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Quantitative and qualitative study on zooplankton in restored southern Iraqi marshes

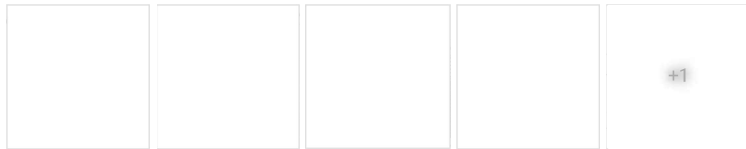
January 2007

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University of Basrah[Citations \(45\)](#)[References \(22\)](#)[Figures \(6\)](#)

Abstract and Figures

The Zooplankton assemblages of the restored marshes was dominated by Rotifera, Copropoda, Cladocera and free nematode respectively. Monthly changes were noticed in densities of these groups. Highest densities were recorded with temperature range 10-20 °C and salinities 1.5-2.0 ppt. dynamic seasonal fluctuations were noticed between zoo. Eighty seven species of zooplankton were identified, including 53 species of Rotifera, 24 of Cladocera, 4 Copepoda, and 6 other belong to Insect, Ostracoda and Nematode. Rotifera contain more species than other groups in all surveyed stations (plankton and phytoplankton).



Total number of zooplankton's...
Total number of individuals for...
Total number of individuals for...
Relationship between total...
Relationship between total...

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Quantitative and qualitative study on zooplankton in restored southern Iraqi marshes

H.M. Al-Sodani ; J.M. Abed ; S.A.K. Al-Essa and N.S. Hammadi
Dept. of Fisheries & Marine Resources ,College of Agriculture, University Basrah

Abstract

The Zooplankton assemblages of the restored marshes was dominated by Rotifera, Copepoda, Cladocera and free nematode respectively. Monthly changes were noticed in densities of these groups. Highest densities were recorded with temperature range 10-20 °C and salinities 1.5-2.0 ppt. dynamic seasonal fluctuations were noticed between zoo. Eighty seven species of zooplankton were identified, including 53 species of Rotifera, 24 of Cladocera, 4 Copepoda, and 6 other belong to Insect, Ostracoda and Nematode.

Rotifera contain more species than other groups in all surveyed stations (plankton and phytoplankton).

1-Introduction

Zooplankton formed an important food web in food chain in aquatic environment they feed greatly on phytoplankton and detritus they converted organic matter in phytoplankton to protein and lipids, they also an important food to fishes, crustaceans .

The oldest studies related to Zooplankton in southern Marshes and neighboring waters were of Gurny (1921) during the British campaign to Iraq, fifty years later Iraqi scientist contributing to the knowledge, Mohamed (1965), Al-Hamad (1966), Khalaf and smirnov (1976), Salman et al. (1986), Abdul Hussein et al. (1989) and Al-Zubaidi (1998). Few specific

articles were dealt with zooplankton of the marshes such as Al-Saboonchi et al. (1986) Ajeel (1998) and Al -Garooni (2005).

The aim of the present study to give an idea about the quantity of major groups and seasonal variation of zooplankton and to identified the zooplankton species existed in the restored Iraqi marshes. Zooplankton is important food for fresh water carnivorous fishes in Iraqi southern marshes especially juveniles, beside their importance as a link between different trophic levels.

Six stations were selected in three restored marshes distributed in shape of two in each marsh, represented different habitats, these stations are:

1-Suq Al Shuyuak marsh.

1-1-Al -Wineas : represent open water with dense vegetations, previously desiccated, GPS reading ((N 30 51 50 ,E 46 40 42)

1-2- Al- Amia : channel marsh station with moderate vegetations, GPS reading(N 30 51 41,E 46 38 13)

2-Huwayza marsh.

2-1-Um- Al naaj :The only natural station escape from desiccation, open water with patch vegetations . GPS reading (N 31 38 30., E 47 35 21),.

