

Vol 4 Issue 11 Dec 2014

ISSN No : 2230-7850

International Multidisciplinary
Research Journal

*Indian Streams
Research Journal*

Executive Editor
Ashok Yakkaldevi

Editor-in-Chief
H.N.Jagtap

Welcome to ISRJ

RNI MAHMUL/2011/38595

ISSN No.2230-7850

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board. Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

International Advisory Board

Flávio de São Pedro Filho Federal University of Rondonia, Brazil	Mohammad Hailat Dept. of Mathematical Sciences, University of South Carolina Aiken	Hasan Baktir English Language and Literature Department, Kayseri
Kamani Perera Regional Center For Strategic Studies, Sri Lanka	Abdullah Sabbagh Engineering Studies, Sydney	Ghayoor Abbas Chotana Dept of Chemistry, Lahore University of Management Sciences[PK]
Janaki Sinnasamy Librarian, University of Malaya	Ecaterina Patrascu Spiru Haret University, Bucharest	Anna Maria Constantinovici AL. I. Cuza University, Romania
Romona Mihaila Spiru Haret University, Romania	Loredana Bosca Spiru Haret University, Romania	Ilie Pintea, Spiru Haret University, Romania
Delia Serbescu Spiru Haret University, Bucharest, Romania	Fabricio Moraes de Almeida Federal University of Rondonia, Brazil	Xiaohua Yang PhD, USA
Anurag Misra DBS College, Kanpur	George - Calin SERITAN Faculty of Philosophy and Socio-Political Sciences AL. I. Cuza University, IasiMore
Titus PopPhD, Partium Christian University, Oradea,Romania		

Editorial Board

Pratap Vyamktrao Naikwade ASP College Devrukh,Ratnagiri,MS India	Iresh Swami Ex - VC. Solapur University, Solapur	Rajendra Shendge Director, B.C.U.D. Solapur University, Solapur
R. R. Patil Head Geology Department Solapur University,Solapur	N.S. Dhaygude Ex. Prin. Dayanand College, Solapur	R. R. Yaliker Director Managment Institute, Solapur
Rama Bhosale Prin. and Jt. Director Higher Education, Panvel	Narendra Kadu Jt. Director Higher Education, Pune	Umesh Rajderkar Head Humanities & Social Science YCMOU,Nashik
Salve R. N. Department of Sociology, Shivaji University,Kolhapur	K. M. Bhandarkar Praful Patel College of Education, Gondia	S. R. Pandya Head Education Dept. Mumbai University, Mumbai
Govind P. Shinde Bharati Vidyapeeth School of Distance Education Center, Navi Mumbai	Sonal Singh Vikram University, Ujjain	Alka Darshan Shrivastava Shaskiya Snatkottar Mahavidyalaya, Dhar
Chakane Sanjay Dnyaneshwar Arts, Science & Commerce College, Indapur, Pune	G. P. Patankar S. D. M. Degree College, Honavar, Karnataka	Rahul Shriram Sudke Devi Ahilya Vishwavidyalaya, Indore
Awadhesh Kumar Shirotriya Secretary,Play India Play,Meerut(U.P.)	Maj. S. Bakhtiar Choudhary Director,Hyderabad AP India.	S.KANNAN Annamalai University,TN
	S.Parvathi Devi Ph.D.-University of Allahabad	Satish Kumar Kalhotra Maulana Azad National Urdu University
	Sonal Singh, Vikram University, Ujjain	

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.isrj.org



STUDY ON ZOOPLANKTON FAUNA AND SEASONAL VARIATION IN BHIMA RIVER NEAR GURSALE VILLAGE, DIST: SOLAPUR, (MAHARASHTRA).

A. N. Dede¹ and A. L. Deshmukh²

¹Department of Zoology, Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur, District Solapur (MS) India
²Department of Zoology, Shankarrao Mohite Patil Mahavidyalaya, Akluj, Taluka Malshiras, District- Solapur.

Abstract:-During present investigation total 18 Zooplankton species were recorded from Bhima river near Gursale village Taluka Pandharpur, Dist. Solapur (M.S) from Jan. 2014 to Dec.2014. Which consist of 9 Species belong to Rotifera, 5 species belong to Cladocera, 4 species belong to Copepoda, The Rotifera was the most dominant group throughout the Study period. The number of Zooplankton was highest in summer followed by winter and lowest in Monsoon Season. The Zooplankton variation were observed as follows Rotifera > Copepod > Cladocera in Study Period. All Three zooplankton groups were observing in throughout study period.

