

# COMMUNITY MOBILIZATION FOR WATER HYACINTH CONTROL STRATEGIES: EXPERIENCES FROM KAINJI LAKE AREA, NIGERIA.

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## ABSTRACT

A description of the approach adopted for the manual clearing of water hyacinth (*Eichhornia crassipes*) beaches around Kainji Lake area is given. The problems posed by the weed to the fishing activities are enumerated. The various strategies in organizing the communities for the physical removal of the weed are expatiated. Factors responsible for the success recorded in the approach are equally highlighted.

The paper, in conclusion, gives recommendations on how the approach can be replicated in other water bodies taking into consideration the socio-cultural characteristics of the various ethnic groups in different parts of the country.

## INTRODUCTION

The River Niger was dammed for the generation and supply of hydroelectric power to parts of Nigeria and Niger Republic in 1968. With a surface area of 1,237 km<sup>2</sup> and an average depth of 11m, the resulting lake was, by then, the largest man-made water body in West Africa.

Following impoundment, an important artisanal fishery developed with an annual fish yield reaching 28,500 metric tons (Ita 1982). However, immediately after impoundment, there was a noticeable rise in the number of fisherfolks who were increasingly adopting damaging fishing

methods that eventually led to the decline in fish yield. Coupled with the problem of influx of fisherfolks was the infestation of the water body by water hyacinth (*Eichhornia crassipes*). *Eichhornia crassipes* (Martius), an exotic plant species, which was absent on Kainji Lake until 1988 was first noticed on the lake in 1989, and by 1994 had a frequency of 91% (Ayeni et.al. 1999). By 1995, about 32% of the lake had been colonized by aquatic macrophytes of which water hyacinth alone constituted over 52%. In 1994, the Federal Government of Nigeria initiated water hyacinth control measures on Lake Kainji by providing the necessary

funding for the National Institute for Freshwater Fisheries Research (NIFFR) to carry out research and support the water hyacinth control efforts.

In collaboration with the Nigerian-German Kainji Lake Fisheries Promotion Project (KLFPP), two control measures, namely; manual and biological control measures were embarked upon. The manual control centers on the physical removal of the water hyacinth through community based efforts while the biological control involves the introduction of *Neochetina eichhorniae* (Warner and *N. bruchi* (Hustache) weevils to infest, weaken and eventually kill out the water hyacinth.

This paper attempts at highlighting the various community mobilization strategies adopted at the physical removal of water hyacinth at beaches by fisherfolks around Kainji Lake area. Local knowledge shows that the infestation of water bodies by water hyacinth has many deleterious effects on fishing, navigation and other livelihood activities carried out within such water bodies. Some of the characteristics of the aquatic weed are that it is a free-floating weed that possesses extensive fibrous root structures. It has a high growth rate and can double its surface within 25 days. It can thus form large free floating islands.

Some problems posed to fisherfolks and other lake users by the infestation of water hyacinth are:

- areas covered with water hyacinth have few fish;
- mats of water hyacinth on the lake can get fishing nets entangled and dislodged;

- water hyacinth prevents access to beaches by canoes
- venomous snakes live within the water hyacinth and this could cause hazard to villagers washing and collecting water; and
- cattle rearers also claim that the plant is toxic therefore causing death if consumed by livestock.

## OBJECTIVES OF THE STUDY

The study aims at:

- highlighting the various strategies adopted at communal clearing of water hyacinth by fisherfolks.
- enumerating factors responsible for the success recorded in the exercise and
- making recommendations for future actions.

## METHODOLOGY

The study which was carried out between 1996 and 2000 adopted a combination of methods to gather data and disseminate information. Participatory Rural Appraisal (PRA) tools were the most prominent methods used; i.e. Semi-Structured Interviews (SSI), Focus Group Discussions (FGDs). participatory exercises which include participant observation, diagramming and transect making and visual assessment of beaches using a standardized questionnaire.

Group meetings, drama presentation and radio broadcasts were employed to arrive at decisions concerning actions and to help in reinforcing messages (decisions on actions). Capacity building for relevant staff to carry out the activities was done.

