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**BIOLOGY OF JUVENILES AND IMMATURE *Acanthopagrus latus*  
IN TIDAL POOLS OF KHOR AL-ZUBAIR LAGOON, IRAQ**

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**ABSTRACT**

542 juveniles and immature of yellow-fin sea bream, *Acanthopagrus latus* were collected from tidal pools of Khor Al-Zubair estuarine lagoon during the period from March to November 1994. Length frequency distribution, age, growth and food habits were investigated. The samples were consisted of age groups 0, I and II. The species feed on insects, shrimps, fishes, isopoda and crabs.

**INTRODUCTION**

Juveniles and immature stages of *Acanthopagrus latus* are occurred in inland brackish water and estuaries (Wallace, 1975). It has been recorded previously from several estuaries in the Indo-Pacific region (Blaber, *et al* 1989), Natal estuary, south Africa (Wallace, 1975), India, East Indies, Japan, China Sea and Australia (Kuronuma and Abe, 1986).

In the Arabian Gulf *A. latus* was recorded from the north western part and especially in the waters effected by Shatt Al-Arab River influx (Ali, 1993; Hussain and Ahmed, 1995). These juveniles and immature were occurred in the Shatt Al-Arab estuary and even extended far north in the inland brackish water (120 km) of the Shatt Al-Arab branches and tributaries (Hussain, *et. al.* 1987; Hussain *et al.* 1999) and Shatt Al-Basrah (Al-Daham *et al.* 1993). Abu-Hakima (1984) studied the reproductive cycle of Sparidae including *A. latus* in Kuwaiti waters. Hussain and Abdullah (1977); Samuel *et al.* (1984) studied some biological aspects of this species in the same region.

The present study was concerned with some biological aspects such as occurrence, age, growth and food of this species in Khor Al-Zubair lagoon, northwest Arabian Gulf.

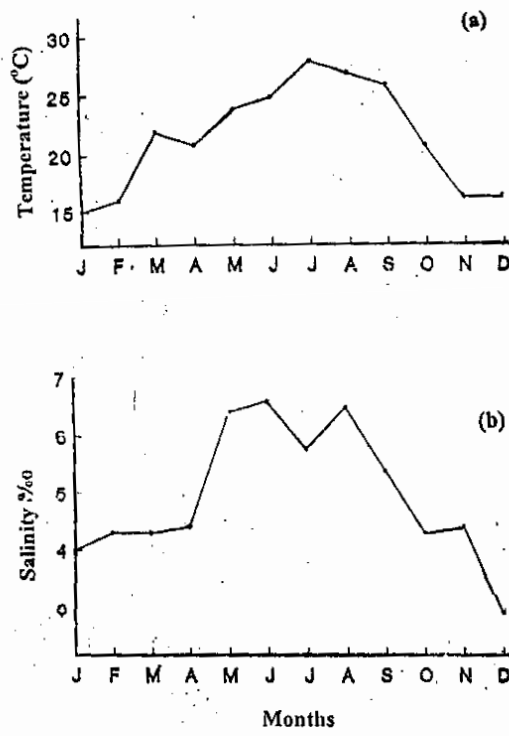


Figure (1): Monthly variation in temperature (a) and salinity (b) of upper reaches of Khor Al-Zubair lagoon during 1994.