Keywords: Zooplankton, Bhima River, Pandharpur, Density.

INTRODUCTION

Rivers are freshwater aquatic habitat for plants, animals and play important role in maintaining high biodiversity. The zooplanktons are microscopic animal and found in fresh water and marine water bodies. The change in water quality of river is depends upon biotic and abiotic factors. The Zooplankton is important component of the ecological pyramid of the fresh water ecosystem. Zooplanktons are occupying a central position between Phytoplanktons and fish. The monitoring of zooplankton communities is needed to allow us to predicatively model the ecosystem and helpful for conservation of river (Saron et.al, 2013).Zooplanktons are the integral part of lotic community and contributes the role of aquatic ecosystem. (Patel et.al, 2014). The clarity of water, fluctuation of temperature are depends upon seasonal change in aquatic environment by adding rain water it suitable for growth of zooplankton (Lokhande et. al., 2012).

The zooplankton is wide range of environmental conditions but physicochemical parameters are limiting factors, they also good bioindicators to assess the pollution of any freshwater body (Dutta et.al, 2013). A number of workers have previously reported on different aspects of zooplankton in habiting Indian fresh waters (Shrirame et.al, 2014; Majagi et. al, 2009; Datta. 2011; Kaya et. al. 2006; Joshi 2011). Therefore the aim of the present study is to determine zooplankton fauna and seasonal variation of the study area.

MATERIALAND METHODS:

Description site: Gursale village is situated in the Solapur district of State Maharashtra. Bhima river is runs near Gursale village. It is situated in latitudes 17° 71' and 41° 77'N and longitudes 75° 31' and 31° 21'E (Fig. no.1).

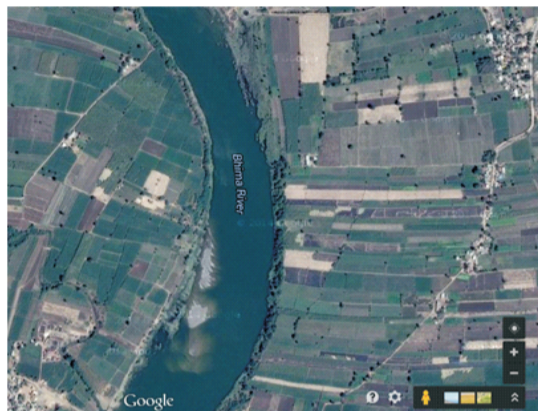


Fig. No-1. Satellite view of Bhima River in Study area.

Collection of Sample: Water sample were collected from Bhima river near Gursale village every month during Jan 2014 to Dec 2014 in the morning between 8 to 11 am. For the collection of zooplanktons sample 50 lit. of surface water passed through standard plankton net of bolting silk No. 25. The collected samples were preserved in 4% formalin solution in 200 ml bottle.

Biological analysis:

The Zooplanktons were identified with the help of standard literature up to generic level by using standard keys of Adoni et al., (1985), Edmondson (1959), Pennak (1978), Reddy (1994), Dhanapathi (2003), Bhoyain et.al. (1992). The qualitative and quantitative analysis of the organism is carried out by 'Sedgwick rafter cell' as per the standard methods APHA (1998). The Average of 5 to 10 counts for each sample is taken in to account and results are expressed in No of organism/lit.

Table No. I: Seasonal Occurrence of Zooplankton density during Study area During Jan 2014 to Dec 2014

Zooplankton species	Summer					Winter					Rainy season				
	Feb	Mar	Apr	May	Total	Oct	Nov	Dec	Jan	Total	Jun	Jul	Aug	Sep	Total
Rotifera															
<i>Brachionus Caudatus</i>	10	15	20	15	60	05	04	03	05	17	10	05	12	05	32
<i>Brachionus falcatus</i>	05	10	10	20	45	15	10	04	10	39	10	10	04	05	29
<i>Brachionus forficula</i>	04	05	06	05	20	10	09	08	10	37	15	05	05	05	30
<i>Brachionus Calyciflorus</i>	10	20	25	20	75	25	10	05	05	45	20	06	06	05	37
<i>Brachionus diversicornis</i>	05	05	10	Nil	20	10	09	10	05	34	10	04	05	03	22
<i>Filinia opolensis</i>	Nil	Nil	05	Nil	05	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
<i>Keratella tropica</i>	10	15	25	20	75	15	10	05	05	35	10	05	03	01	19
<i>Keratella crassa</i>	05	10	15	10	40	03	02	Nil	Nil	05	06	01	02	01	10
<i>Keratella chochlearis</i>	Nil	Nil	05	Nil	05	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	49	80	121	90	340	83	54	35	40	212	81	36	37	25	179

