

***Freshwater fishes of Sierra Leone
and Liberia***
Annotated checklist and distribution

Didier PAUGY (1), Christian LÉVÊQUE (1),
Guy G. TEUGELS (2), Rémy BIGORNE (1)
et Raymond ROMAND (3)

SUMMARY

The authors present an up-to-date check-list of the freshwater fishes of the coastal basins of Sierra Leone and Liberia. The faunal lists are based on the literature data and on the collections of fishes housed in the european and american natural history museums; part of this material was collected by the authors. Identifications were made according to the most recent revisions. Species lists for each river basin were established as a base for a zoogeographical work on the fishes of West Africa.

KEY WORDS : Fish — Freshwater — West Africa — Sierra Leone — Liberia — Taxonomy — Fauna — Zoogeography.

RÉSUMÉ

POISSONS D'EAU DOUCE DE LA SIERRA LEONE ET DU LIBERIA : LISTE COMMENTÉE DES ESPÈCES
ET DE LEUR DISTRIBUTION

A partir des collections déposées dans les muséums d'histoire naturelle européens et dans un muséum américain, réalisées en partie par les auteurs et à partir de travaux effectués dans cette zone, une mise à jour des connaissances de la faune ichthyologique des bassins côtiers de la Sierra Leone et du Liberia est présentée. Il a été tenu compte pour la nomenclature des révisions les plus récentes. Des listes par bassin hydrographique ont été établies qui doivent servir de base à un travail d'ensemble sur la zoogéographie des Poissons d'Afrique de l'Ouest.

MOTS-CLÉS : Poissons — Eau douce — Afrique de l'Ouest — Sierra Leone — Liberia — Taxinomie — Faune Zoogéographie.

(1) Hydrobiologistes ORSTOM, Muséum national d'histoire naturelle, Laboratoire d'Ichtyologie générale et appliquée, 43 rue Cuvier, 75231 Paris Cedex 05, France.

(2) Musée royal de l'Afrique centrale, Laboratoire d'Ichtyologie, B 1980 Tervuren, Belgique.

(3) Université Blaise-Pascal, Ensemble scientifique des Cèzeaux, 63177 Aubière Cedex, France.

Our knowledge of the freshwater fish fauna from Sierra Leone and Liberia is still rather poor. A regional monograph as published for Guinée by DAGET (1962) and for Côte-d'Ivoire by DAGET and ILTIS (1965) is lacking for Sierra Leone and the most recent review for Liberia is given by SCHULTZ (1942).

During recent years the taxonomy of African freshwater fishes has often been substantially modified following results of detailed revisions based on the study of various new collections. This paper is an attempt to provide an up-to-date checklist of fish from Sierra Leone and Liberia. It follows three other contributions to the knowledge on taxonomy and distribution of fish in surrounding countries : Côte-d'Ivoire and western Ghana (TEUGELS *et al.*, 1988) Guinée and Guinée Bissau (LÉVÊQUE *et al.*, 1989) and Togo (PAUGY and BENECH, 1989).

REVIEW OF SYSTEMATIC LITERATURE AND RECENT COLLECTIONS OF FISHES FROM SIERRA LEONE AND LIBERIA

The first contributions on freshwater fishes from Liberia were the early papers of HUBRECHT (1881) and STEINDACHNER (1895) followed by the review of SCHULTZ (1942). There is no similar paper for Sierra Leone, for which only limited information was published : AHL (1937), BOULENGER (1915 and 1919), DAGET (1950 and 1962), CHAYTOR and WILLIAMS (1966), NORMAN (1932). Short notes mainly dealing with descriptions of new species were also published for both countries and for the upper reaches of river basins situated in Guinée and Côte d'Ivoire : GÉRY (1968), HOWES (1980), LAMBERT (1958), LÉVÊQUE and PAUGY (1982), NICHOLS and LA MONTE (1933), PAYNE and TREWAVAS (1976), THYS VAN DEN AUDENAERDE (1968a, b, c, d; 1969a, b, c, d; 1970 and 1974). The major part of the literature deals with the Cyprinodontidae which were studied in detail by several authors : BERKENKAMP (1977, 1978 and 1979), BERKENKAMP and ETZEL (1977; 1978a, b; 1979a, b; 1980; 1982 and 1983a, b), CLAUSEN (1966), ETZEL (1977; 1978a, b, c), ETZEL and BERKENKAMP (1979; 1980a, b), LADIGES and ROLOFF (1973), NEUMANN (1976), RADDA (1976), ROLOFF (1965; 1971a, b), ROLOFF and LADIGES (1972), ROMAND (1978a, b; 1979; 1980; 1985; 1986), VANDERMISSEN (1977a, b; 1978), VANDERMISSEN *et al.* (1980).

Since two decades several new collections from these countries were deposited in different natural history museums. We should mention in particular the large surveys undertaken by THYS VAN DEN AUDENAERDE in Sierra Leone and Liberia whose collections are housed by the Musée royal d'Afrique centrale (MRAC-Tervuren), by Payne in western

Sierra Leone which collections are deposited in the British Museum (BMNH-London) and by ORSTOM teams in the upper reaches of rivers basins under consideration in Guinée and Côte-d'Ivoire from 1980 to 1987 and in Sierra Leone in 1989 (collections deposited in the Muséum national d'histoire naturelle - Paris).

PHYSICAL GEOGRAPHY

A general review of physical geography, climatology and hydrography of Sierra Leone and Liberia is given in DAVEAU (1971a, b) and BALARIN (1984a, b).

Sierra Leone covers 73,326 km². The flat coast belt with many estuaries and mangrove swamps is followed by interior plains (altitude 150-300 m) which rise to high plateaux and mountains in the north-east, some of them (Mt Loma and Fingi) rising to over 1,500 m. High plateaux and interior plains are covered with rain forest, partly degraded in the interior plain as a result of agriculture (bush fires are more and more frequent).

Liberia covers 111,370 km² and the relief is fairly similar to that found in Sierra Leone. Low mountains below 900 m are scattered throughout the country. The two highest peaks are the Mt Nimba (1752 m) and the Mt Wologosi (1446 m) both situated on the north-eastern border. The highlands of the north-eastern borders form a watershed with the Niger basin. Most of the major rivers originate in the highlands and flow NE/SW to the Ocean. As a result, rivers are relatively short and of narrow catchment. They cut the plateaux region, creating a slow erosion process resulting in the steep "V" shaped valleys of most of the upland watercourses. The upper courses are rocky and "torrential", whereas the lower courses are swampy and end in wide estuary mouths. Most of the rivers exhibit floodplains in their lower courses. There are no major natural freshwater lakes but quite large coastal lagoons (freshwater and brackish).

The surfaces of the main river basins (in km²) estimated from 1/1,000,000 maps are : Little Scarces or Kaba of which Mongo river is the principal tributary (18,530), Rokel or Rockel or Seli (8,440), Jong or Pampana or Taja or Taya or Taia or Taye (7,750), Sewa or Bagbe or Bagbwe of which Waanje river is the principal tributary (19,050), Moa (18,760), Mano or Gbea (8,260), Fisherman lake (1,880), Lofa (13,200), St Paul (18,180), Du-Farmington (>7,000), St John (>14,000), Cess or Cestos or Nuon (Liberia) or Nipoué (Côte-d'Ivoire (11,920) (fig. 1). The fish fauna of the Kolenté or Great Scarces river has been treated in an other paper (LÉVÊQUE *et al.*, 1989) and

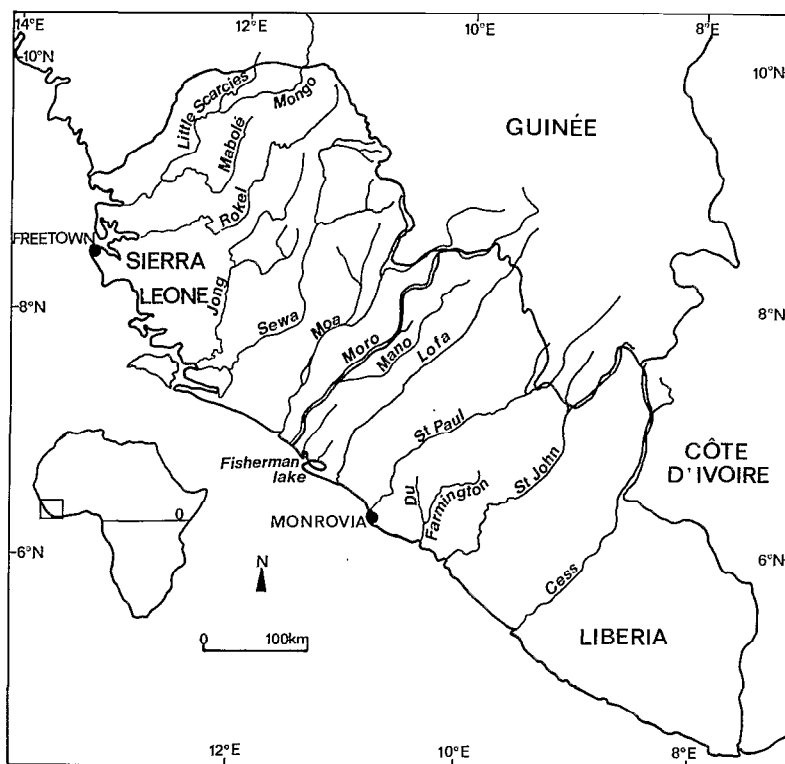


FIG. 1. — Hydrographical map of Sierra Leone and Liberia (main basins). *Le réseau hydrographique de la Sierra Leone et du Liberia (principaux bassins).*

TABLE I

Observed species richness and predicted species richness in function of the area of the basin (after the relationships established by DAGET and ILTIS, 1965 and by HUGUENY, 1989a)

Richesse spécifique observée et théorique calculée en fonction de la superficie des bassins versants (d'après les relations établies par DAGET et ILTIS, 1965 et par HUGUENY, 1989a)

Bassin	Superficie (km ²)	Richesse spécifique observée	Richesse spécifique théorique D. & I., 1965	Richesse spécifique théorique Hug., 1989a
Little Scarcies	18530	66-67	58-59	53-54
Rokel	8440	55-56	47-48	41-42
Jong	7750	90-97	46-47	40-41
Sewa	19050	82	58-59	54-55
Moa	18760	55-59	58-59	54-55
Mano	8260	50-51	47-48	41-42
Fish. Lake	1880	32-33	32-33	25-26
Loffa	13200	48-49	53-54	48-49
St Paul	18180	76	58-59	53-54
Du	>7000	42-43	>46	>39
St John	>14000	55-56	>55	>49
Cess	11920	61-62	52-53	46-47

no other samples were carried out since this publication. So we do not consider this basin here.

The climate is hot and wet. There is a wet season (from April-May to October-November) and a dry season. Mean total annual rainfall is high and drops along a SW/NE axis from 4,000-5,000 mm along the coast to 2,000 mm on the north-eastern border. In Sierra Leone rains are heaviest in August, but in Liberia there is a break in intensity (the mid dry period) in July-August.

The main rivers flow all year round. Only few data are known about discharge. BALARIN (1984a) mentioned an average per year of 123 m³ s⁻¹ for the Mano river (range from 50 to 600 m³ s⁻¹) and a range of 70-2,500 m³ s⁻¹ for the St Paul river. CHAYTOR (1969) gave some data for the hydrological regime of the river Jong. The peak occurs in August-September and the minimum in March. Water temperature in the river Jong (CHAYTOR, 1969) ranges from 25 °C (September-October) to 31 °C (April-May). This river was found to be acidic throughout the year and possessed a low dissolved chemical content (conduc-

tivity range : 10-30 $\mu\text{S cm}^{-1}$ (WRIGHT, 1982 and 1985).

METHODS

The CLOFFA 1 and 2 (DAGET *et al.*, 1984 and 1986), covering all African freshwater fish families except the Cichlidae, provide a current list of species with their type locality, full synonymies and references to papers where the species is quoted. The aim of this paper is not to repeat CLOFFA. Therefore, we restricted the list of synonymies to those authors who considered the species with particular reference to the Sierra Leone and Liberia freshwaters.

Since CLOFFA was published, subsequent taxonomic papers introduced new data for the following taxa, which have been taken into account in this paper :

Polypteridae : *Polypterus* (GOSSE, 1988).

Clupeidae : (WHITEHEAD, 1986), Pellonulinae (GOURÈNE, 1988; GOURÈNE and TEUGELS, 1989).

Mormyridae : *Marcusenius* (JÉGU and LÉVÊQUE, 1984a; BIGORNE and PAUGY, 1990), *Hippopotamyus* (LÉVÊQUE and BIGORNE, 1985a), *Mormyrus* (LÉVÊQUE and BIGORNE, 1985b), *Mormyrops* (BIGORNE, 1987), *Brienomyrus* and *Isichthys* (BIGORNE, 1989).

Characidae : *Alestes s.lato* (PAUGY, 1982a, b; 1986), *Hydrocynus* (BREWSTER, 1986; PAUGY and GUÉGAN, 1989), Petersiini (PAUGY, 1990).

Distichodontidae : (LÉVÊQUE and BIGORNE, 1987).

