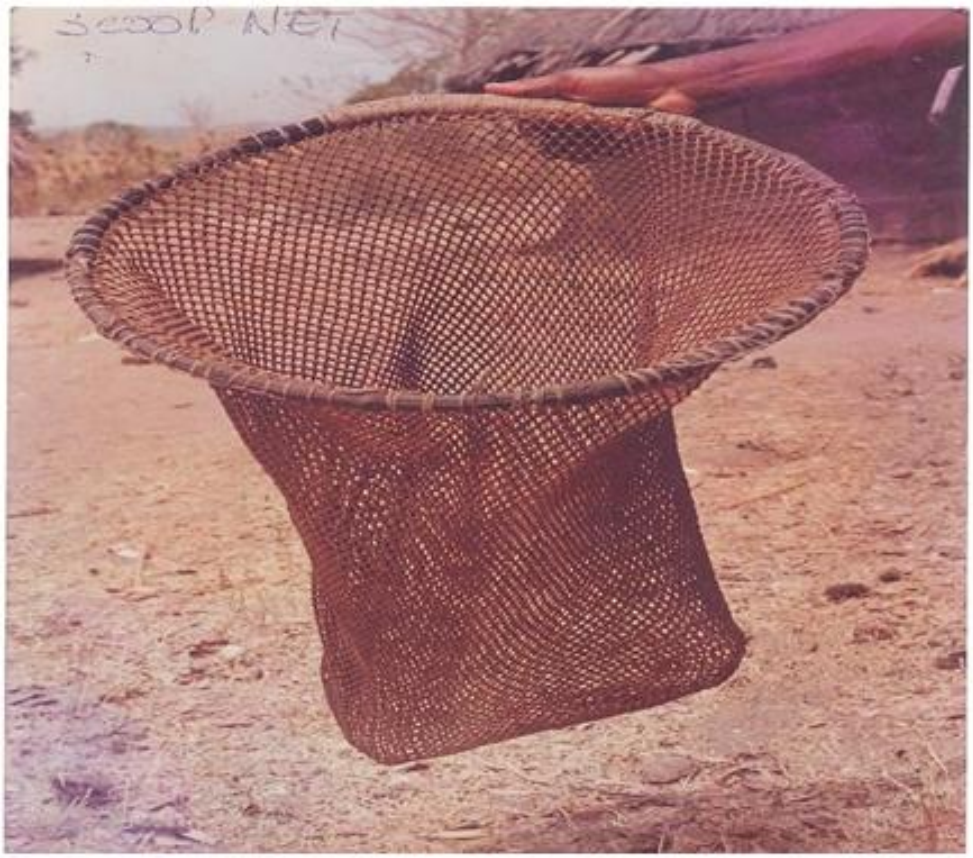

Plate 1: Scoop Net

Tribal names are: Tiv Kper u kase, Jukun Aga, and Hausa Homa

Plate 2: Doubled chambered cane trap.
Tribal names are: Tiv Ikya, Hausa N'druttu, Jukun Xjini

Plate: 3. Woven trap
Tribal names are: Tiv Ikyoonugh, Hausa Gura, and Jukun Agura

Plate: 4. Malian trap.
Tribal names are: Tiv Ikese, Jukun Agire, and Hausa - Mali T

Plate: 5. Spear
Tribal names: Tiv-Dagi, Jukun-Odaji, Hausa-Mashi

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Tribal names are: Tiv Iho, Hausa Daga, and Jukun - Akwe

Plate: 7. Machete

Tribal names are: Tiv Shom, Jukun Aberaba, and Hausa Ada

Plate: 8. Planked canoe
Tribal names are: Tiv - Tso u Manden, Jukun Giriginruwa, Hausa - Taboo

Plate: 9. Dugout canoe
Tribal names are: Tiv Tso u Gban, Hausa Ambra, Jukun - Ako

Plate: 10. Calabash
Tribal names are: Tiv Gber, Hausa Gwora, Jukun - Apo

DISCUSSION

It was observed during this research that the materials used in the construction of these fishing gears and crafts were locally available. These materials were trunks of hard woods, palms, vines, canes, lianas, reeds, grasses, barks of plants and trees, as well as nylons. This is in agreement with the works of Reed *et al* (1967), and Udolisa (1995). The cost of making these gears and crafts is low, therefore, could easily be afforded by most traditional fishermen. This places traditional gears and crafts at an advantage over the improved and imported fishing gears, which are costly and can not be afforded by our poor fishermen. This is why there has evolved a vast array of traditional fishing gears. This observation is in agreement with the work of Reed *et al* (1967).

Apart from the siene net which, sweeps all the species of fish, most traditional gears have their specific species of fish to catch. During the course of this work, it was observed that basket and Malian traps caught mainly the big size fishes such as Lates, Gymnarcus and Clarias spp which is in agreement with the work of Holden (1991). Most of the traditional gears were found to be more efficient on predatory fishes. Lates and Gymnarchus were mainly caught using the hook and line and single - set long - lines. The Bugu-bugu were more efficient on the naked fishes.

Bottom drift nets are better for species like Clarias and Synodontis. Spears, knives, matchets, were mainly used as accessory gears on large species like *Nile perch*, large sized *Tilapia, Clarias*. The 'guru-jaken lendi'

is the gear for Cray fish and small sized fish used mainly as baits.

Based on the mode of operation, gears are classified as passive and Active gears (Ibrahim, 1991). Passive gears are gears that can be applied but the target fish can not be caught instantly. The fishermen have to set the gears in place and wait until there is sign that the fish is impaled or entangled. Passive gears include: drift nets, Gura basket, Malian traps, Suru, N' duruttu and a host of others. Others are single setlines, foul-hook line, bugu-bugu, drifting baited hooks. An active gear on the other hand is one in which the gear is set or applied and except there is missed target; the fish is caught at that very instance. Active gears include siene net, cast nets, scoop nets, knives, spears, machetes (Ibrahim, 1991).

It was also observed that the seasonality of the water environment determined which types of gear to use. Some fish gears found their use only during dry season, others were used during rising water levels but in some cases, some gears could however be applied both during rising water levels, receding water levels and in some cases at low water levels. This agrees with the work of Reed *et al* (1967) who made similar observation. This ensured that all the niches in the water environment were adequately fished. This is necessary since most local fishes change their habits and habitats at different times of the year.

It was also observed that drag nets, scoop nets, fish fence, and drift baited lines, knives, sickles, spears and machetes were restricted to only low water level area which agrees with the work of FAO (1999). This could be attributable to the facts that the fish gears are better operated at low water level and the calm nature of the water current during dry season. Some gears were found to be used mainly at receding water levels. Such fishing gears include the Okahwa, and Oka-ha traps. On the other hand, cast net, basket traps, Malian traps, Atabilli triggered traps, hook and line, foul-hook lines, and bugu- bugu were found to be used during rising and receding water levels.

Some crafts were used to aid fishing activities in the areas of study. Such crafts include dugout canoes, half dug-out canoes, and planked canoes and in some instances motorized boats were also used mainly to transport fish to landing sites (FAO/UN, 1985), and Ibrahim (1991)

Most fishing gears were named according to tribal patterns of the fishermen based on the exiting tribes of the fishing communities where this research was carried out. Among such communities are the Tivs, the Hausa, and the Jukuns apart from English which is the medium of communication. This helped in the identification, use and mode of operations of these fishing gears as the communication was in the local tribes.

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