Cladocera															
<i>Moina micrura</i>	20	25	15	10	70	08	05	03	10	26	10	05	02	01	18
<i>Moina Brachiata</i>	10	15	10	15	50	03	02	02	02	09	05	01	02	05	13
<i>Chydorus sphaericus</i>	10	20	15	10	55	05	05	02	03	15	02	01	01	01	05
<i>Bosmina longirostris</i>	02	10	05	10	27	10	05	01	Nil	16	03	02	01	02	08
<i>Diaphanosoma sarsi</i>	10	15	10	10	45	05	10	04	01	20	Nil	Nil	07	01	08
	52	85	55	55	247	31	27	12	16	86	20	09	13	10	52
Copepoda															
<i>Mesocyclops</i>	25	20	35	30	110	20	15	25	10	70	10	03	03	03	19
<i>Undinula valgaris</i>	20	10	15	10	55	19	14	20	10	63	05	03	02	04	14
<i>Thermocyclops</i>	20	15	20	10	65	21	15	14	05	55	10	02	03	05	20
<i>Nauplius</i>	20	25	20	20	85	25	20	15	10	70	15	05	10	05	35
	85	70	90	70	315	85	64	74	35	258	40	13	18	17	88
Total	186	235	266	215	902	199	145	121	91	556	141	58	68	52	319

RESULT AND DISCUSSION:

The present studies 18 species of Zooplankton were recorded. The Zooplankton represented by three groups of Phylum Viz. Rotifera, Cladocera, Copepoda. Rotifera were dominant as compared to other group in the Bhima river. Among, these Rotifera belongs to 9 Species were found as follows, B. Caudatus, B. falcatus, B. forficula, B. Calyciflorus, B. diversicornis, Keratella tropica, Keratella crassa, Keratella chochlearis. Filinia opolenis. Copepoda belongs to 4 species, Mesocyclops, Undinula valgaris, Thermocyclops, Nauplis, Cladocera belongs to 5 species, Moina micrura, Moina brachiata, Chydrous sphaericus, Bosmina longirostris, Diaphanosoma sarsi. Filinia species was present in only summer season only during the present Study period. The seasonal variation of zooplankton groups as follows, Rotifera > Copepoda > Cladocera. The total density of Zooplankton was higher during summer season and Minimum no. of zooplankton recorded in winter and rainy season (Table no. I), similar observation was seen Patel, et.al (2013).

Rotifera: Rotifers are Pseudocoelomate animals and also called as 'Wheel-Bearer'. In present study population density of rotifera was Maximum in April Month 121/ L and Minimum in Sept Month 25/ L. (Fig no.5) similar observation was seen in Ukkadam Lake Coimbatore, Tamilnadu. Ezhili et.al (2013).

Cladocera: Cladocera are small crustacean animals and also called as water fleas. In present study the cladocera population density show Minimum in July 9/L and maximum in March 85/L, (Fig. no.3), Similar trends observed in Godavari river water near Nashik Maharashtra, Kolhe (2014).

Copepoda: Copepoda are group of small animal found in freshwater and sea water habitat. In present study Population density of copepod was maximum in April 90/ L and minimum was July 13/ L (Fig. no.4), Similar trend observed in urban lake of Nagpur city, Sitre (2012)