Cyprinidae : *Labeo* (JÉGU and LÉVÊQUE, 1984b; REID, 1985), *Raiamas* and *Leptocypris* (LÉVÊQUE and BIGORNE, 1983; HOWES and TEUGELS, 1989), *Barbus* (LÉVÊQUE, 1983; 1989a, b; LÉVÊQUE *et al.*, 1987a, b; 1988; LÉVÊQUE and GUÉGAN, 1990).

Bagridae : *Chrysichthys* (RISCH, 1981; 1986; RISCH and THYS VAN DEN AUDENAERDE, 1985).

Schilbeidae : (DE VOS, 1983; 1984; DE VOS and LÉVÊQUE, 1983; LÉVÊQUE and HERBINET, 1982).

Amphiliidae : (SKELTON, 1984; 1989).

Clariidae : (TEUGELS, 1981; 1982; 1986; TEUGELS *et al.*, *in press*).

Syngnathidae : (DAWSON, 1981; 1984).

Channidae : *Parachanna* (BONOU and TEUGELS, 1985).

Cichlidae : *Hemichromis* (WILSON and LOISELLE, 1980), *Paratilapia* (GREENWOOD, 1985), *Pelmatochromine* (GREENWOOD, 1987), *Tilapia s.l.* (TREWAVAS, 1983), *Tylochromis* (STIASSNY, 1989).

Mastacembelidae : (TRAVERS, 1984a, b; *in prep.*).

Table II summarizes our knowledge on fish distribution in the major river systems. Symbols used in this table are explained as follows :

— when a valid species has been originally described from a river system, a black spot is used;
— preserved specimens from a river system housed in a museum are indicated by a block letter referring to the museum :

B : British Museum (Natural History), some specimens collected in North Sherbo District and Pujehun were respectively considered by us from Jong and Moa basins. These samples are bracketed,

L : Rijksmuseum van natuurlijke Historie, Leiden,

P : Muséum national d'histoire naturelle, Paris,

T : Musée royal de l'Afrique Centrale, Tervuren,

U : United States National museum, Washington,

Z : Zoologisches Staatinstitut und Zoologisches

Museum, Hambourg;

— when a species has been mentioned in a paper, but when no material was preserved in a Museum, a reference number is used referring to the publication, listed in the text of the table II;

— when a species is not preserved or not mentioned in a paper but when it has been observed by one of the authors, it is indicated by a cross (+);

— when a species is mentioned in the CLOFFA from this area without precise reference, it is indicated by a C.

TAXONOMICALLY ANNOTATED CHECKLIST

POLYPTERIDAE

— *Polypterus palmas* Ayres, 1850

Polypterus büttikoferi Steindachner, 1891 from rivers Mahfa and Sulymah (riv. Moa), Liberia.

Polypterus retropinnis lowei Boulenger, 1911 see Gosse (1988).

Polypterus lowei Boulenger, 1911 see Gosse (1988).

Most part of the specimens were caught in East Sierra Leone and in the major basins in Liberia, but this species was also recorded at Nanna Kru (certainly Puebla river) in Southeastern Liberia near the Côte-d'Ivoire boundary.

CLUPEIDAE

— *Pellonula leonensis* Boulenger, 1916

Pellonula afzeliuzi Johnels, 1954 see WHITEHEAD (1986).

Microthrissa miri Daget, 1954 see WHITEHEAD (1986).

TABLE II

Presence of species in the different river systems. See introduction for signification of letters and symbols. The numbers refer to papers where the species is mentioned : 1-McCARTON and PAYNE (1985); 2-PAYNE and McCARTON (1983); 3-STEINDACHNER (1895); 4-HUBRECHT (1881); 5-DAGET (1950); 6-TREWAVAS (1983); 7-NORMAN (1932); 8-FOWLER (1950); 9-DAGET (1952); 10-ROMAND (1986); 11-VAN DEN NIEUWENHUIZEN (1972)

Présence des espèces dans les différents bassins. Voir l'introduction pour la signification des lettres et des signes. Les nombres font références aux publications dans lesquelles les espèces sont signalées : voir ci-dessus

SPECIES	L.Scar.	Rokel	Jong	Sewa	Moa	Mano	F. Lake	Lofa	StPaul	Du	StJohn	Cess
POLYPTERIDAE												
<i>P. palmas</i>				B	3 (B)	U	3		P	U		T
CLUPEIDAE												
<i>P. leonensis</i>			(*)								T	T
<i>P. vorax</i>							3	T		U		
<i>S. leonensis</i>				•	T							
NOTOPTERIDAE												
<i>P. afer</i>	B	P	BT	BT		TU	3	T	TU	U		PT
<i>X. nigri</i>			5 (B)	5			3					
MORMYRIDAE												
<i>B. brachyistius</i>	P		BT	BT	T (B)	TU	B	T	U	U	T	
<i>B. longianalis</i>	P		B									
<i>H. paugyi</i>	PT	P	T		T	T		PT	T			
<i>I. henryi</i>	P		B	BT	T	TU			U	U	T	
<i>M. mento</i>		B	BT	T	T	T		T				
<i>M. meronai</i>		•	P									
<i>M. thomasi</i>		2	T (*)		PT	T		T	T			
<i>M. ussheri</i>										3	T	PT
<i>M. anguilloides</i>		P	P		P				U		T	
<i>M. breviceps</i>			B			T			•	U		
<i>M. caballus</i>				P								
<i>M. tapirus</i>			BT		T	T		T	TU			
<i>P. bovei</i>	P	P	P	P								
<i>P. pellegrini</i>								P	P		PT	•
<i>P. simus</i>			B	B	B	U			PU	U	P	
<i>P. tenuicauda</i>	P	P	TP	TP	TP	T		TP	P		T	
HEPSETIDAE												
<i>H. odoe</i>		B	P (B)	T	T	T	3		PTU	U	T	PT
CHARACIDAE												
<i>B. imberi</i>												PT
<i>B. longipinnis</i>	BP	BP	BPT	BPT	BT	TU		T	PTU	U	T	PT
<i>B. macrolepidotus</i>	P	BP	BPT	T	PT	T	8	PT	PTU	U	T	PT
<i>B. nigricauda</i>												•
<i>B. nurse</i>			1?						U	U		
<i>H. forskalii</i>	BP	P	BPT	5	PT	BT		T	BPTU		T	T
<i>L. roloffii</i>			•	Z							11	
<i>L. adonis</i>											11	
<i>M. occidentalis</i>				P					U	U		PT
<i>R. septentrionalis</i>	P			BT	T	T						
DISTICHODONTIDAE												
<i>I. quadrilineatus</i>	P	BP	BT	BT								
<i>N. ansorgii</i>			B	T	(B)						T	
<i>N. fasciatus</i>	P	P	P (B)	PT	(B)				•		T	T
<i>N. unifasciatus</i>			BT	T				•	P			T
CYPRINIDAE												
<i>B. ablabes</i>	P	P	BP			T			U	3	T	PT
<i>B. bagbwensis</i>			P	•								
<i>B. bigornei</i>	•		P	P								
<i>B. boboi</i>										•		
<i>B. eburneensis</i>									PU		9	•
<i>B. foutensis</i>	•											
<i>B. inaequalis</i>											T	•
<i>B. lauzannei</i>								•				
<i>B. leonensis</i>			T	B		•						
<i>B. liberiensis</i>		T	T				3					
<i>B. macrops</i>			PT	BT	T	T			U	U		
<i>B. punctitaeniatus</i>												PT
<i>B. tiekoroii</i>	P	P										
<i>B. trispiloides</i>						•						
<i>B. trispilos</i>										U?		PT

SPECIES	L.Scar.	Rokel	Jong	Sewa	Moa	Mano	F. Lake	Lofa	StPaul	Du	StJohn	Cess
CYPRINIDAE												
<i>B. parawaldroni</i>								P	P			•
<i>B. sacratus</i>	P	P	B	7	P			P	PT		T	
<i>B. wurtzi</i>	P	BP	B	P				P				PT
<i>L. alluaudi</i>				P								PT
<i>L. coubie</i>	1?	2	P									?+
<i>L. curriei</i>					T	T			•			
<i>L. obscurus</i>	P		(B)		P			P				
<i>L. parvus</i>	P	P		P								T
<i>L. guineensis</i>				T	T							
<i>L. taitaensis</i>	B		•									
<i>P. batesi</i>	T	P	P	•								
<i>R. nigeriensis</i>				T	T							
<i>R. scarciensis</i>	•											
<i>R. steindachneri</i>	•	P	BP	BPT	T	T			U			P
BAGRIDAE												
<i>A. occidentalis</i>	B		BP									
<i>C. auratus</i>									T	U		
<i>C. johnelsi</i>		P	PT	P	T	T		T	T		T	PT
<i>C. maurus</i>	PT	P	PT	T	PT	T		T	T	T	T	PT
<i>C. nigrodigitatus</i>		2	BP	P		U	L	T	U	U	T	T
<i>C. teugelsi</i>												T
<i>N. maculatum</i>			(B)	B								
<i>N. thomasi</i>			BT	B	(•)							
SCHILBEIDAE												
<i>P. spiniserrata</i>			B									
<i>S. mandibularis</i>									P	L	T	PT
<i>S. micropogon</i>	P	P	BP					T				
<i>S. mystus</i>	P											
<i>S. niloticus</i>		2?	B?		PT	T		T	LPT			
AMPHILIDAE												
<i>A. atesuensis</i>				B					PU	U	PT	PT
<i>A. platychir</i>	P	PT	T	BT				PT	T		T	P
<i>A. rheophilus</i>	P											
<i>D. chappuisi</i>												•
<i>P. firestoni</i>									•	U		
<i>P. teugelsi</i>	•											
<i>P. trichomycteroides</i>	1		B					P				
CLARIIDAE												
<i>C. anguillaris</i>		5	B									
<i>C. buettikoferi</i>		Z	BT	BT	BT	BTU	3		PZ	U	T	
<i>C. laeviceps dialonensis</i>	1		1	B	B							
<i>C. laeviceps laeviceps</i>				B					PT		T	PT
<i>C. salae</i>	P		BT	T	T	TU		T	•	U	T	T
<i>H. isopterus</i>	P		P	B	T	T			PU		T	PT
<i>H. longifilis</i>	P			B	T							
MALAPTERURIDAE												
<i>M. electricus</i>	P	P	BPT	BPT	PT	TU	3	T	PTU	U	T	T
MOCHOKIDAE												
<i>C. normani</i>												•
<i>C. occidentalis</i>	P	P										PT
<i>C. polyodon</i>				•								
<i>M. polli</i>												•
<i>M. paynei</i>			T									
<i>S. annectens</i>			T									
<i>S. ansorgii</i>			BT	T								
<i>S. thysi</i>	•	P	B									
<i>S. waterloti</i>	P		BPT	T	P				P		T	PT

SPECIES	L.Scar.	Rokel	Jong	Sewa	Moa	Mano	F. Lake	Lofa	StPaul	Du	StJohn	Cess
CYPRINODONTIDAE												
<i>A. brueningi</i>				C	C	10		10				
<i>A. etzeli</i>	•											
<i>A. geryi</i>	+	T	T		T				T			
<i>A. guineense</i>					+							
<i>A. jeanpoli</i>								•				
<i>A. liberiense</i>		T			CT	10	T	10	PTU	P	10	
<i>A. maeseni</i>									PT	10	P	•
<i>A. monroviae</i>						C		C	CT			
<i>A. occidentale</i>	C	C	CT	C	C	C	C	C				
<i>A. roloffii</i>	C	CT	C	C	CT	C	C	C				
<i>A. schmitti</i>												10
<i>A. toddi</i>	•											
<i>A. viride</i>								10	T		10	
<i>A. kabae</i>	•											
<i>A. nimbaensis</i>									P			+
<i>A. normanni</i>	C	C	T				8		C	U		
<i>A. schioetzi</i>											C	PT
<i>A. spilauchen</i>							8					
<i>E. annulatus</i>			T				8					
<i>E. azureus</i>												+
<i>E. barmoiensis</i>		T	T			U	T	T	TU	U	T	
<i>E. bifasciatus</i>	+		B									
<i>E. coccinatus</i>				•								
<i>E. dageti</i>							8		T	U		+
<i>E. fasciolatus</i>	+	T	BT	T	T	TU	PT	T	TU	U	T	T
? <i>E. hildegardae</i>									•			
<i>E. josianae</i>				•								
<i>E. lamottei</i>								?	T		?	
<i>E. njalensis</i>			•									
<i>E. olbretchisi</i>									P			•
<i>E. roloffii</i>									•			
<i>E. ruhkopfi</i>									•			
CHANNIDAE												
<i>P. obscura</i>			5(B)	T			3					
CENTROPOMIDAE												
<i>L. niloticus</i>		T	P	BT	T	T					T	
CICHLIDAE												
<i>A. thomasi</i>			T	T	T	•					T	
<i>C. guentheri</i>												PT
<i>H. bimaculatus</i>			BT	BT	T	TU	PT	T	PTU	U	T	T
<i>H. fasciatus</i>	P	BPT	BPT	PT	PT	TU	T	T	PTU	U	T	PT
<i>P. buettikoferi</i>			B	T	T	TU	3-8	T	U	U	T	
<i>P. humilis</i>		P	BPT	BT	T	TU		T	U	U		
<i>P. roloffii</i>			BT	BT		T?						
<i>S. caudomarginatus</i>	B		BT	T	T	T			T			
<i>S. galilaeus</i>				P								
<i>S. m. leonensis</i>		T					T		PT		T	
<i>S. occidentalis</i>	B	T	B	T			3?	U	U		TU	
<i>S. t. liberiensis</i>											6	PT
<i>T. brevimanus</i>	1	P	BPT	BT	T			T	T		T	PT
<i>T. buttkoferi</i>	1		BT	T	T				•		T	
<i>T. cessione</i>												•
<i>T. coffea</i>									•			
<i>T. guineensis</i>	B	T	B?				T		T		T	
<i>T. joka</i>		B	1	•								
<i>T. louka</i>	B	P	BT	•	BT	T		T				
<i>T. walteri</i>												PT
<i>T. zillu</i>	P		B		P			P	PU		T	PT
<i>T. intermedius</i>	B		B	T					TU		T	
<i>T. jentinki</i>	T	2	T	TU		TU	•	T	T		T	
<i>T. leonensis</i>	BP	P	•	TU	T	T		T				