2-2-Taraba :Shallow marsh with very dense vegetations,previously was desiccated. GPS reading(N 31 29 48, E 47 31 48),

3-East Hammer:

3-1- Burkha:Open shallow water station , with patch vegetations GPS reading(N 30 40 22 , E 47 33 03)

3-2-Saddah : Natural station escape desiccation,effected by tide from shatt Al Arab, GPS reading (N 30 40 04, E 47 38 06)

Field Measurements Quantitative Sampling:

Hundred liters of water of the in each station were poured through zooplankton net of mesh size of 55 μm , then 5% formalin was added to the sample ,for five months(January to May).

Qualitative Measurements:

The plankton net of 55 μm mesh size was dragged for about $\frac{1}{2}$ hr. beside the boat and then preserved in bottle with 5% formalin. The

samples were taken for five months (September to May).

Laboratory Analysis

Binocular microscope was used for examination the zooplankton by using different identifications references (Edmondson, 1959; Pontin, 1978 and De Bernardi, 1984).

The numbers of individuals were counted by using the counting cell, and then the average was calculated for 100 liters.

3-Results

The highest numbers of individuals of zooplankton were recorded in Taraba station in January and the lowest in March. Um Al-naaj station in Huwayza marsh, the highest noticed in April and the lowest in May .Al-Amia station,the highest in March, and lowest in April. Al Wineas in Suq Al-Shuyuak the highest in March and lowest in February .Burkha station highest in January and the lowest in April. Saddah highest in March, lowest in January. In general there were no clear rhythm in increase and decrease of number of individuals, but seemed two-three months periodcity, fig (1).

The dominant groups were Rotifera forming 53% , 57% and 70% followed by Copepod consisting 29%, 35% and 15% then Cladocera and followed by free nematode in Huwayza, Suq Al-Shuyukh and East Hammar respectively, figs. (2, 3 and 4).

The highest numbers of Rotifera was in Jan., Copepod in Dec., Cladocera in March and for Free nematode in Sep.as displayed in Fig (5). The monthly variations indicated the dominance of Rotifera,followed by Copepoda ,then Cladocera and free Nematoda were showed in

figures (5,6,7,8,9 and 10), demonstrated the dominance of Rotifera during winter season (December-January), Copepod had different

Fig (14, 15, and 16) represents the relation between number of zooplankton and salinities . The best values were recorded in range of

Free nematode peaks in fall in all stations.

The relation between water temperature and total number of individuals were inverse in most of monitored stations except in Taraba and Sadda (Figs. 11, 12, 13).

Figs (17, 18, and 19) explain the inverse relations between number of zooplankton individuals and phytoplankton cells, in all monitored stations.

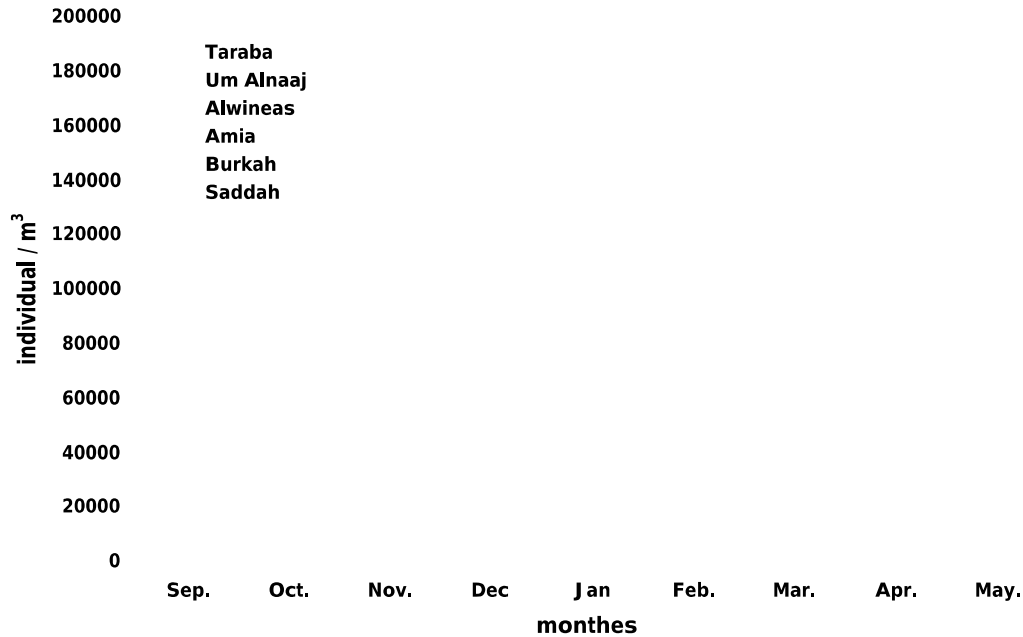


Fig.(1):Total number of zooplankton's individuals in all stations ,Sep.2004-May.2005

