Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2017; 5(6): 336-344

Received: 17-09-2017
Accepted: 19-10-2017

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Composition and structure of zooplankton community in ouémé river basin, republic of Benin

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Abstract
Biodiversity particularly the micro-biodiversity of aquatic ecosystems in Africa, remains little known. This study aims to establish a first list of zooplankton species in Ouémé River basin and to assess population organization. Samples were taken monthly between October 2014 and September 2015 using a 20 µm mesh plankton net. The microscopic observation of samples allowed identification of 102 species including 84 rotifers, 11 copepods and 8 cladocerans. The Margalef index ranged from 6.58 in January to 10.53 in September. The temporal pattern of this index shown that in Ouémé River basin, the greatest zooplankton abundances do not necessarily coincide with the greatest specific riches. The Shannon diversity Index showed a good diversification of the population with values between 2.19 bit.ind^{-1} in April and 3.65 bit.ind^{-1} in July. However, the Evenness ranging between 0.09 and 0.47 showed the dominance of a relatively small species number on others. This dominance is assured by 27 species occupying 81.09% of the population (dominance Y = 0.81). Species such as: *Brachionus plicatilis*, *Asplanchna priodonta*, *Brachionus caudatus*, *Anuraeopsis navicula* were the most dominant in the Ouémé River basin. The study thus identified a rich zooplankton population which during low flow periods loses some of its diversification in favor of high abundance.

Keywords: diversity; relative occurrence; Specific dominance; zooplankton

Introduction

Ouémé River is the most important aquatic ecosystem from Bénin republic both in terms of occupied area and it contained natural resources. These constitute the basis of the economy of the locale populations within the river basin. However, resource exploitation and releases from anthropogenic sources (industrial, agricultural, domestic, etc.) are increasingly high in the basin. There is thus an observable change in habitat composition (occurring of aquatic plants and algae bloom) and in catches (high masses reduction and species rarefaction). This situation is particularly noticeable in the delta zone downstream of the basin. Urbanization in this area appears to be the primary cause of disruption.

Effects of disturbance on aquaculture species are strongly related to the size of the target organisms [1, 2] giving a positive trend from smaller organisms to larger ones. Zooplankton appears to be one of the most affected communities by changes in the environment [3- 5]. Climatic, chemical and physical fluctuations in aquatic environment are likely to affect the composition and structure of zooplankton community [6- 9]. Thus, several studies have used zooplankton as a pollution indicator [5, 10- 13].

According to its position in the food chain (primary consumer), zooplankton contributes by grazing to the regulation of primary production and serves as a link for energy transfer in the food chain [5, 14]. Thus, it is a particularly relevant indicator since any changes in it community immediately induce temporary or even permanent modifications in the composition and organization of organisms at the upper level of trophic chain. Knowledge of the specific composition and the structure of the zooplankton population in an aquatic system is therefore a valuable set of information in a bio-assessment program of ecosystem status.

Unfortunately in Benin republic, very little study is devoted to changes in aquatic ecosystems despite important influences from human activities within them. There is no published data on the zooplankton community from Ouémé River basin, while it is the most important aquatic system in Benin. The present study is then the first complete evaluation of the zooplankton community in Ouémé River basin. It aims to assess the composition and the structure of zooplankton community.

Materials and methods

Study area and sampling sites

The study was carried out in Ouémé River basin, which is the longest and the largest catchment area in Benin. It is long about 510 km and its catchment (figure 1) extends between 6° 51' and 10° 11' north latitude and 1° 29' and 3° 24' east longitude. It covers an area equivalent to half of the Benin territory (i.e. more than 50000 km²).

A total of fifteen stations (figure 1) (Table 1) was sampled. The stations of Affon, Bétérou, Atchakpa-Béthel, Atchakpa-Rejet (wastewater discharge point of the "Sucrerie de Complant du Bénin (SUCOBE)" and Atchakpa-Pompage (water pumping point of SUCOBE) were selected to represent the upper course of the river. The lower course was represented by stations such as Bétékoukou (Dassa), Zagnanado, Bonou and Agonlon-lowé. Six stations were chosen on some selected tributaries (important flow). The Kpassa hydraulic dam and the Kaboua station were representative of Okpara River. Toué and Atchérigbé were retained on Zou River while Vossa (Ouessè) and donga were chosen respectively on Beffa River and Donga River.