## RESULTS AND DISCUSSION

### Strategies Adopted

#### *Demarcation of boundaries and Identification of Local Institutions*

Before the commencement of the community mobilization exercises, the whole lake area had been divided into strata and sub-strata and the local institutions with their power structure identified (du Feu and Abayomi, 1996; Mdaihli and Alamu, 1994). The demarcation of boundaries and the identification of existing local institutions formed the basis on which subsequent strategies were adopted.

#### *Meetings with traditional authorities and representatives of local communities*

The first strategy taken was that a meeting was held at each of the three Emirate Councils. In attendance at the meetings were the three Emirs, District Heads, Village Heads, *Sarakunan Ruwa*, fishermen representatives and representatives of NIFFR/GTZ. The meetings were held at the three Emirate Council Chambers. It was at these meetings that problems posed by the infestation of the lake area by water hyacinth were discussed and solutions to the problems identified. Decisions taken at the meetings were to be passed on to the fishing communities by the participants at the meetings most especially the District Heads, *Sarakunan ruwa* and fishermen representatives, for immediate action.

#### *Enlightenment campaign meetings around the lake area*

By early 1995, the first enlightenment campaign meeting was organized jointly by the Institute and NGKLFPP. The campaign aimed at:

- Ascertaining the state of knowledge of the fisherfolks concerning the water hyacinth infestation on the lake and the associated problems,
- Identifying the efforts being taken by individual fisherfolks and the different communities towards combating the problems posed by the weed;
- Enlightening fisherfolks on additional scientific information on the characteristics of the weed; and
- Deciding on a plan of action towards controlling and eliminating the weed on Lake Kainji based on some suggestions made at the initial meetings held with traditional authorities and representatives of local communities in 1994.

During this enlightenment campaign tours tagged '*VIP Tours*', musical groups accompanied the entourage and before the commencement of the meetings, the musical group would be rendering songs in the local vernacular on the dangers inherent in the weed and urging communities to combine effort at eliminating it for the overall benefit of the fishing communities. This musical display attracts many villagers to the venue of the meetings. This strategy involved the movement of the Royal Fathers to some specific locations in their areas of jurisdiction. This same strategy was repeated in September/October, 2000. The meetings with the physical presence of the three Emirs lent credence to the importance attached to the exercise and spurred the fisherfolks to be more involved in the physical removal of the weed from their beaches.

**Table 1: The Number of Fishing Localities per Settlement Type,  
by State, L.G.A. and Stratum**

Location	Settlement Type				1996
	1	2	3	4	
<b>State</b>					
Niger	156	13	2	0	171
Kebbi	89	16	6	4	115
<b>LGA</b>					
Agwara*	42	3	0	0	45
Borgu*	69	3	3	0	75
Magama*	41	5	0	0	46
Ngaski*	42	15	3	0	60
Yauri*	50	3	3	4	60
<b>Sub stratum</b>					
01	37	1	1	0	39
02	46	5	2	0	53
03	44	4	0	0	48
04	8	2	2	0	12
05	3	12	0	0	15
06	26	1	0	0	27
07	23	1	2	2	28
08	57	3	2	2	64
<b>Total</b>	<b>244</b>	<b>29</b>	<b>9</b>	<b>4</b>	<b>286</b>

*Note:*

*\* = Local government area, 1 = permanent villages, 2 = permanent fishing camps, 3 = temporary fishing camps (from within Kainji Lake), 4 = temporary fishing camps (from outside Kainji Lake).*

*Source: du Feu et al, 1996.*

### *Training of extension, ADP and other field staff*

Before the commencement of field work, series of training courses and workshops were organized for various categories of field workers (extension, ADP and other field staff) to acquaint them with the tools needed for data gathering and interactions with fishing communities. Some of the training sessions were conducted by invited experts (Mobbs, 1994; Van Poelje, 1996; FACU/ADP/KLFPP) and some by subject matter specialists (Okomoda et al. 1994 & 1998; Opeke 1997) in the specialized areas of community mobilization, qualitative and quantitative research methods, Focus Group Discussion techniques (FGDs) and Participatory Rural Appraisal (PRA). Since the field workers, some of whom are resident in the fishing villages are closer to the fisherfolks they stand better chances of monitoring and supervising the clearing exercises.

