Fish fauna survey on the Upper Maroni (French Guyana) between 2000 and 2002 with some ecological considerations

by

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Abstract. – This paper presents data collected in the Upper Maroni, French Guiana during 5 field missions from 2000 to 2002. A total of 123 known species, classified into 34 families, was captured. Fish communities sampled vary during the year depending on the season. On a daily cycle, fish composition also clearly varies, with a predominance of Siluriformes and Gymnotiformes during the night. Our results give a historical overview of the fish fauna in Upper Maroni 20 years ago. At this time, threatened fishes were already recorded due to overfishing and in certain areas, habitat alteration (turbidity and pollution).

Résumé. – Données préliminaires recueillies dans le Haut-Maroni, en Guyane française, entre 2000 à 2002.

Ce document présente les données préliminaires recueillies dans le Haut-Maroni, en Guyane française lors de 5 missions entre 2000 à 2002. Un total de 123 espèces connues, réparties en 34 familles, a été capturé. Les communautés de poissons varient au cours de l'année selon la saison. Sur un cycle quotidien aussi les variations sont claires dans les compositions spécifiques, avec une prédominance de Siluriformes et Gymnotiformes pendant la nuit. Ces résultats donnent des informations historiques de la faune ichtyologique du Haut Maroni il y a 20 ans. Des menaces sont déjà enregistrées comme la surpêche et, dans certains endroits, des dommages sur les habitats (pollution et turbidité).

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The fish fauna of The French Guiana is rich with 416 species of fresh and brackish water fishes (Keith *et al*., 2000; Le Bail *et al*., 2000, 2012). This richness is notably higher than in the two main neighbouring "Guianas" (Surinam and Guiana) (Vari and Ferraris, 2009), which might also reflect greater survey efforts in French Guiana. The Maroni watershed harbors the most diversity within French Guiana, with over 240 species. An analysis of the various inventory works also shows that this specific richness is also greater than in other large Neotropical river (Keith *et al*., 2004). Another peculiarity of the Maroni ichthyofauna is the strong degree of endemism.

The fish fauna of French Guiana is now quite well known in its major features, but the upper reaches of the rivers still require further investigations. With this aim in mind, we surveyed the composition of the fish fauna in several stations along the Upper Maroni during 5 assignments held between 2000 to 2002, in both dry and wet seasons. Since the Maroni waters have suffered great modifications in the past decades, notably due to anthropogenic pressures from the goldrush, we deemed important to publish these historical data with a short analysis of the fish diversity and how it varies based on campaign, season, and sampling methods.

MATERIAL & METHOD

Site information

The study took place near the village of Antecume Pata, at the confluence of the Litany and Marouini rivers, several hundreds of kilometres upstream of the mouth of Maroni River (Fig. 1). Three sites were chosen around Antecume Pata (Fig. 2; Tab. I). Each one was selected in order to vary habitats, hydrology and proximity of rapids. Samplings were also made upstream of Antecume Pata in a location with reduced human impact comparison (Fig. 2 and Tab. I).

Sampling methods

Five campaigns were conducted between 2001 and 2002 (Mission 1 to Mission 5) (Tab. II). These campaigns overlap the different hydrological conditions found in this area (Fig. 3). A set of gillnets of 14, 22, 28, 35, 40, 50 and 55 mm mesh size, of 10 m length 1.50 m height, sinking nets, were used for standardized sampling. Seven nets were set from 9:00 AM to 4:00 PM during the day and from 5:00 PM to 7:00 AM overnight. Additionally, seines and handnets were used at the beginning and the end of the day. Fisheries were performed consecutively at each site, starting with the noc-