Cladocera
Copeooda
Free nematod
Rotifera
Rotifera
53%

Cladocera
12%

Copeooda
29%

Fig.(2):Mean of individuals for each order of zooplankton at Soq-Alshuwuk Marsh, Sep.2004-May.2005

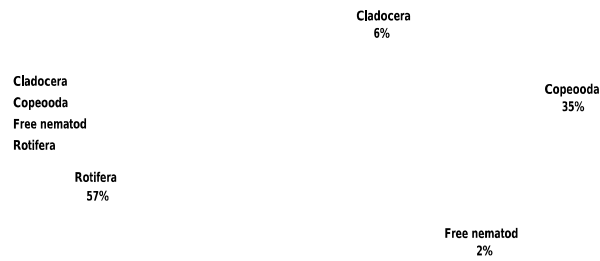


Fig.(3):Mean of individuals for each order of zooplankton at Al-Hawzah Marsh, Sep.2004-May.2005



Fig.(4):Mean of individuals for each order of zooplankton at East-Hammar Marsh, Sep.2004-May.2005

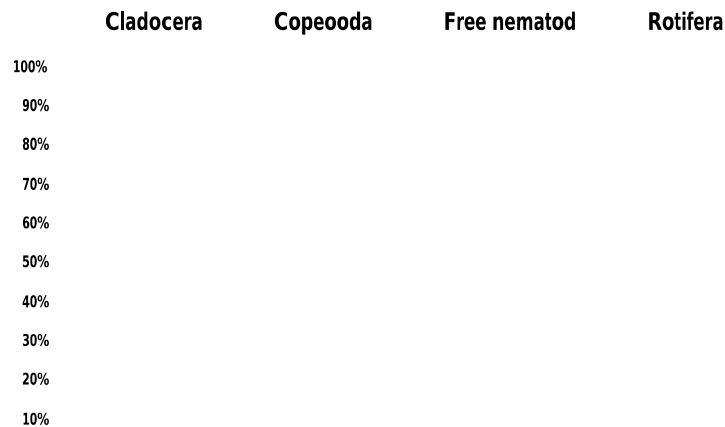


Fig.(5):Total number of individuals for each order of zooplankton at Alwineas, Sep.2004-May.2005

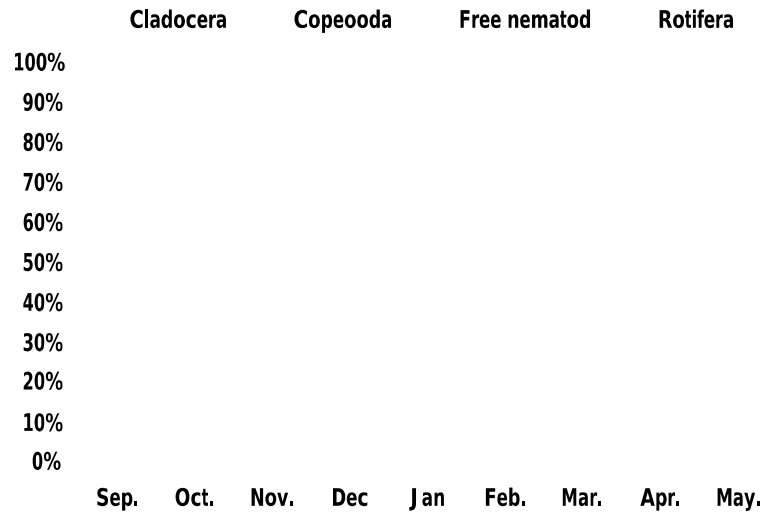


Fig.(6):Total number of individuals for each order of zooplankton at Alamia, Sep.2004-May.2005

