



Mike Burton

Handmade, foldable valve fish traps in Zanzibar.

## Traditional fishing methods of Africa – and why they need to be conserved

*Fishing is one of the earliest forms of hunting as the prey can be caught using relatively simple gear. A wide variety of traditional fishing methods has been developed in Africa and many of them still provide valuable protein and income for rural communities. These methods typically harvest aquatic resources (freshwater and marine) sustainably, and their success is ensured by the intimate knowledge that traditional fishers have of the behaviour and seasonal abundance of their prey. Furthermore, traditional fishers typically have a vested interest in the sustainability of their harvest as they depend on these resources for their livelihoods.*

A rock painting in KwaZulu-Natal dating from 45 000 years ago shows men spearing fish from canoes. Tomb paintings in Egypt illustrate the use of fishing spears with retrieval lines, gill and seine nets, valve traps, and lines with hooks about 4 400 years ago. The use of fishing rods with simple wooden reels is recorded 3 900 years ago, more than 3 200 years before they were invented in the West.

Traditional fishing methods include the use of spears, bows-and-arrows, fishing rods, barriers, traps and nets. The use of poisons is an ancient method of catching fish that is effective in shallow swamps and pools. Some poisons, such as those from the coral tree, have a neurotoxic effect that paralyses the fish. Others, such as extracts from beach-poison-vine, stop the fish from absorbing oxygen through



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**Handmade fishing reel and twine at Vilanculos, Mozambique.**

its gills. Some intrepid fishers use a concoction of powdered wood mixed with milkbush sap, crushed scorpions and caterpillars, snake venom and toad secretions to make a deadly cocktail!

### Various fishing methods

Spears are probably the most widely used traditional fishing gear in Africa. Initially spear points were made from wood, bone, horn or ivory but later copper and iron were used. The metal tips typically have backwardly pointed serrations to prevent the fish from escaping. Gwembe children in Zambia make small fishing spears by inserting thorns into the ends of reed shafts. The Twa people on the Kafue Flats in Zambia previously speared fast-swimming fishes from *mbulu* (dark huts). In 1955 there were over 250 *mbulu* but this traditional fishing method has sadly disappeared. Bow-and-arrow fishing has been recorded in Liberia, Angola, Mozambique and South Africa.

Some rural fishers use curved thorns or fish bones, carved wood, shell or bone, rhinoceros beetle horns and eagle beaks or talons as hooks when line fishing. Gorges, which are double-pointed pieces of wood, bone or shell that are tied off-centre onto the end of a fishing line and lodge crosswise in the throat of the fish, are widely used in central Africa instead of hooks.

The baVenda in southern Africa use a unique device for catching fish that comprises a palm leaf stem from which all the thorns except the last one has been cut off. The whole stem, a combined rod and baited hook without a line, is dipped into the water.

Fishers in Zambia and the Congo attach baited hooks to lines hanging from banana-shaped wooden floats that turn over when the bait is taken. Lungwa fishers in Zambia attach a cluster of handmade bells to their rods, which are stuck into the riverbank, to alert them to a strike. In Nigeria fishers have modified rodent

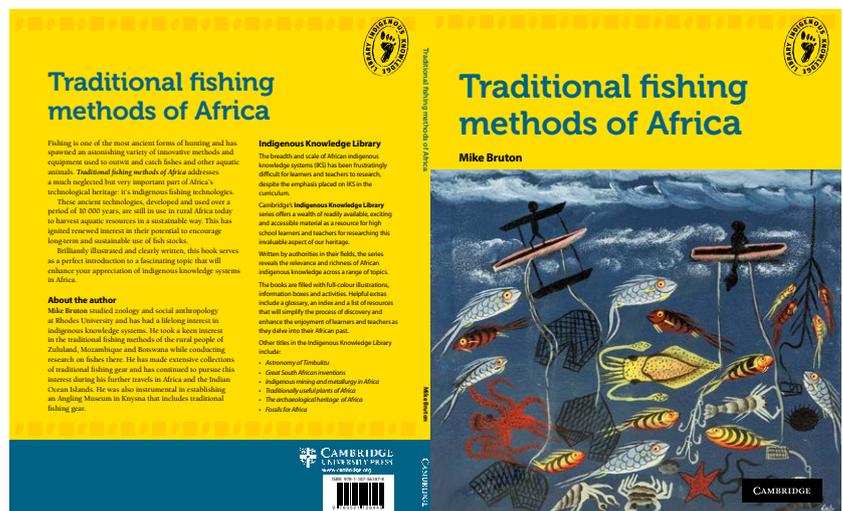
snares into fish-catching devices that have automatic trigger-releases that pull the fishing rod sharply upwards when a fish bites!

Fishers in the Comoros have developed a sophisticated handline fishery that targets oilfish but also catches coelacanths by accident. Previously their lines were made from coconut coir but they now use strands of cotton twisted into a strong cord (*tsissi*) that is rot-proofed in an emulsion of tree bark. Their large metal hooks are baited with fish, squid, octopus or crab. The fishers set out to sea in handmade wooden dugouts with outriggers (*galawas*) and fish at depths of several hundred metres, usually at night. They even know, when a fish bites, whether it is an oilfish (which fights hard like a shark) or a coelacanth (which is sluggish but dogged, like a large grouper).

### Traps and barriers

Barriers made from reeds, papyrus or sticks are commonly used in Africa to guide fish into enclosures or traps where they can be speared. Barriers are also used to intercept the breeding and feeding migrations of fishes and are typically set on receding water levels, on a drying floodplain, or on an outgoing tide. Rock barrier traps are laid out in arcs in the intertidal zone and can be seen at Stilbaai, Rooi-El and Skipskop in the southern Cape. Fish swim over the barriers at high tide and are trapped when the tide recedes. Rock barrier traps are also used in rivers in Malawi, Botswana and Namibia and, most recently, on the Orange River below the Vanderkloof Dam in South Africa where water released for hydro-power generation stimulates fish to swim upstream into the flooded traps.