### *Weekly monitoring of water hyacinth manual clearing of beaches*

The monitoring team, which was put in place by the Institute and the NGKLFPP, was saddled with the responsibilities of:

- Mobilizing individual communities in their manual clearing efforts by assisting in the identification of days for the clearing and how it will be done;
- Monitoring the progress of the clearing activities in the different communities using a standardized questionnaire for the purpose;
- Documenting observations concerning the quantity of water hyacinth seen in beaches, creeks and the open lake; and

- Liaison with fishing communities on progress made concerning other methods by the government on one hand, and problems encountered by the fishing communities in the course of clearing their beaches of water hyacinth, on the other hand.

The weekly monitoring exercise started in 1996 and as a result of this, the communities were always cooperating with the visiting teams to the extent that a remarkable achievement has been recorded over the years. Table 2 shows the trend of manual clearing of beaches in some selected fishing communities through visual assessment for the period of 1996 to 1999.

### *Preparation and airing of radio messages*

After the series of meetings and training sessions, radio scripts were written, vetted and translated into Hausa language because of the low literacy level of the target audience-the fisherfolks. The use of radio as a means of communication was based on the outcome of an earlier survey which showed media, stations and timing preferences (Ibeun and Mdashli 1994). The radio programme started on a local radio booster station-Radio Niger, Koro, and programmes were aired twice a week. Because of the popularity of this programme and the result of a sampled opinion, the radio programme is now aired on the Federal Radio Corporation of Nigeria (FRCN), Kaduna. The airing of the messages comes up twice a week (Mondays and Wednesdays) and is captioned "FILIN MASUNTA" i.e. Fisherfolk Forum. The messages which

Table 2: Visual Assessment of Communal Clearing of Water Hyacinth in Selected Fishing Communities in Kainji Lake Area

State	LGA	District	Village	Contact Person	Score	Assessment				Remarks								
						96	97	98	99	96	97	98	99					
Niger	Borgu	Malale	Malale	Alh. Abdular Wakili	96	95	100	100		FWH	FWH	NWH	NWH	ATC/P	ATC/P	praised ATK	praised ATK	
					90	65	70	70		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P
	Borgu	Shagunu	T/Leda	Hakini Bala	60	65	71	75		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	
					65	70	78	85		PWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	Praised ATK
	Agwara	Papiri	Buka dubu	Alh. M. Maikanti S. Ruwa	80	85	90	100		FWH	FWH	NWH	NWH	ATC/P	ATC/P	ATC/P	ATC/P	
					90	95	100	100		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	Praised ATK
	Agwara	Rofia	Hikiya	Hakimi Audu	80	85	90	100		FWH	FWH	NWH	NWH	ATC/P	ATC/P	ATC/P	ATC/P	Praised ATK
					90	95	100	100		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	Praised ATK
	Magama	Auna	Anfani	Sani Dan Abu	70	80	85	95		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P
					80	85	90	95		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P
Kebbi	Ngaski	Wawa	Gadanzare	55	65	70	80		PWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P	
				40	55	70	75		PWH	PWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P
Yauri	Ubando ma	Rukubalo	Noma Garba	65	70	75	80		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P	
				70	80	85	95		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P
Yauri	Gungu	Gumbi	Mal. Bagudo	80	90	95	100		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	Praised ATK	
				75	80	90	95		FWH	FWH	FWH	FWH	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P	ATC/P

KEY: PWH: Plenty water hyacinth  
 FWH – Few water hyacinth  
 NWH – No water hyacinth  
 ATC/P – Advised to clear and park  
 ATK – Advised to keep up

initially focused on the problems of water hyacinth, decisions taken at meetings with fisherfolk and appeals for cooperation to get rid of the Kainji Lake area of water hyacinth now keep listeners abreast of all the activities of the Kainji Lake Fisheries Promotion project (KLFPP) on a weekly basis.

#### ***Preparation and distribution of posters***

Since the majority of the target group is illiterate it was thought expedient to prepare posters describing the dangers of the weed especially with reference to declining catches. The posters were taken to some selected fishing communities for pre-testing after which the suggestions made by the fisherfolk were incorporated for final production. The final product was thereafter mass-produced and distributed for pasting at conspicuous locations such as mosques, market center, public buildings and *Sarakunan Ruwa's* residences.