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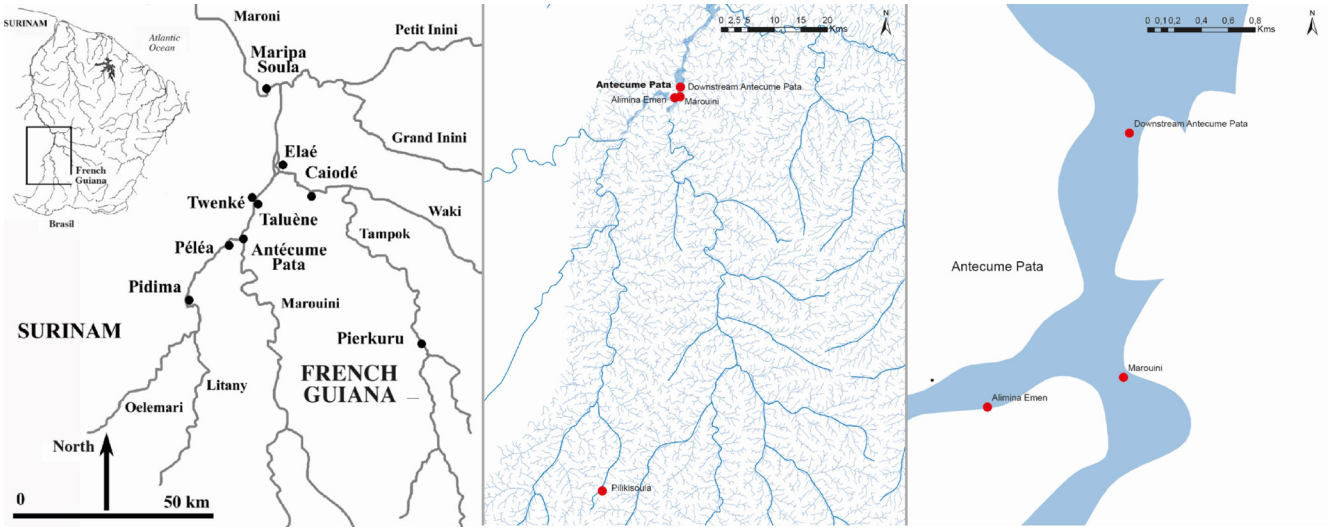

Figure 1. – Maps of the region of Antecume Pata and location of the 3 sites around Antecume Pata and the site upstream (Pilikisoula), from left to right: location of the sites on a geographical map, on the hydrographical map, and detail on the location of the sites at Antécume Pata (© Google – Image Landat / Copernicus).

Figure 2. – Photography of sites around Antecume pata (left: high level, right: low level).

turnal phase. For the different comparisons, we mainly use the standardized data collected by gillnets.

Fish processing

The captured specimens were put into zip plastic bags by fishing gear and by time of collection. A bag therefore corresponds to a fishing event. A label was placed in each bag and reproduced with a marker on the sachet itself and includes: (i) name of the station; (ii) date of the collection day; (iii) time of collection and (iv) fishing gear. After capture, the specimens were sacrificed and kept cold in ice. Afterwards, specimens were fixed in 10% buffered formaldehyde then later transferred to 80-85% ethanol after rinsing in water. All the specimens are deposited in the National Museum of Natural History (MNHN), Paris under the collector name "Fermon" and "French Guiana". Specimens were sorted and identified at the laboratory using a dissection microscope and calipers were used for taking morphometric measurements.

Table I. – Location of the sampling sites.

Location	Site	Latitude	Longitude
Sites around Antecume Pata	Alimina Emen	3.2893	–54.0771
	Marouini	3.2913	–54.0680
	Downstream Antecume Pata	3.3077	–54.0676
Upstream Antecume Pata	Pilikisoula	2.6097	–54.1769

Table II. – Campaigns of sampling: date, season and water level.

