

FISH ASSEMBLAGE OF ATSHAN RIVER NEAR SAMAWAH CITY, SOUTHERN OF IRAQ

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Abstract:

This study was directed at the Atshan stream in Al-Samawah for the duration of the October 2020 till September 2021. The station (31°18'12.2"N 45°11'01.1"E). The aquatic factors included by this study has been recorded monthly from stations which include dissolved oxygen , water heat, pH , salinity. Fishes were taken by gill nets, electro-fishing, and hand network. A whole of 1055 fish were founded which included 12 species plus 7 families. 7 species from them are local species where as five of them are foreign species. The mainly abundant species was *Oreochromis aureus* (blue tilapia) established 33.2% of all caught, the second species is *C. auratus* represented 27.7% of caught fish and third species is *Carasobarbus luteus* (Himri) instituted 15.9%. It is noticeable that alien species prevailed in the Atshan river, they constituted 68.6% of total caught. This study considers the first fish assemblage in Atshan river.

Keywords: Fish assemblage, Fish population, Euphrates, Aquatic environment, Atshan river.

Introduction:

Several study expounded that rivers (freshwater system) fluxes and fish community composition, with the aim of understand an important biological functions such as growth, abundance and fish assemblage (Robins *et. al*, 2005, Hinojosa-Garro *et. al*, 2013).

River environmental factors and location affects on fish populations features in the rivers so there is a tough relationship between river state and site with fish groups, for that fish composition in head-river parts vary from mid-river and downstream, these change in fish composition nature are stepwise along the extends of diversity (Cherdymova *et. al*, 2018, Filatov *et. al*, 2018, Masalimova *et. al*, 2019, Yorov *et. al*, 2019, Zaitseva *et. al*, 2018).

Fish Composition from internal water bodies has affected by managing and fishing by illegal methods, so both quality plus quantity of fish composition structure are effected by fishing work in an inland water (Pauly *et. al*, 2002; Dudgeon *et. al*, 2006). Wholly types of water contamination and foreign species straight effect on fish numbers in interior water (Britton *et. al*, 2010; Nulu *et. al*, 2011).

Prior studies for Fish Composition provided an obvious information of assessment pollution levels in the water environment, and its show human effects on aquatic environment (Sarkar *et. al.*, 2013). Many studies for fish composition in inland of Iraqi water showed river such as Al-Rudaini *et. al.*, (2001) , Al-Tamimi (2004) , Khaddara (2014) , Mohamed & Al-Jubouri (2017), Al-Helli *et. al.*, (2019) and Abdulla *et. al.*, (2019).

The aim of study: To understand fish structure community from Atshan river nearby Samawa city and its relationship with some environmental factors.

Materials and Methods:

Atshan river is important irrigation systems, provide for areas from west Al-Qadisiyah to Al-Muthanna province, and go in to Al-Hila province from the north of Samawa then pours in the Euphrates near center of Samawa city, The length of river from its branching from the Euphrates River in the district of Shamia until its meeting with the Euphrates River again in the city of Samawa is about 105 km. (fig. 1). Site of study in the downstream of the river within coordinates $31^{\circ}18'12.2''N$ $45^{\circ}11'01.1''E$. Particular physical plus chemical Features were monthly reported for water and fishing between October 2020 to September 2021. water temperature and d. oxygen measured by American YSI55 device. Chinese portable pH meter used to measure pH. Salinity was measured EC300YSI field device. The Fishing by several methods like immobile gill net, per dimension 1 x 60 m through 15 mm net size, also by electric shock of 12 volts, 150 Amp battery .



Fig. (1): study Place in Atshan river

The classification of fishes were agreeing with (Coad, 2010) and updating of logical names agreeing to Froese and Pauly (2018) and Mohammadian-Kalat *et. al*, (2017), Families names have been updated according to Tan and Ambruster (2018).