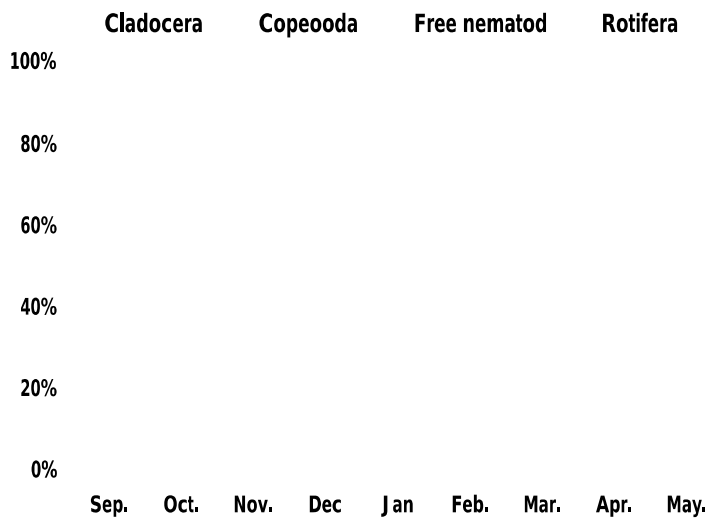
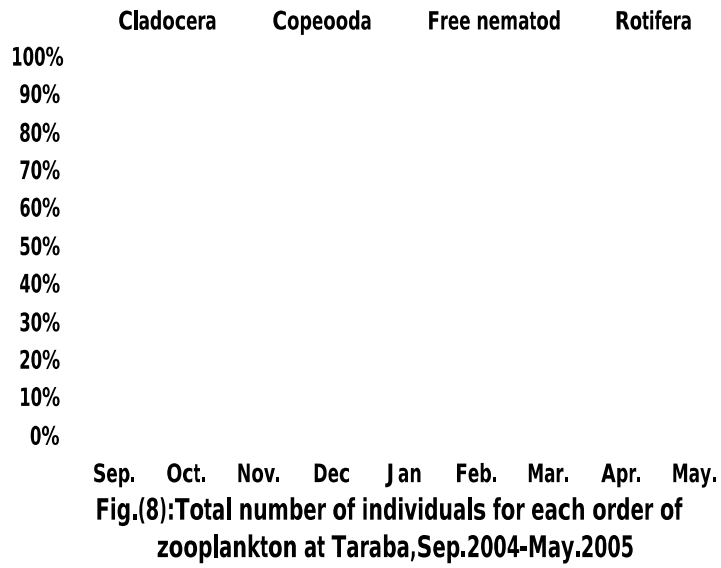
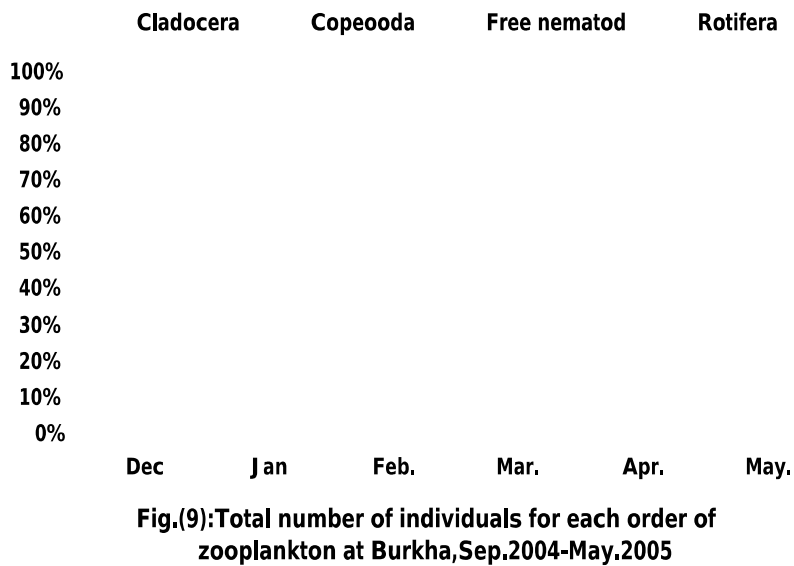