SPECIES	L.Scar.	Rokel	Jong	Sewa	Moa	Mano	F. Lake	Lofa	StPaul	Du	StJohn	Cess
GOBIIDAE												
<i>C. lateristriga</i>	P	T	T			TU	3		U	U		T
<i>N. maindroni</i>			(B)									
ELEOTRIDAE												
<i>E. daganensis</i>									P			
<i>E. senegalensis</i>				T							T	
<i>E. vittata</i>			5	5		U	8	T	U	U	T	
<i>K. kribensis</i>			B	5						PU		PT
<i>K. leonensis</i>					(B)							
<i>K. nana</i>	P	T	T	T	T							T
ANABANTIDAE												
<i>C. kingsleyae</i>	P		BT	PT	T	TU	3	T	U	U	T	PT
MASTACEMBELIDAE												
<i>A. liberiensis</i>	P	P	BPT	BPT	P	U	3	P	PU	U	T	T
<i>A. nigromarginatus</i>			P									T
<i>C. n. sp.</i>		B	B									

Microthrissa normanae Whitehead, 1986 see GOURÈNE and TEUGELS (1989).

Microthrissa sp. Daget, 1962 see GOURÈNE and TEUGELS (1989).

— *Pellonula vorax* Günther, 1868

— *Sierrathrissa leonensis* Thys van den Audenaerde, 1969

NOTOPTERIDAE

— *Papyrocranus afer* (Günther, 1868)

Notopterus afer Günther, 1868 in BOULENGER (1919).

Present in the major basins in Sierra Leone and Liberia, this species was also recorded at Nanna Kru (certainly Puebla river) in Southeastern Liberia near the Côte-d'Ivoire boundary.

— *Xenomystus nigri* (Günther, 1868)

Mentioned by DAGET (1950) from the Jong and Sewa rivers (Sierra Leone), and by STEINDACHNER (1895) from Fisherman lake (Liberia). We examined two specimens from a river near Glap in the Sherbo District (Sierra Leone) and housed in the Tervuren Museum. The species have never been recorded from Guinée nor Côte-d'Ivoire.

MORMYRIDAE

— *Brienomyrus brachyistius* (Gill, 1863)

Mormyrus liberiensis Steindachner, 1895.

Marcusenius brachyistius Gill, 1863 in BOULENGER (1919) and CHAYTOR and WILLIAMS (1966).

? *Marcusenius sphekodes* (non Sauvage, 1879) in NORMAN (1932).

Present in the major basins in Sierra Leone and Liberia, this species was also recorded at Nanna Kru (certainly Puebla river) in Southeastern Liberia near the Côte-d'Ivoire boundary.

— *Brienomyrus longianalis* (Boulenger, 1901)

— *Hippopotamyrus paugyi* Lévêque and Bigorne, 1985

Hippopotamyrus harringtoni (non Boulenger, 1905) in DAGET (1962).

Recently described, this species is apparently widespread in the upper guinean zone, as defined by ROBERTS (1975).

— *Isichthys henryi* Gill, 1863

Mormyrops henryi (Gill, 1863) in HUBRECHT (1881).

Mormyrus henryi (Gill, 1863) in STEINDACHNER (1895).

— *Marcusenius mento* (Boulenger, 1890)

Gnathonemus mento (Boulenger, 1890) in STEINDACHNER (1895), BOULENGER (1919) and SCHULTZ (1942).

— *Marcusenius meronai* Bigorne and Paugy (1990), originally described from Rokel and Sewa rivers

— *Marcusenius thomasi* Boulenger (1916)

Gnathonemus thomasi Boulenger, 1916 in BOULENGER (1919).

— *Marcusenius ussheri* (Günther, 1867)

Mormyrus ussheri Günther, 1867 in STEINDACHNER (1895).

Gnathonemus ussheri (Günther, 1867) in SCHULTZ (1942).

Gnathonemus bruyerei Pellegrin, 1904 see JÉGU and LÉVÊQUE (1984a).

Occurs only in eastern basins of Liberia. Widespread in Côte-d'Ivoire and western Ghana.

— *Mormyrops anguilloides* (Linnaeus, 1758)

Mormyrops deliciosus (Leach, 1818) see BIGORNE (1987) in HUBRECHT (1881), STEINDACHNER (1895) and SCHULTZ (1942).

Mormyrops curviceps Roman, 1966 see BIGORNE (1987).

Mormyrops longiceps (Günther, 1867) see BIGORNE (1987).

— *Mormyrops breviceps* Steindachner, 1895

Mormyrops bougouribaensis Roman, 1966 see BIGORNE (1987).

Mormyrops elongatus Norman, 1935 see BIGORNE (1987).

— *Mormyrops caballus* Pellegrin, 1927

Mormyrops oudoti (non Daget, 1954) in Mc CARTON and PAYNE (1985). Known only from the Sewa river.

— *Mormyrus tapirus* Pappenheim, 1905

Mormyrus goheeni Fowler, 1919 see LÉVÊQUE and BIGORNE (1985).

This species is recorded from Upper and Lower Guinea zones as defined by ROBERTS (1975). In between it has not been collected.

— *Petrocephalus bovei* (Valenciennes, 1846)

— *Petrocephalus pellegrini* Poll, 1941

— *Petrocephalus simus* Sauvage, 1879

Species level systematics of the genus *Petrocephalus* are still poorly known. The specimens from Sierra Leone (Little Scarcies, Rokel and Jong) correspond with those described by STEINDACHNER (1895) as *Mormyrus tenuicauda* subsequently synonymised with *P. simus* by BOULENGER (1898). The status of *M. tenuicauda* is presently being examined by Bigorne (*in prep.*).

HEPSETIDAE

— *Hepsetus odoe* (Bloch, 1794)

Sarcodaces odoe (Bloch, 1794) in STEINDACHNER (1895) and BOULENGER (1919).

CHARACIDAE

Paugy (1986) reviewed the genus *Alestes sensu lato* and recognized two genera: *Alestes sensu stricto* and *Brycinus*. Only the latter is present in the area studied.

— *Brycinus imberi* (Peters, 1852)

Alestes imberi Peters, 1852 see PAUGY (1986).

— *Brycinus longipinnis* (Günther, 1864)

Brachyalestes longipinnis Günther, 1864 see PAUGY (1986) in HUBRECHT (1881).

Alestes longipinnis (Günther, 1864) see PAUGY (1986) in STEINDACHNER (1895), BOULENGER (1919), SCHULTZ (1942) and CHAYTOR and WILLIAMS (1966).

Alestes chaperi Sauvage, 1882 see PAUGY, 1982a

— *Brycinus macrolepidotus* Valenciennes, 1849

Alestes macrolepidotus (Valenciennes, 1849) see PAUGY (1986) in HUBRECHT (1881), STEINDACHNER (1895) and BOULENGER (1919).

Alestes rutilus Boulenger, 1916 see PAUGY (1982b) in BOULENGER (1919), FOWLER (1919; 1950) and SCHULTZ (1942).

— *Brycinus nurse* (Rüppell, 1832)

Brachyalestes nurse (Rüppell, 1832) see PAUGY (1986) in HUBRECHT (1881).

Alestes nurse (Rüppell, 1832) see PAUGY (1986) in BOULENGER (1919) and SCHULTZ (1942).

— *Brycinus nigricauda* (Thys van den Audenaerde, 1974)

Alestes nigricauda Thys van den Audenaerde, 1974 see PAUGY (1986).

— *Hydrocynus forskalii* (Cuvier, 1819)

Hydrocyon forskalii Cuvier, 1819.

— *Ladigesia roloffi* Géry, 1968

This small characid was originally described from the Kasewe Forest (Sierra Leone). VAN DEN NIEUWENHUISEN (1972) reported this species from the Firestone Plantation in Liberia.

— *Lepidarchus adonis* Roberts, 1966

Specimens from the Black river on the Sherbo Island (Sierra Leone) are housed in the BMNH collections. VAN DEN NIEUWENHUISEN (1972) reports the species from the Firestone Plantation (Liberia).

— *Micralestes occidentalis* (Günther, 1899)

Petersius occidentalis Günther, 1899 in SCHULTZ (1942).

— *Rhabdalestes septentrionalis* (Boulenger, 1911)

Petersius septentrionalis Boulenger, 1911.

Rhabdalestes intermedius Blache and Miton, 1960 see PAUGY 1990.

DISTICHODONTIDAE

— *Ichthyborus quadrilineatus* (Pellegrin, 1904)

Neoborus quadrilineatus Pellegrin, 1904.

LÉVÊQUE and BIGORNE (1987) reviewed meristic and morphometric characteristics of this species as well as its distribution. It is close to the Zairian species *Ichthyborus ornata*.

— *Nannocharax ansorgii* Boulenger, 1911

— *Nannocharax fasciatus* Günther, 1867

Nannocharax seiboldi Schultz, 1942 see COENEN (*in prep.*).

— *Neotebias unifasciatus* Steindachner, 1895

Nannaethiops unilaeniatus (non Steindachner) in DAGET (1963).

CYPRINIDAE

— *Barbus ablabes* (Bleeker, 1863)

— *Barbus bagbwensis* Norman, 1932

Described from the Bagbe (Sewa) river and collected also in the Jong river.

— *Barbus bigornei* Lévêque, Teugels and Thys van den Audenaerde, 1988

Types were described from the Mongo river (upper Little Scarcies). Specimens were collected also in the Jong and Sewa rivers and in western Côte-d'Ivoire.

— *Barbus boboi* Schultz, 1942

This species is known only from the types collected in Gibi Mountains (Farmington system) in Liberia. Other specimens mentioned from eastern Liberia and western Côte-d'Ivoire were misidentified (LÉVÊQUE *et al.*, 1988).

— *Barbus eburneensis* Poll, 1941

Barbus flomoi Schultz, 1942 see DAGET (1962).

Barbus trispilos (non Bleeker) in NORMAN (1932) according to TREWAVAS (1974) and in PELLEGRIN (1921) according to LÉVÊQUE (1983).

— *Barbus foulensis* Lévêque, Teugels and Thys van den Audenaerde, 1988

Barbus spurelli non Boulenger, 1913 in DAGET (1962).

Apparently restricted to the Fouta Djallon area in Guinea. Types were collected in the upper Little Scarcies river.

— *Barbus inaequalis* Lévêque, Teugels and Thys van den Audenaerde, 1988

Barbus boboi (non Schultz) in DAGET (1952 and 1963), DAGET and ILTIS (1965) and LÉVÊQUE (1983).

— *Barbus lauzannei* Lévêque and Paugy, 1982

Known from the upper reaches of the Lofa river in Guinea.

— *Barbus leonensis* Boulenger, 1915

— *Barbus liberiensis* Steindachner, 1895

Barbus camptacanthus var. *liberiensis* Steindachner, 1895.

? *Barbus trispilos* (non Bleeker) in CHAYTOR and WILLIAMS (1966).

Many museum specimens were collected in small streams in the Freetown Peninsula.

— *Barbus macrops* Boulenger, 1911

Mannichthys lucilae Schultz, 1942 see HOPSON and HOPSON (1965).

A widespread species known from sahelian and guinean provinces.

— *Barbus punctilaeniatus* Daget, 1954

— *Barbus tiekoroi* Lévêque, Teugels and Thys van den Audenaerde, 1987

Barbus trispilos (parlim, non Bleeker) in DAGET (1962).

— *Barbus trispiloides* Lévêque, Teugels and Thys van den Audenaerde, 1987

Described from a single specimen from river Mano (Liberia); differs markedly from other three spotted barbs by its elongated body.

— *Barbus trispilos* (Bleeker, 1863)

— *Barbus parawaldroni* Lévêque, Thys van den Audenaerde and Traoré, 1987

Replaces *Barbus waldroni* in western Côte-d'Ivoire and eastern Liberia.

— *Barbus sacratus* Daget, 1963

Barbus gruveli (non Pellegrin, 1911) in DAGET (1962).

— *Barbus wurtzi* Pellegrin, 1908

Barbodes (*Barbus*) *wurtzi* Pellegrin, 1908 in CHAYTOR and WILLIAMS (1966).

Varicorhinus wurtzi (Pellegrin, 1908).