Results:

Water temperatures varied between 14.1°C in the winter and 32.5°C in the summer. Figure 2 shows the distribution of temperatures during the seasons of the study year. The same figure shows the distribution of dissolved oxygen levels during the seasons of the year. which recorded its highest level in the winter 9.6 gm/l While the lowest level of dissolved oxygen was recorded in the summer, reaching 4.9 gm/l

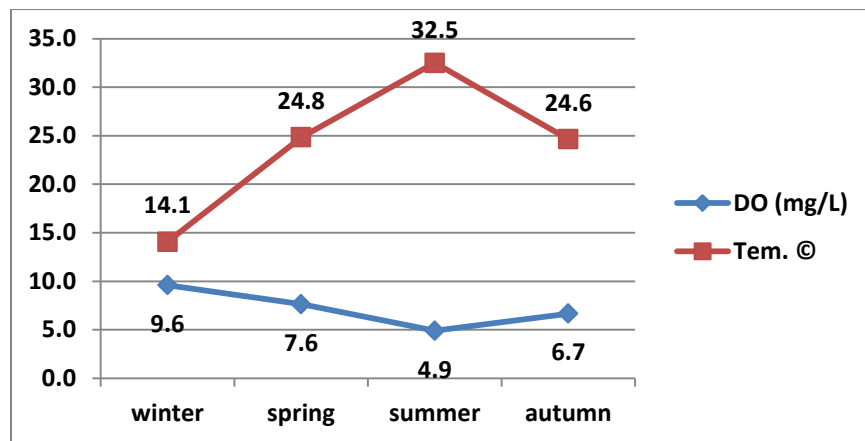


Fig. (2): Dissolved Oxygen (DO) and Water temperature through year seasons

Water salinity varied between 2 ppt in winter and 2.5 ppt in summer. Figure 3 shows the distribution of salinity during the seasons of study year, The same figure shows the distribution of water pH levels during the seasons of the year. which recorded its highest level in winter 7.7 gm/l While the lowest level of pH was recorded in spring reaching 7.1 gm/l.

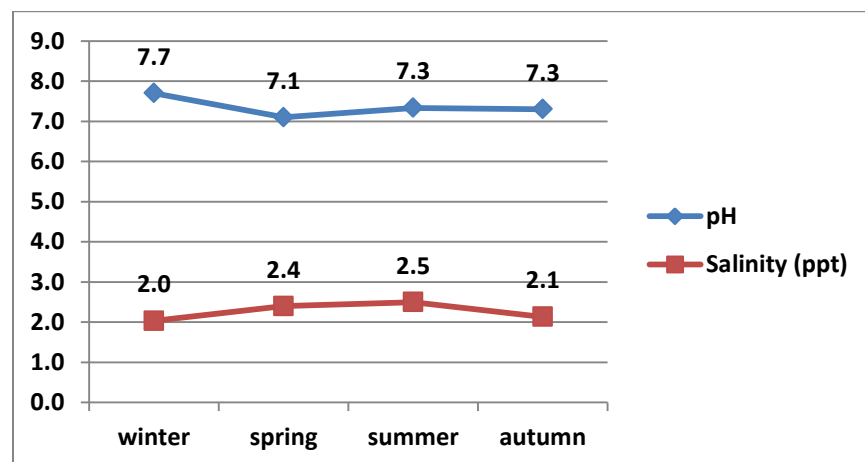


Fig. (3): Salinity and Water pH through year seasons

Fish assembly:

A whole of 1055 fish has been taken throughout study period, organized with 7 native species in addition to 5 alien species. Which belong to seven families . A Cyprinidae family dominated by four species following by Cichlidae and Leuciscidae by two species, while others families represented with one species (Table 1).

Table (1): The common name, scientific name and family name of fish in the study site

	Local name	Scientific name	Family
1	Himri	<i>Carasobarbus luteus</i>	Cyprinidae
2	* Carp brusy	<i>Carassius auratus</i>	Cyprinidae
3	*Carp shae'	<i>Cyprinus carpio</i>	Cyprinidae
4	Gattan	<i>Luciobarbus xanthopterus</i>	Cyprinidae
5	*Redbelly tilapia	<i>Coptodon zillii</i>	Cichlidae
6	*Blue tilapia	<i>Oreochromis aureus</i>	Cichlidae
7	semnan tuyel	<i>Alburnus sellal</i>	Leuciscidae
8	Shillig	<i>Leuciscus vorax</i>	Leuciscidae
9	*Samenan	<i>Hemiculter leucisculus</i>	Xenocyprinidae
10	Jirri dijlal	<i>Silurus triostegus</i>	Siluridae
11	Khishni;	<i>Planiliza abu</i>	Mugilidae
12	Marmarij	<i>Mastacembelus mastacembelus</i>	Mastacembelidae