Fig.(7):Total number of individuals for each order of zooplankton at Um Alnaaj, Sep.2004-May.2005



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Cladocera **Copeooda** **Free nematod** **Rotifera**

100%

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Fig.(10):Total number of individuals for each order of zooplankton at Saddah, Sep.2004-May.2005

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... The Western Marsh Harrier is a least concern species (Birdlife International, 2022). Moreover, according to (Scott, 1995b; Abed, 2007; Fazaa et al., 2017b; Al-sheikhly and Al-azawi, 2019) The Eurasian Marsh Harrier is the most abundant and notable raptor species found in Iraq wetlands (Mesopotamian). It is thought to be a local breeding that lives in Iraq marshes in the south and potentially it living a long of central Iraq wetlands , in addition to being a passage migrant and a visitor come in winter (Salim et al., 2012). ...

... The Western Marsh Harrier is a least concern species (Birdlife International, 2022). Moreover, according to (Scott, 1995b; Abed, 2007; Fazaa et al., 2017b; Al-sheikhly and Al-azawi, 2019) The Eurasian Marsh Harrier is the most abundant and notable raptor species found in Iraq wetlands (Mesopotamian). ...

Description and Overview of the Western Marsh Harrier *Circus aeruginosus* (Linnaeus, 1758)[Article](#)

Dec 2023

Abdullah Al-Sarraf

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... It is one of the common and widespread winter visitors in our country and it spawns in some places for sure, [10,11]. The first recoded of *Accipiter nisus* in Iraq by [12], then by [13]; [14]; [15]; [16]; [17]; [18] and [19]. [20] Mentioned that seven sparrow hawks were recorded on the edge of the Central Marshes in Thi Qar province south of Iraq. ...

... *Aquila clanga* is a passage migrant and winter visitor [10]. It was almost recorded by all the previous surveys in Iraq as follow: [24]; [25]; [12]; [26]; [14]; [16]; [17]; [27]; [19]. In addition of, [28] revealed to it in Al-Dalmaj Marsh, south of Iraq. ...

Morphological study for Accipitrid birds (Accipitridforms, Accipitridae) in Iraq[Article](#) [Full-text available](#)

Jun 2022

● Afkar Hadi · ● Suhad Yasin Jassim · ● Hind Hadi · Hani Saber Khalif

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Sheldon et al., (2007) referred that lapwing *V. vanellus* nest success results showed that the different crops type had a significant difference. ...

A study of Distribution and Breeding on Lapwing (*Vanellus* spp.) of Al-Malih area in Babylon Province / Iraq

Thesis [Full-text available](#)

Jan 2024

● Kamil H. Alfayadhi · ● Moayed J Yass · Omar F. Al-Sheikhly

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... Birds in the study area are classified into migratory and indigenous birds (Muhsin & Kadhim, 2017). In the spring season of each year, there are various groups of birds migrating from Russia and Europe to Al-Huwaizah marsh (Abed, 2007). The main reason for the migration of these birds is the favorable climate and the abundance of water and food (Al-Sheikhly & Al-Azawi, 2019). ...

Geographical Assessment of the Natural Environment at Al-Huwaizah Marsh, Eastern of Misan Governorate (Iraq)

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Oct 2023

● Bashar F. Maarof · ● Mohammed A. Almusawi · ● Hashim H. Kareem Aldhahi · ● Iacopo Carnacina

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... Marbled Teal breeds in the Mesopotamian marshlands, at the confluence of the Tigris and Euphrates rivers, Iraq; in this region there are lakes, rivers, and marshes with emergent vegetation of *Phragmites australis*, *Typha domingensis* and *Schoenoplectus litoralis*, and submerged vegetation of *Ceratophyllum demersum*, *Najas marina*, *Potamogeton crispum*, and *Potamogeton lucens* (74, 121). ...

