New records of Rotifera for the Cameroon fauna, from the Korup Park and its environs

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ABSTRACT

Rotifera in nineteen samples collected from seven different biotopes within the Korup Park and it's surroundings have herein been examined.Specimens were isolated with micropippettes, mounted in glycerine and identified under oil immersion using their lorica morphology. A total of 8 families and 37 species are recorded, the Lecanidae being the most represented.Twenty of these species are new records for the Cameroon fauna.

Keywords : Rotifera, Korup, Taxonomy

RESUME

Dix neuf échantillions de zooplancton collectés dans le Park de Korup et ses environs ont été analysés pour les rotifères.Une totale de 37 èspèces et 8 familles sont enregistrés les Lecanidae étant les plus réprésentés. Parmi ces èspèces 20 sont nouvelles pour la faune du Cameroun.

Mots clés : Rotifères, Korup, Systèmatique

Introduction

The rotifera of Cameroon is still very poorly studied compared to other neighbouring African countries (Green,1960; 1967).Most of the preliminary work done date far back and involved foreign researchers on expedition like Green(1972), Green et al.(1973,1974) and Corbet et al.(1973).The only available published works by local researchers are those of Chiambeng et al.(1991,1993).All these works resulted in a checklist with 57 species for the Cameroon fauna.

This present contribution adds 20 new records to the above.This work is intended to build up a check list of rotifera for the Cameroon fauna and is still a preliminary to a more comprehensive survey .The study zone is limited to the Korup Park and its surroundings. This area is less than 6000km^2 and includes the Korup National park,the Nta Ali mountains and Ejagham and the rural development areas linking these protected areas.

Materials and methods

Nineteen water samples were collected from seven different biotopes in the Korup Project area and its surroundings (Figs.1 & 2).These included : 1) Lake Ejagham, ii) Streams within the Ndian oil estate iii)Seasonal and permanent streams, iv) Rivers, v)Temporal puddles, vi)Water collections in tree trunk cavities and vii) Fallen fruit cavities.

The precise locations, depths at which samples were taken, mesh sizes utilised, dates and sample numbers are given in table 1, on the following page.

In all the areas samples were collected by towing a plankton net over about 3m distance except with tree trunk cavities and fallen fruits cavities where the contents were drained and strained through the plankton net.

Samples collected were fixed in up to 4% formaldehyde solution for preservation and carried over to the Institute of Animal Ecology,State University of Gent,Belgium for analysis.

Rotifers were isolated under a dissection microscope using micropipettes and mounted in glycerine.Identification of species was done under oil immersion and based on lorica morphology using the keys of Koste(1978),Braioni & Gelmini (1983), Edmondson(1966) Segers (1995) and Ruttner-Kolisko(1974).