Name	Date	Season	Water level
Mission 1	Mar.-Apr. 2001	Beginning of rainy season	High level
Mission 2	Jun. 2001	End of rainy season	High level
Mission 3	Mid-Dec. 2001	Dry season	Low level
Mission 4	Mar. 2002	Beginning of rainy season	High level
Mission 5	Oct./Nov. 2002	Dry season	Low level

Data analysis

In order to compare the different results of the catches, we calculated CPUE (Catch per Unit Effort) as the number of fish caught at one site with all 7 nets during one night

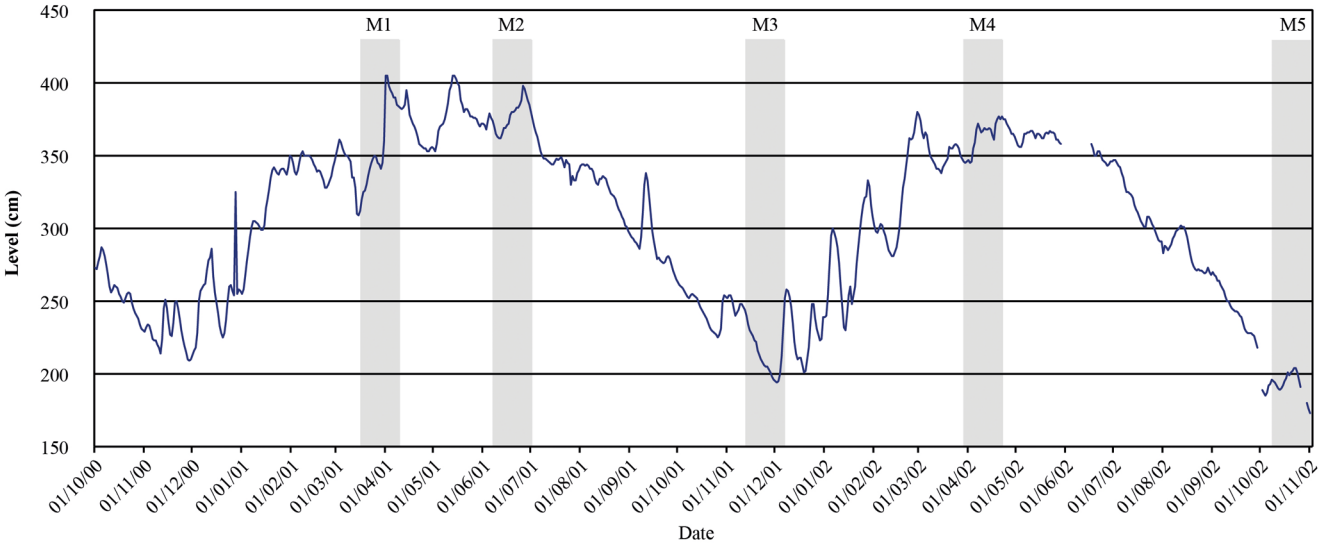

Figure 3. – Water level at Antecume Pata (A. Cognat data) with sampling assignments indicated 51 – M5).

and day session. Results are reported for a water column of 1.50 m of nets. The CPUE is only calculated for gillnet catches. For comparing with data collected at the location upstream (Pilikisoula), we split the team in two groups: both teams sampled on the same day using the same fishing protocols at the different locations.

Table III. – Numbers of taxonomic levels found for fishes from the Maroni River.

	Orders	Families	Genera	Species
Numbers known for the Maroni River	11	39	143	233
Numbers known for the Upper Maroni	9	33	114	172
Numbers caught during the campaigns	9	34	97	123
Numbers caught by gillnets	6	23	52	68

RESULTS

Catches composition and specific richness

The fish fauna of the Maroni as reported in the literature consists of 233 described species in 39 families (Tabs III-IV; Ann. 2). In the Upper Maroni upstream the town of Maripasoula, 172 in 33 families are recorded. Our collecting yielded 123 species in 34 families. One species of Trichomycteridae identified as *Ituglanis nebulosus* had not previously been collected in the area. Before this study, several species were only known from this area by a small number of specimens. These collections from diverse sites increased their representation. In the case of species of Trichomycteridae (*Ituglanis nebulosus*), more than twenty

