



THE REPUBLIC OF UGANDA

**MINISTRY OF AGRICULTURE, ANIMAL INDUSTRY AND FISHERIES  
DEPARTMENT OF FISHERIES RESOURCES**



**PROMOTION OF USE OF LIFT NETS IN HARVESTING MUKENE  
(*RASTRINEOBOLA ARGENTEA*) IN UGANDA**

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## 1. INTRODUCTION

*Rastrineobola argentea* locally called Mukene in Uganda, is one of the abundant fish species in Lake Victoria that can be targeted to increase commercial fish catches from Lake Victoria. Mukene is concentrated by artificial light generated from kerosene pressure lamps at night before being scooped by a variety of gears all involving small meshed (mosquito) nets. Fishing gears currently in the Uganda waters of Lake Victoria are mosquito seines and scoop nets. These gears are efficient in shallow shore waters but are not effective in open deep waters. The rough weather conditions in open waters has made fishing for Mukene in these waters using the above gears difficult thus most fishing is concentrated in sheltered shallow areas of the lake. The sheltered areas also serve as breeding and nursery grounds for both Mukene and other fishes in the lake. Catches from sheltered waters include high proportion of immature Mukene, Nile perch, Tilapia and haplochromines. Catching of immature fish is a threat to sustainability of the fishery resources and should be discouraged. Results from stock assessment surveys on Lake Victoria show that the amount and size of Mukene increases with depth. Concentrating the effort in the shallow waters leaves Mukene in the open waters largely unfished. It is therefore the intention of the Department of Fisheries Resources to encourage exploitation of these open water stocks of Mukene in order to boost the country's fisheries output.

Mukene offers a good source of protein especially to the poor and middle-income homes. Because of its small size, appropriate amounts can be packed or heaps prepared according to the affordability of the consumers. Apart from home consumption, the dried mukene is either exported to our neighbouring countries (Democratic Republic of Congo, Kenya, Rwanda and Sudan), or used in production of animal feeds. Mukene has a great advantage in that processing takes advantage of the free energy from the sun. It also offers employment opportunities to women especially in the processing and marketing area which is dominated by women.

One of the strategies to promote fishing for Mukene in the deep waters is by introducing use of lift nets in Uganda waters. Lift nets are operated from two joined canoes locally called Catamaran in Tanzania (Plate 1). The Lift nets were introduced in the Tanzania part of Lake Victoria from Lake Tanganyika where the light fishery is well established. The Catamarans are more stable in rough weather and can be operated in very deep waters. Because of using lift nets, Tanzania has become the

(a)



(b)



(c)



**Plate 1** Photos showing (a) boats joined to make a catamaran, (b and c) shape of the boats.

leading producer of Mukene in the region. The use of lift nets has however not yet been introduced to the Ugandan waters of Lake Victoria. In September 2004, twelve fishers from four prominent mukene landing sites (Kasekulo in Kalangala district, Kalyandere on Buvuma Island in Mukono district, Koko in Wakiso district and Bugoma on Sigulu Island in Bugiri district) were taken to Mwanza Tanzania and trained both in theory and practical aspects of using lifts nets and Catamaran boats. The training took place at a landing site called Kabangaja (Plate 2). The fishers were trained in making lift nets (illustrated in Plate 3) and fishing operations. Photos illustrating fishing operations at night are shown in Plate 4. The fishers were also taken to Kirumba market, a big market for mukene in Mwanza city to expose them to mukene marketing in Tanzania (Plate 6).

## **2. Boats used in lift net fishing**

To use a lift net, two boats are joined together using big and long poles (Plate 1a). An outboard engine is attached on one of the boats (Plate 1a). In Tanzania the common outboard engines used are of 25 Hp and for big boats, they use up to 45 Hp. The boats used in Tanzania are U-shaped (Plate 1 b), big and become more stable when joined together. They have thick horizontal (6"x2") and vertical (3"x2") support structures (Plate 1c). When the boats are cruising to and from the fishing grounds, the distance between the boats is shortened to make them stable but is widened during fishing operations. During the "good season" both boats may be filled with Mukene. This necessitates the boats to be strong enough to support the weight and volume of the catch, the heavy connecting poles and the engine without sinking.

The pieces of timber for Mukene boats used in Tanzania waters are joined using U-shaped nails (1b) and gaps filled with cotton wool soaked in oil. This ensures a smooth outer surface, which is important as during fishing operations, the lift net passes under the boats and gets in contact with the boats

## **3. Example of a Mukene landing site in Tanzania (Kabangaja Landing Site)**

Kabangaja landing site is one of the largest beaches dominated by Mukene fishery in Tanzania waters. In the frame survey of April 2004, over 300 units of joined boats were registered. By the time of training, many boats were found at the landing site (Plate 2a) although some had shifted to other landing sites. The landing site contributes about 2.5 million Tanzania shillings equivalent of 4 million Uganda shillings per month in terms of revenue to Mwanza city. At the landing site, there were hips of sacks of Mukene in various places indicating large amount of

Mukene at the landing site (Plate 2b). The drying of mukene takes place on the ground (Plate 2 c).