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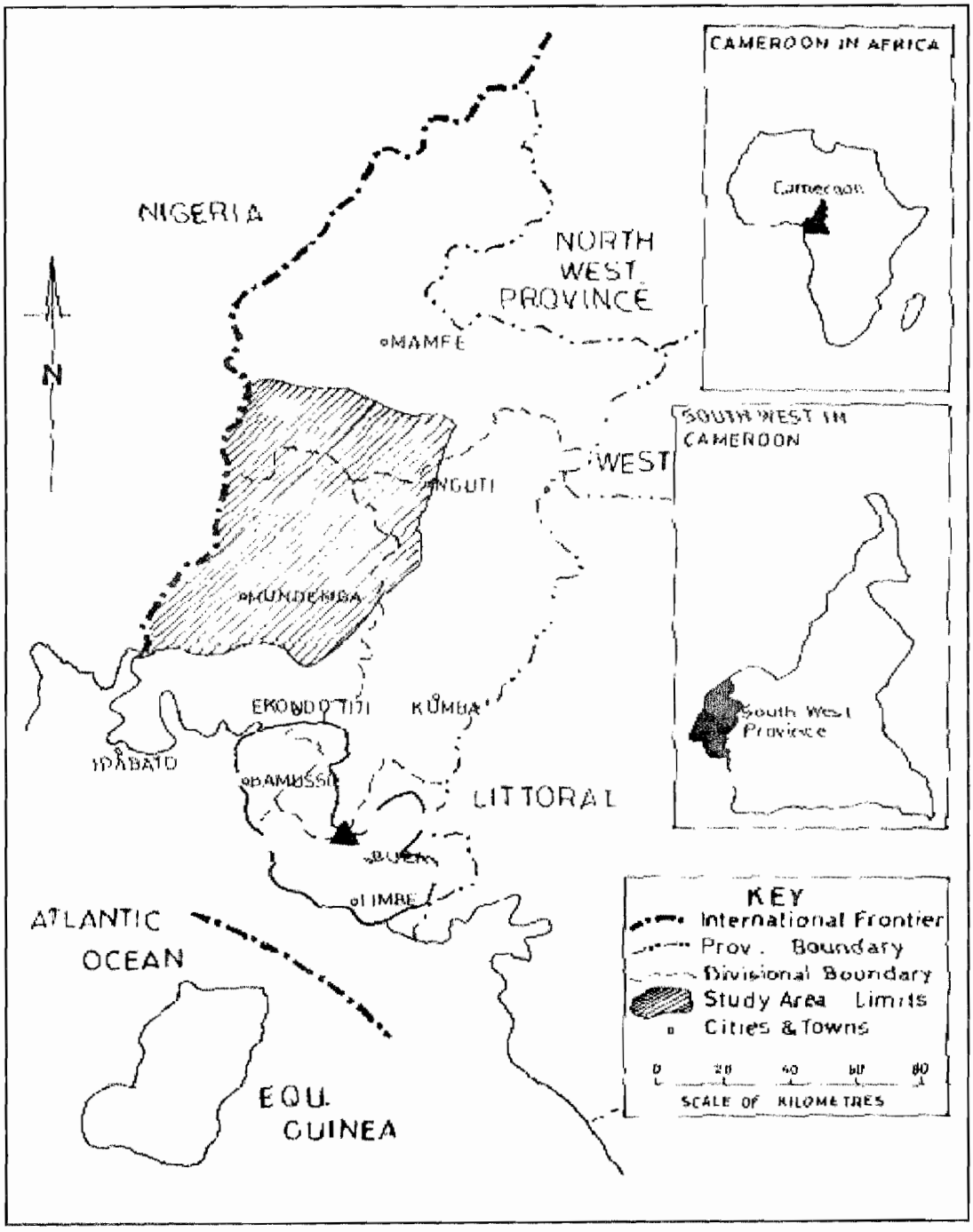