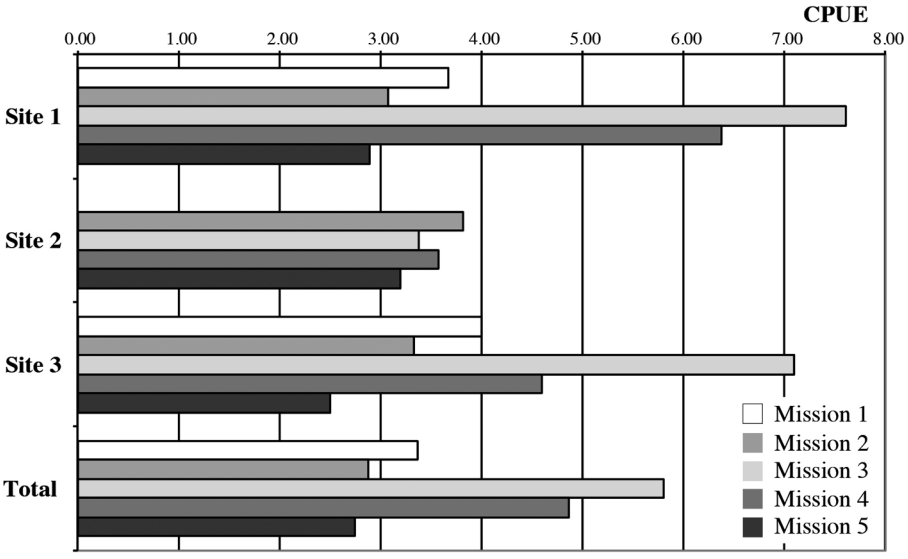

Figure 4. – Catch Per Unit Effort (CPUE) for each site.

specimens were taken to the beach seine nearby the island of Antecume Pata. This applies also to the Gymnotiformes *Distocyclus guchereauae* Meunier, Jégu & Keith, 2014, *Sternopygus macrurus* (Bloch & Schneider, 1801), and *Archolaemus blax* Korringa, 1970.

Among the 123 species sampled, a total of 68 known species, divided into 23 families, were captured in gillnets for 1534 specimens (Tabs II-IV; Ann. 2). Ostariophysan fishes predominate with over 80% belonging to the orders Characiformes, Siluriformes and Gymnotiformes, taken together. The other important order collected was the Cichliformes, with about 7% of the species collected. The order most represented in terms of specimens and species was Characiformes (37 species, 54%), including Characidae with 11 species (16.2%), followed by Serrasalmidae with 9 species (13.2%). Next were the Siluriformes (27.9%), mainly through the presence of the "fish-rock", the Loricariidae, with 8 species (11.8%). It must be noted that certain species formerly identified in the area were not captured in each campaign (Tab. IV) while other species, including commonly caught characiforms, were also regularly caught by other fishing gears.

Table IV. – Number of genera and species known by family from the Maroni River, from the Maroni upstream Maripasoula (Upper Maroni) and caught during our field campaigns. Fam = Family; Gen = Genera; Sp = Species; number in brackets means caught by gillnets. 0 = not found; 1 = found.