(a)



(b)

(c)

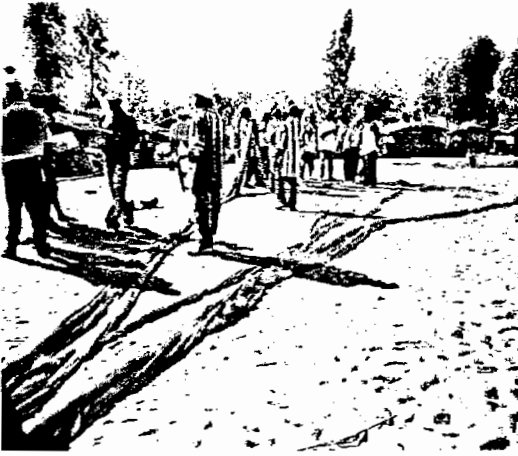


**Plate 2** Photos of Kabangaja landing site showing (a) boats, (b) sacks of Mukene, (c) Mukene on the ground and in sacks

#### 4. Net making

Making of a Lift net starts with measuring and cutting pieces of the net webbing (Plate 3a). The length of the pieces depends on the depth of the fishing grounds. In deep waters, a length of 16 m was recommended. For a 10 mm mesh size webbing, six pieces are measured. Three pieces are joined together and the remaining three pieces also joined together (plate 3b). The joined pieces are immersed in water to make them stretch better (plate 3c). They are aligned one on top of the other (plate 4 d) before the final designing, cutting and then joining again. The finished net has a wide "mouth" and a narrow code end (plate 3e).

(a)



(b)



(c)

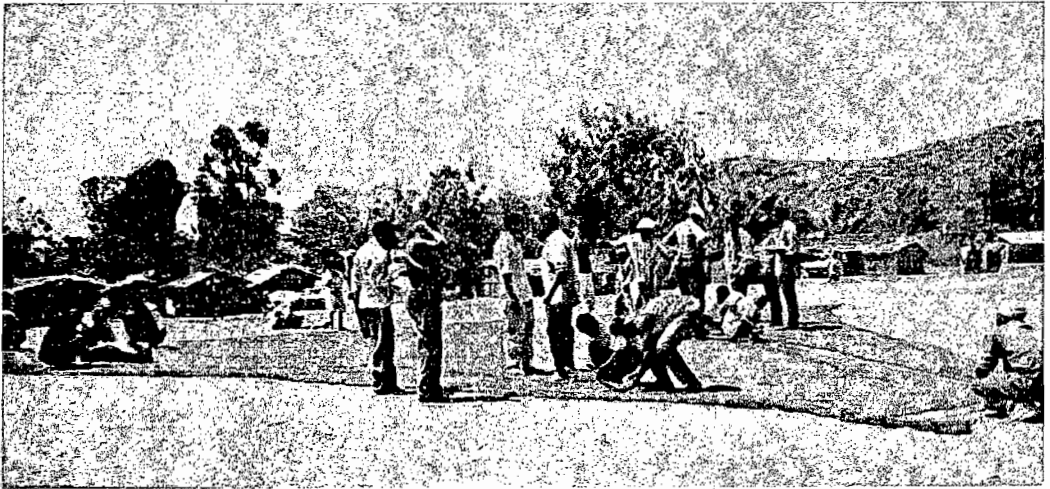


(d)

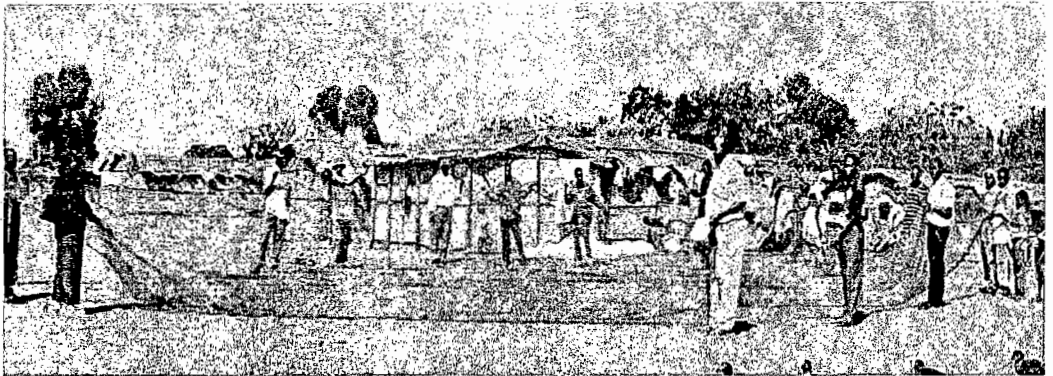


**Plate 3** Photos showing illustrations of different stages in making a lift net. (a) pieces of net webbing, (b) joining of pieces, (c) wetting the pieces, (d) aligning the pieces, (e) size of the net on the ground and (f) shape of a finished net.