Fig.1 : Study area in South West Province

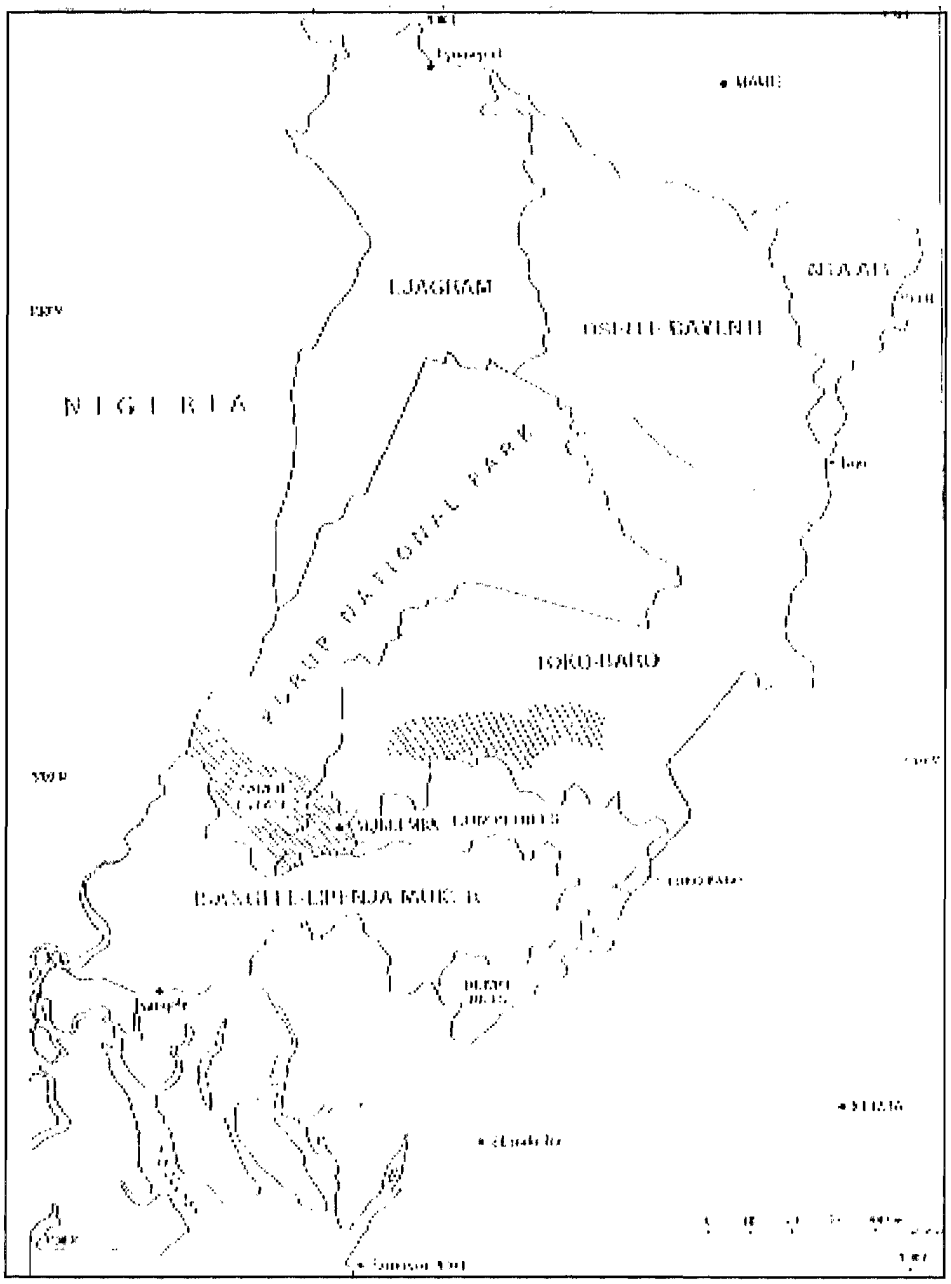
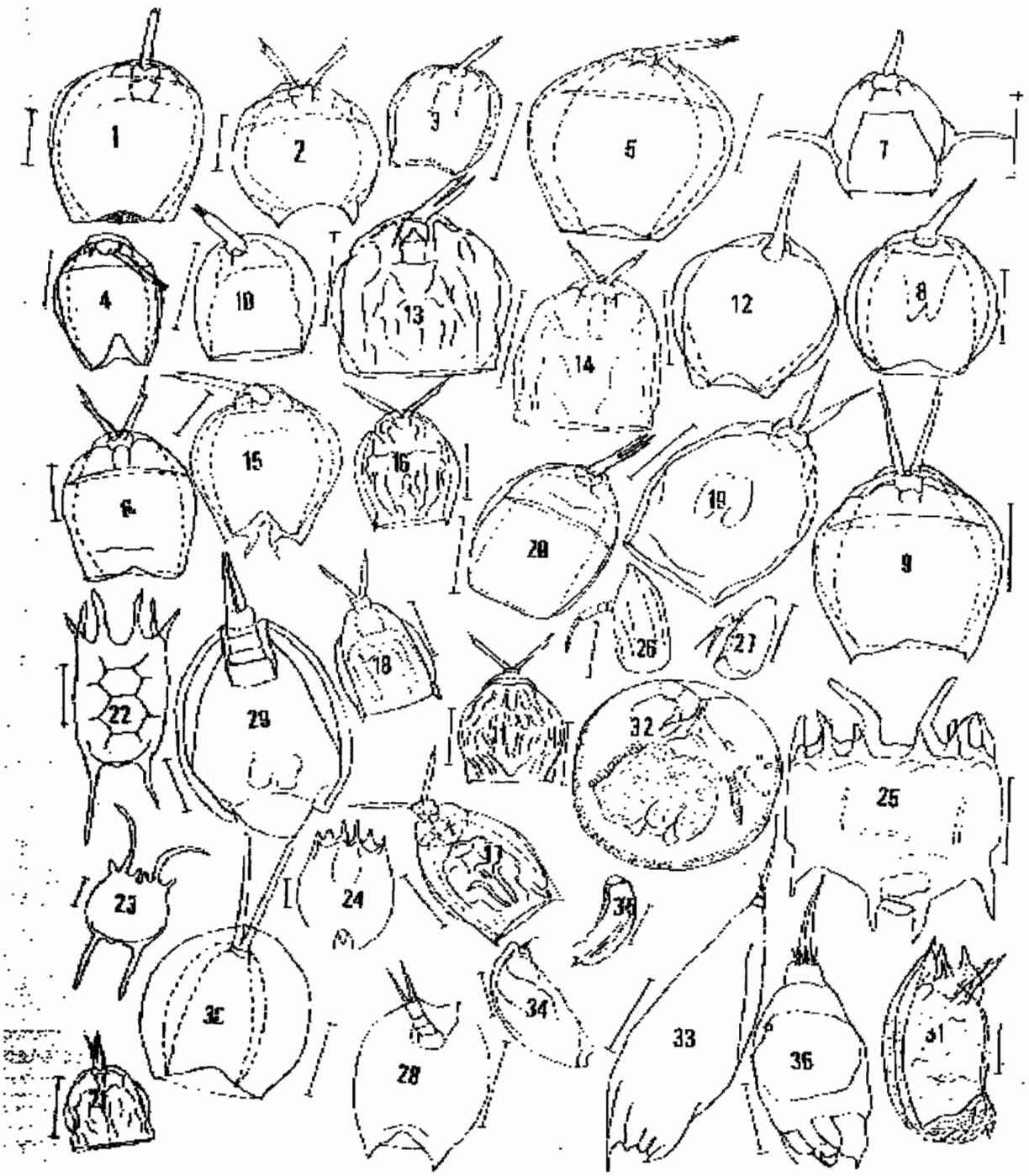