#### ***Supply of anti-snake vaccines***

One of the problems of water hyacinth as stated by the fisherfolk was that the weed harbours poisonous snakes. In order therefore to allay the fears of the fisherfolks, anti-snake vaccines were procured and distributed to dispensaries and clinics bordering the lake area. For effective administration of the vaccines, paramedical staff were specially trained to handle the treatment of snake bite victims. This strategy actually motivated the communities to participate fully in the communal clearing without fearing snake bites.

#### ***On the spot demonstration and involvement of communities near isolated creeks***

During monitoring exercises and tours round the fishing communities, some creeks and non-settlement areas were found to be infested by water hyacinth. Since the areas are "no mans land", nobody cared to clear such areas. Since it was thought to pose a big danger in future if nothing was done, officers from NIFFR visited such areas to first assess the extent of coverage, after which arrangements were made to do the clearing of the isolated areas.

Visits were made to the fishing villages adjacent to the isolated areas and young and energetic boys were mobilized to the spots. The extension officers together with the young villagers would be involved in the clearing exercises after which the villagers were given some token money as compensation.

#### ***Competition and award of prizes.***

To motivate the communities for more active participation, there was an arrangement made for competition and award of prizes for the best-cleared beach around the lake area. The competition involved all the Emirate Councils, Local Government Areas, and fishing communities. Criteria for the award of prizes were stipulated and all the fishing communities were duly informed. Teams of judges and inspectors were sent round the fishing villages and beaches and were to follow strictly the criteria already laid down.

A day was fixed for the ceremony and the Emirs, District Heads, *Sarakunan Ruwa* and fishermen representatives were in attendance at the ceremony. The awards were given to the village heads of the best-cleared beaches through their District Heads. This further spurred the communities to intensify their communal efforts at clearing their beaches.

### **FACTORS RESPONSIBLE FOR THE SUCCESS OF THE STRATEGIES ADOPTED**

The successes recorded in the strategies adopted are attributable to the following factors.

#### **Clearly defined hierarchical power structure**

There is in existence clearly defined hierarchical power structure in the lake area. There are clear areas of authority to which each hierarchy is answerable. From below to the top are layers of authority and this hierarchical structure are followed strictly in the area. With this arrangement already in place it was easy to identify the various office holders and seek their cooperation and assistance in getting the fishing communities for effective mobilization. In Figure 1 the hierarchical power structure in the area is shown.

#### **Existence of clearly defined boundaries and membership**

Social and physical boundaries are demarcated for ease of monitoring and evaluation. Before the commencement of the community mobilization activities the whole lake area has been stratified and the fishing villages divided into States, Local Government Areas and Districts. Equally, membership of each fishing village is known through annual frame surveys (du Feu et.al. 1996). All these make it

possible for effective communication, decision-making and decision taking. In Figure 2 and Table 2 the defined boundaries, strata, as well as settlement patterns are shown.

#### **Group cohesion.**

There is already in existence a high degree of homogeneity in terms of kinship, ethnicity, occupation and religion among the group. This socio-economic and religio-cultural homogeneity plays an important role in making the people to work together as a group.

#### **High dependence on the fishery as a means of livelihood.**

Because the fisherfolks are highly dependent on the fishery they are always ready to cooperate to facilitate collective action to deal with any problem that will disturb their fishing activities. This was why immediately the problem of water hyacinth cropped up, they were ready to find all possible solutions to it.