Zooplankton sampling and processing

Zooplankton was collected monthly at each of the fifteen stations between October 2014 and September 2015 using plankton net of 20 µm mesh size. A combination of vertical and horizontal sampling techniques was used. Vertical sampling being problematic during flood periods (high flow of the river); it was supplemented with the horizontal one. This association was also used during low flow, in order to standardize the protocol over the entire sampling period. For horizontal sampling, the net has been maintained backward flow for 2 minutes or trained over a distance D (variable between 3 m and 10 m depending on the area available) when the water current is nil or near nil (February and March). This current was assessed by measuring the crossing time of expanded polystyrene through a pre-defined length of the water surface. In some upstream stations, Kpassa, Kaboua, Vossa, Bétérou, Affon and Donga, due to the shallow depth (<30 cm), only horizontal sampling on distance D was carried out in February and March. The zooplankton samples were then fixed with 5% formaldehyde.

Samples were processed in a laboratory under light microscope. Zooplankton species have been identified using guides and specific descriptive works such as Beauchamp [15], Smith and Fernando [16], Pourriot & Francez [17], Shiel [18], Lynne [19], and LaMay *et al.* [20]. A four-grid counting cell (Burker turk) was used for enumeration of individuals of each identified species. The counting effort was 400 individuals for each species. For rare species, individuals were listed throughout the sample. The zooplankton density per liter of River water was then estimated according to Equation 1.

$$\text{Eq1: } D = \frac{1}{V1 + V2}\left(\frac{N}{Td} * 100\right)$$

D is the density of the species per liter of river water, N is the number of individuals counted and Td the rate of sample volume corresponding to N. V1 and V2 are respectively the volume of water filtered in the vertical sampling and horizontal. V1 was obtained according to equation 2. V2 is calculated in two different ways depending on whether the net is kept fixed (equation 3: V2) or trained over a distance (case detailed above) (equation 4: V2 ').

Eq2: V1 = Sb*P

$$\text{Eq3: } V2 = Sb*Cr*t \text{ or Eq4: } V2' = \frac{Sb*trained\ distance*Pe}{0{,}3\ m}$$

Sb is the surface of the base circle of the plankton net and P is the sampled depth. Cr is the water current and t is the netting duration. Pe is the water depth and 0.3 m is the diameter of the base circle of the plankton net.

Data Processing

The specific composition of zooplankton in the study area was evaluated and explored with the occurrence frequency (F). The frequency was calculated according to equation (Eq5). It allowed the assessment of species constancy in a given environment [21]. Depending on F value, three groups of species are distinguished: i-) constant species (F ≥ 50%); ii-) accessory species (25% ≤ F <50%) and iii-) incidental (rare) species (F <25%).

The community structure was studied through the alpha and beta diversity indices. The Shannon Diversity Index (Eq6), the Evenness (Eq7), the Margalef Index (Eq8) and the Dominance Index Y (Eq9) were calculated. The temporal heterogeneity of each of these indexes was assessed using the Kolmogorov-Smirnov test. Also, the spatial similarity of the zooplankton assemblage was studied with Jaccard index (Eq10).

Eq5 [21]: F = (µi x 100)/µT,

$$\text{Eq6 [22]: } H' = -\sum_{i=1}^{S}\left(\frac{ni}{N}\right)\log 2\left(\frac{ni}{N}\right)$$

$$\text{Eq7 [23]: } Evenness = \frac{e^{H'}}{S}$$

$$\text{Eq8 [24]: } D = \frac{S-1}{\ln N}$$

$$\text{Eq9: } Y = \left(\frac{n}{N}\right) fi$$

Eq10 [25]: $N_C/(N_A+N_B-N_C)$

Where µ is the number of samples in which species i is present, µT is the total number of samples. S is specific richness, ni is the abundance of species I and N is the total abundance of all species. Fi is the frequency of species i in the samples. NA and NB are respectively the number of species present in the sites A and B to be compared. NC is the number of common species to both sites.