Fig.2 : Detailed map of the Korup Project area showing the sampling sites



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37. *Notomata sp.*(19)

NB: numbers after species refer to their locations. Figure for *notomata sp.*distorted

Fig.3 : L = 50um

Sample no.	Location	Depth (m)	Meshsize (um)	Date
1	Ejagham lake Eyumojock 5°44'N-8°59'E	2	50	30-05-95
2	Ejagham lake Eyumojock 5°44'N 8°59'E	13	50	30-05-95
3	Ejagham lake Eyumojock 5°44'N 8°59'E	13	50	30-05-95
4	Akpasang river Mund'ba 5°3'N-8°52'E	-	50	27-05-95
5	Korup forest river 2.5km from P-juction	0.4	50	08-08-95
6	250m from Lowa village	0.2	50	17-05-95
7	Last but one stream before Meangwe 2 E	0.3	50	17-08-95
8	Last stream before Meangwe 2 (E)	0.3	50	17-08_95
9	Mundemba 4°59'N-8°54'E	-	100	24-05-95
10	Mundemba 4°59'-8°54'E	-	50	24-05-95
11	Ndian river 5°00'N-8°52'E	-	50	24-05-95
12	Ndian river 5°00'N-8°52'E	-	100	24-05-95
13	Lobe estate 4°35'N-9°01'E	-	50	31-05-95
14	Field 14 (Pamol Estate)	0.8	50	02-08_95
15	Pamol estate stream	0.5	50	25-07-95
16	Pamol estate stagnant water	0.5	50	25-07-95
17	Pamol estate near foresthouse	0.5	50	25-07-95
18	First brook after gendarmes,M'ba	1.0m	50	29-07-95
19	Second brook after gendarmes M'ba	-	50	29-05-95

Results:
List of Rotifera recorded and their locations:

Family Brachionidae:

Brachionus falcatus(1,2)
*Brachionus variabilis(8)
*Brachionus patulus(14)
Keratella tropica(1,2)

Family Trichocecidae:

*Trichocerca longiseta(4)
*Trichocerca sulcata(17)
*Trichocerca tenuior(11,19)
Trichocerca tigris(14)

Family Colurellidae:

*Colurella sulcata(9,10)
Colurella uncinata(11,13,19)
*Lepadella costatoides(19)
Lepadella patella(16,17,18)

Family Euchlanidae:

Dipleuchlanis propatula(13)

Family Lecanidae:

*Lecane arcuata(4,7,8,17,18)
Lecane bulla(3,7,6,9,11,12,14,15,16,17,19)
Lecane closterocerca(11,19)
Lecane curvicornis(11,19)
Lecane furcata(19)
*Lecane haliclysta(10,16,19)
Lecane hamata(10,13,19)
*Lecane inopinata(3,11)
Lecane luna(3,19)
Lecane lunaris(7,13,14,17)
*Lecana papuana(19)
*Lecana pusilla(12,17)
Lecane quadridentata(5)
Lecane signifera(3)
*Lecane simmoncae(12)
*Lecane stichaca(10)
*Lecane syngenes(4,16,17,18,19)
Lecane tenuiseta(10)
Lecane undulata(17,19)
*Lecane unguitata(16,19)
*Lecana monostyla(16,19)

FAMILY Mytilinidae:

*Mytilina ventralis(19)

FAMILY Notomatidae:

*Notomata sp.