#### **Cooperation and leadership at community level.**

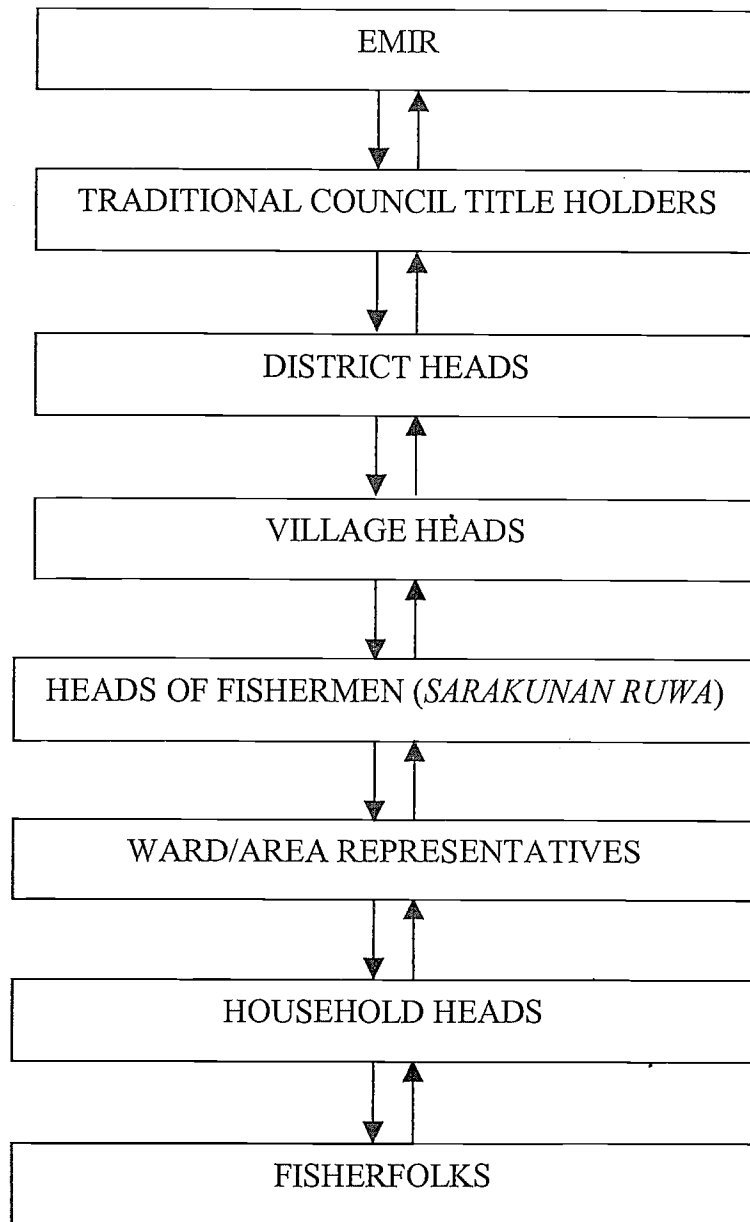
There is an incentive and willingness on the part of the fishers to actively participate with time and effort in the communal clearing of water hyacinth. Since the fishers themselves chose the leaders they are ready at any time to follow their instructions. Therefore, a strong local leadership is very critical for the success achieved.

#### **Utilization of local knowledge**

Ruddle (1994) noted that local knowledge was of continuing importance to present day subsistence fishing over most of the world. Thus, acquiring, using and transmitting such knowledge is still



Fig. 1: Hierarchical Power Structure in Kainji Lake Area.