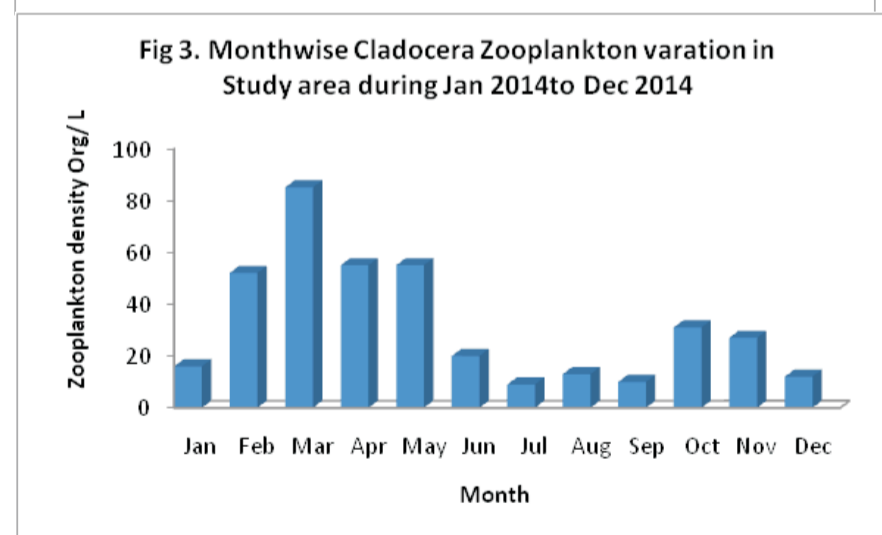
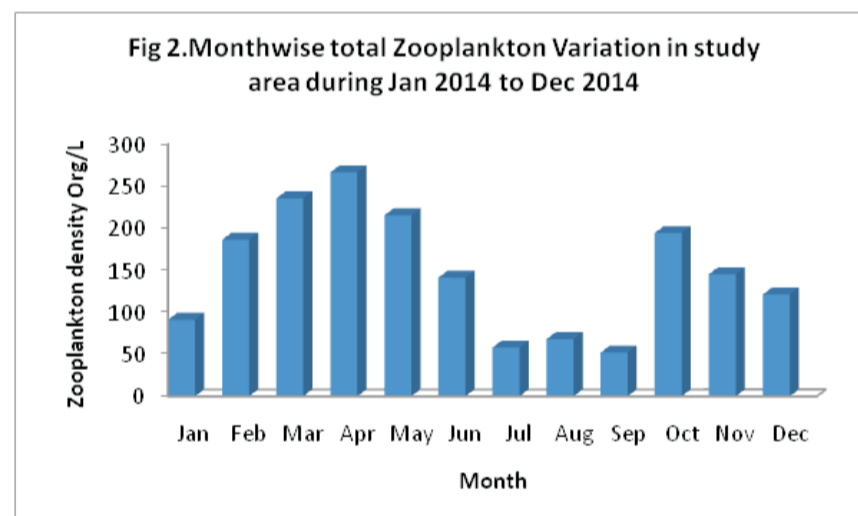
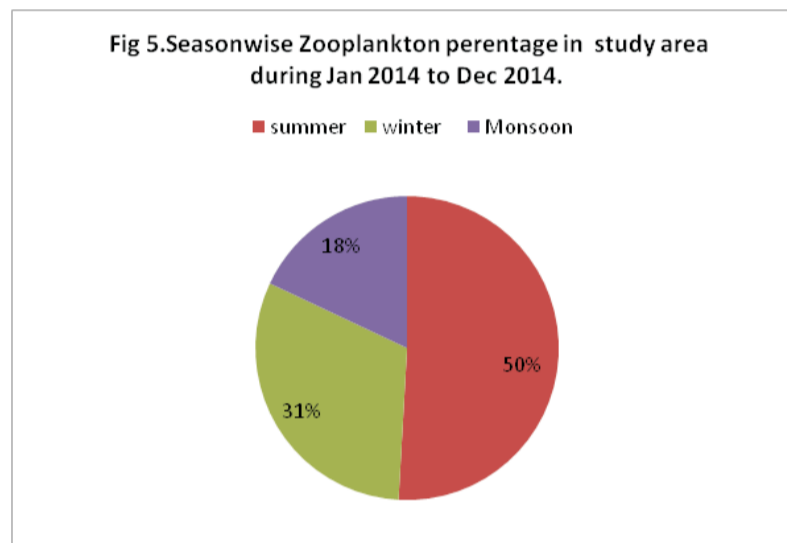
According to Ahmad, et.al, (2013) reported as 28 genera of Zooplankton from Pahuj Reservoir at Jhansi U. p. India. Salve, et.al (2013) reported as 18 genera of Zooplankton from Gangapur Dam of Nashik. Gadekar et.al (2014) reported as 25 genera of Zooplankton in Pangadi lake, Gondia, Maharashtra. During present study the summer season percentage of zooplankton number is 50%, winter season 31%, and rainy season 18% (fig.No.5). Therefore the present studies were helpful for awareness of water pollution and conservation of river.