FAMILY Testudinellidae:

*Testudinella patina(19)

*New records.

Descriptions

Lecane lunaris(Ehrenberg,1832)
Fig.1
Diagnosis: Head aperture narrow dorsally,with V-shaped posterior sinus; ventral margin wide,sinus deep;transverse dorsal fold at the base of the anterior sinus;transverse ventral fold infront of foot; toe slender and long, greater than 1/3 body length;claw long ,slender and acutely pointed, two minute spicules at base.

Lecane luna (Muller,1776)
Fig. 2
Diagnosis: Head aperture margins not coincident: both with deep sinuses, dorsal anteriorly 2/3 width of ventral; external angles of ventral sinus cusp-like,dorsal sinus angles more blunt; smooth dorsal plate almost circular with broad median anterior hump,
ventral plate slightly narrow with single transverse fold;toes about1/3 total length, terminate with claw and basal spicule.

Lecane arcuata(Bryce,1891)
Fig. 3
Diagnosis: Head aperture with slightly concave dorsal margin;ventral margin with shallow median sinus flanked by two straight sections; toe long and stout,greater than ¼ body length, parallel sided or bulging slightly in the middle,then tapering at the end.

Lecane bulla(Gosse,1851)
Fig. 4
Diagnosis:Head aperture with shalow V-shaped sinus dorsally, U-shaped notch at posterior margin of sinus for protrution of dorsal antenna;ventral anterior margin with very deep sinus,rounded at posterior end; transverse fold on ventral surface infront of foot; toe long,1/3 body length, terminates in a slender acute claw with basal spicules, claw with median line undivided.

Lecane unguitata(Fadeev,1925)
Fig.5
Diagnosis: Head aperture dorsal margin straight,ventral margin with median U-shaped notch in broad,shallow lunate sinus;dorsal plate narrower and shorter than ventral;toe parallel sided,slightly swollen distally;claw long,seperated or fused.

Lecane papuana(Murray,1913)
Fig.6
Diagnosis:Head aperture margins not coincident,dorsal almost straight,ventral with broad shallow V-shaped sinus with undulating sides,rounded posteriorly; no cusps at external angles,but distinctive rounded lobes of ventral lorica project well beyond dorsal margin,lateral sulci moderately deep;ventral plate slightly narrower than dorsal,with same circular outline;toes greater than ¼ total length slightly dilated distally before stout claw,which has two basal spicules.

Lecane monostyla (Daday,1897)
Fig.7
Diagnosis: Head aperture margins straight and coincident; two small spines at external angles;long moveable curved spines hinged to lateral margin of dorsal lorica.

Lecane closterocerca(Schmarda,1859)
Fig.8
Diagnosis: Head aperture dorsal and ventral margins similar,shallow V-shaped sinuses with widely flaring convex sides; faint dorsal fold near apex of anterior sinus; transverse dorsal fold infront of foot; lateral sulci shallow;toe long less than1/3 body length, parallel sided for half length and tapering to slender acute point.

Lecane curvicornis(Murray,1913)
Fig.9
Diagnosis: Head aperture margins coincident,both with broad V-shaped sinuses;two large cusps at external angles;ventral plate much wider than dorsal,with transverse folds;posterior segment rounded;toes about1/3 total length.

Lecane furcata(Murray,1913)
Fig.10
Diagnosis: Ventral and dorsal margins of head aperture straight;ventral plate parrallel sided behind triangular and extending beyond dorsal anterolateral margins; toe short and stout about1/4 body length, terminating in two distinct claws, seperated by V-shaped notch.

Lecane haliclysta Harring & Myers,1926
Fig.11
Diagnosis: Head aperture margins coincident,straight,with two small spines at frontal corners;dorsal plate facetted,ventral plate also patterned,less regularly than dorsal;caudal plate round,projects slightly beyond dorsal plate;toes greater than ¼ body length,straight and ending in indistinctive acute claw.