According to Reid (1985), two sub-groups of *Labeo* occur in this area :

— *Labeo coubie* group : specimens from Liberia and Sierra Leone have been referred as *L. coubie* Rüppell, 1832 or *Labeo curriei* Fowler, 1919. The taxonomy is not clear and more material and research are needed. *L. curriei* was described from the St Paul river. It is close to *L. walkeri* Günther, 1902 from Ghana and *L. brachypoma* Günther, 1868 from Lagos, Ghana, a vague locality (REID, 1985). *Labeo rouaneti* Daget, 1962 from the Konkouré river (Guinea) belongs also to the *L. coubie* group.

— *Labeo forskalii* group includes :

— *Labeo alluaudi* Pellegrin, 1933

Originally described from Cavally river (Côte-d'Ivoire) and recorded from Cess (Liberia) and Bagbe (Sierra Leone) rivers.

— ? *Labeo obscurus* Pellegrin, 1908

Labeo chariensis Pellegrin 1904 in NORMAN (1932).

This species is very close to *L. parvus* and *L. ogunensis*. JÉGU and LÉVÊQUE (1984) mentioned that *L. parvus* Boulenger, 1902 is widely distributed from the Zaïre basin to West Africa. For REID (1985), West African sahelian populations belong to *L. ogunensis* Boulenger, 1910 described from the Ogun river (Nigeria), which "most closely resembles to *L. parvus*". REID (1985) also considered *L. obscurus* from the Konkouré river as a valid species, whereas he noticed that it closely resembles *L. ogunensis* and may be a rapid water form of that species. This group of species obviously needs a

thorough systematic revision. In the meantime we continue to consider *L. obscurus* as a valid species.

- *Labeo parvus* Boulenger, 1902
- *Labeo chariensis* Pellegrin, 1904 in NORMAN (1932).

- *Leptocypris guineensis* (Daget, 1962)
- *Barilius guineensis* Daget, 1962.

Taxonomy and distribution of this species are discussed by LÉVÊQUE and BIGORNE (1983). It is vicariant species of *Leptocypris niloticus* from sahelian rivers.

- *Leptocypris taitaensis* Howes and Teugels, 1989
- *Prolabeo batesi* Norman, 1932

Originally described from the Bagbe (Sewa) river; we recently found this species in Rokel and Jong rivers.

- *Raiamas scarciensis* Howes and Teugels, 1989
- *Raiamas steindachneri* (Pellegrin, 1908)
- *Barilius steindachneri* Pellegrin, 1908 in BOULENGER (1919) and NORMAN (1932).
- *Barilius silex* Schultz, 1942 in DAGET (1963) see LÉVÊQUE and BIGORNE (1983).

Taxonomy, synonymies and distribution have been discussed in LÉVÊQUE and BIGORNE (1983). This is a vicariant species of *R. senegalensis* from sahelian rivers.

- *Raiamas nigeriensis* (Daget, 1959)
 - *Barilius nigeriensis* Daget, 1959.
- This species is found in some coastal basins in Sierra Leone (LÉVÊQUE and BIGORNE, 1983).

BAGRIDAE

- *Auchenoglanis occidentalis* (Valenciennes, 1840)
- The taxonomy of the genus *Chrysichthys* has been reviewed by RISCH (1986). We refer to this paper for details on synonymies.

- *Chrysichthys auratus* (Geoffroy Saint-Hilaire, 1809)

Chrysichthys filamentosus Boulenger, 1912 in SCHULTZ (1942) see RISCH (1986).

- *Chrysichthys johnelsi* Daget, 1959
- Described from the Gambia river where it was considered to be endemic for a long time. RISCH and THYS VAN DEN AUDENAERDE (1985) extended the distribution area as far as the Pra river (Ghana).

- *Chrysichthys maurus* (Valenciennes, 1839)
- *Chrysichthys velifer* Norman, 1928.
- *Chrysichthys walkeri* (non Günther) in BOULENGER (1919).

- *Chrysichthys nigrodigitalis* (Lacépède, 1803)
- *Chrysichthys furcatus* Günther, 1864.
- *Chrysichthys buettikoferi* Steindachner, 1895.

- *Chrysichthys teugelsi* Risch, 1987

- *Notoglanidium maculatum* (Boulenger, 1916)
- *Liauchenoglanis maculatus* Boulenger, 1916.
- *Heterobranchus* sp. in CHAYTOR and WILLIAMS (1966).

- *Notoglanidium thomasi* Boulenger, 1916

SCHILBEIDAE

The systematics of the family has been studied by DE VOS (1984) and taxonomy and full synonymy of West African species of *Schilbe* (*Eutropius*) have been discussed by DE VOS (1983) and DE VOS and G. L. LÉVÊQUE (1983).

- *Parailia* (*Parailia*) *spiniserrata* Svensson, 1933
- Described from the Gambia river, the species was collected in the river Njala (Jong) in Sierra Leone.

- *Schilbe* (*Eutropius*) *mandibularis* (Günther, 1867)
- *Eutropius liberiensis* Hubrecht, 1881 in SCHULTZ (1942).

Eutropius mentalis Boulenger, 1901 in DAGET (1952).

- *Schilbe* (*Eutropius*) *micropogon* (Trewavas, 1943)

- *Schilbe* (*Eutropius*) *niloticus* (Rüppell, 1829)
- *Eutropius altipinnis* Steindachner, 1895.
- *Eutropius adansonii* Valenciennes, 1839 in HUBRECHT (1881).

- *Schilbe* (*Schilbe*) *mystus* (Linnaeus, 1758).

AMPHILIIDAE

- *Amphilius atesuensis* Boulenger, 1904
- *Amphilius pictus* Nichols and La Monte, 1933 in SCHULTZ (1942) see LAMBERT (1958).

Sympatric with *A. platyichir* in the St John river but replaces the latter eastward to the Mono river.

- *Amphilius platyichir* (Günther, 1864)
- *Amphilius grammatorphus* Pellegrin, 1913 in DAGET (1950), NORMAN (1932) and CHAYTOR and WILLIAMS (1966) see SKELTON (1984).
- *Amphilius grammatorphus marmoratus* Daget, 1963.

- *Amphilius rheophilus* Daget, 1959
- Known from Guinea and Little Scarcies river.

- *Doumea chappuisi* Pellegrin, 1933
 - *Paramphilius trichomycteroides* Pellegrin, 1907
- Known from Fouta Djallon area in Guinea, including upper Little Scarcies. A single specimen from the Lofa river.

- *Paramphilius firestonei* Schultz, 1942
- Only known by the types from St Paul and Du rivers near the coast in Liberia.

- *Paramphilius teugelsi* Skelton, 1989
- Known by the types collected in a small tributary of the Mamou river (Little Scarcies system), by a

specimen from a small tributary of the Kogon basin in Guinea and by a specimen from the Falata river in Guinea.

CLARIIDAE

TEUGELS (1986) provided a revision and full synonymy for the African species of the genus *Clarias*.

— *Clarias anguillaris* (Linnaeus, 1758)

According to TEUGELS (1986), the specimens identified *Clarias senegalensis* by CHAYTOR (1969) from river Jong, are *C. anguillaris*. TEUGELS was also able to examine specimens from Rokel river housed in the Frankfurt Museum and noticed that both populations (Jong and Rokel) should be considered as disjunct populations: both rivers are entirely situated within the rain forest while most other specimens of *C. anguillaris* are located in savannah areas.

— *Clarias buettikoferi* Steindachner, 1895

Clarias liberiensis Steindachner, 1895 in BOULENGER (1919), NICHOLS and LA MONTE (1933), SCHULTZ (1942), DAGET (1950) and CHAYTOR and WILLIAMS (1966).

Clarias bulumae Steindachner, 1895.

Clarias dorsimormoratus Ahl, 1937.

Clarias angolensis (non Steindachner) in FOWLER (1919) and SCHULTZ (1942).

— *Clarias laeviceps dialonensis* Daget, 1962

Clarias dialonensis Daget, 1962.

Specimens from coastal rivers in Sierra Leone belong to this sub-species.

— *Clarias laeviceps laeviceps* Gill, 1862

Clarias vandenhoutei Poll, 1941 in DAGET (1952; 1963).

Clarias walkeri (non Günther, 1896) in NORMAN (1932).

Clarias submarginatus (non Peters) in NORMAN (1932).

Clarias salae (non Hubrecht) in DAGET (1952; 1963).

— *Clarias salae* Hubrecht, 1881

TEUGELS *et al.* (in press) revised the species of the genus *Heterobranchus*.

— *Heterobranchus isopterus* Bleeker, 1863

— *Heterobranchus longifilis* Valenciennes, 1840

MALAPTERURIDAE

— *Malapterurus electricus* (Gmelin, 1789)

MOCHOKIDAE

— *Chiloglanis normani* Pellegrin, 1933

— *Chiloglanis occidentalis* Pellegrin, 1933

Chiloglanis niloticus waterloti Daget, 1954 in LAMBERT (1958).

— *Chiloglanis polyodon* Norman, 1932
Only known from the Bagbe river.

— *Microsynodontis polli* Lambert, 1958
Only known from the St John river.

— *Mochokiella paynei* Howes, 1980
Only known from the type locality (Kasewe Forest Reserve, Sierra Leone). A Small sized species (max. 36 mm SL) close to *Microsynodontis* and *Mochokus*.

— *Synodontis annectens* Boulenger, 1911
Known from Gambia to Jong river.

— *Synodontis ansorgii* Boulenger, 1911
Synodontis gambiensis (non Günther) in POLL (1971).
Known from Geba, Sewa and Jong basins.

— *Synodontis thysi* Poll, 1971
Described from Little Scarcies and apparently restricted between Konkouré and Jong rivers.

— *Synodontis waterloti* Daget, 1962
Apparently the only widespread species of *Synodontis* in Sierra Leone and Liberia.

CYPRINODONTIDAE

— *Aphyosemion brueningi* (Roloff, 1971)
Roloffia brueningi Roloff, 1971.

— *Aphyosemion etzeli* (Berkenkamp, 1979)
Roloffia etzeli Berkenkamp, 1979.
This species is very close to *A. geryi*.

— *Aphyosemion geryi* Lambert, 1958
Aphyosemion guineense geryi Lambert, 1958.
Roloffia geryi (Lambert, 1958).

— *Aphyosemion guineense* Daget, 1954 from Kema district (Moa river) in BERKENKAMP and ETZEL, 1979b.

— *Aphyosemion jeanpoli* (Berkenkamp and Etzel, 1979)

Roloffia jeanpoli Berkenkamp and Etzel, 1979.
Roloffia melantereon (non Fowler) in GRIMM (1974).

— *Aphyosemion liberiense* (Boulenger, 1908)
Haplochilus liberiensis Boulenger, 1908.
Roloffia liberiensis (Boulenger, 1908).
Panchax liberiensis (Boulenger, 1908) in AHL (1924).

Aphyosemion calabaricus Ahl, 1936 see RADDA (1976).

Epiplatys melantereon Fowler, 1950 see BERKENKAMP and ETZEL (1979).

Aphyosemion bertholdi (Roloff, 1965) see RADDA (1976).

Roloffia fredrodi Vandersmissen, Etzel and Berkenkamp, 1980 see WILDEKAMP (1981).

