

Short Communication

The rotifers of omi river, Ago-iwoye, Nigeria

*¹Fafioye, O.O and ² Omoyinmi, G.A.K

¹ Department of Plant Science and Applied Zoology, Olabisi Onabanjo University, PMB. 2002, Ago-Iwoye, Nigeria.

² Department of Agricultural Science, Federal College of Education, Osiele, Abeokuta, Nigeria.

Accepted 11 November, 20118

The rotifers of Omi River, Ago -Iwoye, Nigeria were qualitatively studied. Twenty-nine species were recorded indicating a fairly rich quality relative to other Nigerian and African waters. Family Brachionidae (33.3%) was dominant out of nine families documented, while family Trichotriidae was least represented. The bulk of the rotifers were found at the littoral and pelagic zones. This study showed that the river is not polluted, a reliable drinking water supply and has a high potential for thriving fishery

Key words: Zooplankters, rotifers, Omi River, Nigeria.

INTRODUCTION

Rotifers are microscopic fauna characteristically prevalent in fresh waters. A few rotifers are cosmopolitan, while majority of these animals are highly adapted to a wide range of freshwater conditions (Hutchinson, 1967, Brummett, 2000). They constitute the bulk of zooplankters of rich lakes and are also ranked with Protista and Crustacea.

The Rotifera fauna plays significant role in the food chain and biological productions of waters such as aqua pollution indicators, or and water quality monitor (Pontin, 1978, Sladeczek, 1983). There had been appreciable studies done globally especially in Europe but within Africa, such studies are very limited in scope (De Ridder, 1987). In Nigeria, the paucity on knowledge of rotifers had been attributed to inadequate relevant literature, type specimens, shortage of illustrated checklists and culture problem (Green, 1960; Bidwell and Clarke, 1977; Egborge, 1981; Akinbuwa and Adeniyi, 1991).

Rotifers are highly nutritive to planktivorous fish, its protein supports fast growth of fish larvae and juveniles and as such a booster to fish farmers (Kitto and Bechara, 2004). It is therefore pertinent to investigate the species composition of rotifers of Omi River, Ago-Iwoye, Nigeria.

Study area

The Omi River is a major river that passes through the length of Ago-Iwoye town and so very significant to the

inhabitants as a principal source of water for domestic activities. Ago- Iwoye is the seat of Olabisi Onabanjo University with student population of about thirty-five thousand. This river also serves as source of fish supply at moderate prices to the inhabitants, while artisanal fishery production is carried out in it as well.

MATERIALS AND METHODS

Routine sampling was carried out between May 18, 2003 and June 30, 2004. Five fixed stations were established viz.: (a). Upstream, (b). Back of Olabisi Onabanjo University, mini campus, (c). under bridge area, (d) market and (e). Outskirt of town. Samples were collected fortnightly from each of the stations using a 2.5 litre Friedinger water sampler. At each station, samples were collected from Omi, 2 m, 4 m and 6 m depths of water column to obtain fair population distribution of limnoplanktonic, benthic, littoral and periphytic rotifers. Each water sample was strained through a 125 µm mesh net to make 4% formalin, stored in small specimen bottles and labelled.

At the laboratory, a dropping pipette was used to transfer several drops of the sampled water from each specimen bottle to clean glass slides, covered with clean cover slips, mounted on a compound light microscope and observed. This process was repeated twenty times for each sample and lists of identified rotifers were compiled. The frequency of occurrence of each rotifer estimated was used to calculate its population. Identifications of rotifers were made by reference to Ward and Whipple (1959), Hutchinson (1967), Pontin (1978), Ayodele (1979), Sladeczek (1983), Jeje and Fernando (1986) and Egborge and Chigbu (1988).

RESULTS

The list of identified rotifer species and ecotype differentiation in Omi River is shown on Table 1. Twenty nine species consisting of thirteen genera and nine families

*Corresponding author's E-mail: ofafioye@yahoo.com. Tel: 08037172255.

Table 1. List of identified rotifer species and ecotype differentiation in Omi River

Rotifer Species	Distribution		
	Littoral Zone	Open Water Zone	Benthic Zone
<i>Brachionus angularis</i> Gosse		+	
<i>Brachionus calyciflorus</i> Pallas		+	
<i>Brachionus falcatus</i> Zacharias		+	
<i>Keratella lenzi</i> (Hauer)		+	
<i>Keratella tropica</i> (Apstein)		+	
<i>Platyias quadricornis</i> (Ehrenberg)	+		
<i>Platyias patulus</i> (Muller)	+		
<i>Mytilina mucronata</i> (Muller)	+		
<i>Euchlanis dilatata</i> (Ehrenberg)	+		
<i>Euchlanis deflexa</i> Gosse	+		
<i>Notholca labis</i> Gosse		+	
<i>Notholca acuminata</i> (Ehrenberg)		+	
<i>Lecane curvicornis</i> (Murray)	+		
<i>Lecane bulla</i> Gosse	+		
<i>Lecane closterocerca</i> (Schmarda)	+		
<i>Lecane quadridentata</i> (Ehrenberg)	+		
<i>Trichocerca bicristata</i> (Gosse)		+	
<i>Trichocerca porcellus</i> (Gosse)		+	
<i>Trichocerca rousseleti</i> (Voigt)		+	
<i>Trichocerca pusilla</i> (Lauterbons)		+	
<i>Trichocerca longiseta</i> (Schrank)		+	
<i>Ascomorpha ovalis</i> (Bergendahl)	+	+	+
<i>Ascomorpha ecaudis</i> (Perty)	+	+	+
<i>Asplanchna brightwelli</i> Gosse		+	
<i>Asplanchna priodonta</i> Gosse		+	
<i>Testudinella patina</i> (Hermann)		+	
<i>Filinia terminalis</i> (Plate)		+	
<i>Filinia longiseta</i> (Ehrenberg)		+	
<i>Philodinavus paradoxus</i> (Murray)	+		

Key: + sign symbol = occurrence

were recorded. The bulk of the fauna were found at the pelagic and littoral zones, while only *Ascomorpha* was found in the benthic zone. The relative percentage compositions of the various families of rotifers of Omi- River show Brachionidae (33.3%) as dominant, followed by sub-dominant Testudinallidae (15%), Lecanidae (13.0%), Trichocercidae (12.4%) and Euchlanidae (8.7%) Table 2. The least populated rotifer family in the river was Trichotriidae.

