



## A REVIEW ON *MUGIL CEPHALUS* BIOLOGY AND ITS OCCURRENCE IN VISAKHAPATNAM COAST

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**ABSTRACT:** *Mugil* is a genus of mullet and belong to the family *Mugilidae*. *MUGIL CEPHALUS* commonly known as striped mullet occurs in the coastal waters of the tropical and subtropical zones of all seas. A Study was carried on *Mugil cephalus* from January 2011 to 2015 and observed its different aspects of its life span. Some of its biological aspects of *Mugil cephalus* in different areas of Visakhapatnam were studied.

**Key words:** *Mugil Cephalus*, Biology, Visakhapatnam coast.

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### INTRODUCTION

Carl Linnaeus, a Swedish naturalist, initially described the striped mullet as *Mugil cephalus* in 1758. The genus name *Mugil* is derived from the Latin "mugil" meaning a fish, probably a mullet. The species name *cephalus* is derived from Latin meaning a mullet. The maximum length of striped mullet is 120 cm, and a maximum weight of 8 kg. Lifespan is between 4 to 16 years with a probable average lifespan of five years. Mainly growth occurs for the period of the spring and summer months. Females are large in size and growth is faster than males of the same age. Adults grow to a length of 35 to 50 cm. Immature mullet are 7.6 to 17.8 cm long.

### TAXONOMY AND DISTINCTIVE CHARACTERS

The striped mullet is in the order *Mugiliformes*, family *Mugilidae*. There are three species of mullet found in the Visakhapatnam, the most common being the striped mullet, *Mugil cephalus* Linnaeus, 1758. The striped mullet body is having sub cylindrical and compressed anteriorly. The mouth is terminal and small with not easily visible teeth and a blunted nose. Having thin lips, and has a strike at the tip of lower lip. The major adipose eyelid with pupil contains narrow slit. The head is a little wider and the body is lengthen. Due to short Pectoral fins which do not reach the first dorsal fin. The second dorsal fin origin is later to the anal fin origin. Unable to see the lateral line. The body colours are grayish olive to brown, containing olive-green to blue and sides are silvery. Longitudinal lines which are dark are formed by dark spots at the middle of each scale on the body upper half, along the body length.

When viewed from above the triangular mouth is seen, with small, close-set teeth set in numerous rows on the jaws. Mullet are diurnal feeders, they consume mainly zooplankton, benthic (bottom-dwelling), detritus and small invertebrates. With a long gastrointestinal tract that enables them to feed on detritus these Mulletts have thick-walled gizzard-like segments in their stomach.



**Fig1: *Mugil cephalus***

### **HABITAT AND BIOLOGY**

In Visakhapatnam its occurrence is reported in visakhapatnam coast, megahadri reservoir and lawson's bay estuary. The striped mullet is distributed worldwide between latitudes 51° N and 42° S, although it is less abundant in the tropics [1, 2]. Striped mullet are euryhaline; they are able to tolerate the entire range of salinities from freshwater to oceanic water.

*Mugil cephalus* are found in highly salty to fresh waters that are warm or temperate from 8 to 24 C. They spend a great deal of time close to shore around the mouths of streams and rivers or in brackish bays, inlets, and lagoons with sand or mud bottoms. They often enter estuaries and freshwater environments. Adult mullet have been found in waters ranging from 0 ppt to 75 ppt salinity. Adults form huge schools near the surface over sandy or muddy bottoms and dense vegetation. ("Texas Parks and Wildlife Department", 2005); [3]



**Fig-2: Megahadri Reservoir**

Larger striped mullet (greater than 350 mm or 14 inches TL) are frequently found in low salinity brackish water (less than 5.0 ppt) and freshwater, but this is more likely due to capture methods rather than the actual distribution of larger striped mullet. Striped mullet may stratify by depth according to size with the larger individuals moving into deeper water habitats, particularly in winter [4, 5]. However, during the spawning migration, particularly in November and December, larger, reproductively developing striped mullet are seen in greater numbers closer to the mouth of most estuaries in high salinity habitats [6].