* Alien species

Cyprinidae species were represented by *Carasobarbus luteus*, *Carassius auratus*, *Cyprinus carpio*, *Luciobarbus xanthopterus*. Leuciscidae represent by *Leuciscus vorax*, *Alburnus sellal*. Cichlidae represent with *Oreochromis aureus*, *Coptodon zillii*, whereas families Siluridae, Mastacembelidae, Mugilidae ,and Xenocyprinidae represented with, *Silurus triostegus*, *Mastacembelus mastacembelus*, *Planiliza abu* and *Hemiculter leucisculus* respectively. (Table 1)

Table (2) shows the monthly fluctuations species number and number of fish individuals, 12 species documented ranged for nine species in November plus four species in February and July, Whereas, the overall number from individuals were 1055, all number of fishes extended from 262fish on November whereas 16 fish on February and July.

Table (2): number of fish species and individuals according months of study year

	Species	dec	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov
1	<i>Carasobarbus luteus</i>	5	-	5	30	35	57	5	5	5	4	7	10
2	<i>Carassius auratus</i>	59	56	2	2	9	22	5	2	5	5	21	105
3	<i>Oreochromis aureus</i>	43	18	5	128	7	29	4	5	5	9	44	54
4	<i>Coptodon zillii</i>	6	1	4	9	-	-	1	4	-	1	13	5
5	<i>Planiliza abu</i>	-	2	-	-	-	-	-	-	-	-	3	14
6	<i>Alburnus sellal</i>	35	-	-	4	5	3	-	-	2	7	15	45
7	<i>Hemiculter leucisculus</i>	1	-	-	-	-	-	1	-	1	2	5	24
8	<i>Luciobarbus xanthopterus</i>	-	-	-	1	-	-	-	-	-	-	-	-
9	<i>Silurus triostegus</i>	-	2	-	6	3	3	-	-	-	-	-	-
10	<i>Cyprinus carpio</i>	-	-	-	-	-	-	-	-	-	-	-	2
11	<i>Leuciscus vorax</i>	2	1	-	-	1	2	1	-	2	-	-	3
12	<i>Mastacembelus mastacembelus</i>	-	-	-	1	-	-	-	-	-	-	-	-
Sum	12	151	80	16	181	60	116	17	16	20	28	108	262

Fig. (4) shows analysis of cluster for similarity between the months on caught fish via the Jaccard index. A similarity level of 75% shows five main groups. The first major group included June, December, August, September, October and November, the next group involved April & May. Third group involved February & July, However the fourth set included March, and the last group included January..