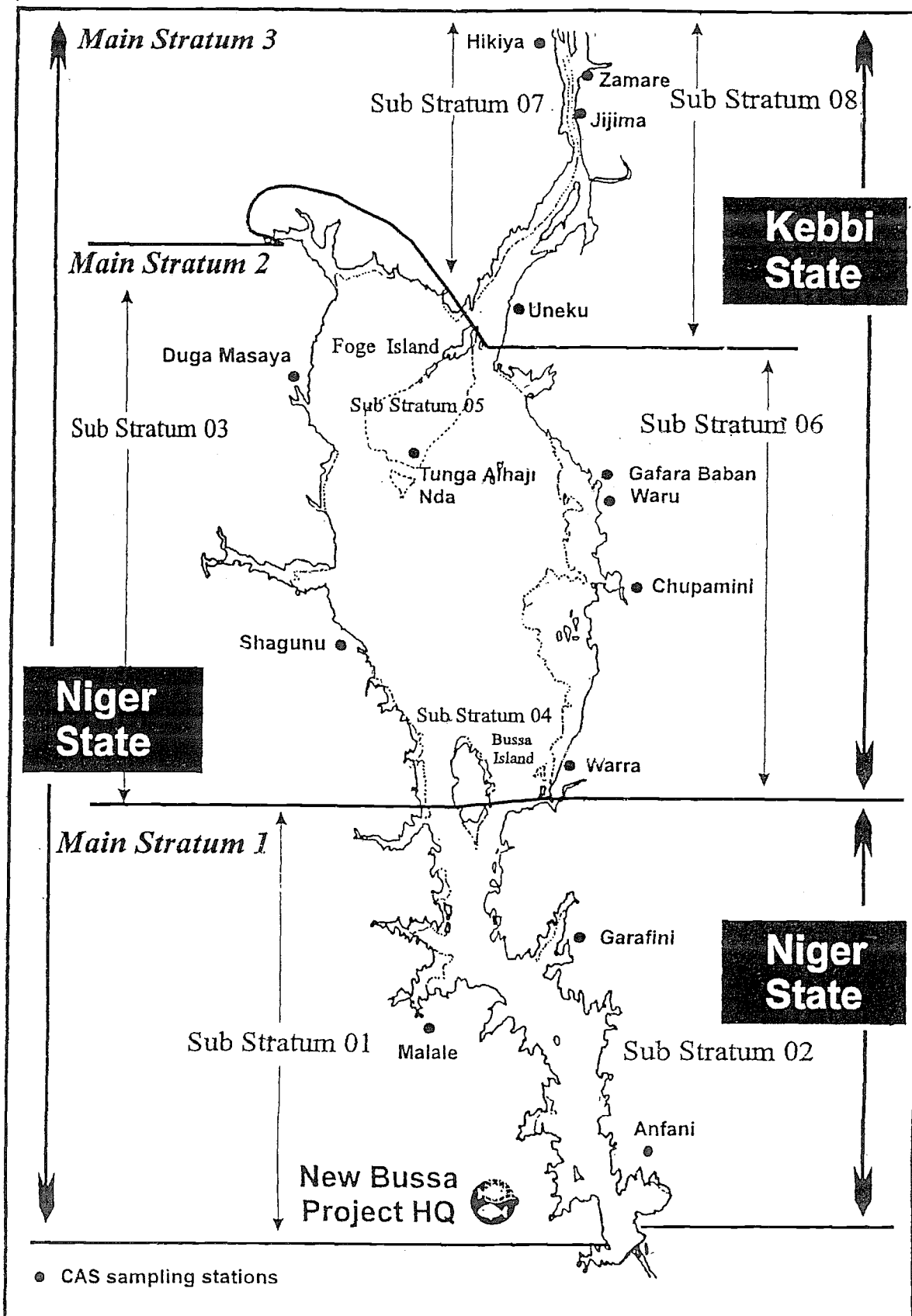


Fig. 2. Kanji Lake showing the location of the States, sampling strata and CAS sampling stations .

extremely relevant to livelihoods in many areas and particularly where fishery resources are still relatively abundant. Right from the onset the local knowledge of the fisherfolks on the water hyacinth was investigated into and their contributions about the local names, the dangers it imposes on the fishery, livestock, human beings and its use as fertilizer for cereals. With the initial acquisition of local knowledge blended with scientific knowledge the target group felt a sense of belonging and able to cooperate in eliminating the weed from their beaches.

### CONCLUSION

Community mobilization as an approach for involving local communities in a problem that bordered on their livelihood is being experimented around Kainji Lake. The success recorded so far has been attributed to the various strategies adopted. The strategies are also successful because of some factors, which were identified to be in existence within the communities. The success has been attributed to the cooperation received from the local leaders and the fisherfolks themselves. Coupled with an understanding of the concept and process of community organizing by the staff involved, sound social, communication and facilitating skills for the promotion of social integration in the communities, ability to work with other teams by all the professionals involved and sensitivity to the local culture.

Although, it has not been possible to give a quantifiable amount of water hyacinth removed through manual clearing, the approach could be said to be the most effective control measures so far adopted around Kainji Lake Area.

### RECOMMENDATIONS

This 'model' is recommended for adoption in other water bodies infested by water hyacinth not only in Nigeria but in other ECOWAS countries. The caveat, however, is that the socio-cultural characteristics and power structure of the areas should be taken into consideration before embarking on such a venture.

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