



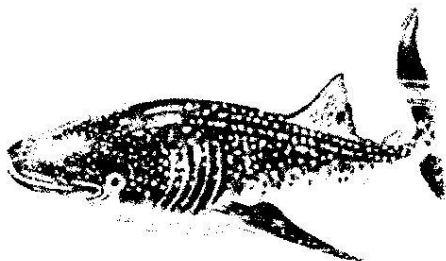
# FISH AND FISHERIES

NEWS LETTER OF THE FISHERIES TECHNOCRATS FORUM – CHENNAI

No. 61

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## MIGHTY SHARKS



Whale sharks (*Rhincodon typus*) are the world's largest living fish species, growing up to 12.6 metres/15.5 tonnes. Whale sharks are known to travel more than 12,875 kilometers (8,000 miles) across the Pacific Ocean, from Mexico to the Tonga Islands. Of the more than 1,000 species of sharks and rays, 145 are known to be migratory. 18 % of these thousand species are threatened with extinction, compared to 45 % of the migratory sharks and rays. At a recent UN-sponsored conference on migratory sharks held in the Seychelles, three species, namely, whale sharks (*Rhincodon typus*), basking sharks (*Cetorhinus maximus*) and great white sharks (*Carcharodon carcharias*) were singled out as being in urgent need of protection. It is only in recent years that targeted fishing of whale sharks has been prohibited in countries like Taiwan and India.

## OCEANIC JUMBO SQUIDS WASHED ASHORE AT SAN DIEGO BEACH, US

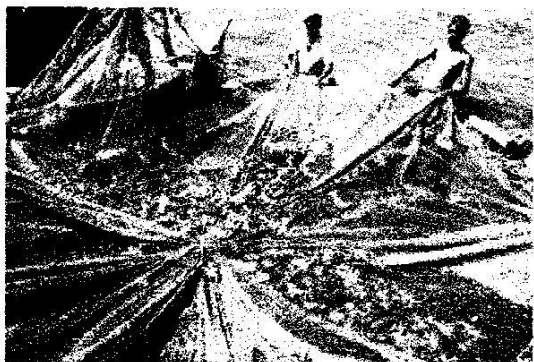


Jumbo squid, also known as Humboldt squid (*Dosidicus gigas*) can grow up to two meters long and weigh as much as 45 kg. Scientists believe the squid live at depths of 200 to 700 meters during the day. Their preferred depth at night is about 70 meters. Dozens of jumbo squid were found flapping helplessly on the beach at San Diego in the first half of July 2009. The beaching of squids took place about an hour after an earthquake had struck off the California city. The beachgoers in the city of La Jolla attempted to throw the squid back into the water to save them from circling seagulls. Similar stranding of Jumbo squid has been recorded in July 2002, when thousands of jumbo squids washed ashore at La Jolla Cove north of San Diego, California. In the following months similar mass strandings were reported all along North America's Pacific coast, as far north as Alaska. In 2005 also, at least 1,500 of the squid ended up on beaches between San Diego and Los Angeles. In all the strandings, the squids did not seem to wash up as dead on the shores, but instead appeared to swim into shallow water where waves carried them onto the beach. Like whale and dolphin strandings, the causes of squid beachings are a mystery. According to the fishery biologist from the Hopkins Marine Station, there may be something neurologically wrong with the squid. They appear to be mentally deranged, not physically ill. They're big-brained, intelligent creatures. Two reasons are postulated, one on sudden change in water temperature, which makes squid confusing and the other feeding on prey concentrated with toxin, probably derived from plankton.

## DEMONSTRATION ON CAGE CULTURE OF SPINY LOBSTER IN KERALA

The Central Marine Fisheries Research Institute (CMFRI) at Vizhinjam, Kerala, has successfully demonstrated cage culture of Indian spiny lobster (*Panulirus homarus*), not only to augment its dwindling wild catches, but also to increase its

export potential. The cone-shaped cage is 6 m in diameter and 6 m in height and it was moored in the



near shore water off fishing harbor, where the depth was 8 m. The cage was positioned by ballast and ropes tied to the mooring chain to withstand the vagaries of the ocean currents and winds. A total of 1,200 juveniles of *P. homarus*, each weighing 70 to 95 g, were stocked. The reared lobsters were fed with low-cost animal diets (brown mussel - *Perna perna* and trash fish). The cage was cleaned regularly to have a greater free-flow of water into the cage, as the lobsters preferred clean water. The juvenile lobsters were stocked in January 2009 and harvest was made after four-and-half months rearing, by which time, the lobsters attained a size of 250-350 g. A recovery rate of 85 % was recorded and the net profit was Rs. 1.5 lakh. The Govt. of India has banned the export of lobsters below the Minimum Legal Size, i.e. below 200 g. This demonstration has proved the possibility of raising juvenile lobsters to marketable/legal size, suitability of the design and operation of cage in near shore water and undertaking of such cage culture by fishermen to augment their income