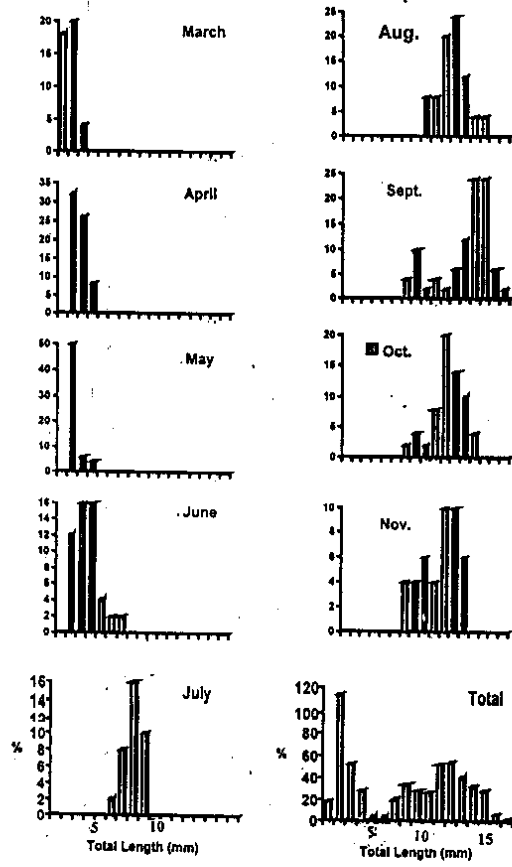


Figure (2): Length frequency distributions of *Acanthopagrus latus* in Khor-Al-Zubair lagoon.

number and the second important size group was (12.0-12.9cm) which occurred in August and November forming 9.9% of the total number and the size group (13.0-13.9cm) occurred during August and October.

#### Length-Weight relationship

The proportion of body weight to the length of 542 fishes captured were computed and the following equation obtained  $W = 0.0250714 * L^{2.82767}$ .

#### Age and growth

The growth curve of *A. latus* was constructed by plotting length against corresponding relative age (Fig. 3). The fish was grown to 8.5 and 15.5cm T.L in the end of the first and second years respectively.

#### Food

Fish were divided into two size groups, small fish (<9 cm) and large fish (>9cm). Figure (4) illustrates the percentage of the food items of 137 stomachs of small fish. Insects were the main food item formed 87.4% O, 74.9% N and 38.8% W. The larvae of shrimp, *Expalemon styliforus* was the second important item (41.1% O, 23.0% W and 15% N). Post larvae of *Ilisha megaloptera* and Gobiidae species consisted 32.9% O, 24.3% W and 6.7% N. Other food items were crabs and isopoda.

Insects were dominant food item in six months (March, April, May, June, July and September), shrimps in October and November and fish in October.

Figure (5) illustrates the percentage of the food items of 143 stomachs of large fish. Shrimps were the main food item formed 61.3% O, 41.4% W and 30.9% N, then fishes 45% O, 24% W and 14% N and isopoda (*Sphaeroms smandalei amandulei*) 39% O, 30.9% N and 18% W. Other food items were insects and crabs.

Shrimps dominate food items during August, September, October and November, fish in July and isopoda in October and November.

A summary of the percentage composition of food for the two size groups is presented in Table, 1. The small fish feed mainly on insects 33.4% (IRI), isopoda 24.8%, shrimps 17.8%, fishes 15.2% and crabs 7.2%. The food items of the large fish comprising (33.9%) shrimps, 18.5% fishes, 18.0% insects, 15.2% isopoda and 14.2% crabs.

#### DISCUSSION

Adults *A. latus* are thought to spawn at sea during the winter, January-February (Abu-Hakima, 1984), with migration of juveniles into estuaries

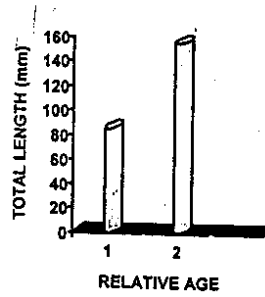


Figure (3): The relative ages at their lengths of *A. latus* collected from Khor Al-Zubair lagoon.

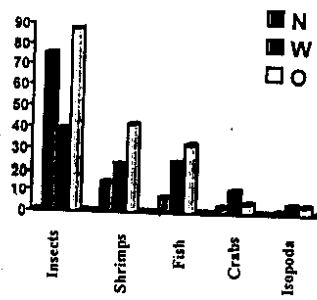


Figure (4): Food items of *A. latus* < 9cm in Khor Al-Zubair lagoon.

