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Food and Feeding Habit of *Wallago attu* from Bhadar Reservoir of Gujarat, India

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***Abstract*:** The present study is conducted at Bhadar reservoir landed of Rajkot in Gujarat, India. The Gastrosometic index (GaSI) of the male and female was higher in February and September and low in f August. Mean GaSI of male was higher than the female. The percentage of empty stomachs was the highest (26.67%) in July and in September was absent. The stomachs with one-half contents and three-fourth contents was high in October (34.22%) and in September (40%). The percentage of full stomachs was highest (50%) in February.

***Keywords*:** *Wallago attu*, GaSI, Stomachs, Bhadar reservoir

The study of the feeding habits of fish and other animals based upon analysis of stomach content has become a standard practice (Ajah and Udoh 2012). Stomach content analysis provides important insight into fish feeding patterns and quantitative assessment of food habits (Alam et al 2013). This is an important aspect of fisheries management provides important insight into fish feeding patterns (Zacharia and Abdurahiman 2004). Feeding of fish represents an integration of many important ecological components that includes behavior, condition, habitat use, energy intake and inter- and intra-specific interactions, etc (Demekeadmassu and Tadesse 2015). Accurate description of fish diets and feeding habits also provides the basis for understanding trophic interactions in aquatic food webs. Conceptually, trophic relations of fishes begin with food and feeding behaviour of individuals or species (Epko et al 2014). Diet composition analysis can be used to evaluate effects of ontogeny or the establishment of exotic species (Manko 2016). Catfish is an opportunistic and omnivorous feeder ingesting a wide variety of food items such as algae, macrophytes, zooplankton, insects, fish prey, detritus, amphibians and sand grains (Tesfahun 2018). Food and feeding habits of fishes have been a field of interest to fisheries researchers since very long (Manon and Hossain 2011, Nikolioudakis et al 2011, Ramesh and Kiran 2016). Feeding is the dominant activity of the entire life cycle of fish and food is the main source of energy which plays an important role in determining the population levels, rate of growth and condition of fishes (Mamun et al 2004, Gupta and Banerjee 2013, Tesfahun 2018). The present study was focus on the food and feeding habit of *Wallago attu* (fresh water shark) from the reservoirs of Bhadar, Gujarat.

MATERIAL AND METHODS

The present study is conducted at Bhadar reservoir landed of Rajkot district (Saurashtra region (22°30′N 70°78′33"E) in Gujarat, India. Bhadar reservoir (site) is located at 21°76′28"N 70°42′37" E near Bhukhi village Dhoraji, Taluka of Rajkot district during July 2018 to February 2019. Data collected from the sites at monthly interval. *W. attu* fishes were collected from selected site of reservoir. The fishermen are mainly using gill net for fishing. Fish samples were brought to College of Fisheries, Veraval and used 5% formalin solution in specimen jar according to the size of species. The samples were identified with the help of literature. The Index of relative importance (IRI) of various food items in the gut was calculated (Pinkas 1971).

$IRI = (\%N + \%V) \times \%F$

Where N = number, V = volume and F = frequency of occurrence

RESULT AND DISCUSSION

Gastro somatic index (GaSI): The higher peak in gastro-sometic index of both male and female during February and September 6.83 and 4.85 respectively (Fig. 1). The lower value of 2.91 was in August, because during spawning season female prefer less food than the male.

Feeding intensity: During the present investigation, a total of 225 stomach of *W. attu* ranged from 31.8 to 109.5 cm. The total length (TL) were examined the ontogenetic shift in the selection of food was observed as fishes with higher total length were with fishes and some prawns. Ontogenetic shift in diet is widespread among fish, which is a function of an increase in the sizes of body and mouth, permitting the individuals to capture preys of broader ranges of size and

types (Sahoo et al 2006). Most of the examined specimens were with full and three fourth stomach contents. Very less number of empty stomachs observed during study period. The percentage of empty stomachs was 32% in August, half contents (34.22%) in October, three-fourth contents (40%) in September, full stomachs was (50%) in February and absent in July, August. The percentage of empty stomach was high in female than the male. *Chanda nama* and digested fish, *M. rosenbrgii* and some other cat fishes were the favorite food of *W. attu* are highly carnivores species (Yousafzai et al 2010).

Feeding patterns: The stomach contents of *W. attu* composed mainly of prawns and other fresh water which *Chanda nama, Catla catla, Labeo rohita, Ompak spp., Laboe calbasu, Channa spp., Mytus spp.,* and *M. rosenbergii.* The *W. attu* species are highly carnivores in nature. Babare et al (2013) observed that gut of *W. attu* consists of a thick, muscular, roughly spherical, highly extensible stomach bag and narrow, medium and thick intestine. *W. attu* able to locate and consume different type of animals. Fishes consume 90% food items of animal origin of which 90% are locally available weed fish species. Ranjan et al (2009) reported *W. attu* as only carnivorous food and it was recorded in the gut of this fish. The 99.0 % included planktonic crustaceans, rotifers, insects and their larvae and small fishes. In addition, miscellaneous food particles (1.0%) were also present. Samina et al (2017) observed that in *W. attu* stomach content the adult crustaceans, insects and a number of small fishes.