- *Aphyosemion maeseni* Poll, 1941
Roloffia maeseni (Poll, 1941) in CLAUSEN, 1967.
Aphyosemion liberiense (non Boulenger) in DAGET (1952; 1963).
A. maeseni, *A. viride* and *A. liberiense* are sibling species; they are difficult to differentiate by morphometrical characters.
- *Aphyosemion monroviae* (Roloff and Ladiges, 1972).
Roloffia monroviae Roloff and Ladiges, 1972.
Occurs mainly in Liberia.
- *Aphyosemion occidentale* Clausen, 1966
Fundulus sjoestedti (non Lönnberg) in BOULENGER (1919).
Aphyosemion sjoestedti (non Lönnberg) in CHAYTOR and WILLIAMS (1966).
Roloffia occidentalis (Clausen, 1966) in SCHEEL (1966).
Fundulopanchax occidentalis (Clausen, 1966) in PARENTI (1981).
Aphyosemion huwaldi Berkenkamp and Etsel, 1980 in ROMAND (1985).
- *Aphyosemion roloffii* Roloff, 1936
Roloffia chaytori Roloff, 1971 see RADDA (1976).
- *Aphyosemion schmitti* (Romand, 1979)
Roloffia schmitti Romand, 1979.
Restricted to eastern Liberia.
- *Aphyosemion toddi* Clausen, 1966
Aphyosemion occidentale toddi Clausen, 1966.
Roloffia occidentalis toddi (Clausen, 1966).
Restricted to lower G. C. little Scarcies.
- *Aphyosemion viride* (Ladiges and Roloff, 1973)
Roloffia viridis Ladiges and Roloff, 1973.
Present only in the north-eastern region of Liberia.
- *Aplocheilichthys kabae* Daget, 1962
Known only from the types specimens from the Kaba river, a tributary of the Little Scarcies river in Guinea.
- *Aplocheilichthys nimbaensis* (Daget, 1948)
Haplocheilichthys nimbaensis Daget, 1948 in DAGET (1952).
Aplocheilichthys macrurus (non Boulenger, 1904) in DAGET (1954).
Micropanchax nimbaensis (Daget, 1948) in HUBER (1981).
Occurs only in north-eastern Liberia.
- *Aplocheilichthys normani* Ahl, 1928
Micropanchax macrurus manni Schultz, 1942 in DAGET (1950) and FOWLER (1950) see CLAUSEN (1967).
Aplocheilichthys gambiensis Svensson, 1933 see DAGET and ILTIS (1965).
- *Aplocheilichthys schioetzi* Scheel, 1968
Aplocheilichthys monikae Berkenkamp and Etsel, 1976 see HUBER (1982).
Aplocheilichthys macrurus (Duméril, 1861) in LAMBERT (1958).
Micropanchax schioetzi (Scheel, 1968) in HUBER (1982).
Aplocheilichthys terofali Berkenkamp and Etsel, 1981.
- *Aplocheilichthys spilauchen* (Duméril, 1861)
Haplochilus spilauchen (Duméril, 1861).
Epiplatys spilauchen (Duméril, 1861) in SCHULTZ (1942), DAGET (1950) and FOWLER (1950).
Epiplatys typus Bleeker, 1863 see WILDEKAMP, ROMAND and SCHEEL (1986).
Epiplatys tschiloangensis Ahl, 1928 see HUBER (1981).
This species is restricted to brackish water.
- *Epiplatys annulatus* (Boulenger, 1915)
Haplochilus annulatus Boulenger, 1915.
Pseudepiplatys annulatus (Boulenger, 1915) in CLAUSEN (1967).
Aplocheilus annulatus (Boulenger, 1915) in RADDA (1976).
- *Epiplatys azureus* Berkenkamp and Etsel, 1983
May be a synonym of *E. olbrechtsi* which is found in the same area in eastern Liberia and presents the same color pattern.
- *Epiplatys barmoiensis* Scheel, 1968
Epiplatys bifasciatus (non Steindachner) in SCHULTZ (1942), DAGET (1950) and LAMBERT (1958).
Aplocheilus barmoiensis (Scheel, 1968) in RADDA (1976).
Epiplatys lokoensis Berkenkamp and Etsel, 1978 see ROMAND (1980).
- *Epiplatys bifasciatus* (Steindachner, 1881)
Haplochilus bifasciatus Steindachner, 1881.
Panchax bifasciatus (Steindachner, 1881) in AHL (1924).
Panchax taeniatus Pfaff, 1933 see DAGET and ILTIS (1965).
Aplocheilus bifasciatus (Steindachner, 1881) in RADDA (1976).
- *Epiplatys coccinalus* Berkenkamp and Etsel, 1982
Known only from the type locality in the Upper Sewa river.
- *Epiplatys dageli* Poll, 1953
Epiplatys chaperi (non Sauvage) in SCHULTZ (1942).
Haplochilus infra fasciatus (non Günther) in STEINDACHNER (1895).
Epiplatys sexfasciatus (non Gill) in FOWLER (1950).

- *Epiplatys fasciolatus* (Günther, 1866)
Haplochilus fasciolatus Günther, 1866.
Epiplatys sexfasciatus (non Gill) in SCHULTZ (1942) and CHAYTOR and WILLIAMS (1966).
Epiplatys sexfasciatus leonensis Ahl, 1937 see DAGET and ILTIS (1965).
Epiplatys dorsalis Mayer, 1936 see BERKENKAMP and ETZEL (1978).
Epiplatys mallocki Fowler, 1950 see SCHEEL (1968).
Epiplatys zimiensis Berkenkamp, 1977 see BÖHM (1979).
Epiplatys senegalensis (non Steindachner) in LAMBERT (1958).
Epiplatys fasciolatus tototaensis Romand, 1978.
Epiplatys fasciolatus huwaldi Berkenkamp and ETZEL, 1978 see BERKENKAMP and ETZEL (1979).
 This species is polymorphic as shown by several subspecies.

— *Epiplatys hildegardae* Berkenkamp, 1983
 Known only from the Nzérékoré region, but may be present in Liberia.

— *Epiplatys josianae* Berkenkamp and Etzel, 1983
 Known only from the type localities around Kenema in Sierra Leone.

— *Epiplatys lamottei* Daget, 1954
Epiplatys fasciolatus lamottei Daget, 1954.
 Present in northern Liberia.

— *Epiplatys njalaensis* Neumann, 1976
Aplocheilus njalaensis (Neumann, 1976) in RADDA (1976).
 Known only from the type locality around Njala in Sierra Leone.

— *Epiplatys olbrechtsi* Poll, 1941
Epiplatys fasciolatus olbrechtsi (Poll, 1941) in DAGET (1952 and 1963).
Epiplatys fasciolatus (non Günther) in DAGET and ILTIS (1965).

Epiplatys fasciolatus puetzi Berkenkamp and Etzel, 1985.
 This species is polymorphic as shown by several subspecies present in Côte-d'Ivoire.

— *Epiplatys roloffii* Romand, 1978
Epiplatys olbrechtsi (non Poll) in ROLOFF (1976).
 Restricted to the northern regions of Liberia.

— *Epiplatys ruhkopfi* Berkenkamp and Etzel, 1980
 Only known from the type locality in central Liberia.

CHANNIDAE

— *Parachanna obscura* (Günther, 1861)
Ophiocephalus obscurus Günther, 1861 in BOULENGER (1919) and DAGET (1950).

Taxonomy and distribution of the genus *Parachanna* have been discussed by BONOU and TEUGELS (1985).

CENTROPOMIDAE

— *Lates niloticus* (Linnaeus, 1758)
 Seems to occur mainly in Sierra Leone.

CICHLIDAE

— *Anomalochromis thomasi* (Boulenger, 1915)
Paratilapia thomasi Boulenger, 1915.
Pelmatochromis thomasi (Boulenger, 1915).
Hemichromis thomasi (Boulenger, 1915).
 — *Chromidotilapia guntheri* (Sauvage, 1882)
Hemichromis guntheri Sauvage, 1882.
Pelmatochromis guntheri (Sauvage, 1882).

— *Hemichromis bimaculatus* Gill, 1862
Hemichromis fugax Payne and Trewavas, 1976 see LOISELLE (1979).

Hemichromis paynei Loisel, 1979.

— *Hemichromis fasciatus* Peters, 1857

— *Pelmatochromis buettikoferi* (Steindachner, 1895)
Paratilapia büttikoferi Steindachner, 1895.

— *Pelvicachromis humilis* (Boulenger, 1916)
Pelmatochromis humilis Boulenger, 1916.

— *Pelvicachromis roloffii* (Thys van den Audenaerde, 1968)

Pelmatochromis roloffii Thys van den Audenaerde, 1968.

Pelmatochromis pulcher (non Boulenger) in BOULENGER (1916) and DAGET (1950; 1962).

Pelmatochromis buettikoferi (non Steindachner) in FOWLER (1950).

— *Sarotherodon caudomarginatus* (Boulenger, 1916)
Tilapia caudomarginata Boulenger, 1916.

— *Sarotherodon galilaeus* (Linnaeus, 1758)
Tilapia galilaea (Linnaeus, 1758).

— *Sarotherodon melanotheron leonensis* (Thys van den Audenaerde, 1971)

Tilapia leonensis Thys van den Audenaerde, 1971 see TREWAVAS (1983).

This subspecies occurs in fresh and brackish waters along the coast.

Tilapia macrocephala (partim? non Günther, 1862) in BOULENGER (1916) see TREWAVAS (1983).

It is possible that specimens identified *T. heudeloti* see AHL (1937) belong to *S. melanotheron leonensis*.

— *Sarotherodon occidentalis* (Daget, 1962)

Tilapia occidentalis Daget, 1962.
 ? *Chromis mossambicus* (non Peters) in STEINDACHNER (1895) (St Paul river and Soforeh Place, Liberia) see TREWAVAS (1983).

Tilapia galilea (partim, non Linnaeus) in FOWLER (1919) (Mt Coffee, St Paul, Liberia see TREWAVAS (1983).

Tilapia pleuromelas (non Duméril) in SCHULTZ (1942) see TREWAVAS (1983).

- ? *Chromis niloticus* (non Linnaeus) in STEINDACHNER (1895) see THYS VAN DEN AUDENAERDE (1968).
- *Sarotherodon tournieri* (Daget, 1964)
Tilapia tournieri Daget, 1964.
Trewavas (1983) distinguished two sub-species :
— *S. lounieri tournieri* (Daget, 1964) from Cavally (Côte-d'Ivoire).
— *S. lounieri liberiensis* (THYS VAN DEN AUDENAERDE, 1971) from Cess and St John rivers.
Tilapia liberiensis Thys van den Audenaerde, 1971 see TREWAVAS (1983).
- *Tilapia brevimanus* Boulenger, 1911
Tilapia savagei Fowler, 1919 in SCHULTZ (1942) and DAGET (1963) see WHITEHEAD (1962).
- *Tilapia butlikoferi* (Hubrecht, 1881)
Chromis butlikoferi Hubrecht, 1881.
- *Tilapia cessiana* Thys van den Audenaerde, 1968
Close to *T. butlikoferi*, this species occurs in river Cess or Nipoué.
- *Tilapia coffea* Thys van den Audenaerde, 1970
Described from St Paul river and close to *Tilapia walteri* occurring in the adjacent basins (St John, Cess and Cavally).
- *Tilapia guineensis* (Bleeker, 1862)
THYS VAN DEN AUDENAERDE (1968) considered that *Chromis mossambicus* Peters, 1852 mentioned by HUBRECHT (1881) and STEINDACHNER (1895) could be *T. guineensis* at least in part. That is possible too for *Tilapia melanopleura* Duméril, 1859, in DAGET (1950).
- *Tilapia joka* Thys van den Audenaerde, 1969
- *Tilapia louka* Thys van den Audenaerde, 1969
Tilapia melanopleura Duméril, 1859 in NORMAN (1932), FOWLER (1950) and SCHULTZ (1942).
Tilapia zillii (non Gervais) in SCHULTZ (1942).
- *Tilapia walteri* Thys van den Audenaerde, 1968
- *Tilapia zillii* (Gervais, 1848)
- *Tylochromis intermedius* (Boulenger, 1916)
Pelmatochromis intermedius Boulenger, 1916.
Pelmatochromis jentinki (non Steindachner) in SVENSSON (1933) see STIASSNY (1989).
- *Tylochromis jentinki* (Steindachner, 1895)
- *Tylochromis leonensis* Stiassny, 1989
Pelmatochromis intermedius (non Boulenger) partim in BOULENGER (1916; 1919) see STIASSNY (1989).

GOBIIDAE

- *Chonophorus lateristriga* (Duméril, 1861)
Gobius lateristriga Duméril, 1861.

- Gobius aeneofuscus* var. *guineensis* Peters, 1877.
Gobius guineensis Peters, 1877 in BOULENGER (1919).
Gobius (*Chonophorus*) *tajasica* (non Lichenstein, 1823) in STEINDACHNER (1895).
- *Nematogobius maindroni* (Sauvage, 1880)
Gobius maindroni Sauvage, 1880 in BOULENGER (1919).

ELEOTRIDAE

- *Eleotris daganensis* Steindachner, 1870
- *Eleotris senegalensis* Steindachner, 1870
Eleotris (*Culius*) *büttikoferi* Steindachner, 1895.
- *Eleotris vittata* Duméril, 1858
Eleotris pisonis (non Gmelin, 1789) in STEINDACHNER (1895).
Eleotris monleiri O'Snaughnessy, 1875 in AHL (1937).
- *Kribia kribensis* (Boulenger, 1907)
Eleotris kribensis Boulenger, 1907 in SCHULTZ (1942), DAGET (1950) and CHAYTOR and WILLIAMS (1966).
- *Kribia leonensis* (Boulenger, 1916)
Eleotris leonensis Boulenger, 1916 in FOWLER (1936) known only from Sierra Leone.
- *Kribia nana* (Boulenger, 1901)

ANABANTIDAE

- *Ctenopoma kingsleyae* Günther, 1896
Anabas kingsleyae (Günther, 1896) in SCHULTZ (1942) and FOWLER (1919).
Ctenopoma petherici (non Günther) in HUBRECHT (1881) and STEINDACHNER (1895).

MASTACEMBELIDAE

- The spiny eels have been reviewed by TRAVERS (*in prep.*).
- *Aethiomastacembelus liberiensis* (Boulenger, 1898)
Mastacembelus liberiensis Boulenger, 1898.
Mastacembelus marcheii (non Sauvage) in STEINDACHNER (1895).
Mastacembelus laticauda Ahl, 1937 see DAGET and ILTIS (1965).
Mastacembelus reticulatus Boulenger, 1911 see TRAVERS (*in prep.*).
- *Aethiomastacembelus nigromarginatus* (Boulenger, 1898)
— *Mastacembelus nigromarginatus* Boulenger, 1898. This species replaces *A. liberiensis* eastwards of the Cess river to the Cross. They are sympatric in Cess and Cavally systems.
- *Caecomastacembelus* sp. Travers (*in prep.*)
The genus *Caecomastacembelus* widespread in eastern and central Africa is represented in Upper

Guinea only by this species presently being described from Sierra Leone.