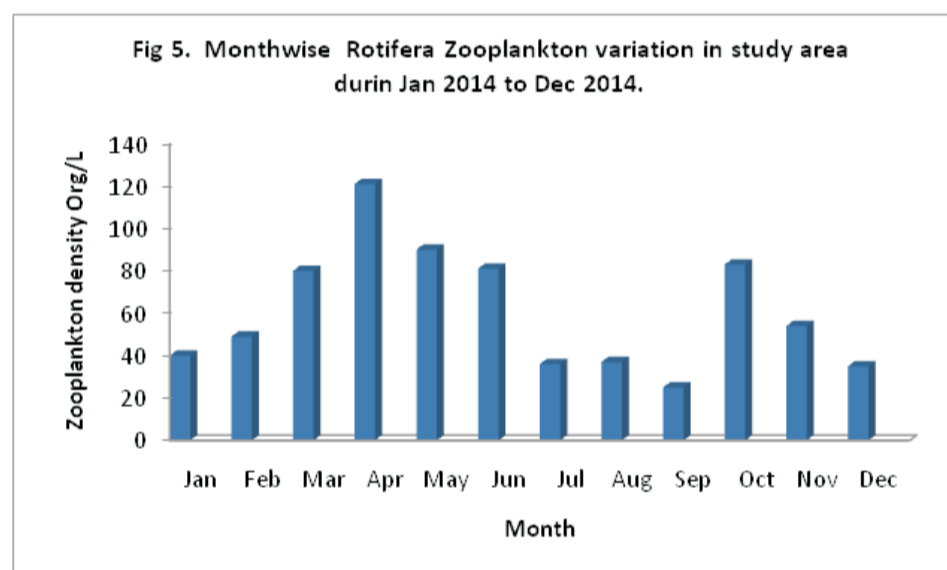
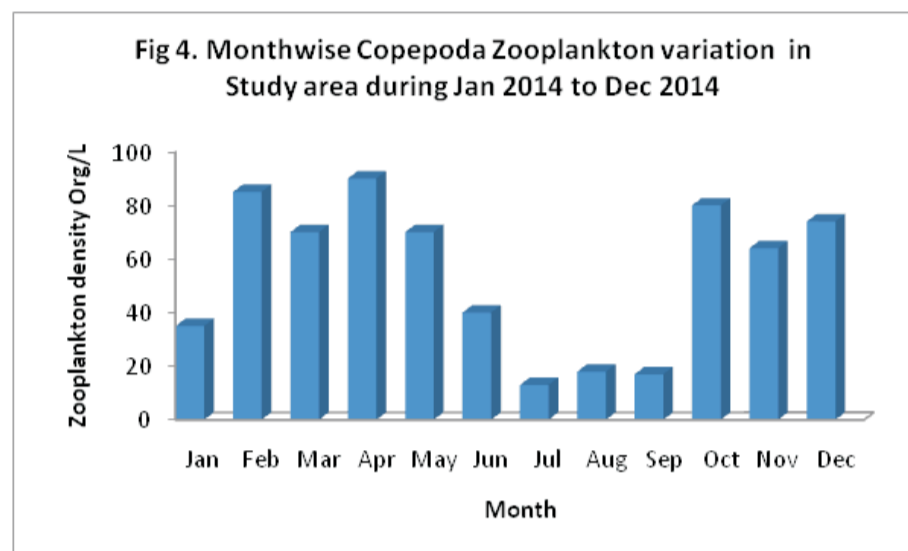
CONCLUSION:

The Zooplankton density was more in summer followed by winter season because favorable environmental condition for growth of Zooplankton. The Zooplankton density was less in rainy season. The river is protecting from domestic waste, agriculture waste, and industrial waste from near village. The river water is clean and maintain aquatic ecosystem in future.

ACKNOWLEDGEMENT:

The authors are thankful to Principal and Head of Department of Zoology, Shankarro Mohite Patil Mahavidyalaya Akhuj, for providing Laboratory and library facility for the present research work.





REFERENCE

1. Adoni, A.D. Joshi, G. Gosh, K., Chowasia, S.K, Vaishy, A.K, Yadav. M, and Verma, H.G (1985); Work book or limnology, prathibha publishers, sagar, India.
2. APHA (1998). Standard methods for examination of water and waste water. (20th edition), American public health Association, Washington D.C.
3. Bhouyain, A.M. & Asmat, G.S. (1992). Freshwater zooplankton from Bangladesh Gazi Publishers, Dhaka, Bangladesh, pp. 32-151
4. Datta. T (2011); Zooplankton diversity and Physico chemical condition of two wetland of Jalpaiguri Dist, India, International Journal of applied biology and Pharmaceutical technology Vol. 2, Issue 3, PP. 576- 583.
5. Dhanapathi, M.V.S.S.S (2000). Taxonomic notes on the Rotifera, Indian association of aquatic Biologist, Hyderabad, Vit, PP.178.
6. Dutta T. K and Patra. B. C. (2013); Biodiversity and seasonal abundance of Zooplankton and its relation to physicochemical parameter of Jamunabundh Bishnupur, India, International Journal of Scientific and research publication. vol. 3, Issue 8, PP. 1- 7.
7. Edmondson, W.T. (1959). Fresh water biology, Edward and hipple, 2 nd Edn. John willy son. Inc; Newyork, PP. 95- 189.
8. Ezhili N., Manikandan R and Ilangovan .R (2013); Diversity and Seasonal variation of zooplankton in Ukkadam lake, Coimbatore, Tamilnadu India , International Journal of current research Vol. 5(6) PP. 2091- 2094.

