RESEARCH ARTICLE

Preliminary investigation for first time on blue snapper *Pagrus spinifer* (Forsshal, 1775) of Mithbav Creek of South konkan, sindhudurg, Maharashtra, India.

Yeragi SS* and Yeragi SG

Department of Zoology, K. J. Somaiya College of Science and commerce, Vidyavihar, Mumbai- 400 077. India.

*Corresponding author Email – dryeragi@gmail.com

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ABSTRACT

Blue snapper, *Pagrus, spinifer* is habitant of Mithbav creek (L.16^0 20' N.L. 17^0 25' E) Sindhudurg district, Maharashtra, so far there is no work carried out in India. It is commercially and high prized fish available throughout the seasons. It is always found in school condition except in mansoon. It is carnivorous and benthic feeder. It feeds on crustacean, fish, clams, even on human faeces. It is found in deep water lined with rocky-regions. Snapper spawn is observed during the month of May-June with cloudy atmospheric condition in rocky region. The Juvenile can be found around inlets bays and other shallow, sheltered marine water, often over mud-flat. The coastal natives popularly call as 'palu'.

Keywords: Palu, snapper, Mithbav.

INTRODUCTION

The blue snapper belongs to the family sparidae, in the order of perciformes. It is commonly called sea breams and porgies. *Pagrus spinifer* is a highly resident, demersal species that occupies a wide variety of habitat including rocky reefs, sandy, muddy bottom and about 5-10 m. depth in Mithbav creek. All the spines of dorsal fin are tough. Three spines are in anal fin. Adults of this species aggregate over rocky reefs while juveniles are abundant in estuaries and also around shallow coastal rocky reefs and over sandy substrates. This species is an important predator in shallow reef as well as sandy region. During high tide, they easily migrate in this creek but highest recruitment is

observed in extremely high tide time. It is very sensitive to oxygen in cloudy atmosphere, because the diffusion of atmospheric oxygen decreased in deep water hence they move toward the shallow places in group to gulf the atmospheric oxygen. Their breeding and spawning is in the month of May-June. When this time the salinity reached to maximum and atmosphere is cloudy. They spawn in rocky regions; this situation is well known to the coastal native therefore they fished them on large scale.

The Juvenile reached to 2-3 inches in length during the month of july and fully grown is of 30-35 cm.L. and 20-25 cm. H. formed within two year period. The sexual maturity reached at the age of one year growth. Body of the *Pagrus spinifer* is robust oblong, moderately compressed, upper profile of head convex with a buldge above the eye. Lower jaw slightly shorter than upper. The mouth is projected interiorly for search of benthos in the sandy region. Head and upper body is dark silvery blue, sides and belly also blue. The scales are moderately large, dense and firmly attached to avoid the injury in rockly reefs during feeding activities, Dorsal fin usually having 10-15 spines and soft rays 10-15, Maxilla hidden by a sheath, when mouth is closed. Branchiostegal ray six, caudal fin forked but greatly lobed. The proximal part of the caudal fin is dark while distal margin white. The jaws containing heavy molariform teeth, these robust teeth allow them to feed on hard bodies of prey such as small shellfish and other benthic invertebrates.

The life process is slightly disturbed in mansoon due to rain fall. In monsoon due to fluctuation of salinity and temperature, drastically make the effect on their food and feeding habit. The major fishing in this creek is carried out with help of cast net, gill-net, long-line and advan. In pre-monsoon, due to shortage of sea fish, the coastal people plough the shallow sandy region of the creek and after full high tide spread the net on circularly arranged wooden poles. During high tide, blue snapper are attracted toward this soft place for easily available food present in the soil. The highest fishing is done in the month of May-June because of snapper gather for breeding in large number.

MATERIAL AND METHODS

Monthly samples of *Pagrus spinifer* have been collected from December 2013 to November 2014, from Mithbav creek of south Konkan- The fresh specimens were collected for investigation in all the seasons. The percentage composition of gut contents were determined by using the point method. The contents were fixed in 4% formalin.

RESULTS AND DISCUSSION

A preliminary objective of the study was to determine whether or not the blue snapper feeds on bottom dwelling organisms or animals which may be consumed while up in the water column. Table 1 gives various food items which are divided into three categories, like benthic, semibenthic, and nektonic expressed by volume and frequency of occurrence. The semibenthic category contains food organism which may be nektonic but some associated with the substrate.

Ten specific food items were found in the digestive tracts of blue snapper. These include seven Genera of fish and seventeen taxa of invertebrates. Invertebrates consisting mainly of crustaceans, echinoderms, molluscs, annelids were the dominant foods of adult fish occurring in 80-85% of the stomachs. The pelecypod molluscs, sea-urchin, *Scylla sp., Portunus* sp., *Dotilla* sp., and fiddler crabs were occurred most frequently and contributed 57% of the total food volume. The crabs were the most diverse group of food organisms found in stomach.

Table 1 : Seasonal occurrence of food items of *Pagrus spinifer* in the coastal area of Mithbav.

