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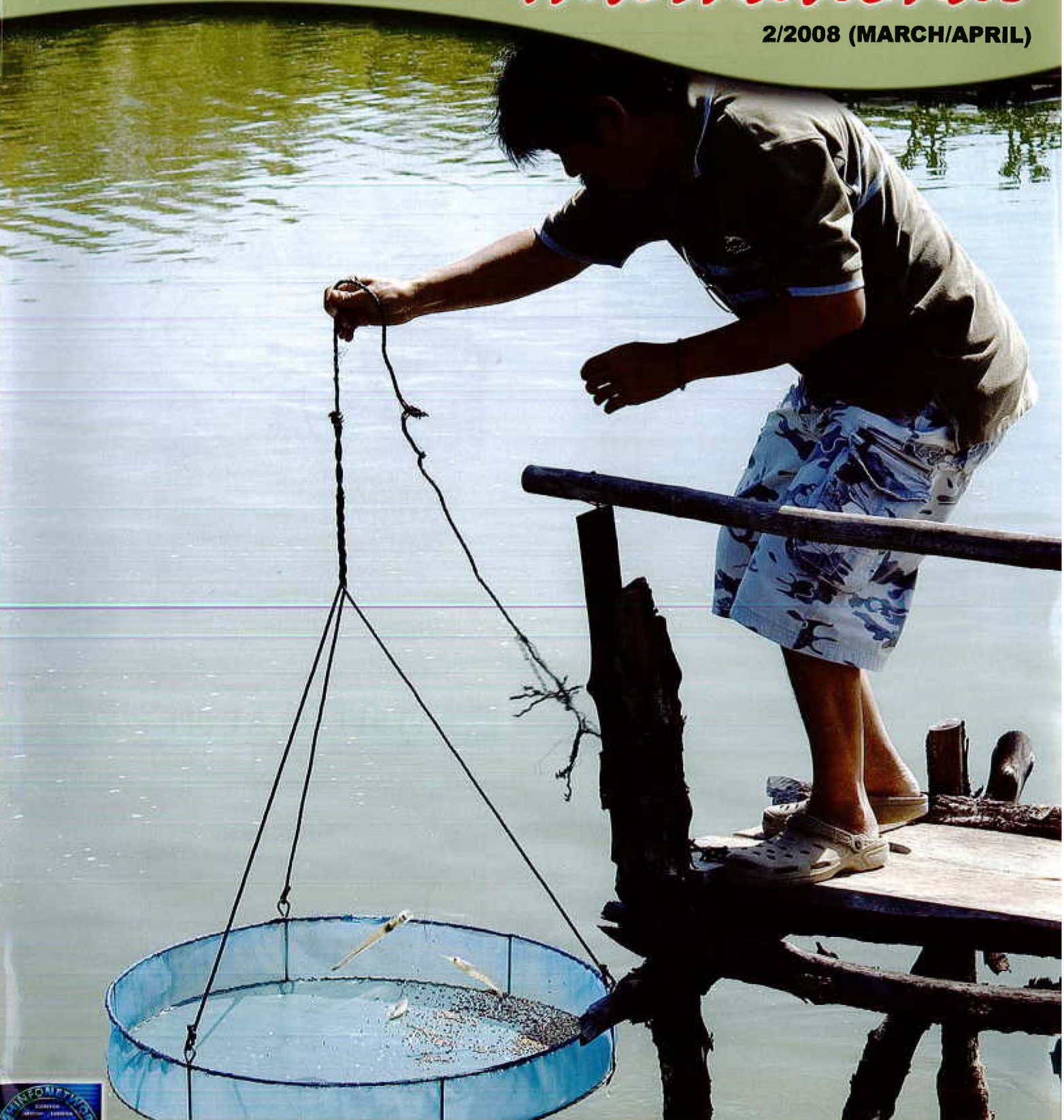


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**T**he Bay of Bengal has been extensively fished for its rich fishery resources since the past several years. However, of late, tuna fishing has emerged as an important fishery activity in the region with Visakhapatnam in Andhra Pradesh emerging as the nerve centre for tuna fishing along the east coast of India.