Results

Species composition of the zooplankton community

The zooplankton community of Ouémé River basin is composed of 102 species (Table 2). Rotifers were the most represented with 84 species distributed in 38 genera. Copepods and cladocerans were respectively represented by 11 species (10 genera) and 8 species (6 genera). The occurrence frequency of species showed that only 49 species are constant in the basin (F ≥ 50%). These include species such as *Asplanchna priodonta*, *Anuraeopsis navicula*, *Brachionus calyciflorus*, *Brachionus plicatilis*, *Anuraeopsis navicula*, *Filina opoliensis* (rotifers), *Pleuroxus denticulatus* (Cladoceran), *Acanthocyclops robustus* and *Eucyclops* sp (Copepods). Twenty-six other species are accessory (25 ≤ F <50) (among them, *Ascomorpha ecaudis*, *Brachionus* *bidentatus*, *Keratella cochlearis*, *Bosmina* sp, *Afrocyclops gibsoni*). Twenty-seven (27) species were relatively rare (F <25%).

Alpha and beta diversity of zooplankton community

Temporal variation of the specific richness and Margalef index in the Ouémé basin is shown on figure 2. The highest richness was observed during low flow (between January and April). All 102 identified species were observed in February. The months of August and September (flood period) were the least riches specifically. Only 53 and 52 species were identified respectively in August and September. The significant effect of sampling month on the zooplankton specific richness is observed ($p<0.05$) The Margalef index varied between 10.53 observed in January and 6.585 recorded in September. No significant effect of sampling month was observed ($p>0.05$).

Both Shannon diversity and the Evenness were not significantly varied between months. The zooplankton community was less diversified during low flow (figure 3). The smallest Shannon index was 2.19 bit.ind^{-1} in April. However, the highest diversified zooplankton population was founded in July (3.65 bit.ind^{-1}). The Evenness index had the same profile as Shannon's diversity with values between 0.09 and 0.47.

The beta diversity of zooplankton community (Jaccard Index (J) showed a high overall similarity between all stations (J varying between 0.582 and 1) (Table 3). However, the index value was higher between the downstream stations (up to Atchérigbé latitude) and between upstream stations (lower limit: Dassa). The value decreases when the communities present in the downstream stations are opposite to those present in the upstream stations.

Dominant zooplankton species

A group of 27 species, including 25 rotifers and 2 copepods, largely dominated the zooplankton population (Table 4). It accounts for 81.09% of the total zooplankton abundance. The species such as *Brachionus plicatilis*, *Asplanchna priodonta*, *Brachionus caudatus*, *Anuraeopsis navicula* were the most dominant. Their relative abundance was 7.66% (dominance = 0.08), 6.73% (dominance = 0.07), 6.10% (dominance = 0.06) and 5.20% 05) respectively. The two copepod species: *Eucyclops* sp and *Acanthocyclops robustus* accounted for 2.29% (dominance = 0.02) and 1.32% (dominance = 0.01), respectively.

Discussion

One hundred and two (102) species composed the zooplankton community in Ouémé River basin. It appears as relatively stable richness. It reflects the great variability of habitats in the basin, since zooplankton community is highly related habitats variation [26]. The importance of the exogenous substance from varied sources induced favorable nutritional conditions to plankton species [27-29]. So, zooplankton being primary consumer, the high observed is synonymous with a great variability and availability of the phytoplankton population [30]. The Ouémé river basin then appears with high trophic condition.

The zooplankton specific composition of Ouémé River basin is above the specific richness reported for two rivers in Ivory Coast (Agnédi and Bia Rivers); which contains respectively 30 and 64 species [31]. The Orogodo River in the Niger Delta in Nigeria with 79 species also has a weaker zooplanktonic richness than the Ouémé River basin [32]. Since geographical distance is important for zooplankton community, the geographic difference between the Ouémé River and the over cited ones might explain the difference in zooplankton composition. The longitudinal profile of Ouémé basin presents a very varied form of riparian forest alienated by the urbanization of more or less important zones. The habitats variability thus formed throughout the basin was an important factor in zooplankton biodiversity [26].