(e)



(f)



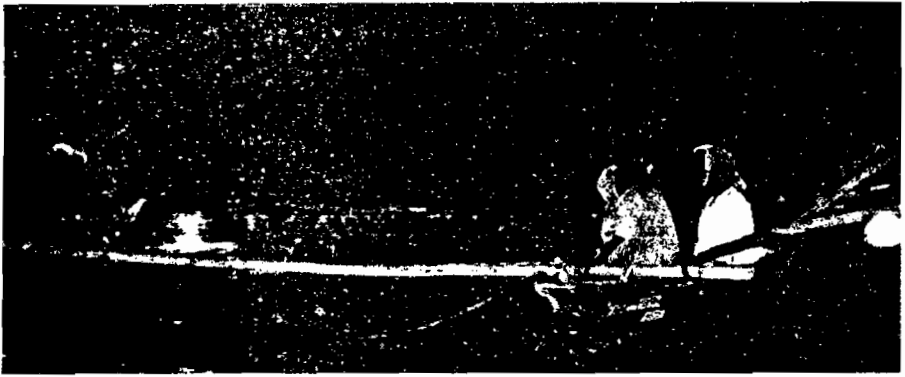
**Plate 3 (cont.)** Photos showing illustrations of different stages in making a lift net. (a) pieces of net webbing, (b) joining of pieces, (c) wetting the pieces, (d) aligning the pieces, (e) size of the net on the ground and (f) shape of a finished net.

## 5. Fishing operations

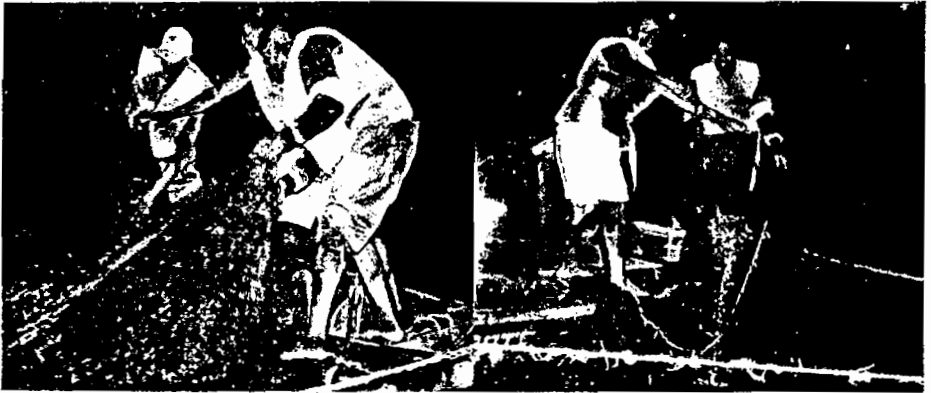
During fishing, fishers wait for about one hour after setting the pressure lamps before the first hauling. For consecutive hauls, the duration of waiting is maintained or shortened depending on the first catch. The duration may be reduced to fifteen minutes when catches are high.

At the time fish is removed from the nets, fishers stand along the edge of the boat which requires stable boats. Illustration of fishing operations are shown in Plate 4. The common V-shaped Ssebo boat used by Uganda fishers may not be suitable for liftnet operations (Plate 5). Standing on one side of a V-shaped boat makes it roll to one side and may capsize.

(a)



(b)



**Plate 4** Photos illustrating fishing operations at night. (a) Pressure lamp is put in the middle to attract the fish. (b) fishers stand on the side of the boat to pull out the lift net and scoop the fish out.



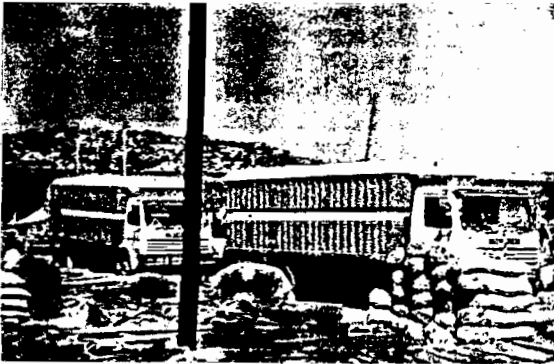
**Plate 5** Photo of V-shaped boats which may not be suitable for liftnet fishing for mukene



## 6. Mukene market in Tanzania (Kirumba Market)

The largest market for Mukene in Tanzania is called Kirumba market located in Mwanza. Although it handles other items like wood products, cereals and fruits, the majority of the business in the market is on Mukene. It receives almost all Mukene from Tanzania waters of Lake Victoria. It is an important market to Mwanza city for employment and revenue collection contributing an average of 18 million (Tanzanian shillings) equivalent of 28.8 million Uganda shillings per month (September 2004). Kirumba market shows an example of a large scale marketing of Mukene. In the market, there were hips of Mukene sacks and many big lorries loading (Plate 6). Mukene from Kirumba market is transported to both internal and regional markets which include Democratic Republic of Congo, Rwanda, Kenya, Zambia and Zimbabwe.

(a)



(b)



(c)



(d)



**Plate 6** Photos showing the sacks of mukene and the Lorries loading Mukene at Kirumba market