Tunas are represented by several genera and species and together they form an important pelagic finfish resource. Targeted fishing is being carried out along the coast and currently tuna fishing has reached the status of a major industry with several private fishery entrepreneurs, processors and fish exporters participating actively with local fisherfolk in harvesting and processing tunas. Of the several species contributing to the tuna

**Fishing for the yellowfin tuna in the western part of the Bay of Bengal by traditional Indian coastal fisherfolk is a recent development. Tuna fishing has reached the status of a major industry with several private fishery stakeholders actively involved.**



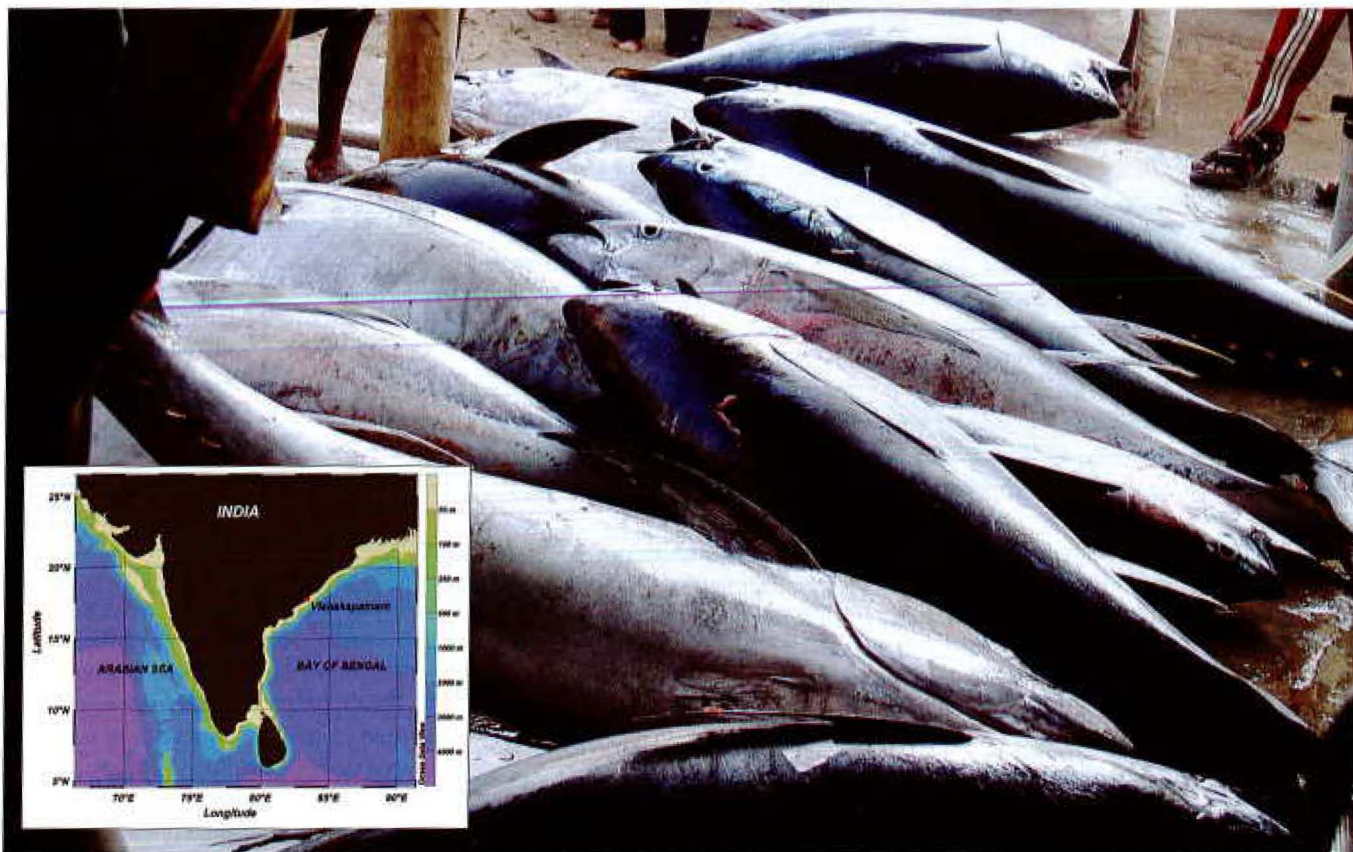
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fishery, the yellowfin tuna, *Thunnus albacares*, forms the major component of the catch. This species is also the most commercially sought after tuna and there has been a concerted effort both by the private and government sectors to exploit the

## **The small-scale tuna fishery of the western Bay of Bengal**



Tuna landed by the small-scale fishery of the western Bay of Bengal. Inset: Map - showing region covered by the fishery.

yellowfin tuna resources available in the Indian waters. Interestingly, it is the non-mechanised sector operating hooks and line, which mainly harvests the tuna. The local fishermen, especially at Lawsons Bay and Pudimadaka villages of Andhra Pradesh, travel out to the oceanic waters (>200 m depth) with ease in their small crafts and are skilled in catching large sized yellowfin tuna. Although the operation looks simple and effortless, it in fact requires a lot of skill and physical endurance to catch these extremely fast moving fishes.