Marbled Teal (*Marmaronetta angustirostris*)

Chapter

Jul 2023

Alfredo Salvador · ● Juan A. Amat · ● Andy J Green

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... Scott (1995) mentioned that the number of waterbird species recorded in the marshes of southern Iraq amounted to 134 species. Previous studies on birds in southern Iraq are limited; Abed (2007), Surveyed waterbirds in two southern Iraqi marshes, including Hammar and Hawizeh marshes. In this study, 57 species were recorded. ...

The role of temporary rain pools in attracting waterbirds in Basrah province, Iraq

Article [Full-text available](#)

Sep 2022

● Adil Fadhil

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... Noticeable seasonal increase in number of species and individuals synchronized with periods of moderate temperature at the end of spring and early winter, this mode was noticed in other Iraqi marshes and similar to other temperate regions which conceded with noticeable increase in spring and autumn productivity in the marshes also followed by increase of macro-invertebrates [23, 24, 25], fish and aquatic birds abundance [26]. ...

Abundance and Ecological Indices of Mammals at East Hammar Marsh

Article

Jan 2015

F Mesop. Environ ; A · ● Adil Fadhil

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Identifying hotspots of endangered wetland bird in the Marsh Al-Dalmaj / Iraq

Preprint [Full-text available](#)

Jul 2023

● Ahmed Awad · ● Safaa A Kadhum · ● Mohd Yusoff Ishak · Haider Mashkoor Hussein

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Mohammed F. Abbas

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Diversity of crustaceans in the euphrates River/Najaf province-Iraq

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Sep 2022

Abdul Salam Hassan Hamza Al-Shamry ·  Aliaa Mizhir

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A study on plankton dynamics of two wetland systems in Shimoga District, Karnataka (INDIA)

● Venkateshwarlu Meedidoddi · ● Shahnawaz Ahmad · K Honneshappa

A comparative hydrobiological study of two contrasting wetlands viz., Santhekadur and Sogane ponds in Shimoga district of Karnataka was carried out during February 2006 to January 2007 in order to access the status of plankton diversity in relation to water quality parameters. The water quality parameters and plankton diversity showed marked variation in total density, which is because of diverse ... [\[Show full abstract\]](#)

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Article

The hydrology and plankton of the River Sokoto. *Journal of Animal Ecology* 29: 65 - 84.(1960)

May 1960

M. J. Holden · ● Jim Green

1. Two stations were sampled in the River Sokoto, Nigeria, near Birnin Kebbi, one in the main stream the other in a pool isolated during the dry season. 2. Birnin Kebbi has one wet season each year. 3. Approximately monthly data over 3 1/2 years are given for water level, temperature, pH, alkalinity, oxygen and transparency. Samples were also taken for chemical analysis, phytoplankton and ... [\[Show full abstract\]](#)

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Limnological studies in a small reservoir in Meghalaya (N.E. India)

January 1995

● B K Sharma

A13STRACT Tile present study conducted in a small man-made reservoir of Meghalaya state (NE.India) indicated some interesting features. These included its warm-monomictic nature, subtropical thermal range (surface water temperature: 12-22 DC), low transparency (2.25-3.25 m), acidic pH (5.5-6.6) and very soft waters (alkalinity: 5.6-11.8 mg l⁻¹; total hardness: 4.0-14.0 mg l⁻¹; Ca ++ > Mg +) ... [\[Show full abstract\]](#)

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AN ASSESSMENT ON ZOOPLANKTON DIVERSITY BETWEEN THREE FRESHWATER HABITATS OF BARAK VALLEY, ASSAM

July 2018

● Uma Das · ● Papia Das · ● Sulata Kar · [...] · ● Devashish Kar

A study was carried out to assess the diversity trend of zooplankton (ZP) in three freshwater habitats of Barak valley, Assam. Weekly collection of plankton samples have been done for three months from July 2015 to September 2015. Total 41 genera have been encountered during the study among which 32 genera found from Chatla haor (Site A), 29 genera found from Kar bhala wetland (Site B) and 26 ... [\[Show full abstract\]](#)

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