The zooplankton population in Ouémé River basin is largely dominated by rotifers. This is typical of continental environments, particularly in the tropical zones [33]. The predominance of rotifers is related to their very short developmental time and to the parthenogenetic reproduction which they practice in favorable conditions. Azevêdo *et al*. [34] and Shah *et al*. [35] reported that rotifers are dominant in eutrophic environments. So, the observed zooplankton structure suggested that nutritional climatic conditions in Ouémé River basin are those observable in eutrophic media. This observed situation shows a high trophic level in the basin [36, 37].

The temporal structure of zooplankton community in Ouémé River basin showed a high specific richness during low flow period. This richness gradually decreases during the rainy season and becomes minimal during the flood. This observed decease might be first justified by the dilution of water during the flood which induces high reduction of nutritional parameters. Another main cause of species richness decrease during the flood is related to strong predation on zooplankton, since the flood period is the reproduction period of most of aquatic species (fish and shrimp especially). The zooplankton abundance then drops rapidly and some species become rare. The observed decrease in specific richness during flood, corroborate with observations of Tchapgnouo *et al*. [38]. Studying the Margalèf index, it was observed a weak or even lack of linearity between the specific richness and the zooplankton abundance. So, high zooplankton densities in the Ouémé River basin are therefore not necessarily synonymous with high specific richness. Regarding Shannon index and Evenness values, the zooplankton community is relatively well diversified during floods, and less diversified during the low flow. The large specific richness thus coincides with the weakest diversification of the population. This confirms the influence of water dilution and predation on the zooplankton community. The Evenness index showing high domination of little species number during low flow, it was observed that species such as *B. plicatilis*, *A. priodonta*, *B. caudatus*, *A. navicula* (rotifers) were high abundant during this period. So, they were favored by the water enrichment by external discharges (household, agricultural wastes, industrial discharges). Consequently, the increasing rarefaction of these species during flood induced increase diversification of the existing community [39].

According to the Jaccard similarity Index, zooplankton communities present in different studied stations are generally similar. This shows the importance of water current on the species distribution in the basin. All upstream species are automatically drained to downstream. However, the relative water stability and the greater downstream mineralization have encouraged the emergence of some unidentified species in the upper course of basin. The downstream zone is thus distinguished from that upstream in terms of zooplankton community structure and ecological level.

Table 1: Geographic coordinates of sampling sites.

Stations	Code	River	Latitude	Longitude
Agonlin-Lowé	Ag-L	Ouémé River	6°39'35.2"N	2°28'38.6"E
Bonou	Bon	Ouémé River	6°54'32.5"N	2°26'57.1"E
Zagnanado	Zag	Ouémé River	7°12'50.9"N	2°28'26.4"E
Dassa	Das	Ouémé River	7°37'17.0"N	2°27'59.1"E
Atchakpa-Bethel	Atc-Beth	Ouémé River	8°00'22.9"N	2°22'39.3"E
Atchakpa-Rejet	Atc-R	Ouémé River	8°03'38.1"N	2°22'33.8"E
Atchakpa-Pompage	Atc-P	Ouémé River	8°04'27.0"N	2°22'12.6"E
Bétérou	Bét	Ouémé River	9°11'55.2"N	2°16'04.6"E
Affon	Aff	Ouémé River	9°57'28.6"N	1°51'45.4"E
Kpassa	Kpa	Okpara River	9°16'59.7"N	2°44'13.4"E
Kaboua	Kab	Okpara River	8°10'49.8"N	2°45'05.5"E
Toué	Tou	Zou River	7°12'22.8"N	2°17'23.3"E
Atchérigbé	Atc	Zou River	7°33'44.8"N	2°07'57.7"E
Vossa	Vos	Beffa River	8°29'34.6"N	2°20'27.1"E
Donga	Don	Donga River	9°42'37.7"N	1°56'41.2"E