### Crafts used

Wooden *catamarans* consisting of logs strapped together are the most popular craft

used in tuna fishing. Fibreglass canoes shaped like *catamarans* have been introduced very recently in the fishery. The crafts use wind power for propulsion and huge sails mounted on the crafts give a speed of up to 10 knots. When wind conditions are favourable, the crafts are able to reach the fishing grounds, which are about 14 -15 km away from the shore, in 2 - 3 hours. However, when wind conditions are unfavourable, the fishermen use oars to steer the crafts and then it takes 5 - 6 hours to reach the fishing grounds. Of late, a few units operating with hooks and line, especially at Pudimadaka village, have been fitted with outboard engines for propulsion. However, even these units have sails and use engines only if wind conditions are not favourable.



Bringing the tuna onboard the craft.

Each crew, consisting of 3 - 6 members, starts out for fishing early in the morning and returns in the evening or sail out late in the evening and return by early morning. However, the time of return after fishing depends purely on prevailing wind conditions. If wind conditions are not at all favourable, fishing activity is suspended for the day. Sails of varying size and shape are used by the crafts and are generally made from old plastic gunny bags sewed together with monofilament twine and fixed to the craft with a bamboo mast. The sail is opened when wind conditions are favourable; otherwise, it is neatly rolled up and kept alongside the craft until wind conditions become favourable.

### Action plan for the development of tuna fisheries

The Marine Products Export Development Authority (MPEDA) of India, the nodal agency for the development of the seafood industry and trade, has chalked out a perspective plan to increase the export of tuna to 12 percent from the present 0.1 percent. The anticipated export revenue from tuna alone would be US\$ 500 million by 2013. The plan aims to diversify the export production which is currently shrimp-oriented. Shrimp forms about 53 percent of the export earnings at present. The action plan is expected to boost the economy of the Andaman & Nicobar group of islands of the country, an area responsible for one third of the country's tuna and fifty percent of the region's marine resources. The Andaman & Nicobar group of islands are located in the Bay of Bengal, stretching a length of about 700 kms, composed of some 572 islands, islets and reefs. The marine fishery resources of this group of islands is estimated to be around 0.244 million mt. The annual average fishing is estimated around 27 700 mt, of which the composition of tuna and tuna-like fish is around 500 mt. The tuna fishery is the single largest untapped marine fishery resource of the islands.



The action plan envisages conversion of 100 fishing vessels to long liners for efficient exploitation of tuna resources. Other production centres which the action plan would target would be Visakhapatnam and Tuticorin in the east coast and the Laccadives group of islands on the west coast of the country. Although India is a signatory to the 28 member Indian Ocean Tuna Commission (IOTC), it is yet to develop its tuna fishery in a big way commercially. During 2006-07, 23 788 mt of tuna products valued at US\$ 29.54 million were exported from India as against 16 627 mt valued US\$ 15.68 million during 2005-06. In order to increase tuna harvest and to supplement MPEDA's efforts in the development of the tuna industry, a tuna long lining expert from Australia has recently been appointed as Advisor. His expertise will be utilised for conversion of existing vessels into long liners, and designing offshore-based infrastructure for packing sashimi grade tuna.

### Tuna fishing

Trolling, as well as hook and line, are popular fishing methods employed for tuna fishing. In trolling, a craft (*catamaran*) generally takes 2 - 6 lines, each attached with a round bent barbed hook (No 1 or 2). The length of the main line, as well as the number of branch lines and hooks, in hook and line fishing vary depending on the operation. The main line, made of monofilament, is 8 000 - 10 000 m long and branch lines 8 - 10 m long. Some 600 - 900 hooks are operated at a time. Distance between the branch lines varies from 15 - 20 m. Hooks are baited mostly with sardines (oil/lesser/rainbow sardine). In the absence of sardines other species like mackerel, flying fish and carangids are used. Bait fishes are usually iced and taken separately in insulated boxes. The lines with hooks are neatly rolled up and kept on the crafts.



The simple crafts are powered manually (left) or by wind (right).

On nearing the fishing grounds the troll lines are unrolled and baits attached to the hooks. Baited hooks are set and dragged by the crafts. As soon as the fish bites, the line with the hooked fish is hauled onboard. The fish is killed by striking it on the head with a

wooden baton. The hook is then carefully removed, baited afresh and then set once again. The procedure is repeated several times and continued for 2 - 3 hours until they return in the evening. In the case of hook and line operation, the lines with baited hooks are

also released into the water soon after they reach the fishing ground. The lines are allowed to drift alongside the craft. Generally, the baited hooks are released as the craft continues to move to deeper waters. The lines are allowed to drift for an hour after which they are hauled up. If the catch is good the lines are baited again and re-laid.