Order	Family	Maroni			Upper Maroni			Our study		
		Fam	Gen	Sp	Fam	Gen	Sp	Fam	Gen	Sp
Rajiformes	Potamotrygonidae		1	2		1	2		1 (1)	2 (1)
Clupeiformes	Engraulidae		3	3		1	1		1 (0)	1 (0)
Characiformes		14	58	108	14	50	85	14 (10)	42 (27)	60 (37)
	Acestrorhynchidae		1	2		1	1		1 (1)	1 (1)
	Anostomidae		3	11		3	9		3 (2)	8 (6)
	Characidae		23	49		17	35		15 (9)	21 (11)
	Chilodontidae		1	1		1	1		1 (1)	1 (1)
	Crenuchidae		5	7		3	4		3 (0)	3 (0)
	Curimatidae		4	6		4	5		1 (1)	1 (1)
	Cynodontidae		1	2		1	2		1 (1)	1 (1)
	Erythrinidae		3	4		3	4		3 (2)	3 (2)
	Gasteropelecidae		2	2		2	2		1 (0)	1 (0)
	Hemiodontidae		3	4		3	4		2 (2)	3 (3)
	Lebiasinidae		3	5		3	5		2 (0)	4 (0)
	Parodontidae		1	1		1	1		1 (0)	1 (0)
	Prochilodontidae		2	3		2	2		2 (2)	2 (2)
	Serrasalmidae		6	11		6	10		6 (6)	10 (9)
Siluriformes		10	50	77	8	36	53	9 (7)	33 (16)	37 (19)
	Aspredinidae		1	2		1	2		1 (0)	1 (0)
	Auchenipteridae		6	9		3	4		3 (2)	4 (3)
	Callichthyidae		4	7		2	3		2 (0)	2 (0)
	Cetopsidae		2	2		0	0		0	0
	Doradidae		2	3		2	3		2 (2)	3 (3)
	Heptapteridae		6	14		5	11		3 (1)	6 (2)
	Loricariidae		17	27		15	21		14 (7)	15 (8)
	Pimelodidae		5	6		5	6		2 (2)	2 (2)
	Pseudopimelodidae		4	4		3	3		3 (1)	3 (1)
	Trichomycteridae		2	3		0	0		1 (0)	1 (0)
Gymnotiformes		5	14	16	5	13	14	5 (3)	11 (4)	11 (4)
	Apteronotidae		3	3		3	3		3 (0)	3 (0)
	Gymnotidae		2	3		2	3		2 (1)	2 (1)
	Hypopomidae		3	3		2	2		1 (0)	1 (0)
	Rhamphichthyidae		1	1		1	1		1 (1)	1 (1)
	Sternopygidae		5	6		5	5		4 (2)	4 (2)
Cyprinodontiformes		3	4	8	1	1	3	1 (0)	1 (0)	2 (0)
	Anablepidae		1	1		0	0		0	0
	Poeciliidae		2	2		0	0		0	0
	Rivulidae		1	5		1	3		1 (0)	2 (0)
Beloniformes	Belonidae		1	1		0	0		0	0
Synbranchiformes	Synbranchidae		1	1		1	1		1 (0)	1 (0)
Cichliformes	Cichlidae		8	14		8	11		5 (3)	7 (5)
Perciformes	Sciaenidae		2	2		2	2		2 (2)	2 (2)
Pleuronectiformes	Achiridae		1	1		0	0		0	0
Total		39	143	233	33	114	172	34 (23)	97 (52)	123 (68)
Total number of orders		11			9			9 (6)		

Some ecological consideration

Seasonal variation in CPUE

The total number of fishes caught was weighted by the number of nets and number of fishing days for the calculation of catch per unit effort (CPUE). Figure 4 presents the total CPUE versus sampling sites and sampling missions in the three sites around Antecume Pata. CPUE was higher during the last two missions in dry season, likely due to the greater concentration of fishes in a lower volume of water. Moreover, we note that the CPUE of Loricariidae was substantially higher in dry seasons, and exceeded the CPUE of Serrasalmidae, which was otherwise higher (Fig. 5). The Gymnotiformes, almost absent in high-water fisheries, were mainly found during the dry season and low waters.

Moreover, the CPUE at site 2 (Marouini) was generally lower. It is actually located just in front of Antecume Pata and of easy access; the number of nets set by Amerindians fishermen there was usually relatively high.

Diurnal variation in CPUE

In total, gillnet catches yielded 672 specimens belonging to 57 species; 34 species were caught during daylight hours (8 exclusively during daytime), 49 at night (23 exclusively at night), and 26 were caught both night and day. Catfish (Siluriformes) and Gymnotiformes were largely collected only at night (Fig. 6). The Serrasalminae were caught both night and day.