DISCUSSION

This paper is an up-dated review of our knowledge on freshwater fishes from main river systems in Sierra Leone and Liberia, for many of them, the upper course is located in Guinea. It forms part of a series on regional approaches for West Africa, and follows papers on Côte-d'Ivoire and western Ghana (TEUGELS *et al.*, 1988), Guinea (LÉVÊQUE *et al.*, 1989) and Togo (PAUGY and BÉNECH, 1989). A general synthesis on faunistic relationships between West African river basins will be prepared using these reviews. Meanwhile, some general comments are given herein.

According to ROBERTS (1975), rivers of Sierra Leone and Liberia are populated almost exclusively by upper guinean fishes, and the distribution of some taxa indicates "early faunistic relationships between upper guinean, lower guinean and zaïrean provinces". Without discussing how old these relationships are, this statement can be illustrated by some examples :

— some species are only recorded from upper, lower guinean and zaïrean provinces : *Mormyrus tapirus*, *Isichthys henryi*, and *Brienomyrus brachyistius* (Mormyridae) and *Notopterus afer* and *Xenomystus nigri* (Notopteridae) ;

— some genera recorded from upper Guinea are apparently also represented in lower Guinea and Zaïre. That is the case for *Doumea*, *Paramphilius*, *Microsynodontis* and the related genus *Mockochiella*, *Parailia*, *Ichthyborus* (*I. quadrilineatus* is close to *I. ornata* from Zaïre and *I. monodi* from Cameroon) and *Caecomastacembelus*.

Comparing our list of species to that of the Niger basin (LÉVÊQUE *et al.*, *in prep.*) whose upper reaches are geographically close to some of the coastal basins, only few species are found in common. The most abundant ones are : *Mormyrops anguilloides*, *Hepsetus odoe*, *Brycinus macrolepidotus*, *Brycinus nurse*, *Hydrocynus forskalii*, *Chrysichthys nigrodigitatus*, *Malapterurus electricus*, *Schilbe niloticus*, *Auchenoglanis occidentalis*, *Barbus macrops*, *Hemichromis bimaculatus* and *Tilapia zillii*.

Concerning species richness, and using the simple relationships established by DAGET and ILTIS (1965) and by HUGUENY (1989a) where species richness depends only on the catchment surface area, we often find that the predicted number of species is lower than the observed one (tab. I), especially for Sierra Leone basins from which more samples are available. To obtain a better predictive model we have to introduce the mean annual discharge, as demonstrated by HUGUENY (1989a). Unfortunately, for this area these data are unavailable for the moment. Nevertheless, as all the rivers are perennial, i.e. with a relative high mean annual discharge, it might well be that these refuge biotopes *sensu* HUGUENY (1989b) have a higher specific richness than nilo-sudan basins.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the staff of the fish sections in the Muséum national d'histoire naturelle (Paris), the Musée royal de l'Afrique centrale (Tervuren) and the British Museum (Natural History) (London) for granting facilities to work on their collections. This paper forms part of the PEDALO programme (Poisson d'eau douce de l'Afrique de l'Ouest). A mission was carried out in Sierra Leone (March 1989) with the financial support of the Onchocerciasis Control Programme (World Health Organization).

Manuscrit accepté par le Comité de rédaction le 20 août 1990.

REFERENCES

- AHL (E.), 1924. — Zur Systematik der altweltlichen Zahnkarpfen der Unterfamilie Fundulinae. *Zool. Anz.*, 60 : 49-55.
- AHL (E.), 1937. — Ueber eine kleine Fischeammlung aus Sierra Leone. *Mitt. Zool. Mus. Berl.*, 22 (2) : 239-243.
- BALARIN (J. D.), 1984a. — National reviews for aquaculture development in Africa. 2 — Liberia. *FAO Fish. Circ.* (770.2) : 45 p.
- BALARIN (J. D.), 1984b. — National reviews for aquaculture development in Africa. 3 — Sierra Leone. *FAO Fish. Circ.* (770.3) : 55 p.
- BERKENKAMP (H. O.), 1977. — *Epiplatys zimiensis* spec. nov., eine neue Hechtlingsart aus dem Ueberartenkreis *Epiplatys fasciolatus* aus Südwest Sierra Leone. *Aquarienfrend*, 6 (9) : 163-176.

- BERKENKAMP (H. O.), 1978. — Voorlopige beschrijving van *Epiplatys hildegardae* spec. nov., een nieuwe Panchax soort uit Guinea, West-Afrika. *Belgische Killivis Vereniging, Killi Kontakt*, 6 (6) : 130-135.
- BERKENKAMP (H. O.), 1979. — Description provisoire de *Roloffia etzeli* sp. nov., un nouveau Cyprinodontidae de Sierra Leone. *Association Killiphile Francophone Belge, Killi contact*, 7 (1) : 11 p. (separate).
- BERKENKAMP (H. O.) and ETZEL (V.), 1977. — Aquarienfische aus der Elfenbeinküste. 6. *Epiplatys kassiapleuensis* spec. nov., aus dem westlichen Hochland. *Aquarienfrend*, 6 (10) : 187-197.
- BERKENKAMP (H. O.) and ETZEL (V.), 1978a. — *Epiplatys lokoensis* spec. nov., eine neue Hechtlingsart des Ueberartenkreises *Epiplatys bifasciatus* (Steindachner, 1881) aus Sierra Leone. *Deutsche Killifisch Gem. J.*, 10 (9) : 152-162.
- BERKENKAMP (H. O.) and ETZEL (V.), 1978b. — *Epiplatys fasciolatus huwaldi* subspec. nov. eine neue Unterart aus Liberia. *Deutsche Killifisch Gem. J.*, 10 (11) : 191-207.
- BERKENKAMP (H. O.) and ETZEL (V.), 1979a. — Weitere Kenntnisse über den Huwald-Hechtling aus Liberia, *Epiplatys fasciolatus tototaensis* Romand, 1978. *Deutsche Killifisch Gem. J.*, 11 (8-9) : 113-117.
- BERKENKAMP (H. O.) and ETZEL (V.), 1979b. — The *Roloffia* species of Liberia, with research into the identity of *Roloffia melanireon* (Fowler, 1950) and a description of *Roloffia jeanpoli* spec. nov. *Brit. Killifish Ass.*, publ. : 15 pp.
- BERKENKAMP (H. O.) and ETZEL (V.), 1980. — *Epiplatys ruhkopf* spec. nov., eine neue Hechtlingsart aus Liberia (Pisces, Cyprinodontidae). *Deutsche Killifisch Gem. J.*, 12 (11) : 165-176.
- BERKENKAMP (H. O.) and ETZEL (V.), 1982. — *Epiplatys coccinatus* spec. nov. eine neue Hechtlingsart aus Liberia (Pisces, Cyprinodontidae). *DATZ*, 35 (7) : 251-255.
- BERKENKAMP (H. O.) and ETZEL (V.), 1983a. — *Epiplatys azureus* spec. nov., eine neue Hechtlingsart aus Liberia (Pisces, Cyprinodontidae). *DATZ*, 36 (4) : 134-139.
- BERKENKAMP (H. O.) and ETZEL (V.), 1983b. — Description de *Epiplatys josianae* spec. nov. *Association Killiphile Francophone Belge, Killi Contact*, 11 (8) : 16 pp. (separate).
- BIGORNE (R.), 1987. — Le genre *Mormyrops* (Pisces, Mormyridae) en Afrique de l'Ouest. *Rev. Hydrobiol. trop.*, 20 (2) : 145-164.
- BIGORNE (R.), 1989. — Les genres *Brienomyrus* et *Isichthys* (Pisces, Mormyridae) en Afrique de l'Ouest. *Rev. Hydrobiol. trop.*, 22 (4) : 317-338.
- BIGORNE (R.) and PAUGY (D.), 1990. — Description de *Marcusenius meronai* n. sp. (Pisces, Mormyridae) de Sierra Leone. *Ichthyol. Explor. Freshwater*, 1 (1) : 33-38.
- BOHM (O.), 1979. — Der Goldfasciolatus. *DATZ*, 32 (2) : 42-43.
- BONOU (C. A.) and TEUGELS (G. G.), 1985. — Révision systématique du genre *Parachanna* Teugels and Daget, 1984 (Pisces, Channidae). *Rev. Hydrobiol. trop.*, 18 (4) : 267-280.
- BOULENGER (G. A.), 1898. — A revision of the genera and species of fishes of the family Mormyridae. *Proc. Zool. Soc. Lond.* : 775-821.
- BOULENGER (G. A.), 1915. — Descriptions of new freshwater fishes from Sierra Leone. *Ann. Mag. nat. Hist.* (8) 15 (86) : 202-204.
- BOULENGER (G. A.), 1919. — A list of the freshwater fishes of Sierra Leone. *Ann. Mag. nat. Hist.* (9) 4 (19) : 34-36.
- BREWSTER (B.), 1986. — A review of the genus *Hydrocynus* Cuvier, 1819 (Teleostei : Characiformes). *Bull. Br. Mus. Nat. Hist. (Zool.)*, 50 (3) : 163-206.
- CHAYTOR (D.B.E.), 1969. — The hydrology and chemistry of the River Jong in Sierra Leone. *Rev. Zool. Bot. afr.*, 80 : 325-339.
- CHAYTOR (D. B. E.) and WILLIAMS (M. O.), 1966. — The freshwater fishes of the Freetown Peninsula. *Bull. IFAN*, sér. A, 28 (3) : 1041-1063.
- CLAUSEN (H. S.), 1966. — Definition of a new Cyprinodont genus and description of a "new" but well known West African Cyprinodont, with clarification of the terms "sjoestedti", *Aphyosemion sjoestedti* (Lönnerberg) and *Aphyosemion coeruleum* (Boulenger). *Rev. Zool. Bot. afr.*, 74 : 331-341.
- CLAUSEN (H. S.), 1967. — Tropical old world Cyprinodonts. *Akademisk Forlag, Copenhagen* : 64 pp.
- DAGET (J.), 1950. — Poissons d'eau douce de Sierra Leone *Notes Afr.*, 46 : 55-57.
- DAGET (J.), 1952. — La réserve naturelle intégrale du Mont Nimba. Poissons. *Mém. IFAN*, 19 : 311-334.
- DAGET (J.), 1962. — Les poissons du Fouta Dialon et de la Basse Guinée. *Mém. IFAN*, 65 : 210 pp.
- DAGET (J.), 1963. — La réserve naturelle intégrale du Mont Nimba. Poissons (2^e note). *Mém. IFAN*, 66 : 573-600.
- DAGET (J.), GOSSE (J.-P.) and THYS VAN DEN AUDENAERDE (D. F. E.), 1984. — CLOFFA 1 — Check list of the freshwater fishes of Africa. Vol. 1, MRAC, ORSTOM : 410 pp.
- DAGET (J.), GOSSE (J.-P.) and THYS VAN DEN AUDENAERDE (D. F. E.), 1986. — CLOFFA 2 — Check list of the freshwater fishes of Africa. Vol. 2, ISBN, MRAC, ORSTOM : 520 pp.
- DAGET (J.) and ILTIS (A.), 1965. — Poissons de Côte-d'Ivoire (eaux douces et saumâtres). *Mém. IFAN*, 74 : 385 pp.
- DAVEAU (S.), 1971a. — Les Monts Loma dans la dorsale guinéenne. In Le massif des Monts Loma (fasc. 1). *Mém. IFAN*, 86 : 11-23.