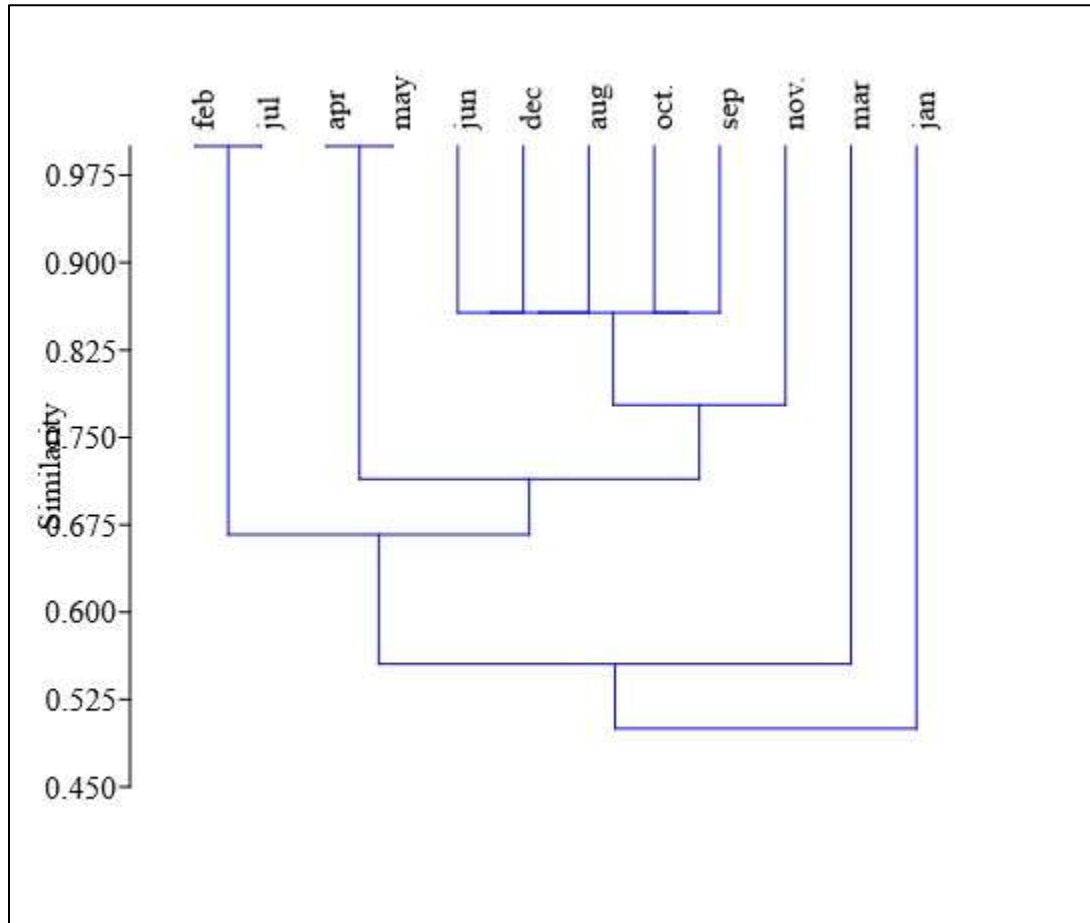


Fig. (4): analysis of Cluster for similarities between months for caught fish

CCA analysis:

Fig. (5) showed Multivariate which represents the relationship among environmental factors, species, and year seasons at Atshan river. The big value for E value Axis 1 was 81.14% and 13.42% for Axis 2, therefore this figure showed 94.56% of the all picture of the correlation between overall variables. Also, in this figure, the vertical axis separated the variables to two groups, first group includes *P. abu*, *C. auratus*, *A. sellal*, *H. leucisculus*, *C. carpio* and *C. zillii*, which positively affected by pH and dissolved Oxygen, They have been clearly associated in Autumn and Winter positively, while the second group includes *L. xanthopterus*, *L. vorax*, *O. aureus*, *C. luteus*, *M. mastacembelus* and *S. triostegus*, which have positive affected in salinity and Temperature. They were associated with spring and summer..

