Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
www.entomoljournal.com
JEZS 2020; 8(4): 2349-2351

Received: 14-04-2020
Accepted: 12-05-2020

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Study on food and feeding habits of *Etroplus suratensis* (Bloch, 1790) from Sarvepalli reservoir of Nellore district, Andhra Pradesh

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Abstract
The present investigations were carried out during May 2017 to April 2018 on food and feeding analysis of *Etroplus suratensis* from Sarvepalli Reservoir. It is considered as a good table fish, has wide salinity tolerance, breeds in confined waters and has highly adaptable feeding habits. A total of 438 fishes were examined for gut content analysis. From this observation, gut contents were mostly made up of the number of Diatoms, Filamentous algae, Detritus, fragments of higher plants, Fish eggs, Copepod, Molluscans, Crustaceans and Fish scales were identified. The composition of the food varied from season to season depending upon the fluctuations in the occurrence of food items in the environment.

Keywords: Food, feeding habits, *Etroplus suratensis*, Sarvepalli reservoir

Introduction
Fish from inland waters can be extremely important to local food security as compared with other animal protein. Majority of these inland fishes are known to be involved in the 'small-scale sector' [18], which makes important but undervalued contributions to the economies of some of the world's poorest countries [2]. The pearl spot (*Etroplus suratensis*), belonging to the family cichlidae and an endemic cichlid species to Asia, are widely distributed in the India and Sri Lanka. Importantly, this fish forms important fishery in the brackish water lakes of India. Its abundance in the Chilka lake, Pulicat lake and Vembanad Lake has been reported previously [9, 16]. This species show wide salinity tolerance [4]. It is essentially a brackish water fish that has become naturally acclimatized to freshwaters. Euryhaline nature and omnivorous feeding habit make the fish compatible to be farmed in polyculture with both brackish water and freshwater fish and prawns [7, 12]. In spite of their economic importance, the feeding ecology of this fish is poorly known. Therefore, the present paper deals with the study on the food and feeding habits of *Etroplus suratensis* (Bloch) inhabiting the Sarvepalli Reservoir.

Materials and Methods
Samples of *E. suratensis* were collected randomly once in a month from Sarvepalli Reservoir during the period of May 2017 to April 2018. A total of 438 fishes were collected and examined for gut content analysis. Immediately after collection the total length (cm) and weight (g) of the fishes were measured. To study the gut content each stomach was analyzed separately. The stomachs of fishes were dissected and were preserved in 10% formalin solution to prevent the breakdown of the food materials. The gut contents were removed on to petridish with the help of very fine forceps. Gravimetric method [6] was followed for estimation of the percentage composition of different food items. The food items were identified under microscope by following the keys of Prescott [14], Ward and Whipple [17] and Needham and Needham [11].

Result and Discussion
From this present observation, The proportions of major food items of *E. suratensis* predominantly on filamentous algae (39. 57%), diatoms (10. 84%), higher aquatic plants (14. 62%), detritus (17. 61%), molluscans (6. 64%), crustaceans (4. 34%), rotifers (3. 49%), copepods (1. 65%) and fish scales (1. 63%) were present in the gut contents. Filamentous algae, detritus, aquatic plants and diatoms were present as major food constituents throughout

the study. [5] Stated that in the estuarine habitat of the Mangalore region the major food items of this species are filamentous algae. [6] observed it as a predominant macrophyte feeder and not a complete herbivore. The concentrations of detritus in the diet of *E. suratensis* as observed in the study, is indicative of its preference for detritus. Detritus play a significant role in the diet of fishes in freshwater systems [4]. Earlier studies also indicated preponderance of aquatic weeds followed by detritus and algae in the diet of the adult *E. suratensis* [10, 13, 1]. Also had indicated a mixed diet for this species.

A View of Fish scale

A View of Gastropod

A View of gut content found in *E. suratensis*

A view of Aquatic plant leaf

A View of Molluscan shell

A View of Fish eggs

Fig 1: Different food items identified in the gut of *E. suratensis* during the study period

The seasonal change in the abundance of food items of *E. suratensis* is a reflection of the availability of food in the environment. During pre-monsoon months (March - May), filamentous algae dominated the food items, whereas detritus

comprising of decayed vegetable matter formed the major item during post-monsoon months (August - December). Low utilization of planktonic food during monsoon months may be due to its poor availability owing to high turbidity, poor photosynthesis and algal productivity. During this period, the fish appeared to subsist heavily on detrital elements abundant in the system. A sizeable reduction in the population of diatoms and algae during monsoon months is a characteristic phenomenon in these backwaters. It may be inferred that the feeding intensity and diet composition of fish are apparently linked to the availability of food in the habitat [3]. The percentage of empty stomach indicated lowest food intake during June-July coinciding with the breeding season [7] and intense feeding during premonsoon months.

Conclusion

The present study showed that the major items of food consumed by *Etroplus suratensis* consisted of diatoms, filamentous algae, higher aquatic plants, rotifers, insect larvae, cladocerans, copepods, other crustaceans, gastropods and detritus were present in the gut contents. Filamentous algae, detritus, aquatic plants and diatoms were present as major food constituents throughout the study.