DISCUSSION

All the twenty-nine species of rotifers identified are

common occurrence in other Nigerian waters such as Sokoto River (Green, 1960), Oshun River (Egborge, 1972), Kainji Lake (Bidwell and Clarke, 1977), Ikpoba River (Egborge and Chigbu, 1988) and Opa River (Akinbuwa and Adeniyi, 1991). These rotifers are consistent with the community composition of rotifers known to dominate tropical lacustrine ecosystems (Green, 1972; De Ridder, 1987; Akinbuwa and Adeniyi, 1991). The presence of twenty-nine species of rotifers in Omi River may be described as fairly rich qualitatively when compared with over two hundred species of rotifers known in Nigeria. These Rotifera species except *Ascomorpha* were found at the littoral and pelagic zones.

Table 2. Relative percentage (%) composition of the rotifer families of Omi River

Families	Relative % representation in Reservoir
Brachionidae	33.3
Trichotriidae	2.1
Mytilinidae	4.3
Euchlanidae	8.7
Lecanidae	13
Trichocercidae	12.4
Asplanchnidae	6.6
Testudinelidae	15
Philodinidae	4.6

This supports the findings of Sladeczek (1983), Egborge and Chigbu (1988) and Akinbuwa and Adeniyi (1991) on distribution and ecology of rotifers that the bulk of the rotifers often occur at the littoral and pelagic zones with very few benthic species. The Omi River could be said to contain enough nutrient for zooplankton growth, which favours its prevalence. Sowunmi and Jeje (2004) documented this on response of food organisms to inorganic nitrogen availability that rotifers recorded higher abundance in response to edible phytoplankton. Family Brachionidae is dominant in Omi River and this conforms to generally known fact as the most dominant in terms of species in West Africa freshwater ecosystems. There was no record of any known indicator species of Rotifers for polysaprobic amongst the documented species. Therefore, it can be deduced that Omi River is not polluted, its water is save for drinking and it will support a thriving fishery

REFERENCES

- Akinbuwa O, Adeniyi IF (1991). The Rotifers fauna of Opa Reservoir, Ile- Ife, Nigeria. *J. Afr Zool*, 105: 383-391.
- Ayodele HA (1979). The influence of some physico- chemical factors on the composition, abundance and character of zooplankton in some lakes in Oshun River Basin. M.Sc.Thesis, University of Ife, Nigeria.
- Bidwell A, Clarke NV (1977). The invertebrate fauna of Lake Kainji, Nigeria. *The Nigerian Field*, 42:104-110.
- Brummett RE (2000). Food organism availability and resource partitioning in- organically and inorganically fertilized *Tilapia rendalli* ponds. *Aquaculture*, 183: 51-71.
- De Ridder M (1986). Annotated checklist of non-marine rotifers (Rotifera) from African Inland waters. *Documentation Zool. Mus. Afo. Cent.* 21:p123 ----1987. Distribution of rotifers in African fresh and inland saline waters. *Hydrobiologia*, 149: 9-14.
- Egborge ABM (1972). A preliminary checklist of the zooplanktonic organisms of the River Oshun in the Western State of Nigeria. *Niger J. Sci.*, 6:67-71
- Egborge (1981). The composition, seasonal variation and distribution of zooplankton in lake Asejire, Nigeria. *Revue Zool. Afr.*, 95: 137-165.
- Egborge ABM, Chigbu P. (1988). The Rotifers of Ikpoba River, Bendel State. *The Nigerian Field*, 53:117-132.

- Green J (1960). Zooplankton of the River Sokoto. The Rotifera. *Proc. Zool. Soc. Lond.* 135:491-523.---1972 Ecological studies in Crater Lakes in West Cameroon. Zooplankton of Barombi Mbo, Mboandong, Lake Kotto and Lake Sodden. *J. Zool. Lond.* 166:288-301.
- Hutchinson GE (1967). A treatise on limnology vol. 11. Introduction to lake biology and the limnoplankton. John Wiley and sons. Inc. New York, p. 1115.
- Jeje CY, Fernando CH (1986). A practical guide to the identification of Nigerian zooplankton (Cladocera, Copepoda and Rotifera). Kainji Lake Research Institute. p.142.
- Kitto MR, Bechara GP (2004). Business agriculture in Kuwait- challenges and solutions, *World Aquaculture* 35(2): p.56.
- Pontin RM (1978). A key to the freshwater planktonic and semi-planktonic rotifera of the British Isles: Freshwater Biological Association Scientific Publication, No 38.
- Sladeczek V (1983). Rotifers as indicators of water quality. *Hydrobiologia*, 100:169-171.
- Sowunmi AA, Jeje CY (2004). Response of food organisms to inorganic nitrogen availability. *Glob. J. of Pure and Applied Sciences*, 10 (2): 243-248.
- Ward HB, Whipple GC (1959). *Freshwater Biology* (2nd ed.) John Wiley and sons. Inc. New York, p.1248