#### AQUATIC QUARANTINE FACILITY AT CHENNAI

The Rajiv Gandhi Centre for Aquaculture of MPEDA has set up an Aquatic Quarantine Facility (AQF) at Neelankarai, Chennai with the financial aid from National Fisheries Development Board, Hyderabad. A technical committee comprising representatives from Coastal Aquaculture Authority, Animal Quarantine & Certification Service, Dept. of Animal Husbandry & Dairying, National Fisheries Development Board, Central Institute of Brackishwater Aquaculture, Marine Product Export Development Authority and Rajiv Gandhi Centre for Aquaculture will oversee and monitor the function of

AQF. Hatchery owners who have permission from Coastal Aquaculture Authority can import fish/shrimp/prawn from abroad. Such imported animals will be quarantined at this AQF and screened for the specific viruses and pathogens. Those animals free from viruses and pathogens will be cleared by the AQF, which is the first facility for aquatic animals in the country.

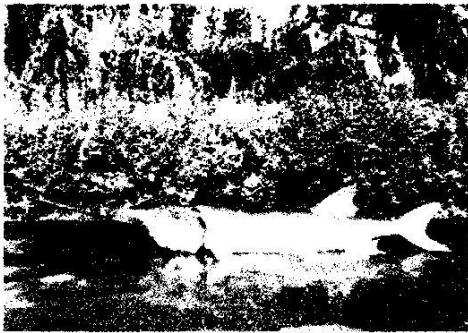
#### MARINE POISONOUS BRACHYURAN CRABS OF INDIA

A total of 990 species of marine brachyuran crabs belonging to 281 genera and 36 families are reported from Indian waters. Among these, there are two dozen species are poisonous. Rumphius, a biologist, who lived for half a century (1653-1702) in the Island Ambionia in the Moluccas (Indonesia) is the first person to write on poisonous crabs in 1705. The occurrence of poisonous crabs first existed as widespread rumors in the Pacific islands during the late 70s. However, the detailed studies conducted on some crabs from Australia, Japan, Pacific Islands, Singapore and the Philippines have indicated the fatalities due to their poisoning. Crab toxins are the heat-resistant and found in crab's viscera. Hence, they could not be destroyed by cooking and also no known cure is available for these toxins. The only alternative is to educate fishermen, holiday-makers and seafood-consumers to recognise these poisonous species and avoid them. Studies conducted in Japan, Singapore and the Philippines have shown the presence of several toxins, most of them are neurotoxins, related to tetrodotoxin (TTX), which is found in the puffer fish. Other toxins include palytoxin, saxitoxin (STX), neurosaxitoxin (NeoSTX), gonyautoxin (GTX), *Pyrodinium bahamense* toxin (PBT) and some unidentified toxins. These poisonous crabs usually possess a mixture of these toxins.

Poisonous crabs belonged to the families Dairidae (*Daira perlata*), Dromiidae (*Dromia dormia*), Eriphiidae (*Eriphia sebana* and *Eriphia smithii*), Majidae (*Micippa phyllira* & *Schizophrys aspera*), Parthenopidae (*Daldorfia horrida* & *Parthenope longimanus*), Pilumnidae (*Pilumnus vespertilio*), Portunidae (*Thalamita danae* & *T. prynna*) and Xanthidae (*Actaeodes tomentosus*, *Atergatis floridus*, *A. integerrimus*, *Carpilius convexus*, *C. maculatus*, *Demania baccalipes*, *D. cultripes*, *D. scaberrima*, *Etisus splendidus*, *Euxanthus exculptus*,

*Pilodius areolatus*, *Platypodia granulosa* & *Zozymus aeneus*), of which majority of species belonged to the family Xanthidae. The toxins are in the flesh and cannot be transmitted, if the crab is bitten/pinched by its claws. Most of the poisonous crabs have very bright colour pattern, which is a good indicator to avoid consuming them. Based on the studies conducted on poisonous crabs from Australia, Fiji, Japan and the Philippines, a total of 24 poisonous species of brachyuran crabs from Indian waters are listed above. It is hoped that future marine biotechnological studies can be focused on Indian poisonous crabs with biotoxicology in general and phylogenetic distribution, molecular structure, evidence of biogenesis, and possible mechanisms involving the crab poisons in particular.

**LARGEST FRESHWATER ANIMALS-SERIES No. 2**



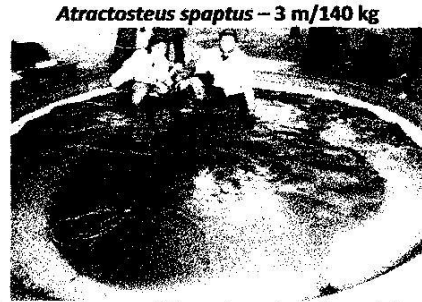
**Giant paddle fish:**  
*Psephurus gladius* – 3 m/300 kg



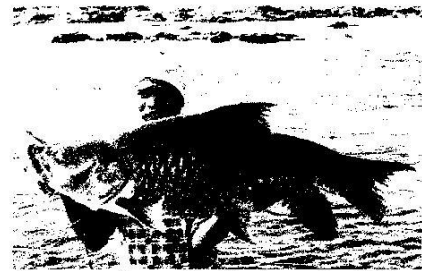
**Mississippi Paddle fish:**  
*Polyodon spathula*: 2.21 m/91 kg