Table 2: Frequency of occurrence of identified zooplankton species

	Genera	Species	Occurrence frequency (%)
Rotifèrs	*Adineta*	*Adineta vaga*	4.4
	Anuraeopsis	*Anuraeopsis fissa*	44.4
		Anuraeopsis fissa pseudonavicula	78.9
		Anuraeopsis navicula	100
	Ascomorpha	*Ascomorpha ecaudis*	27.2
		Ascomorpha sp.	16.7
	Asplanchna	*Asplanchna brightwellii*	100
		Asplanchna girodi	56.1
		Asplanchna herricki	58.9
		Asplanchna priodonta	100
		Asplanchna sp.	56.7
	Asplanchnopus	*Asplanchnopus multiceps*	16.7
	Brachionus	*Brachionus angularis*	90.6
		Brachionus bidentatus	32.8
		Brachionus calyciflorus	99.4
		Brachionus caudatus	100
		Brachionus falcatus	90.6
		Brachionus pinneenaus	5
		Brachionus plicatilis	98.3
		Brachionus pterodinoides	36.1
		Brachionus quadridentatus	55.6
		Brachionus sp.	8.3
	Cephalodella	*Cephalodella gibba*	40.6
	Colurella	*Colurella uncinata*	21.7
	Conochiloides	*Conochiloides* sp.	5
	Dipleuchlanis	*Dipleuchlanis propatula*	64.4
	Dissotrocha	*Dissotrocha* sp.	68.3
	Enteroplea	*Enteroplea lacustris*	32.8
	Epiphanes	*Epiphanes* sp.	39.4
	Euchlanis	*Euchlanis dilatata*	84.4
		Euchlanis oropha	23.9
		Euchlanis sp.	21.7
	Filina	*Filina longiseta*	99.4
		Filina opoliensis	100
		Filina terminalis	98.9
	Gastropus	*Gastropus minor*	21.1
	Hexarthra	*Hexarthra intermedia*	21.1
		Hexarthra mira	60
		Hexarthra polychaeta	57.2
	Kellicottia	*Kellicottia longispina*	3.9
	Keratella	*Keratella cochlearis*	44.4
		Keratella sp.	13.9
		Keratella torpica	100
		Keratella valga	98.9
	Lecane	*Lecane crepida*	97.8
		Lecane leontina	96.7
		Lecane luna	96.7
		Lecane sp.	90.6

		Lecane ungulata	18.3
	Lepadella	*Lepadella ovalis*	54.4
		Lepadella patella	49.4
	Lindia	*Lindia euchromatica*	45
		Lindia sp.	16.7
	Macrochaetus	*Macrochaetus* sp.	12.8
	Monostyla	*Monostyla bulla*	70.6
		Monostyla lunaris	27.2
		Monostyla pyriformis	98.9
	Mytilina	*Mytilina mucronata*	26.1
	Notholca	*Notholca* sp.	17.8
		Notholca squamula	84.4
	Notommata	*Notommata* sp.	23.3
	Philodina	*Philodina* sp.	75
	Platyias	*Platyias patulus*	91.1
		Platyias polyacanthus:	16.7
	Polyarthra	*Polyarthra dolichoptera*	41.7
		Polyarthra euryptera	80.6
		Polyarthra minor	10
		Polyarthra sp.	81.1
		Polyarthra vulgaris	100
	Pompholyx	*Pompholyx sulcata*	95.6
	Proales	*Proales daphnicola*	45.6
		Proales fallaciosa	28.3
	Rotaria	*Rotaria* sp.	65.6
	Scaridium	*Scaridium longicaudum*	16.1
	Synchaeta	*Synchaeta* sp	13.9
	Testudinella	*Testudinella elliptica*	23.3
		Testudinella patina	63.9
	Trichocerca	*Trichocerca bicristata*	26.7
		Trichocerca longiseta	21.7
		Trichocerca rattus	46.1
		Trichocerca similis	18.9
		Trichocerca tigris	11.1
	Trochosphaera	*Trochosphaera sp*	10
Cladocerans	*Bosmina*	*Bosmina sp*	34.4
	Ceriodaphnia	*Ceriodaphnia dubia*	61.7
	Diaphanosoma	*Diaphanosoma brachyurum*	47.2
		Diaphanosoma sp.	27.8
	Moina	*Moina micrura*	27.8
	Moinodaphnia	*Moinodaphnia macleayi*	67.8
		Moinodaphnia sp.	39.4
	Pleuroxus	*Pleuroxus denticulatus*	78.9
Copepods	*Acanthocyclops*	*Acanthocyclops robustus*	86.7
	Afrocyclops	*Afrocyclops gibsoni*	38.9
	Allocyclops	*Allocyclops chappuisi*	41.1
	Ectocyclops	*Ectocyclops phaleratus*	35.6
	Epischura	*Epischura lacustris*	60.6
	Eucyclops	*Eucyclops* sp.	89.4
	Leptodiaptomus	*Leptodiaptomus* sp.	55.6
	Microcyclops	*Microcyclops* sp.	64.4
	Thermocyclops	*Thermocyclops neglectus*	48.9
	Tropocyclops	*Tropocyclops confinis*	56.7
		Tropocyclops prasinus	40.6