Acknowledgement

The authors thank Head of the Department of Fisheries Resource Management, College of Fishery Science, Sri Venkateswara Veterinary University, Muthukur for the facilities provided. An anonymous reviewer is thanked for comments on the manuscript.

References

1. Alikunhi KH. Fish culture in India. Fann Bull. Indian Coun. Agne. Res. 1957; 20:144.
2. Andrew NL, Bene C, Hall SJ, Allison EH, Heck SS, Ratner BD. Diagnosis and management of small-scale fisheries in developing countries. Fish. Fisheries, 2007; 8:227-240.
3. Bhatnagar GK, Karamchandani K. Food and feeding habits of *Labeo fimbriata* (Bloch) in river Narmada near Hoshangabad (M.P). J Inland Fish. Soc. India, 1970; 2:30-50.
4. Bowen SH. Feeding, digestion and growth - Qualitative considerations. In R. S. Pullin and R. H. Lowe-McConnel (Eds), The Biology and Culture of Tilapias. ICLARM. Metro Manila, Philippines, 1982; 141-156.
5. Chandrasekar S, Nich T, Tripathi G, Sahu NP, Pal AK, Dasgupta S. Acclimation of brackish water pearl spot (*Etroplus suratensis*) to various salinities: relative changes in abundance of branchial Na+ /K+ -ATPase and Na+ /K+ /2Cl2 co-transporter in relation to osmoregulatory parameters. Fish Physiol. Biochem. 2014; 40:983-996.
6. De Silva SS, Subasinghe RP, Bartley DM, Lowther A. Tilapias as Alien Aquatics in Asia and the Pacific: A Review. FAO Fisheries Technical Paper. 2004; 453:65.
7. Devaraj KV, Shantharam B, Shetty HPC. A comparative study of the food of juveniles of the pearlspot *Etroplus suratensis* (Bloch) collected from estuarine and freshwaters. Mysore J Agric Sci. 1975; 9:479-48.
8. Hynes HBM. The food of freshwater sticklebacks *Gasterosteus acueatus* and *Pygosteus punji* Cius with a review of methods used in studies of food of fishes. J Anim. Ecol. 1950; 19(I):35-38.
9. Jayaprakas V, Nair NB, Padmanabhan KG. Sex ratio, fecundity and length-weight relationship of the Indian pearlspot *Etroplus suratensis* (Bloch). Journal of Aquaculture in the Tropics 1990; 5:141-148.
10. Jayaprakas V, Nair NB. Maturation and spawning in pearlspot, *Etroplus suratensis* (Bloch). Proc. Natl. Inst. Sci. India, 1981; B47(6):828-836.
11. Karna SK, Sahoo D, Panda S. Length-weight relationship (LWR), growth estimation and length at maturity of *Etroplus suratensis* in Chilka lagoon, Orissa, India. International J. Environmental Sci. 2012; 2:1257-1267 pp.
12. Keshava Joseph PS, Joseph MM, Feeding habits of the pearlspot, *Etroplus suratensis* (Bloch) in the Nethravati-Gurpur estuary, Mangalore. In: M.Mohan Joseph (Ed). Proc. The First Indian Fisheries Forum, Asian Fisheries Society, Indian Branch, Mangalore, 1988, 203-206.
13. Needham JG, Needham PR. "Guide to the Study of Freshwater Biology". 5th edition. Holden day Inc. San Francisco. 1962, 108.
14. Padmakumar KG, Bindu L, Manu PS. Captive breeding and seed production of *Etroplus suratensis* in controlled systems. Asian Fish. Sci. 2009; 22:51-60.
15. Prasadam RD. Observation on the biology of the pearl-spot *Etroplus suratensis* (Bloch) from the Pulicat lake. Mad. J. Inland Fish. Soc. India. 1971; 3(12):78.
16. Prescott GW. "Algae of the Western Great Lakes Area" Wm. C. Brown Co., Pub., Dubuque, Lowa. 946 pp.
17. Thompson JM, 1954. The organs of feeding and the food of some Australian mullet. Aust. J Mar. Freshwat. Res. 1962; 5(3):469-485.
18. Vaitheeswaran T, Malathi S, Felix S. Studies on length-weight relationship of Pearl spot *Etroplus suratensis* (Bloch, 1790) (Family: Cichlidae) Chennai coast of Tamil Nadu (13°25' 41.18" N and 80°18' 31.79" E). International J. Fish. Aquatic Studies, 2016; 4(6):179-181.
19. Ward HB, Whipple GC. Freshwater Biology. John Wiley and Sons, Inc., New York. 1959, 124.
20. Welcomme RL, Cowx IG, Coates D, Bene C, Funge-Smith S, Halls A *et al*. Inland capture fisheries. Phil. Trans. Roy. Soc. B. Biol. Sci. 2010; 365(1554):2881-2896.