Lecane hamata(Stokes,1896)
Fig.12
Diagnosis: Head aperture with narrow U-shaped sinus dorsally,ventrally with deep V-shaped sinus having two cusps in the middle of margins,rounded posteriorly; ventral plate extended anteriorly to form two acute cusps on either side of the headaperture;transverse fold and several longitudinal folds on ventral plate.

Lecane inopinata Harring & Myer,1926
Fig.13
Diagnosis: Head aperture margins coincident, slightly convex; no frontal spines; dorsal plate smooth, narrower than ventral plate anteriorly, slightly truncate posteriorly; ventral plate with two transverse and several longitudinal ridges; lateral sulci deep; toes long, slender about1/4 total length, fused for distal 1/3 of their length,terminate in distinct claw.

Lecane pusilla Harring,1914
Fig.14
Diagnosis: Head aperture margins straight, dorsal projects slightly beyond ventral; no corner spines; dorsal plate distinctivly facetted, ventral plate less conspicuosly patterned; lateral sulci deep;posterior segment rounded, projecting well beyond dorsal plate margin; toes long,slender, greater than ¼ total length, tapering to acute claw.

Lecane quadridentata Ehrenberg,1832
Fig.15
Diagnosis: Anterior dorsal margin with pyriform median sinus flanked by two long outcurved and decurved spines;ventral plate with deep ,sharply pointed V-shaped sinus ;two minute frontal spines present;dorsal plate with two ribs originating on anterior spines ; toe long about1/3 body length ,with indistinct annular constriction near distal end ;claw long ,slender with two basal spicules.

Lecane signifera (Jennings,1896)
Fig.16
Diagnosis:Head aperture margins coincident ,straight ;two small cupslike at external angles ;unusual lorica ornamentation;posterior segment projects slightly beyond dorsal plate ;toe about1/3 total length ,ending in acute points without claws.

Lecane simonneae Segers,1993
Fig.17
Diagnosis:Head aperture margins slightly concave and almost coincident with strong anterolateral spines, ventral plate elongate with transverse and longitudinal ornamentations; lateral sulci deep,toes parrallel sided,elongate,tapering to sharp point
distally.

Lecane stichaea Harring,1913
Fig.18
Diagnosis:Head aperture margins coincident ,slightly convex ;two stout cusps at external angles ;intricate surface markings on both dorsal and ventral plates. Lateral sulci shallow ;ventral plate parallel- sided ,considerably narrower than dorsal plate ;second foot segment extends >1/2 its length beyond posterior margin ;toes >1/4 total length ,ending in claw without basal spicules.

Lecane tenuiseta Harring,1913
Fig.19
Diagnosis:Head aperture margins parallel;dorsal plate smooth ,rounded posteriorly ;ventral plate with series of ridges ;lateral sulci protrudes beyond dorsal plate;toes long ,slender ,toes about 1/3 total length ,terminating in extremely long spine-like claw.

Lecane syngenes (Hauer,1938)
Fig.20
Diagnosis:Dorsal plate wider than ventral;head aperture margins nearly coincident ; anterolateral corners round;ventral plate slightly longer thn wide; lateral sulci deep;toes basally constricted, with a long terminal fissure.

Lecane undulata Hauer,1937
Fig.21
Diagnosis:Lorica stiff ,dorsal plate anteriorly narrower ,medially wider than ventral plate ,ornamented; head aperture margins nearly coincident, irregular undulate; antero-lateral corners angulate. Ventral plate slightly longer than wide ,with incomplete transverse and longitudinal folds,ornamented. Lateral sulci deep. Foot plate ,rounded posteriorly, toes fused basally,bearing completely separated claws.

Brachionus falcatus Zacharias,1898
Fig.23
Diagnosis:Lorica firm,divided to a dosrsal and ventral plate; quite compressed dorso-ventrally; anterior dorsal margin with six spines:intermediates much longer than the others,curved ventrally,lateral and median spines short and of about equal length.Body terminates posteriorly in two long spines widely seperated at their bases.Foot opening between the bases of posterior spines.