**Alligator Gar fish:**



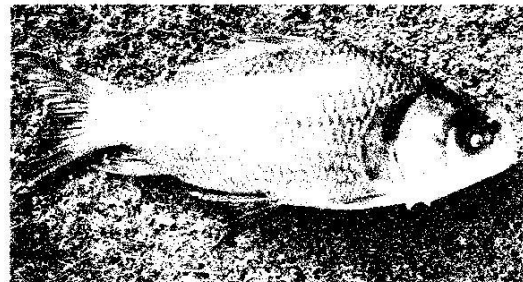
*Atractosteus spaptus* – 3 m/140 kg  
**Freshwater sting ray (*Himantura chaophraya*):** 2 m wide, 2.1 m long (without tail)/350 kg



**Deccan mahseer: *Tor khudree* – 1 m/50 kg**



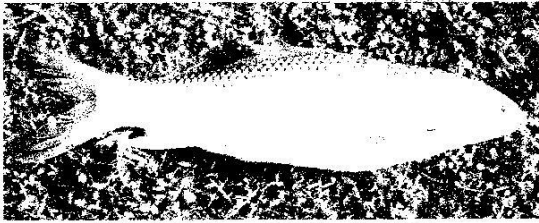
**Giant barb: *Catlocario siamensis* – 3 m/300 kg**



**Catla: *Catla catla* – 2 m/68 kg**



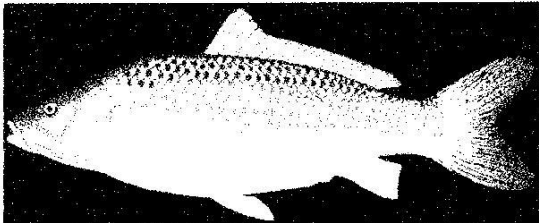
**Rohu: *Labeo rohita* – 2 m/45 kg**



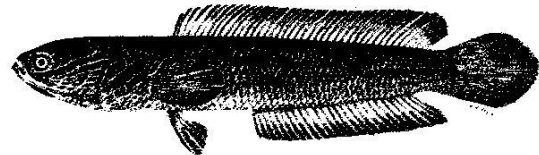
**Mrigal: *Cirrhinus mrigala* – 1 m/30 kg**



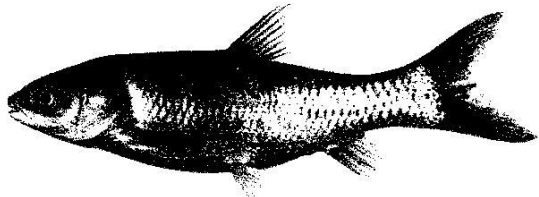
**Wallago: *Wallago attu* – 2.4 m/20 kg**



**Common Carp: *Cyprinus carpio* – 1.2 m/40 kg; can live up to 38 years**



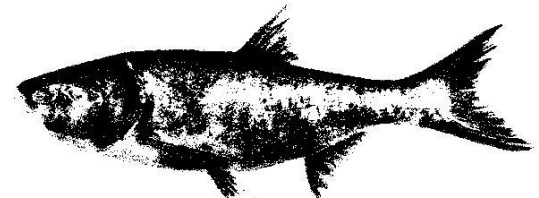
**Snakehead Murrel: *Channa striata* – 1 m/3 kg**



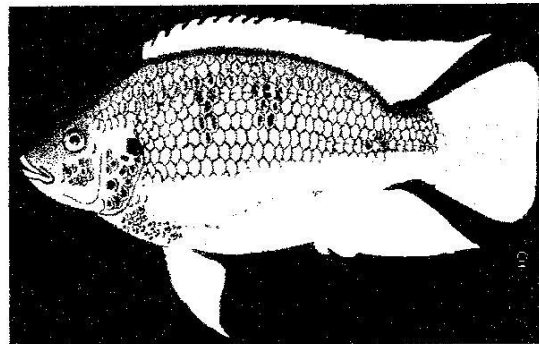
**Grass carp: *Ctenopharyngodon idella* – 1.5 m/45 kg; can live up to 21 years**



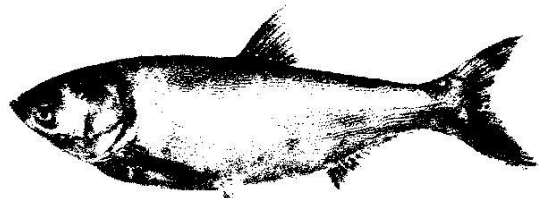
**Nile Tilapia: *Oreochromis niloticus niloticus* – 60 cm/4.3 kg; max. age 9 years**



**Bighead carp: *Hypophthalmichthys nobilis* – 1.1 m/21.3 kg**



**Mosambique Tilapia: *Oreochromis mossambicus* – 39 cm/11.3 kg; max. age 11 years**



**Silver carp: *Hypophthalmichthys molitrix* – 1.05 m/50 kg**