**Fishing season and average catch per unit**

Tuna fishing is carried out throughout the year except when there is a cyclone warning and during bad weather. However, peak landings for yellowfin tuna are during October-March. There are around 1 500 small units operating specifically for tuna along the Andhra coast. Due to the long fishing

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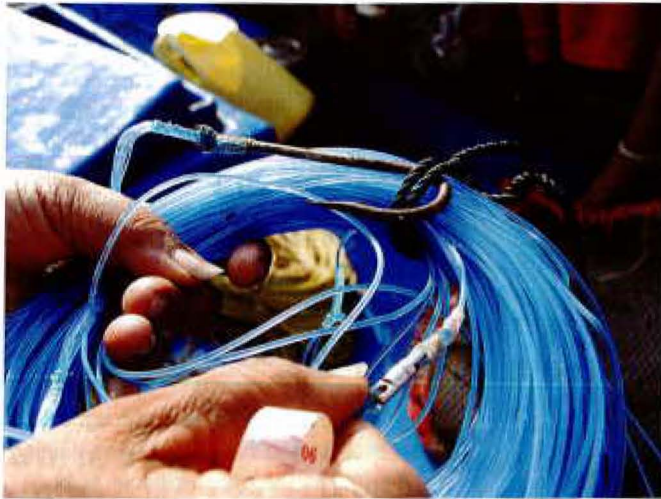
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Some of the fishing gear used.

hours, not all units operate everyday; on average 600 units operate daily. Each small unit operating beyond 150 m gets 2 - 3 yellowfin tuna, 1 - 2 sailfishes (*Makaira indica*), a couple of seerfish (*Scomberomorus commersoni*) and, at times, skipjacks (*Katsuwonus pelamis*). The small tunny, *Euthynnus affinis*, is also landed occasionally. Records show that the fork length and total wet weight of the tuna landed along this coast range from 30 to 173 cm and from 0.423 kg to 83 kg respectively.

The annual mean length and weight were estimated at 105.6 cm and 31 kg respectively. Fish with a fork length of over 80 cm were found to be mature with a dominance of males. So, on fair days, when wind, water and weather conditions are good, 40 - 50 mt of yellowfin tuna alone are landed at these centres. An estimated 6 500 mt of yellowfin tuna are landed along the Visakhapatnam coast annually by these small craft.

### Post-harvest handling and processing

There is little or no post-harvest treatment done on board the *catamarans* or fibreglass crafts. Once the fish is hauled on board, the hooks are carefully removed and the fish kept on the deck. The craft are not equipped with any chilling or ice storage facilities. However, the fish are splashed with seawater periodically and brought ashore in

that condition. Interestingly, depending on the time of catch, quality and market demand, a part of this catch is also exported. Once the catch reaches the shore, it is disposed off to local fish merchants who, in turn, take immediate action to preserve it in ice to prevent further deterioration. The fish merchants supply the tuna to processors, exporters or to retailers who send it to domestic markets. The processors have their own quality testers who test and certify the quality of the fish. The fish are then graded as first (sashimi), second or third grade. The graded fishes are gutted, washed properly and chilled. They are then sent in chilled condition to Chennai by road from where they are exported to Japan, the Philippines and USA. A part of the ungraded fish is iced and sent to processing plants in Chennai where they are gutted, skinned, deboned and made into loins or fish ribbons or are canned. These processed and value added products are also exported to Southeast Asian countries. The remaining ungraded fish are iced and sent either to domestic markets in Kerala where the tuna meat is in good demand or sent for processing into canned meat which fetches a good price in metro cities. Tuna has very little local preference in Andhra Pradesh, so almost the entire catch is disposed off in neighbouring countries and states.

Andhra Pradesh, with its fleet of indigenous crafts, thus plays a pivotal role in

harvesting and disposal of the much-valued yellowfin tuna of the Bay of Bengal. The tuna from this region are highly valued all over the world and this has given new impetus to local fishermen whose only source of livelihood is fishing. The country is currently poised to take up tuna fishing on a large scale and a few large mechanised long liners have already started operations. With such developments, the country can only look forward to increased production of yellowfin tuna, followed by increased exports and, therefore, better income and improved lifestyle for the coastal people of the east coast of India. ☺

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Reader enquiry number 28