Table 3: Jaccard similarity between the zooplankton communities of the studied sites

	Ag-L	**Bon**	**Zag**	**Tou**	**Atc**	**Das**	**Atc-B**	**Atc-R**	**Atc-P**	**Kab**	**Vos**	**Kpa**	**Bét**	**Don**
Ag-L														
Bon	0.951													
Zag	0.804	0.845												
Tou	0.853	0.786	0.724											
Atc	0.853	0.704	0.724	1										
Das	0.706	0.724	0.638	0.71	0.71									
Atc-B	0.676	0.694	0.641	0.696	0.696	0.958								
Atc-R	0.676	0.694	0.641	0.696	0.696	0.958	1							
Atc-P	0.725	0.745	0.66	0.695	0.695	0.896	0.932	0.932						
Kab	0.667	0.667	0.613	0.615	0.632	0.818	0.827	0.827	0.844					
Vos	0.608	0.622	0.582	0.602	0.602	0.763	0.795	0.795	0.789	0.757				
Kpa	0.686	0.704	0.652	0.635	0.602	0.844	0.853	0.853	0.846	0.865	0.859			

Bét	0.667	0.684	0.613	0.667	0.649	0.818	0.903	0.877	0.919	0.789	0.733	0.816		
Don	0.686	0.704	0.652	0.688	0.688	0.868	0.878	0.878	0.895	0.769	0.737	0.795	0.944	
Aff	0.637	0.653	0.615	0.634	0.634	0.851	0.887	0.887	0.878	0.773	0.74	0.8	0.956	0.901

Sampling sites codes are same as in table 1

Table 4: List of dominant zooplankton species in Ouémé basin.

Espèces		Means abundance (x10^2.Ind.L^{-1})	Relative percent (%)	Dominance *Y*
Brachionus plicatilis	Rot	9.90	7.66	0.08
Asplanchna priodonta	Rot	8.69	6.73	0.07
Brachionus caudatus	Rot	7.88	6.10	0.06
Anuraeopsis navicula	Rot	6.71	5.20	0.05
Brachionus falcatus	Rot	6.36	4.93	0.05
Lecane leontina	Rot	6.19	4.79	0.05
Brachionus calyciflorus	Rot	6.19	4.79	0.05
Lecane crepida	Rot	4.69	3.63	0.04
Lecane luna	Rot	4.62	3.58	0.04
Keratella torpica	Rot	4.59	3.55	0.04
Asplanchna brightwellii	Rot	4.02	3.11	0.03
Filina opoliensis	Rot	3.76	2.91	0.03
Polyarthra vulgaris	Rot	3.70	2.86	0.03
Brachionus angularis	Rot	3.11	2.41	0.02
Eucyclops sp.	Cop	2.96	2.29	0.02
Filina longiseta	Rot	2.61	2.02	0.02
Monostyla pyriformis	Rot	2.23	1.73	0.02
Euchlanis dilatata	Rot	2.08	1.61	0.02
Polyarthra euryptera	Rot	1.85	1.43	0.01
Pompholyx sulcata	Rot	1.82	1.41	0.01
Filina terminalis	Rot	1.78	1.38	0.01
Acanthocyclops robustus	Cop	1.71	1.32	0.01
Philodina sp.	Rot	1.64	1.27	0.01
Dipleuchlanis propatula	Rot	1.61	1.24	0.01
Monostyla bulla	Rot	1.43	1.10	0.01
Asplanchna herricki	Rot	1.30	1.00	0.01
Anuraeopsis fissa pseudonavicula	Rot	1.30	1.00	0.01