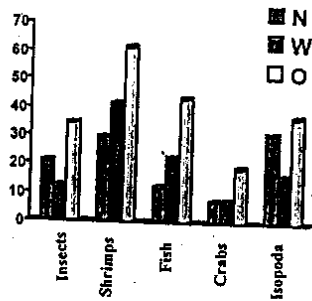


Figure (5): Food items of *A. latus* > 9cm in Khor Al-Zubair lagoon.

Table (1): Index of relative importance (IRI) of different food items of *A. latus* in Khor Al-Zubair lagoon.

Length Group (mm)	No. fish examined	No. of empty stomach	Food items				
			Insects	Shrimps	Fishes	Crabs	Isopoda
< 90	137	17	33.4	17.8	15.2	7.2	24.8
> 90	143	32	18.0	33.9	18.5	14.2	15.2

(Shatt Al-Arab and Khor Al-Zubair), probably taking place at very small size (10-15mm, T.L). Ahmed (1990) stated that sparid juveniles of (7.3-15.8mm T.L) were caught in Khor Al-Zubair in March and May. This corresponds with the appearance of length groups of March-April samples and emphasizes the nursery function of Khor Al-Zubair estuarine lagoon and their backwaters (Shatt Al-Basrah canal). Wallace (1975) noticed the same in Natal estuary, South Africa that yellow fish in bream fries and young juveniles depend on estuaries, during their early stages of life span.

Two major length groups of *A. latus* early stages were noticed in this study, the first group (20-49mm, T.L) collected from March-April and the second group (60-90mm, T.L) sampled from June-August consisted of fry and small juveniles. Houde *et al.*, (1986) showed that the larvae of sparid fishes including *A. latus* were most abundant in Northwest Arabian Gulf during winter, spring and early summer.

It is not worthy that despite intensive sampling no specimens were caught during winter (December, January and February), the same was noticed by Hussain, *et al.* (1987) and Al-Daham, *et al.* (1993) in Shatt Al-Arab River and Shatt Al-Basrah, respectively.

Age determination by length cohort analysis technique was agreed largely with the results obtained by Samual, *et al.* (1984), Morgan (1985), Hussain, *et al.*, (1987) and Al-Daham, *et al.*, (1993), i.e. estuarine and riverine populations are mostly formed of small juveniles, 0 group and I group specimens.

The results of length relationship indicate that there is a slight differences with the studies in the adjacent waters (Hussain, *et al.*, 1987; Al-Daham, *et al.*, 1993).

*A. latus* is a carnivorous species depend on insects (dragon flies), Shrimps (mycides) and fish larvae. The occurrence of insect in the diet of *A. latus* in spring and summer in accordance with diet results of other species in the tidal pools of Khor Al-Zubair like *Periophthalmus waltoni* (Al-Noor, 1995) and *Bathygobius fuscus* (Hussain, *et al.* 1999).

Piscivorous behaviour by predation on post larvae of *Ilisha megaloptera* was found to be very important to young of *A. latus* (>90mm, T.L) in comparison with that of Shatt Al-Arab River which feed mainly on bivalves and shrimps. Hussain, *et al.*, (1987) found crabs was the main food in Shatt Al-Arab and Al-Daham, *et al.*, (1993) indicate crustacean was the main food item in Shatt Al-Basrah, while in this study insects and shrimps are the main food items.



We concluded that food availability, habitat (marine, estuarine, river) and also size of the mouth are the most important factors affecting the type of food taking by *A. latus* of different age groups.

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حياتية يافعات وصغار اسماك الشانك في البرك المدية لخور الزبير، العراق

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#### الخلاصة

جمعت يافعات وصغار اسماك الشانك اصفر الزعانف *Acanthopagrus latus* من الجزء الشمالي لخور الزبير خلال الفترة من آذار ولغاية تشرين الثاني 1994. استخدم نموذج لدراسة توزيع الأطوال وتقدير العمر والنمو وطبيعة الغذاء. لوحظ ان مجتمع الاسماك يحتوي على الأعمار التالية: O، I، و II. كانت طبيعة الغذاء عبارة عن حشرات و روبيان و أسماك ومتشابهة الأقدام وبيوطات.