Food categories	Monsoon %	Post- Monsoon %	Pre-Monsoon %
Polychaete	12.14	14.17	17.12
Crustaceans	32.05	30.12	28.15
Human faeces	2.17	03.15	04.18
Fish larvae	10.12	05.18	16.10
Fish	14.13	17.18	10.09
Eggs	03.18	01.15	09.29
Mollusks	02.19	12.15	18.17
Animal Derivatives	11.73	02.58	02.61
Detritus	05.17	06.12	02.17
Algal Material	07.12	08.21	02.12

Table 2 : Qualitative analysis of gut contents of *Pagrus Spinifer.*

Food Item
Fish
Therapon spp.
Sillago spp.
Mugil spp.
Gerres spp.
Anguilla spp.
Ambassis spp.
Cynoglossus spp.
Decapods
Scylla. Spp.
Portunus spp.
Dotilla spp.
Uca spp.
Penaeus spp.
Annelids
Polychaetes.
Echinodermata
sea urchin
Star fish
Sea cucumber
Brittle star
Molluscs
Meretrix meretrix
Meretrix casta
Katelylsia spp.
Solen spp.
Perna spp.
Balanus spp.
Natica picta
Littorina spp.

Fig. 1: Blue snapper *Pagrus spinifer* (Forsshal, 1775)

During high tide, maximum population of blue snapper recruit in the creek for feeding purpose only. The exposed area of the creek during low tide having large numbers of crustacean species which are buried during high tide. Therefore, during high tide, the blue snapper attracted toward this areas only for feeding on pea crabs, *Uca* spp. *Dotilla* spp. and polychaetes worms. The anterior part of the mouth is elongated which help in removing the hidden prey in the soft soil. The clams like *Meretrix, Kalylesia* Spp., *Solen.* Spp. also available in the intertidal region. Intertidal sandy region of about 40 feet radius area is ploughed to make the soil soft. It is good for burrowing the prey like *Dotilla, Uca*, Polychaetes worm to make it densly populated feeding ground for *Pagrus spinifer.* The deeply buried organisms also get exposed to the upper zone. The wooden poles are arranged on the circumference, after full high-tide the net is raised up to trap the fauna. The blue snaper school is greatly attracted and easily caught. This process of traditional fishing is popularly known as 'Advan'.

The feeding intensity was noticed high during high-tide, but low in low-tide. In monsoon, due to sudden fluctuation in salinity and temperature the rate of feeding is low. The rate of feeding was noticed high in post-monsoon due to availability of varieties of food items.

Fish were of secondary importance in the diet of adult fish occurring in 20% of the blue snapper and contributed to 15%. The observation were made both in juveniles and adults, to be a very aggressive feeder. They generally seize the food bait immediately when it is presented to them. The bait of intestine of chicken, *Anguilla* spp. Shrimp are liking food items on which they feed voraciously, hence, always used for hand-line and long-line fishig methods. Also, *Pagrus spinifer* possesses strong molariform teeth which enable it to crush less motile armoured forms such as echinoderms, *Scylla, Portunus*, clams like *Meretrix* spp, *Soletellina* spp. and gastropods like *Nerita picta,* their egg cases, as well as eggs of *Telescopium* spp. Thus, the blue snapper seems tobe well adapted to feed on motile forms and also on relatively non-motile organisms.

Variable of seasonal, geographic area and depth of collection had no apparent effect on frequency occumences of food items in the diet while large juvenile blue snapper (10-15 cm) and adults (30-40cm) feed on similar foods, smaller juvenile (less than 4-6 cm) consumed mainly amphipods, copepods, stomatopods, Isopods and annelids.

The *Pagrus spinifer* is an opportunistic browser which feed predominantly on benthos foods. Approximately 70% of the food were classified as strictly benthic organisms and 85% of the volume was animals which are considered to be closely associated with the substrate.

CONCLUSION

Pagrus spinifer is commercially important fish of Mithbav creek. It is a specific indicator of low oxygen content of the habitat. It has high salinity and temperature toterance. The data suggest that the blue snapper has a tremendously diverse diet and that content probably reflects localized forage assemblage rather than a preference for specific food. Bearden and Mckenzie (1969) also noted that feeding of red porgy appeared to be dependent on species availability gather than preference or selection. Usually a digestive tract contained only one to several individuals of a taxon. Only bivalves and small shrimps occurred in large number in pre-monsoon and monsoon season. This type of feeding has definitely selective advantages in fish farming near by the logoons of this creek. It is fast growing and full growth is done in two years duration. The sexual maturity is completed in one year of growth. The rate of fecundity is compared to be always high than others It's breeding season is in the month of May- June in cloudy atmosphere in rocky reefes. During breeding time, they gather in deep water and remain there for longer time. It is really a good model for aquacultural practices in this area.

REFERENCES

Bearden CM and Mckenzie MD (1969) An investigation of the offshore demersal fish resoureces of south Carolina. S.C. wilds. *Resour. Dep. Tech. Rep*. No.2 .19 pp.

Yeragi SG and Yeragi SS (2014) Aspects of Biology of Indian silver king *Megalops filamentosus* newly recorded in Mithabav estuany of sindhudurg district, Maharashtra state, *India J. Adv. Zool*., 35 (1) : 22-25.

Yeragi SS and Yeragi SG (2014) food and feeding habit of *Mystus seenghala* (Sykas) the common catfish of Mithbav estuary of south konkan, Sindhudurg district, Maharashtra, India, *Int. Res.J. of Science & Engineering,* 2 (2):XX-XX