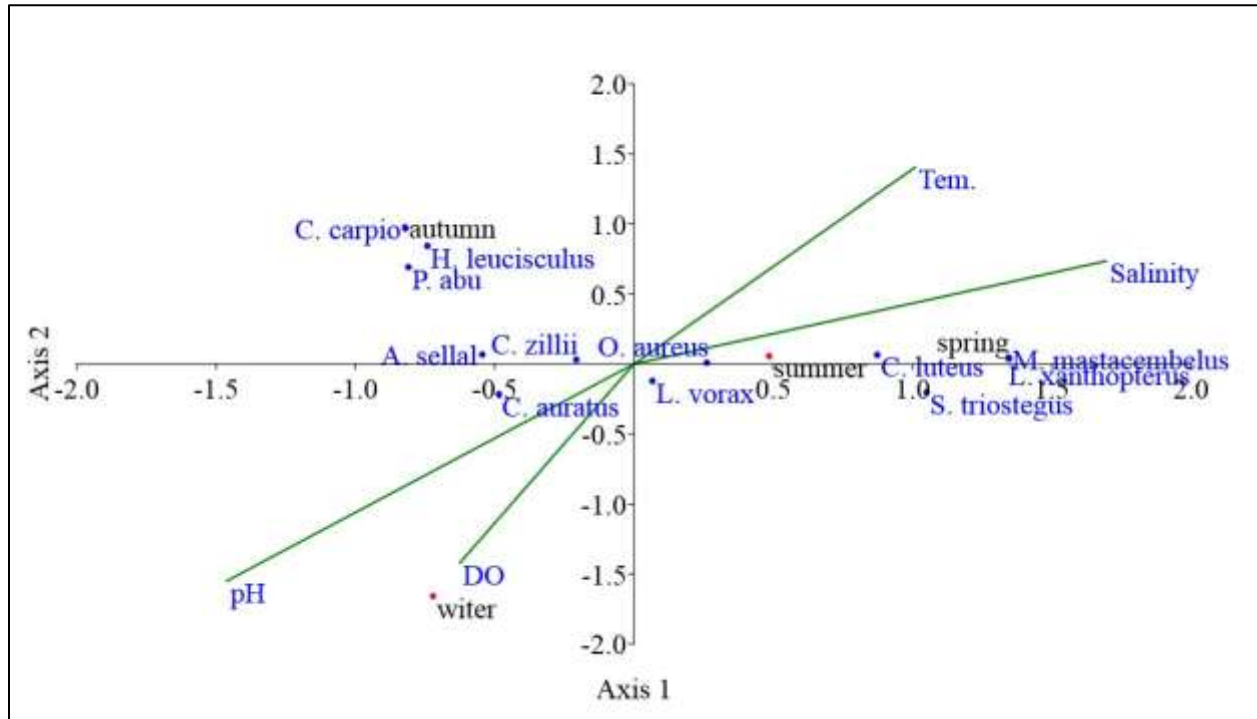


Fig. (5) CCA between species, environmental factors and year seasons in Atshan river

Discussion:

Water quality Changes directly effect on structure fish assemblage in the river, the most Effective factors are climate change, primary productivity and food accessibility. Furthermore to environment elements, relationships among the species in addition interaction with further kinds (Mondal *et. al.*, 2010). Fish accumulation have influence in temperature (Wang *et. al.*, 2003), D.O. (Ostrand & Wilde, 2001), and a discharge or flow of water in river (Chu *et. al.*, 2015) . This work consider first fish assemblage studies in Atshan River near Samawah city. Fish species number that reported were 12 species. The number of individuals caught 1055 individuals. This study differs in outcomes for the species number and number of individuals caught , its record low numbers than other study in Euphrates river such as Al-Temimy, (2004) throughout study near power station of Al-Musaiab in the Euphrates River, 28 fish species. However Salman (2006) recorded 16 species in Tigris-Tharathar Arm river, which, he showed dominance P. abu in 56% then by C. luteus, Al-Amari (2011) when study on Hilla River, he demonstrated twenty three species , while it nearly like the number of species with Salman (2012) study by Sulaibiat marshland, on Al-Samawa city, he showed 13 species, the dominant one was Planiliza. abu in 45.75% and C. auratus secondly in 25.02% , and itscomparable to Abbas, *et. al.* (2017) study for fish assembly in Al-Hindia in Euphrates river barrier, they documented 15 species also, showed dominance P. abu by 14.1% after that C. luteus 12.6%. whereas current study also differs in species number which minor from Mohamed, and Al-

Jubouri, (2017), which found 27 species in Diwaniya River, AlHelli (2019), he recorded 24 species on Euphrates near Samawa city and Abdullah *et. al*, (2019) recorded 18 species in Al-Kahlaa river in Missan province.

Conclusion:

In this study we conclude that water environment of Atshan river nearby al-Samawa city differs from another rivers, that may cause by high level of salinity which may with the other factors and agricultural pollution led to major changes in fish assemblage . differs from other studies in variety rivers and inland water body in number of species and individual number. It is clearly domination for strange species especially blue tilapia & prusian carp Moreover ,we found a low exist native commercial types like Kattan besides absence some native species such as *Arabibarbus grypus*

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