- DAVEAU (S.), 1971b. — Étude morphologique des Monts Loma. In *Le massif des Monts Loma* (fasc. 1). *Mém. IFAN*, 86 : 25-53.
- DAWSON (C. E.), 1981. — Notes on West African pipefishes (Syngnathidae) with description of *Enneacampus* n. gen. *Proc. Biol. Soc. Wash.*, 94 (2) : 464-478.
- DAWSON (C. E.), 1984. — Revision of the genus *Microphis* Kaup (Pisces : Syngnathidae). *Bull. Mar. Sci.*, 35 (2) : 117-181.
- DE VOS (L.), 1983. — Note on the synonyms of *Eutropius mandibularis* Günther, 1867 and *Eutropius multitaeniatulus* Pellegrin, 1913 (Pisces, Schilbeidae). *Rev. Zool. afr.*, 97 (2) : 268-287.
- DE VOS (L.), 1984. — Preliminary data of a systematic revision of the African species of the family Schilbeidae (Pisces, Siluriformes). *Rev. Zool. afr.*, 98 (2) : 424-433.
- DE VOS (L.) and LÉVÈQUE (C.), 1983. — Étude systématique et morphologique du genre *Eutropius* en Afrique de l'Ouest (Pisces, Schilbeidae). *Rev. Zool. afr.*, 97 (3) : 459-532.
- ETZEL (V.), 1977. — Killifisch-Studien in Sierra Leone. 1. Allgemeines und Killifische der Halbinsel Sierra Leone. *Deutsche Killifisch Gem. J.*, 9 (12) : 189-199.
- ETZEL (V.), 1978a. — Killifisch-Studien in Sierra Leone. 2. Die Killifische der Distrikte Port Loko und Kumbia. *Deutsche Killifisch Gem. J.*, 10 (1) : 9-20.
- ETZEL (V.), 1978b. — Killifisch-Studien in Sierra Leone. 3. Die Killifische der Distrikte Mayomba. *Deutsche Killifisch Gem. J.*, 10 (3) : 37-46.
- ETZEL (V.), 1978c. — *Roloffia roloffi* — Populationen der West Region von Sierra Leone. *Deutsche Killifisch Gem. J.*, 10 (9) : 143-152.
- ETZEL (V.) and BERKENKAMP (H. O.), 1979. — *Roloffia geryi* (Lambert, 1958). *Deutsche Killifisch Gem. J.*, 11 (6) : 81-88.
- ETZEL (V.) and BERKENKAMP (H. O.), 1980a. — Kreuzungsexperimente mit *Roloffia* populationen der West-region Sierra Leone. *Deutsche Killifisch Gem. J.*, 12 (8) : 113-127.
- ETZEL (V.) and BERKENKAMP (H. O.), 1980b. — Kreuzungsexperimente mit *Roloffia roloffi* populationen der West-region Sierra Leone. *Deutsche Killifisch Gem. J.*, 12 (9) : 137-144.
- FOWLER (H. W.), 1919. — The fishes of the U.S. Eclipse expedition to West Africa. *Proc. U.S. natn. Mus.*, 56 : 195-292.
- FOWLER (H. W.), 1936. — The marine fishes of West Africa. *Bull. Am. Mus. nat. Hist.*, 70 (2) : 607-1493.
- FOWLER (H. W.), 1950. — Some fishes from Liberia, West Africa with descriptions of two new species. *Notul. Nat. Philad.*, 225 : 8 pp.
- GÉRY (J.), 1968. — *Ladigesia roloffi*, a new genus and species of African Characoid fishes. *Trop. Fish Hobb.*, 16 (8) : 78-87.
- GOSSE (J.-P.), 1988. — Révision systématique de deux espèces du genre *Polypterus* (Pisces, Polypteridae). *Cybbium*, 12 (3) : 239-246.
- GOURENE (G.), 1988. — Révision systématique des Clupeidae d'eau douce de l'Ouest et du centre africain : morphologie, biométrie, ostéologie et zoogéographie des genres *Pellonula*, *Odaxothrissa*, *Cynothrissa*, *Poecilothrissa* et *Microthrissa*. Thèse Doc. Inst. Nat. Polytechn., Toulouse : 288 pp.
- GOURENE (G.) and TEUGELS (G. G.), 1989. — Révision systématique du genre *Microthrissa* Boulenger, 1902 des eaux douces africaines (Pisces, Clupeidae). *Rev. Hydrobiol. trop.*, 22 (2) : 129-156.
- GREENWOOD (P. H.), 1985. — The generic status and affinities of *Paralilapia thomasi* Boulenger, 1915 (Teleostei, Cichlidae). *Bull. Br. Mus. nat. Hist. (Zool.)*, 49 (2) : 257-272.
- GREENWOOD (P. H.), 1987. — The genera of pelmatochromine fishes (Teleostei, Cichlidae). A phylogenetic review. *Bull. Br. Mus. (Nat. Hist.)*, 53 (3) : 139-203.
- GRIMM (H.), 1974. — Zum problem der Unterscheidung der Gattungen *Roloffia* und *Aphyosemion*. *DATZ*, 27 (2) : 50-52.
- HOPSON (A. J.) and HOPSON (J.), 1965. — *Barbus* (Pisces, Cyprinidae) of the Volta Region. *Bull. Br. Mus. nat. Hist. (Zool.)*, 13 : 99-149.
- HOWES (G. J.), 1980. — A new catfish from Sierra Leone. *Bull. Br. Mus. (Nat. Hist.)*, 38 (3) : 165-170.
- HOWES (G. J.) and TEUGELS (G. G.), 1989. — New bariliin cyprinid fishes from West Africa with a consideration of their biogeography. *J. Nat. Hist.*, 23 : 873-902.
- HUBER (J. H.), 1981. — A review of the Cyprinodont fauna of the coastal plain in Rio Muni, Gabon, Congo, Cabinda and Zaire, with taxonomic shifts in *Aphyosemion*, *Epiplatys* and West African Procatopodins. *Brit. Killifish Ass. Publ.* : 1-46.
- HUBRECHT (A. A. W.), 1881. — On a collection of fishes from the St Paul's River, Liberia, with descriptions of three new species. *Notes Leyden Mus.*, 3 : 66-71.
- HUGUENY (B.), 1989a. — West African rivers as biogeographic islands : species richness of fish communities. *Œcologia*, 79 : 236-243.
- HUGUENY (B.), 1989b. — Étude quantitative de la biogéographie et de la structure des peuplements de poissons d'eau douce d'Afrique de l'Ouest. *Thèse Doc.*, Paris VII, 295 pp.
- JÉGU (M.) and LÉVÈQUE (C.), 1984a. — Le genre *Marcusenius* (Pisces, Mormyridae) en Afrique de l'Ouest. *Rev. Hydrobiol. trop.*, 17 (4) : 335-358.

- JÉGU (M.) and LÉVÊQUE (C.), 1984b. — Les espèces voisines et synonymes de *Labeo parvus* (Pisces, Cyprinidae) en Afrique de l'Ouest. *Cybiurn*, 8 (1) : 45-58.
- LADIGES (W.) and ROLOFF (E.), 1973. — *Roloffia viridis* spec. nov., Beschreibung einer neuen *Roloffia*-Art aus Liberia. *DATZ*, 26 (5) : 155-157.
- LAMBERT (J. G.), 1958. — Poissons siluriformes et cyprinodontiformes récoltés en Guinée Française, avec la description d'une nouvelle espèce de *Mycrosynodontis*. *Rev. Zool. Bot. afr.*, 57 (1-2) : 39-56.
- LÉVÊQUE (C.), 1983. — Le genre *Barbus* (Pisces, Cyprinidae) en Côte-d'Ivoire. *Cybiurn*, 7 (3) : 61-86.
- LÉVÊQUE (C.), 1989a. — Remarques taxinomiques sur quelques petits *Barbus* (Pisces, Cyprinidae) d'Afrique de l'Ouest (première partie). *Cybiurn*, 13 (2) : 165-180.
- LÉVÊQUE (C.), 1989b. — Remarques taxinomiques sur quelques petits *Barbus* (Pisces, Cyprinidae) d'Afrique de l'Ouest (deuxième partie). *Cybiurn*, 13 (3) : 197-212.
- LÉVÊQUE (C.) and BIGORNE (R.), 1983. — Révision des *Leptocypris* et *Raiamas* (Pisces, Cyprinidae) de l'Afrique de l'Ouest. *Rev. Hydrobiol. trop.*, 16 (4) : 373-393.
- LÉVÊQUE (C.) and BIGORNE (R.), 1985a. — Le genre *Hippopotamyrus* (Pisces, Mormyridae) en Afrique de l'Ouest, avec la description d'*Hippopotamyrus paugyi*, n. sp. *Cybiurn*, 9 (2) : 175-192.
- LÉVÊQUE (C.) and BIGORNE (R.), 1985b. — Répartition et variabilité des caractères méristiques et métriques des espèces du genre *Mormyrus* (Pisces, Mormyridae) en Afrique de l'Ouest, *Cybiurn*, 9 (4) : 325-340.
- LÉVÊQUE (C.) and BIGORNE (R.), 1987. — Caractères morphologiques et distribution de *Ichthyborus quadrilineatus* (Pellegrin, 1904) et *Phago loricatus* Günther, 1865 (Pisces, Distichodontidae) en Afrique de l'Ouest. *Rev. Hydrobiol. trop.*, 20 (1) : 49-56.
- LÉVÊQUE (C.) and GUÉGAN (J.-F.), 1990. — Les grands *Barbus* (Teleostei, Cyprinidae) d'Afrique de l'Ouest, révision systématique et parasitofaune branchiale. *Rev. Hydrobiol. trop.*, 23 (1) : 41-65.
- LÉVÊQUE (C.) and HERBINET (P.), 1982. — Caractères méristiques et biologie d'*Eutropius mentalis* dans les rivières de Côte-d'Ivoire (Pisces, Schilbeidae). *Rev. Zool. afr.*, 96 (2) : 366-392.
- LÉVÊQUE (C.) and PAUGY (D.), 1982. — Nouvelle espèce de *Barbus* (Pisces, Cyprinidae) d'Afrique de l'Ouest. *Cybiurn*, 6 (1) : 81-84.
- LÉVÊQUE (C.), PAUGY (D.) and TEUGELS (G. G.), — Annotated checklist of the freshwater fishes of the Nilo-Sudan river basins in Africa. *Rev. Hydrobiol. trop.* : In press.
- LÉVÊQUE (C.), PAUGY (D.), TEUGELS (G. G.) and ROMAND (R.), 1989. — Inventaire taxinomique et distribution des Poissons d'eau douce des bassins côtiers de Guinée et de Guinée Bissau. *Rev. Hydrobiol. trop.*, 22 (2) : 107-127.
- LÉVÊQUE (C.), TEUGELS (G. G.) and THYS VAN DEN AUDENAERDE (D. F. E.), 1987a. — Révision de quelques *Barbus* à trois taches (Pisces, Cyprinidae) d'Afrique de l'Ouest, avec la description de trois espèces nouvelles : *B. liekoroï* n. sp., *Barbus traoreï* n. sp., *Barbus trispiloides* n. sp. *Rev. Hydrobiol. trop.*, 20 (2) : 165-184.
- LÉVÊQUE (C.), TEUGELS (G. G.) and THYS VAN DEN AUDENAERDE (D. F. E.), 1988. — Description de trois nouvelles espèces de *Barbus* d'Afrique de l'Ouest. *Cybiurn*, 12 (3) : 179-187.
- LÉVÊQUE (C.), THYS VAN DEN AUDENAERDE (D. F. E.) and TRAORÉ (K.), 1987b. — Description de *Barbus parawaldroni* n. sp. (Pisces, Cyprinidae) d'Afrique occidentale. *Cybiurn* 11 (4) : 347-355.
- LOISELLE (P. V.), 1979. — A revision of the genus *Hemichromis* Peters, 1858. *Ann. Mus. r. Afr. Centr. (Zool.)*, 228 : 1-124.
- MCCARTON (B.) and PAYNE (A. I.), 1985. — ODA Tropical river fisheries management project. Midstudy report january 1985 : 77 pp. *multigr.*
- NICHOLS (J. T.) and LA MONTE (F. R.), 1933. — A new catfish, *Amphilius pictus*, and a discussion of a small Liberian collection of fishes, *Am. Mus. Novit.*, 628 : 1-3.
- NEUMANN (W.), 1976. — Ein neuer *Epiplatys* aus Sierra Leone, *Epiplatys njalaensis* spec. nov. *Aquar. u. Terrar.*, 23 (1) : 4-7.
- NORMAN (J. R.), 1932. — A collection of fishes from Sierra Leone. *Ann. Mag. nat. Hist.*, (10) 10 : 180-185.
- PARENTI (L. R.), 1981. — A phylogenetic and biographic analysis of Cyprinodontiforms fishes (Teleostei, Atherinomorpha). *Bull. Am. Mus. Nat. Hist.*, 168 (4) : 335-557.
- PAUGY (D.), 1982a. — Mise en synonymie d'*Alestes chaperi* Sauvage, 1882 avec *A. longipinnis* (Günther, 1864) (Pisces, Characidae). *Cybiurn*, 6 (3) : 75-90.
- PAUGY (D.), 1982b. — Synonymie d'*Alestes rutilus* Blgr, 1916 avec *A. macrolepidotus* (Val., 1849). Biologie et variabilité morphologique. *Rev. Zool. afr.*, 96 (2) : 286-328.
- PAUGY (D.), 1986. — Révision systématique des *Alestes* et *Brycinus* africains (Pisces, Characidae). *Études et Thèses, ORSTOM*, Paris : 295 pp.
- PAUGY (D.), 1990. — Note à propos des Petersiini (Teleostei, Characidae) d'Afrique occidentale. *Ichth. Explor. Freshwaters*, 1 (1) : 75-84.
- PAUGY (D.) and BÉNECH (V.), 1989. — Les Poissons d'eau douce des bassins côtiers du Togo. *Rev. Hydrobiol. trop.*, 22 (4) : 295-316.
- PAUGY (D.) and GUÉGAN (J.-F.), 1989. — Note à propos de trois espèces d'*Hydrocynus* (Pisces, Characidae) du bassin du Niger suivie de la réhabilitation de l'espèce *Hydrocynus vittatus* (Castelnau, 1861). *Rev. Hydrobiol. trop.*, 22 (1) : 63-69.