Brachionus variabilis(Hempel,1896)
Fig.24
Diagnosis:Lorica firm,divided into a dorsal and ventral plate,dorso-ventral depth about half of the width.Anterior dorsal margin with six acutely pointed spines:median longest and curved outwards,intermediate and lateral spines of about equal length.Lorica narrows posteriorly and terminates in stout lateral spines,less than ¼ of the total length of lorica.Foot opening between basis of posterior spines.

Brachionus patulus(Muller,1786)
Fig.25
Diagnosis: Lorica firm,subrectangular,more or less compressed dorso-ventrally.Both anterior and dorsal and ventral margins with pronounced spines,ten anterior spines present:occipital median spines longest curved over head ventrally; pectoral median shortest,straight;intermediates on both margin and laterals about equal in length.Lorica terminates in two short stout spines.Foot opening between two short spines

Keratella tropica Ahlstrom,1943
Fig.22
Diagnosis: Lorica short,relatively wide and opaque then ornamented with large pastules. Anterio-dorsal margin with six spines.Body termiates in two dissymetrical posterior spines one of which is rudimentary.

Lepadella costatoides Segers,1992
Fig.28
Diagnosis: Lorica elliptical, width about 2/3 of length. Head aperture ventrally deep V-shaped sinus. Foot with three pseudosegments, the two proximal about 2/3 the length of the distal one. A pair of unequal sized toes present.

Lepadella patella (Muller,1876)
Fig. 29
Diagnosis: Lorica almost circular, width about1/2 of length. Head aperture ventrally deep U-shaped sinus. Dorsal lorica

with two pairs of longitudinal ridges. Foot with four pairs of pseudosegments. A pair of equal sized toes present.

Colurella uncinata (Ehrenberg,1832)
Fig.27
Diagnosis: Lorica stiff, rigid and elongated; foot 3 segmented and about ¼ full body length, terminating in two separate thin and sharply pointed toes.

Colurella sulcata (Stenroos,1898)
Fig.26
Diagnosis:Lorica elongated and rigid; foot 3 segmented and about ¼ total body length, toes fused slender and sharply pointed.

Testudinella patina(Herman,1783)
Fig.32
Diagnosis:Lorica more or less compressed dorso-ventrally; transparent and almost oval in outline;foot opening ventral, situated near the middle of the body; toes absent.

Dipleuchlanis propatula(Goose,1851)
Fig.30
Diagnosis: Body oval, more or less domed dorsally, with thin transparent lorica composed of a dorsal and ventral plate. Foot short and two segmented; toes sword shaped, with a sharp point at the tip and about 1/3 the total body length.

Mytilina ventralis(Ehrenberg,1832)
Fig.31
Diagnosis: Body cylindrical, laterally flattened, opaque; lorica with two dorsal keels and spines on all four corners,terminating in thin slender toes.

Trichocerca longiseta(Schrank,1803)
Fig.33
Diagnosis: Body elongated, lorica rigid; right toe absent, left toe present and between half to full length of the body; anterior margin with two teeth.

Trichocerca tenuior Myers,1937b
Fig.35
Diagnosis: Body cylindrical and slightly curved, lorica rigid; left toe ½ full body length ,right toe reduced, single tooth on the anterior margin.

Tricocherca sulcata Jennings,1894
Fig.34
Diagnosis: Body cylindrical and curved, lorica rigid, right toe absent, left toe about eight times full body length

Trichocerca tigris (Muller,1786)
Fig.36
Body cylindrical, lorica rigid, right toe reduced, left toe about 2.5 times full body length; single tooth on the anterior margin.

Discussions and Conclusion
All species recorded are known to abound in tropical inland waters(De Ridder,1985,1986; De Ridder et al.1984,Pourriot,1968;1971,Segers,1995,De Smet,1988).Previous studies (Chiambeng et al.,1991,1993) have recorded a total of 57 species for Cameroon. The present contribution brings the total record to 76 species. Groups dominating the rotifer taxaceonosis are the Lecanidae (52.6%) and the Collurellidae (16.6%).A review of their geographical distribution shows that most are cosmopolitan(Dumont,1967,Pontin,1978,Segers,1995) except for *Lecane papuana* and *Lecane syngenes* which are pantropical and pan subtropical then *Lecane undulata*,*Lecane unguitata* and *Lecane monostyla* that are tropical and subtropical and lastly *Lecane simonneae* which is only recorded in Africa and India till date. Many more species still await discovery.

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