

The Athu Kotu (Brush Park) Fishery of Sri Lanka



The fishermen of the mangrove estuaries of western Sri Lanka have evolved a system of fishing that creates an artificial mangrove habitat. It consists of a pile of mangrove brushwood being placed in the shallows of the estuaries and lagoons, pegged down so that the wood will not be scattered by water movement. When the wood rots, new branches are added, so a single park may exist in the same place for a long time.

Construction

The first reference to this method of fishing was made in 1910: "Twigs and branches are piled up in a circular area 8-10 feet (2-3 m) across and surrounded by poles driven into the bottom to mark it out and keep the branches from drifting away. This is left for two or four weeks, until the sticks exhibit a copious growth of algae." The trapping of the fish that entered this brush pile was accomplished by encircling it with a 'tat' (a transportable, closely set fence made of small diameter bamboo strips).

This fishery is known as the "athu kotu" (athu = branch, kotu = compound) in Sinhalese, and is still practised very much in the same manner. However, today the bamboo tat has given way to the nylon net. Athu kotus are placed in the estuaries in public lands so no formal claims may be registered. Yet an athu kotu site may be handed down from father to son and as long as any evidence of a brush pile exists no other fisherman will trespass. Many sites presently being used have been in the control of a given family for generations.

Mangrove twigs and branches are used

to make the brush pile. Mangrove is also used for the stand poles, long, straight branches cut to a length of about 4 m and trimmed so that about 15 cm of the side branches are left on the pole. When the athu kotu is being harvested, these poles are placed around the perimeter to form a frame for the encircling net. The projections on the poles allow the height of the net above the water line to be adjusted. A tall barrier, about 1 m above water level, is essential to hold large tarpon, mullet and rabbitfish which have a great propensity to leap over an encircling net.

Mangrove supplies yet another input into the fishery—the bark to tan and dye the nets. Fishermen state that by treating the nets with the bark every 3-4 months, the life of a net is greatly extended from 3 to 8 years.

The cost of the wood is Rs. 300-400, but the present pressure on the mangrove forests for firewood will reduce easy access to mangrove areas and will increase these costs. The other major costs are the net, about Rs. 2,500-3,000, and the boat, Rs. 3,500.

Harvesting

Harvesting of the athu kotus is done at 4-6 week intervals, except in prawn fishing, when they could be taken apart every day. A 2-man team harvests an athu kotu in about two hours. At harvest, the athu kotu is encircled with about 12-14 stand poles and then the net. The two fishermen enter the brush pile and methodically cast



Above: Part of catch, mainly rabbitfish and scat. Below: Men driving stand poles around athu kotu. Title photo: Debris taken out of an athu kotu before bottom of net is closed.



it outside the net. This pile becomes the athu kotu for the next harvest.

Once all the debris is removed, the bottom of the net is drawn in slowly until the edges meet. Then the outer area of the net is lifted high on the stand poles to contain jumping fish. Finally the bottom of the net is raised and the trapped fish scooped up with hand nets.

The harvest from an athu kotu varies with the seasons. The best catches are made when the water is clear and the poorest during the flood season when the water becomes opaque. During the clear water season, an athu kotu will yield a financial return of approximately Rs. 300-400. This income could drop to Rs. 50 during the flood season.

An individual or a family unit may own and operate 20-40 athu kotus. The fishing team consists of 2-3 people, usually from within the owner's family. The fishing team takes on the responsibility of construction and maintenance of the athu kotu and of the boats, while a larger number of people, usually women, attend to the repair, dyeing and storing of the nets.

Table 1. Frequency of occurrence of major species in 35 athu kotus sampled in Negombo Lagoon (June-July 1981).

<i>Siganus</i> sp. (Siganid)	80%
<i>Mugil</i> sp. (Mullet)	80%
<i>Etroplus</i> sp. (Leaffish)	80%
<i>Lutjanus argentemaculatus</i> (Mangrove red snapper)	80%
<i>Lutjanus</i> sp. (Snapper)	70%
<i>Lates calcarifer</i> (Giant seaperch)	70%
<i>Monodactylus argenteus</i> (Moonfish)	60%
<i>Scatophagus argus</i> (Scat)	60%
<i>Ambassis</i> sp. (Seaperch)	50%
<i>Hemiramphus</i> sp. (Halfbeak)	40%

Marketing

The fish collected in the athu kotu are sold locally. As the time from harvest to salespoint is usually under half an hour, the fish are very fresh, often still alive when placed on the market slab. Consequently, these fish sell for 30-40% higher than the price obtained for the same species captured by the driftnet or trawler fisheries. The athu kotu fishermen receive 90% of the retail price, while the slab owner earns 10%.

Survey

We surveyed the athu kotu fishing in



Photos by F. Ranil Senanayake.

Negombo Lagoon during June and July 1981 for this Newsletter report. Negombo Lagoon is approximately 40 km north of the city of Colombo; it is about 13 km long and 3 km wide and contains a large number of athu kotus, around 2,200.

Catch details were recorded from a sample of 35 athu kotus. While more than 55 species occur with some regularity in the catch, only 9 species or genera occurred with a frequency greater than 40% (Table 1). The major species by weight and by frequency in catches are *Mugil* (mullet), *Siganus* (rabbitfish) and *Etroplus* (leaffish). However, in terms of number of fish, the most abundant species is *Monodactylus argenteus* (moonfish) and, even though it is a small fish with hardly any food value, it has a very high catch value. *Scatophagus argus* (scat) demonstrates a similar aspect (Table 2). These two species are in great demand for the ornamental fish trade and have given an added value to the athu kotu.

The athu kotu fishermen now carry plastic bags in which these small but valuable fish (about Rs. 1.75 each) can be brought back alive. Most athu kotu fishermen have also invested in small concrete

holding ponds or floating cages.

Ecology

Ecologically, the estuaries of Sri Lanka are mangrove habitats, although many are presently devoid of mangrove cover. The estuarine fish have evolved to use this habitat for food and/or refuge. Athu kotus increase the potential nursery areas with all the attendant benefits in primary productivity.

The question of whether these artificial habitats merely concentrate the fish without improving total lagoon yield has still to be answered. Meanwhile, mangrove habitat around Negombo Lagoon is being lost to development processes such as urbanization, industrialization and energy consumption. This loss can be offset to some degree by setting up more athu kotus. In fact, in the deforested areas of the Negombo lagoon, the only sources of many mangrove-associated fish species are the athu kotus.

All considered, a well-designed athu kotu fishery for deforested mangrove lagoons may provide employment not only for fishermen and mangrove growers, but also add to the ecological stability of the area. ○

Table 2. Catch data of selected species in athu kotus in Negombo Lagoon.

Species	Mean no. fish per catch	Relative biomass (%)	Relative catch value (%)
<i>Siganus</i> sp.	35.2	100	100
<i>Monodactylus argenteus</i>	65.2	5	92
<i>Etroplus</i> sp.	50.7	78	75
<i>Mugil</i> sp.	31.3	89	74
<i>Scatophagus argus</i>	27.4	12	52
<i>Lutjanus</i> sp.	7.4	20	21