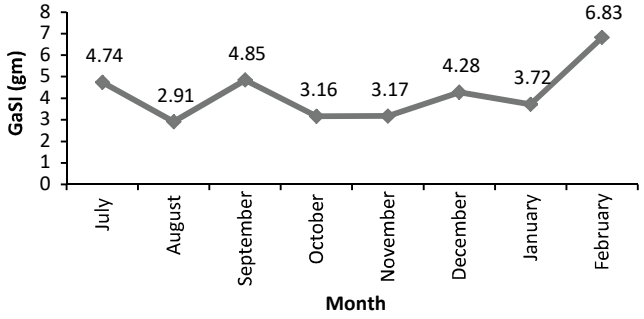

Fig. 1. Monthly variation in GaSI of *W. attu*

Frequency of occurrence of food items: The most frequent food item observed in the diet of *W. attu* was *Chanda nama and M. rosenbergii*., and digested fish, in all the months. It exhibited carnivores in nature more frequently in October, November, December, January and February month. As dietary components, *Chanda nama* and *M. rosenbergii* were more frequent in all months. *Ompaks spp., C. catla, L. rohita, Mystus sp., Channa sp.,* was a frequent food item during almost all the month except July and August.

Table 1. Month wise estimation of Gut condition in *W. attu*

Month	Percentage (distribution) of gut status in different				
	Empty	Quarter	Half	Three fourth	Full
July	26.67	60.00	13.34	-	-
August	32.00	36.00	32.00	-	-
September	-	33.34	20.00	40.00	6.67
October	15.79	5.27	34.22	34.22	10.53
November	23.53	20.59	20.59	29.42	5.89
December	16.22	8.11	13.52	18.92	43.25
January	13.80	10.35	6.90	20.69	48.28
February	4.55	4.55	18.19	22.73	50.00

Table 2. Monthly variation of IRI in the dietary component of *W. attu* (Percent)

Food prey item	July-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Average
Digested material	33.42	29.72	13.99	14.60	12.20	11.13	11.37	10.71	17.14
Fishes	0	0	9.84	0	4.05	15.24	5.84	8.24	5.4
Chandanama	39.19	34.68	27.59	22.32	10.81	16.85	24.94	15.86	24.03
Ompak species	0	0	9.90	10.85	7.86	4.05	4.50	9.57	5.84
Prawns species	27.37	35.59	17.59	21.61	37.94	23.61	30.13	26.45	27.53
Catlas pecies	0	0	14.06	5.10	10.57	10.16	2.96	7.20	7.15
Rohus pecies	0	0	0	3.49	5.94	5.28	4.79	6.29	3.68
Calbasu species	0	0	0	4.25	0	0	6.75	4.63	2.6
Mystus species	0	0	6.63	9.39	5.12	7.29	4.80	4.78	6.33
Channa species	0	0	0	8.36	5.46	6.33	3.87	6.21	6.04

Table 3. Month wise percentage composition of food item of *W. attu*

Months	Digested material	Fishes	*Chanda nama*	*Ompak* spp.	*Prawns* spp.	*Catla* spp.	*Rohu* spp.	*Calbasu* spp.	*Mystus* spp.	*Channa* spp.
Jul-18	33.42	0	39.19	0	27.37	0	0	0	0	0
Aust-18	29.72	0	34.86	0	35.59	0	0	0	0	0
Sept-18	13.99	9.84	27.59	9.90	17.59	14.06	0	0	6.63	0
Oct-18	14.60	0	22.32	10.85	21.61	5.10	3.49	4.25	9.39	8.36
Nov-18	12.20	4.05	10.85	7.86	37.94	10.57	5.94	0	5.12	5.46
Dec-18	11.13	15.24	16.85	4.05	23.61	10.16	5.28	0	7.29	6.33
Jan-19	11.37	5.24	24.94	4.50	30.13	2.96	4.79	6.75	4.80	3.87
Feb-19	10.71	8.24	15.86	9.57	26.45	7.20	6.29	0	4.78	6.21

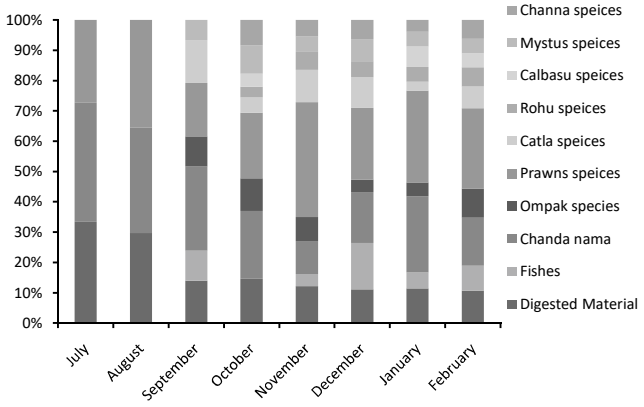

Fig. 2. Monthly variation of IRI in the dietary component of *W. attu*

L. calbasu was present in stomachs all the months except July, August, September, November and December.

Monthly index of relative importance: Variation in the index of relative importance (IRI) of food items ingested by *W. attu* during different months revealed that the percentage composition of different food items varied in different months according to their availability and preference. The food items of *M. rosenbergii* (27.53%), *Chanda nama* (24.03 %), *Ompak sp.* (5.84%), *Catla* (7.15%), *Labeo rohita* (3.68%), *Labeo calbasu* (2.6%), *Mystus sp.* (6.33%), *Channa sp*. (6.04%) and Digested material (17.14%) contributed during entire study period.

CONCLUSION

The gut content analysis of *W. attu* from the Bhadar reservoir in Gujarat showed that 90% of the food consumed by weed fish species in the area is of animal origin. In July and September the empty gut was observed and in February the gut was full. *W. attu* preferred a much smaller amount of diet at this time because of its larger in July and September due to breeding and spawning seasons. The Chanda nama (Glass fish) species was the single most common food item consumed each month.

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