Traditional fish traps typically have two designs. Constriction traps are trumpet-shaped and set in fast-flowing water and they trap fishes that force their way down the increasingly narrow tunnel. Valve traps are conically shaped with a funnel-shaped entrance that projects into the basket where it forms a 'valve' of interlocking sticks that the fish can enter but not leave. Small valve traps are made from sedges or



**Mike Bruton's book on the traditional fishing methods of Africa, available in book stores and online.**



Ben van de Waaal

**Young fishermen with catches made using homemade fishing rods in the Upper Kavango River in Angola.**

reeds whereas large traps, up to 5 m long, are made from sticks. A valve trap is depicted in the Sun Temple of King Niussere built in ancient Egypt 4 400 years ago!

and gill nets. Tangle nets, which entangle the fin spines of fishes from the side, are handmade from plant fibres. Unlike gillnets, their mesh sizes are not of equal size but they are nevertheless efficient enough to meet the needs

The famous barricade fish traps at Kosi estuary in Maputaland comprise barriers constructed from wooden poles worked into the mud and interwoven with brushwood and planted with mangrove saplings. The barriers are set at right angles to the water flow with a clear channel between them that allows unimpeded tidal interchange and fish movement. Valve traps are set in the barriers facing upstream so that they catch large, seaward-moving fish.

### Crafty nets

Archaeological records reveal that meshed nets were used in ancient Egypt over 6 500 years ago. Fishing nets are divided into two groups: those that are actively used to catch fish, such as scoop, lift, cast, seine, purse and trawl nets, and those that are passive and into which fishes swim, such as drift, tangle



Bruton (2016)

**Artist's impression of the now-extinct *mbulu* dark hit fishing method that was used on the Kafue Flats in Zambia.**

of subsistence fishermen. Fishers swim directly into gillnets which entangle with their gill bones.

Early nets were laboriously handwoven from fibres of beach hibiscus, palm trees, soap-nettle and other plants. The rough yarn was initially twisted together without knots but the finer, smoother fibres used later required knots. Flares and chum, such as fish entrails, are often used to lure fishes into nets. Simple fish aggregation devices (FADs) are widely used to gather fish together and make them easier to catch. On Lake Albert and in Nigeria and Mozambique clumps of grass are thrown onto the water surface to attract fishes whereas papyrus and water hyacinth clumps are used as FADs on the Shire River in Malawi.

The fishing baskets used by traditional African fishers include drag, scoop and thrust baskets. On the Phongolo River floodplain in Maputaland *isiFonya* thrust basket drives were previously highly sociable events that attracted hundreds of people but today just a few dozen men, women and children participate. Sadly, this traditional spectacle is about to die out although it previously yielded up to 400 tonnes of fish per year. Thrust basket drives also take place in Mozambique, Zambia and Angola.

### Boat building and sails

Boats used by traditional fishers range from simple rafts made from papyrus or palm fronds to crude canoes made of bark. Wooden dugout canoes are very widely used in Africa on freshwater lakes and rivers as well as along the marine coastline. They are carved from the trunks of mango, lucky bean, wild teak, mahogany and sycamore fig trees but large trees are becoming scarce and fibreglass replicas are now being used in Botswana and elsewhere. Canoe paddles (*nkhafu* in Malawi) are made from light but hard wood such as wild teak.

Dhows with triangular lateen sails, pointed bows and square sterns are commonly used off the East African coast for fishing. They either take the form of sailed dugout canoes (*galawas*) with two outriggers or more sophisticated clinker-built, wooden sailing boats with rudders. In Madagascar fishing pirogues have developed differently with one outrigger and a square sail that is supported by two masts (a Malaysian influence).

### Cooking fish

Fish catches are preserved and cooked in a variety of ways depending on the species (its size and oiliness), the availability of salt, distance to the market, local climatic conditions, and local customs and preferences. Small fish such as *kapenta* and young cichlids are flash fried in hot oil and eaten whole.

Medium-sized fish are gutted, butterflied, salted and sun- or wind-dried. Large, oily fishes such as catfish, tigerfish, tilapia, eels and lungfish are gutted, sun dried and then smoked over a cool fire, which both preserves their flesh



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Ornamental fish trap from Malawi.

and adds a delicious flavour, but smoking requires large amounts of wood which is becoming increasingly scarce.

### Modern? Or more primitive?

The so-called 'modern' fishing methods that have recently been introduced into Africa are, in fact, primitive compared to traditional practices. They typically overexploit aquatic resources and represent a major threat to rural fisheries. They include nylon throw nets, small-meshed monofilament nylon gill nets, and large-mesh gill nets used for catching sharks for the shark-fin trade but which also catch dolphins, coelacanths, turtles and dugongs in Madagascar and Tanzania as an accidental bycatch. They also include micro-mesh, insecticide-impregnated mosquito nets that are used as seine nets or to cover fish traps. The deadliest of these 'modern' methods are commercially made poisons and explosives that are devastating aquatic communities.

The impact of these 'modern' fishing methods is worsened by the fact that they are often used by migrant fishers who have no vested interest in the long-term, sustainable use of a local resource.

For this reason, it is just as important to conserve traditional fishing methods that use aquatic resources sustainably as it is to conserve the resources themselves.

*Article written by Mike Bruton of the South African Institute for Aquatic Biodiversity (SAIAB), who is the author of the book, Traditional fishing methods of Africa (see insert of cover), available in bookstores.*

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