Rot: Rotifère. Cop: Copépode

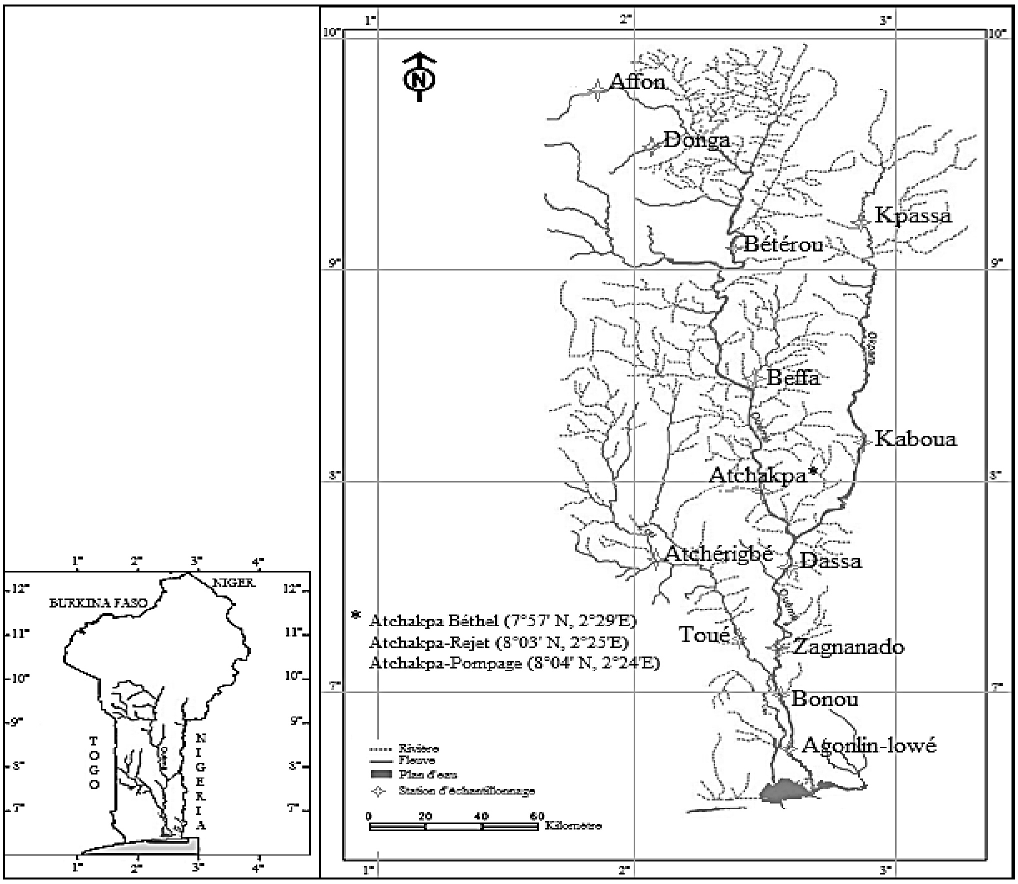

Fig 1: Situation géographique des sites d'échantillonnage

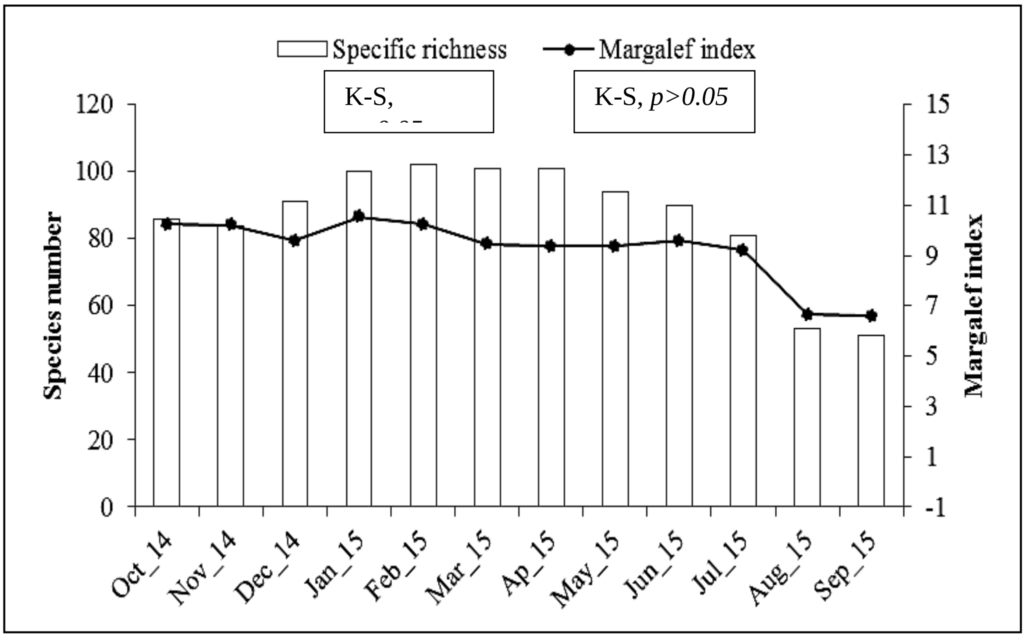

Fig 2: Temporal variation of the specific richness and the specific index of Margalef. K-S is the Kolmogorov-Smirnov test.

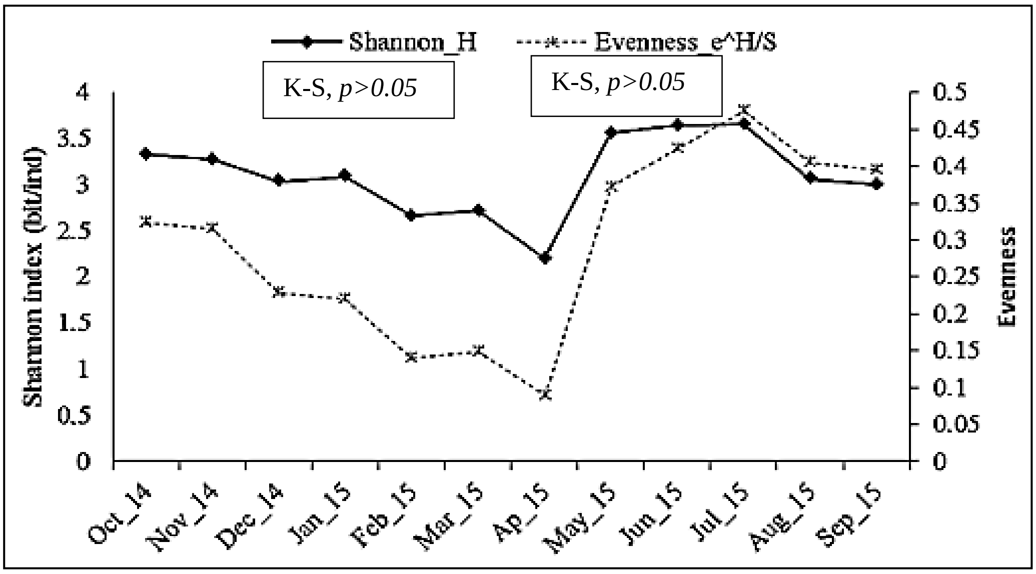

Fig 3: Temporal variation of diversity and evenness Indices of zooplankton community. K-S is the Kolmogorov-Smirnov test.

Conclusion

Zooplankton of the Ouémé River basin is composed of 102 species including 84 rotifers, 11 copepods and 8 cladocerans. The community is affected by water flow, showing high and low diversification respectively during flood and low flow. Zooplankton in the basin also showed high similarity in spatial distribution pattern of the community. With more than 80% of the total abundance, 27 species dominated the zooplankton assemblage. The most dominant species are respectively *Brachionus plicatilis*, *Asplanchna priodonta*, *Brachionus caudatus* and *Anuraeopsis navicula*. The observed community then suggests an ecological status evaluation of Ouémé River basin since dominant species are known to be linked to eutrophication.

Acknowledgement

We are grateful to the West Africa Agricultural Productivity Program (WAAPP) which funded this research. We thank all those who have contributed in one way or another to this study. We also thank the reviewers for their comments and contributions.

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