- PAYNE (A. I.) and Mc CARTON (B.), 1983. — Assessment of the fishery potential of the Bumbuna falls hydroelectric project. Report : 17 p. *multigr.*
- PAYNE (A. I.) and TREWAVAS (E.), 1976. — A new species of *Hemichromis* (Pisces, Cichlidae) of Sierra Leone and Liberia. *Bull. Br. Mus. (Nat. Hist.) Zool.*, 30 (5) : 159-168.
- PELLEGRIN (J.), 1921. — Poissons de Guinée française rapportés par M. P. Chabanaud. *Bull. Mus. natn. Hist. nat.*, Paris, 27 (6) : 404-405.
- POLL (M.), 1971. — Révision des *Synodontis* africains (famille Mochocidae). *Anns. Mus. r. afr. Centr.*, sér. in 8°, Sci. Zool., 191 : 497 pp.
- RADDA (A. C.), 1976. — Die Cyprinodontiden Fauna von Sierra Leone. *Aquaria*, 23 : 137-149.
- REID (Mc G. G.), 1985. — A revision of African Species of *Labeo* (Pisces, Cyprinidae). *Theses Zoologicae*, vol. 6 : 322 pp.
- RISCH (L.), 1981. — Note sur la réhabilitation de *Chrysichthys maurus* (Cuvier et Valenciennes, 1939) (Pisces, Bagridae). *Rev. Zool. afr.*, 95 (2) : 409-416.
- RISCH (L.), 1986. — Het genus *Chrysichthys* Bleeker, 1858 en aanverwante genera (Pisces, Siluriformes, Bagridae). Thèse de doctorat d'État, Université Catholique de Louvain (K.U.L.) : 506 pp.
- RISCH (L.), 1987. — Description of four new Bagrid catfishes from Africa (Siluriformes : Bagridae). *Cybium*, 11 (1) : 21-38.
- RISCH (L.) and THYS VAN DEN AUDENAERDE (D.), 1985. — Nouvelle description, distribution zoogéographique et affinités de *Chrysichthys johnelsi* Daget, 1959 (Pisces, Bagridae). *Cybium*, 9 (3) : 243-254.
- ROBERTS (T. A.), 1975. — Geographical distribution of african freshwater fishes. *Zoological Journal of the Linnean Society*, 57 : 249-319.
- ROLOFF (E.), 1965. — *Aphyosemion bertholdi* spec. nov., eine neue *Aphyosemion* Art aus Sierra Leone. *DATZ*, 18 (12) : 362-364.
- ROLOFF (E.), 1971a. — *Roloffia chaytori* spec. nov., Beschreibung einer neuen *Roloffia* Art aus Sierra Leone. *DATZ*, 24 (6) : 182-184.
- ROLOFF (E.), 1971b. — *Roloffia brueningi* spec. nov., Beschreibung einer neuen *Roloffia* Art aus Sierra Leone. *DATZ*, 24 (9) : 285-287.
- ROLOFF (E.), 1976. — *Epiplatys njalaensis* Neumann, 1976. *DATZ*, 29 (4) : 122-124.
- ROLOFF (E.) and LADIGES (W.), 1972. — *Roloffia monroviae* spec. nov., Beschreibung einer neuen *Roloffia* Art aus Liberia. *DATZ*, 25 (9) : 299-301.
- ROMAND (R.), 1978a. — Description d'un nouveau Cyprinodontidae du Liberia, *Epiplatys fasciolatus tototaensis* n. ssp. *Cybium*, 3 (4) : 43-50.
- ROMAND (R.), 1978b. — A new *Epiplatys* from northern Liberia. *Rev. Zool. afr.*, 92 (4) : 976-984.
- ROMAND (R.), 1979. — Vorläufige Beschreibung von *Roloffia schmitti* spec. nov., einem neuen Killifisch aus Liberia. *DATZ*, 32 (9) : 299-300.
- ROMAND (R.), 1980. — Comments on *Epiplatys lokoensis* Berkenkamp & Etzel (1978) from Sierra Leone (Pisces, Cyprinodontidae). *Rev. Zool. afr.*, 94 (3) : 591-599.
- ROMAND (R.), 1985. — Similarité génétique entre deux espèces d'*Aphyosemion* de Sierra Leone (Pisces, Cyprinodontidae). Proposition de synonymie entre *A. occidentalis* Clausen, 1966 et *A. huwaldi* (Berkenkamp & Etzel, 1980). *Rev. Zool. afr.*, 99 : 177-183.
- ROMAND (R.), 1986. — A study of *Aphyosemion schmitti* (Romand, 1979) and a survey of the *Aphyosemion* of Liberia (Pisces, Cyprinodontidae). *Zool. J. Linn. Soc.*, 87 : 215-234.
- SCHEEL (J. J.), 1966. — Taxonomic studies of African and Asian tooth-carps (Rivulinae) based on chromosome numbers. haemoglobin patterns, some morphological traits and crossing experiments. *Vidensk. Meddr. dansk. naturh. Foren.*, 129 : 123-148.
- SCHEEL (J. J.), 1968. — Rivulins of the old world. *TFH Publications*, New Jersey : 480 pp.
- SCHULTZ (L. P.), 1942. — The freshwater fishes of Liberia. *Prov. US natn. Mus.*, 92 (3152) : 301-348.
- SKELTON (P. H.), 1984. — A systematic revision of species of the catfish genus *Amphilius* (Siluroidei, Amphiliidae) from eastern southern Africa. *Ann. Cape Prov. Mus. (nat. Hist.)*, 16 (3) : 41-71.
- SKELTON (P. H.), 1989. — Description of two new species of West African Amphiliid catfish (Siluroidei, Amphiliidae). *J. L. B. Smith Inst. Ichthyol., Spec. Publ.*, 48 : 1-12.
- STEINDACHNER (F.), 1895. — Die Fische Liberia's. *Notes Leyden Mus.*, 16, 96 pp.
- STIASSNY (M. L. J.), 1989. — A taxonomic revision of the African genus *Tylochromis* (Labroidei, Cichlidae); with notes on the anatomy and relationships of the group. *Anns Mus. r. Afr. cent.*, Sci. Zool., 258 : 161 pp.
- SVENSSON (G. S. O.), 1933. — Fresh-water fishes from the Gambia river (British West Africa). Results of the Swedish expedition 1931. *K. svenska Vetensk. Akad. Handl.*, 12 (3) : 1-102.
- TEUGELS (G. G.), 1981. — Notes on the status and synonyms of *Clarias laeiceps* Gill, 1862 (Pisces, Clariidae). *Rev. Zool. afr.*, 95 (2) : 359-370.
- TEUGELS (G. G.), 1982. — A systematic outline of the African species of the genus *Clarias* (Pisces, Clariidae), with an annotated bibliography. *Anns Mus. r. Afr. Centr.*, 236 : 249 pp.

- TEUGELS (G. G.), 1986. — A systematic revision of the African species of the genus *Clarias* (Pisces, Clariidae). *Anns Mus. r. Afr. Centr.*, 247 : 199 pp.
- TEUGELS (G. G.), DENAYER (B.) and LEGENDRE (M.). — A systematic revision of the African catfish genus *Helobranchius* (Pisces, Clariidae). *Zool. Journ. Linn. Soc.* : (in press.).
- TEUGELS (G. G.), LÉVÈQUE (C.), PAUGY (D.) and TRAORÉ (K.), 1988. — État des connaissances sur la faune ichthyologique des bassins côtiers de Côte-d'Ivoire et de l'Ouest du Ghana. *Rev. Hydrobiol. trop.*, 21 (3) : 221-237.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1968a. — Description of a new *Pelmatochromis* (Pisces, Cichlidae) from Sierra Leone. *Rev. Zool. Bot. afr.*, 77 (3-4) : 335-345.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1968b. — A preliminary contribution to a systematic revision of the genus *Pelmatochromis* Hubrecht *sensu lato* (Pisces, Cichlidae). *Rev. Zool. Bot. afr.*, 77 (3-4) : 349-391.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1968c. — Description of *Tilapia cessiona* sp. nov. with some remarks on *Tilapia (Heterotilapia) buttikoferi* (Hubrecht, 1881) (Pisces, Cichlidae). *Rev. Zool. Bot. afr.*, 78 (1-2) : 183-196.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1968d. — Description de *Tilapia walleri* sp. nov. (Pisces, Cichlidae) de la rivière Cavally (Afrique Occidentale). *Rev. Zool. Bot. afr.*, 78 (3-4) : 374-379.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1969a. — An annotated bibliography of *Tilapia* (Pisces, Cichlidae). *MRAC Terouren (Doc. Zool.)*, 14 : 450 pp.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1969b. — Description of *Tilapia louka* sp. nov. from Sierra Leone, and some remarks on *Tilapia rheophila* Daget, 1962 (Pisces, Cichlidae). *Rev. Zool. Bot. afr.*, 79 (1-2) : 82-96.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1969c. — Description of a small new *Tilapia* (Pisces, Cichlidae) from Sierra Leone. *Rev. Zool. Bot. afr.*, 80 (1-2) : 157-165.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1969d. — Description of a new genus and species of Clupeoid fish from Sierra Leone. *Rev. Zool. Bot. afr.*, 80 (3-4) : 385-390.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1970. — Description of a new *Tilapia* (Pisces, Cichlidae) from St. Paul River, Liberia. *Rev. Zool. Bot. afr.*, 81 (1-2) : 133-140.
- THYS VAN DEN AUDENAERDE (D. F. E.), 1974. — Description d'une nouvelle espèce d'*Alestes* de la rivière Cess (Côte-d'Ivoire et Liberia) (Pisces, Characidae). *Rev. Zool. afr.*, 88 (1) : 143-147.
- TRAVERS (R. A.), 1984a. — A review of the Mastacembeloidei, a sub-order of synbranchiform teleost fishes. Part I : Anatomical descriptions. *Bull. Brit. Mus. nat. Hist. (Zool.)*, 46 : 1-133.
- TRAVERS (R. A.), 1984b. — A review of the Mastacembeloidei, a sub-order of synbranchiform teleost fishes. Part II : Phylogenetic analyses. *Bull. Brit. Mus. (Nat. Hist. Zool.)*, 47 : 83-150.
- TRAVERS (R. A.). — A taxonomic revision of the African mastacembelid spiny eel genus *Caecomastacembelus* Poll, 1958 (Mastacembelidae; Mastacembeloidei; Synbranchiformes) with the description of two new species : (in prep.).
- TRAVERS (R. A.). — A taxonomic revision of the new African mastacembelid spiny eel genus *Aethiomastacembelus* gen. nov. (Mastacembelidae; Mastacembeloidei; Synbranchiformes) with the description of four new species : (in prep.).
- TREWAVAS (E.), 1974. — The freshwater fishes of Rivers Mungo and Meme and Lakes Kotto, Mboandong and Soden, west Cameroon. *Bull. Br. Mus. nat. Hist. (Zool.)*, 26 (5) : 331-419.
- TREWAVAS (E.), 1983. — Tilapiine fishes of the genera *Sarotherodon*, *Oreochromis* and *Danakilia*. *British Museum (Nat. Hist.)*, London : 583 pp.
- VAN DEN NIEUWENHUIZEN (A.), 1972. — Wer das Kleine nicht ehrt, ist das Grosse nicht wert. *DATZ*, 25 (6) : 181-185.
- VANDERSMISSEN (J. P.), 1977a. — *Roloffia melantereon* (Fowler, 1950). Distribution — Ecologie — Essais de redescription. *Association Killiphile Francophone Belge, Killi Contact*, suppl. : 9 pp.
- VANDERSMISSEN (J. P.), 1977b. — Élevage de *Roloffia melantereon*. *Association Killiphile Francophone Belge, Killi Contact*, 5 (6) : 93.
- VANDERSMISSEN (J. P.), ETZEL (V.) and BERKENKAMP (H. O.), 1980. — Description de *Roloffia fredrodi* spec. nov., un nouveau *Cyprinodontidae* de Sierra Leone (Pisces, Cyprinodontidae). *Association Killiphile Francophone Belge, Killi Contact* separate. Dec. : 20 pp.
- WHITEHEAD (P. J. P.), 1962. — The life history and breeding habits of the African Cichlid fish *Tilapia mariae* and the status of *T. meeki*. *Proc. Zool. Soc. Lond.*, 139 (4) : 535-543.
- WHITEHEAD (P. J. P.), 1986. — FAO Species Catalogue. 7. Clupeoid fishes of the world. An annotated and illustrated catalogue of the herrings, sardines, pilchards, sprats, shads, anchovies and wolf-herring. Part I — Chirocentridae, Clupeidae and Pristigasteriade. *FAO Fish. Synop.*, 125, 7 (1) : 303 pp.
- WILDEKAMP (R. H.), 1981. — Killi-Vissen. Zuidgroep B. V. Best : 192 pp.

- WILDEKAMP (R. H.), ROMAND (R.) and SCHEEL (J. J.), 1986. — Cyprinodontidae : 165-276. In CLOFFA 2 — Check list of the freshwater fishes of Africa. Vol. 2, Daget (J.), Gosse (J.-P.) and Thys van den Audenaerde (D. F. E.) eds, ISBN, MRAC, ORSTOM : 520 pp.
- WILSON (M. J.) and LOISELLE (P. V.), 1980. — *Hemichromis thomasi* (Boulenger, 1915). Cichlid index 4 (5) : 1-2. In *Buntbarsche Bulletin (J. Amer. Cichlid Assn.)* n° 78.
- WRIGHT (R. C.), 1982. — Seasonal variations in water quality of a West African river (River Jong in Sierra Leone). *Rev. Hydrobiol. trop.*, 15 (3) : 193-199.
- WRIGHT (R. C.), 1985. — The seasonality of water quality in the drainage basin of a tropical river (R. Jong in Sierra Leone). *Rev. Hydrobiol. trop.*, 18 (3) : 177-181.