

## CHEMICAL NARCOSING OF FISH IN NORTHERN CROSS RIVER

by

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### ABSTRACT

Chemical narcosing of fish was found to be one of the fishing techniques used for harvesting fish stocks in northern Cross River. The preparation of the fish poison has been described in this paper. The Ichthyotoxic plants used for the fish poisoning were identified and *Derris elliptica* recommended to be used for the development of piscicides for the removal of unwanted fish in the fish farms.

### INTRODUCTION

The artisanal fishery in Cross River State is based on riverine, estuarine as well as coastal fish stocks. There are different types of fishing methods and techniques used in cropping these fish stocks in the 129km coastline as well as in the Cross River basin which covers an area of 54,000km<sup>2</sup> (Moses 1980). Among the techniques in use, is the chemical narcosing of fish.

Fish narcosing is the use of poisons for killing fish in small bodies of water and is practised not only in Nigeria but also in other countries such as India, Sudan and Ghana. Dalziel (1955) in his account of useful plants of West Africa, listed fifty plants used for fish poisoning. Some of these plants include *Balanites aegyptiaca*, *Tephrosia vogelii*, *Paulownia polypetala*, *Mimosa d'Almeida*, *Tetrapleura tetraaptera*, *Mundulea sericea* and *Adenia cissampelioides*. Reed et al (1967) also identified such plants as *Tephrosia vogelii* and *Boehavia coccinea* which were being used by the fishermen of the Lake Kainji area, particularly of the tribes of Larawa, Kamberi as well as Gungawa. Bhuyan (1967), Shingur (1975) and Jhingram (1982) studied the uses of plant poisons for the removal of unwanted fish from ponds. Das (1969) and Shingur (1972) reported on the toxicity of *Derris* spp as well as the development of indigenous *Derris* powder in India.

This study was aimed at identifying some of the ichthyotoxic plants used for the chemical narcosing of fish in the northern parts of the Cross River in the Cross River State.

### METHODS

Trips were made fortnightly to the riverine areas of the northern Cross River covering Obubra Local Government between 27th September 1980 to 30th October, 1982 during both low and high flood seasons.

Oral interviews were held with the local fishermen on the methods used for the preparation of the plant poisons and the mode of applications. Occasionally, fishermen were followed during their fishing exercises and plant samples were collected for identification and the species of fish caught were noted.

#### Mode of Preparation and Operation of Fish Poisons

The plants' parts were all collected from the surrounding bushes and pounded in a mortar with some local dried pepper. Clay soil was also added during pounding in order to bind the contents together. Moulds of the mixture were then tied to the tips of palmfronds and then introduced into the water. Intoxicated fish were collected by means of scoop nets.

## RESULTS AND DISCUSSION

Observation made during the study showed that chemical narcosing of fish was carried out in this area during the low flood. The preparation of the fish poisons involved the use of pounded roots, leaves and bark of some Ichthyotoxic plants. These plants were collectively called 'Ilem' in the local language (Legbo) and belonged to the families of Papilionaceae and Mimosaceae as shown in Table 1.

Table 1 Ichthyotoxic plants used in the preparation of fish poisons

Scientific Name	Local Name	Parts of Plant
<u>Tephrosia vogelii</u>	Ilem	Succulent branches and leaves
<u>Derris elliptica</u>	Su-yolo	Roots
<u>Acacia pennata</u>	Ekum-si	Bark of stem
<u>Boerhavia coccinea</u>	Sali-sali	Leaves
<u>Mundulea sericea</u>	Baba-ikpi	Leaves

### The Ichthyotoxic Plants

#### Tephrosia vogelii

These are very common and widely used in the preparation of fish poisons, in the area. The poisonous ingredient is Tephrosin ( $C_{23}H_{22}O_7$ ) which is a crystalline substance only slightly soluble in water. Tephrosin is closely related chemically in its action to the commercial piscicide, rotenone ( $C_{23}H_{22}O_7$ ). According to Dalziel (1956), it has an odour which is due to a volatile oil known as tephrosal.

Tephrosin in its mode of action intoxicates fish by adversely affecting the respiratory system causing immediate death (Reed, 1967). It is very effective in small amounts such as 1 part to 50 millions parts of water (0.02ppm) Tephrosin molluscicide is used in the elimination of schistosome-carrying snails (Reed 1967).

#### Derris elliptica

It has 2 - 5% rotenone content and is widely used also as a piscicide. It acts as a contact poison and damages the respiratory system of fishes as well as causing death finally. The poisonous effect of Derris powder persists for 4 - 12 days and is very effective in shallow waters up to about 1.5 metres depth with water temperature above 25°C (Jhingran, 1982). The action of the poison is comparatively slower in colder waters.

#### Acacia pennata

The active ingredient is the tannin from the stem of the plant and this affects the respiratory organs of fish.

#### Boerhavia coccinea

This is a common weed and it is not considered to be poisonous but it tends to remove slime from the body of the fish (Reed, 1967).

#### Mundulea sericea

The active ingredient is a glucoside called mundulone ( $C_{26}H_{26}O_6$ ) which is more toxic to fish than that of Tephrosin vogelii.

Observation showed that in the open waters, fish were initially dazed, encircling on the surface of the water from 5 - 15 minutes after the introduction of poison. They recovered later if they were not scooped out. The fingerlings were the first to be affected, followed by other juveniles, then species of the family Mormyridae. In the rocky areas with many enclosures, the potent poisons were concentrated and so the fish stocks as well as other aquatic organisms were killed. Some dead fish were seen floating around the area of application the next day. The fish caught by fish poisoning were consumed by the people living in the area. No adverse effect was observed although this might be cumulative.

While some of the plants parts were eaten in some areas the same plants were used as fish poisons in other areas. In the northern parts of Nigeria, Adenium houghel is used for medical purposes whereas in Sudan, it is used as poison (Irvine, 1947). Fish poisoning practices are useful for harvesting fish stocks which are inaccessible to other fishing gears but they destroy the ecological balance of an environment. Although it is illegal to use the technique in riverine areas the local fishermen continue to use it. The use of plant poisons to kill fish for human consumption should not be encouraged.

However, some of the toxins are useful in fish farming. Derris elliptica contains 1 - 5% of rotenone which is commonly used in fish ponds as piscicides. Shingur (1975) found out in India that indigenous preparation from Derris elliptica and other plants such as Balanites roxburghii, Randia domenterium as well as Albizia lebbek were suitable substitutes for imported Derris powder. Suitable piscicides can therefore be developed from extracts of Derris elliptica and used commercially in Nigeria in future for the removal of unwanted fish stocks in ponds.

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