The striped mullet is catadromous, often found coastally in estuaries and freshwater environment. Adult mullet grow in water salinity that ranges from zero to 75‰, whereas juveniles tolerate only such wide salinity ranges after they reach lengths of 4–7 cm. The larvae move inshore to tremendously shallow water, which protects from predators and also a rich feeding ground. Once they reach 5 cm in length, these young mullet travel into somewhat deeper waters. They migrate offshore to spawn in huge aggregations the adult fish generally feed fresh water algae. It is euryhaline significance that the fish can adapt to diverse levels of salinity. Mullet leap out of the water regularly.

### REPRODUCTION

They reach sexual maturity in three years. Mating season lasts from late October to December for Texas species. Mature adults leave the bays, collect in large schools, and migrate offshore to mate. During spawning season, females scatter one to seven million round eggs on the bottom. Eggs are not guarded by adults. After an incubation period of 36 to 50 hours, depending on water temperature, the young mullet hatch. Of millions of eggs spawned in offshore waters, most are eaten by other species. Juveniles return to coastal locations to mature after they have reached 15 to 32 mm long. Their lifespan is seven years for males and eight years for females, with a probable average lifespan of five years. The oldest striped mullet on record is one that lived 13 years.



**Fig-3: Identifying *Mugil cephalus* in Fishing Trawler in Visakhapatnam Fishing Harbor**

### ECOSYSTEM ROLE

Striped mullet are an ecologically important link in the energy flow within marine communities. They serve as prey for their predators. Striped mullet are hosts for many parasites including *flagellates*, *ciliates*, *myxosporidians*, *monogenean* and *digenean trematodes*, *nematodes*, *acanthocephalans*, *leeches*, *argulids*, *copepods*, and *isopods* [3] (Bester 2004).

## **DISSCUSSION**

Striped mullet are not listed as endangered or vulnerable with the World Conservation Union (IUCN), CITES, or the U.S. Endangered Species Act. Presently, the striped mullets are common and abundant fish. It is a very important commercial fish in many other parts of the world [3] (Bester 2004).

Striped mullet are commercially significant fish all over the world for both fisheries and aquaculture purposes. They are also used as bait for a variety of fishes, including billfish, commonly bringing a higher price as bait than as food fish. These fish are prized for their roe. Striped mullet are marketed fresh, dried, salted, and frozen with the roe sold fresh or smoked. In brackish and fresh waters, with the help of hook and line they are caught. Earthworms, oatmeal, and chicken feed are the famous bait. Freshwater caught mullet are frequently having a muddy or sulfide-like taste. Mullet are snagged with hooks or captured with cast nets, seines, gill nets, or trammel nets in saltwater. These fish are prized for their roe. The striped mullet is marketed fresh, salted, dried, and frozen with the roe sold fresh or smoked. Mullet is also used in Chinese medicinal practices. This fish is also used in Chinese medicinal practices.

## **CONCLUSION**

Striped mullet feed primarily on soft mud and other detritus. Therefore, spot may be adversely affected by contaminants (organics, pesticides, and heavy metals) that settle from the water column or become bound to sediment since their feeding strategy offers a vector for these contaminants to enter the food chain. While these types of contaminants are not currently considered a direct threat to striped mullet as a species, they could pose a threat in highly contaminated areas where bioaccumulation up the food chain may have an effect on game fish, birds, and human health through direct consumption. By studying more about mugil cephalus biology and different aspects in its life helps us to monitor its occurrence, habitat protection diseases, conservation and changes in these species and ensures that this important forage fish remains abundant.

## **ACKNOWLEDGEMENT**

We are grateful to thank Professor B.Bharatha lakshmi (Andhra University, Visakhapatnam), for providing laboratory and for useful guidance and discussion. A Joseph (Andhra University, Visakhapatnam) for the important reference information and comment.

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INTERNATIONAL JOURNAL OF  
PLANT, ANIMAL AND ENVIRONMENTAL SCIENCE

ISSN 2231-4490

# International Journal of Plant, Animal and Environmental Sciences