9. Gadekar. P. G., Ghoshal K. P and Gadwe A. S. (2014); Studies on Zooplankton diversity of Pangdi lake, Gondia Dist. Gondia, Maharashtra, International journal of environmental biology 4(1), PP 47- 50.
10. Joshi. P. S. (2011); Studies on Zooplankton of Rajura lake of Buldhana district, Maharashtra India. Journal of Science research report 1(3), PP. 132- 137.
11. Kaya. M and Altindag. A (2006); Zooplankton fauna and seasonal change of Gelingullu Dam lake Turkey, Turkey Journal Zoology 31; PP 347- 351.
12. Kolhe B. G, Shinde S.M. (2014); A study on Monthly variation in distribution and diversity of Cladocera population in Godavari River, Global Journal for research analysis, Vol. 3(6), PP 220- 221
13. Lokhande. M. V. and Shembekar. V. S (2012); Diversity of Zooplankton in Dhanegaon reservoir
14. Dhanegaon, Dist. Osmanabad, Maharashtra (India). Multilingual, multidisciplinary online
15. research Journal, Vol. 1, Issue 1 Pages 1-14
16. Majagi. S, Vijaykumar. K. (2008); Ecology and abundance of zooplankton in karanja reservoir, Environmental Monit Assess Journal 152, PP 452- 458.
17. Patel. S. and Singh. S. (2014); Seasonal variation of Phytoplankton and Zooplankton in Beehar, river, Rewa (M. P). Indian Journal of Applied research. Vol. 4, Issue 9, PP. 558- 560.
18. Patel. V, Shukla. S. N, and Patel V.K (2013); Studies on the diversity of zooplankton and their seasonal variation in Govindgarh lake at Rewa (M. P) India, International Journal advance life science, Vol. 3, Issue 11, PP. 544- 546.
19. Pennak, R.W. (1978). Freshwater invertebrate of United States. 2nd Ed. John Wiley and Sons New York PP. 303.
20. Reddy, Y. R. (1994). Copepod, Cladocera Diaptomidous Guide to the identification of microinvertebrate of the continental water of the world, Vol. 5, SPB. Publisher the Hague, Netherland.
21. Salve S.J, Goswami D, Ahire P. P and Shinde H.P (2013); Diversity of freshwater zooplankton at Gangapur dam Nashik, (M. S.) India, International Journal of advance life science, Vol. 6, Issue 3, PP. 255- 257.
22. Saron. T and Bljen. M (2013); Seasonal variation of Zooplankton population with reference to water quality Iiril river in Imphal. Journal of current World environment vol. 8(1), PP. 133- 141.
23. Shrirame. N. V, Gyanaanath. G, Mulgir. M. T, Phartale. N, Kanse. O. S. (2014); Diversity and seasonal fluctuation of Zooplankton in Ghagardara Pond Taluka Kandhar Dist. Nanded (M. S) India, International Journal of Aquaculture Vol. 4, Issue 3, PP. 20- 23.
24. Sitre R.S. (2012); Studies on the seasonal variation of freshwater zooplankton in perennial urban lake of Nagpur city (M. S.) India, Lokavishkar International E. Journal Vol. 1, Issue 3 PP 10- 16.

Publish Research Article International Level Multidisciplinary Research Journal For All Subjects

Dear Sir/Mam,

We invite unpublished Research Paper, Summary of Research Project, Theses, Books and Book Review for publication, you will be pleased to know that our journals are

Associated and Indexed, India

- * International Scientific Journal Consortium
- * OPEN J-GATE

Associated and Indexed, USA

- Google Scholar
- EBSCO
- DOAJ
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Database
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database
- Directory Of Research Journal Indexing

Indian Streams Research Journal
258/34 Raviwar Peth Solapur-413005, Maharashtra
Contact-9595359435
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com
Website : www.isrj.org