Impact of the location nearby Antecume Pata vs. upstream

Two 24-hour samplings (over the course of 3 days) were performed at the same time at Antecume Pata and upstream (Fig. 2). The nets used were set exactly at the same time and in similar habitats for an identical fishing schedule. The results are presented in figure 7. Both the species richness and the diversity differ. For example, *Eigenmannia virescens* (Valenciennes, 1836) were captured only around Antecume Pata, while the Serrasalminae *Myleus rhomboidalis* (Cuvier, 1818), *Myloplus ternetzi* (Norman, 1929) and *M. planquettei* Jégu, Keith & Le Bail, 2003 and the *Leporinus* spp. were captured almost exclusively upstream. The overall weight of the specimens is also clearly different and the fish caught upstream were generally much larger than those caught near Antecume Pata. There is a factor 10 in weight between fisheries carried out upstream and those conducted in the region of Antecume Pata. The number of catches is also largest upstream.

CONCLUSIVE DISCUSSION

The Upper Maroni exhibits a diverse ichthyofauna with a remarkable range of variations in the species composition according to the season, habitat and other water constraints. These results of high specific richness are of the same order as those observed in other rivers of Guiana, such as the Ara-

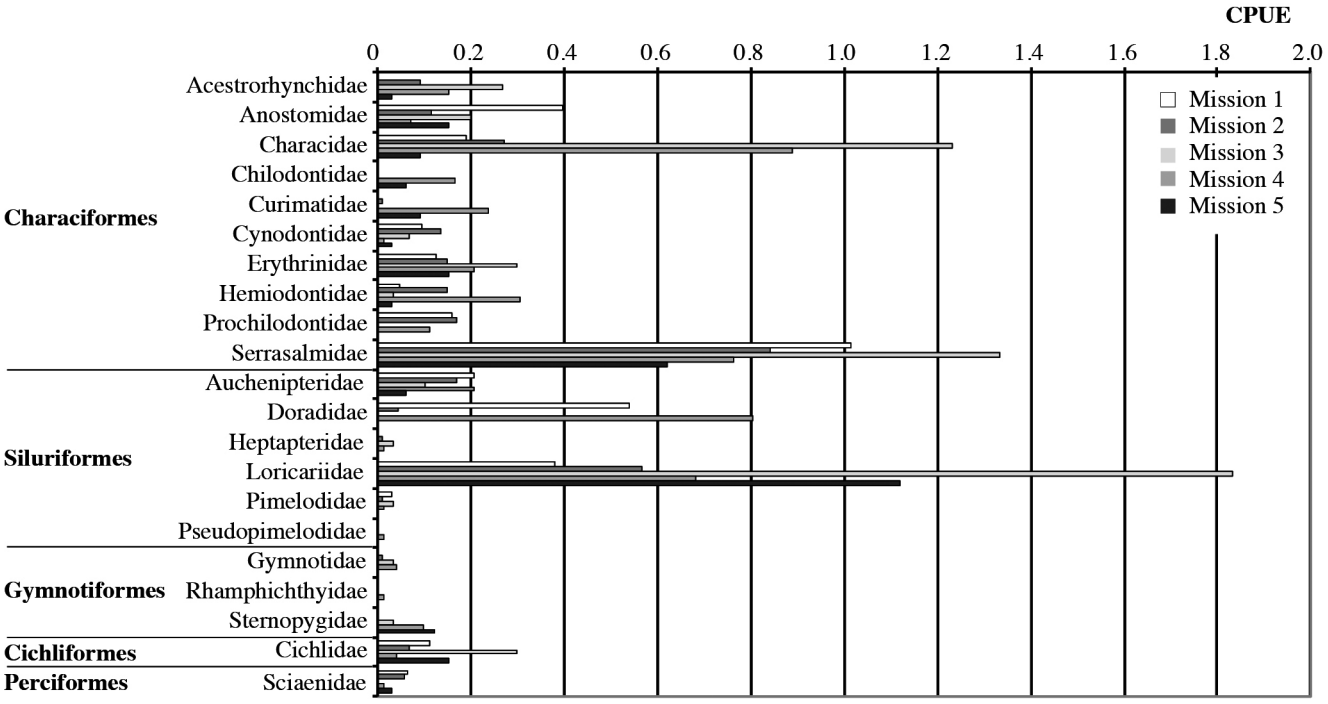

Figure 5. – Catch Per Unit Effort (CPUE) for families for each mission.

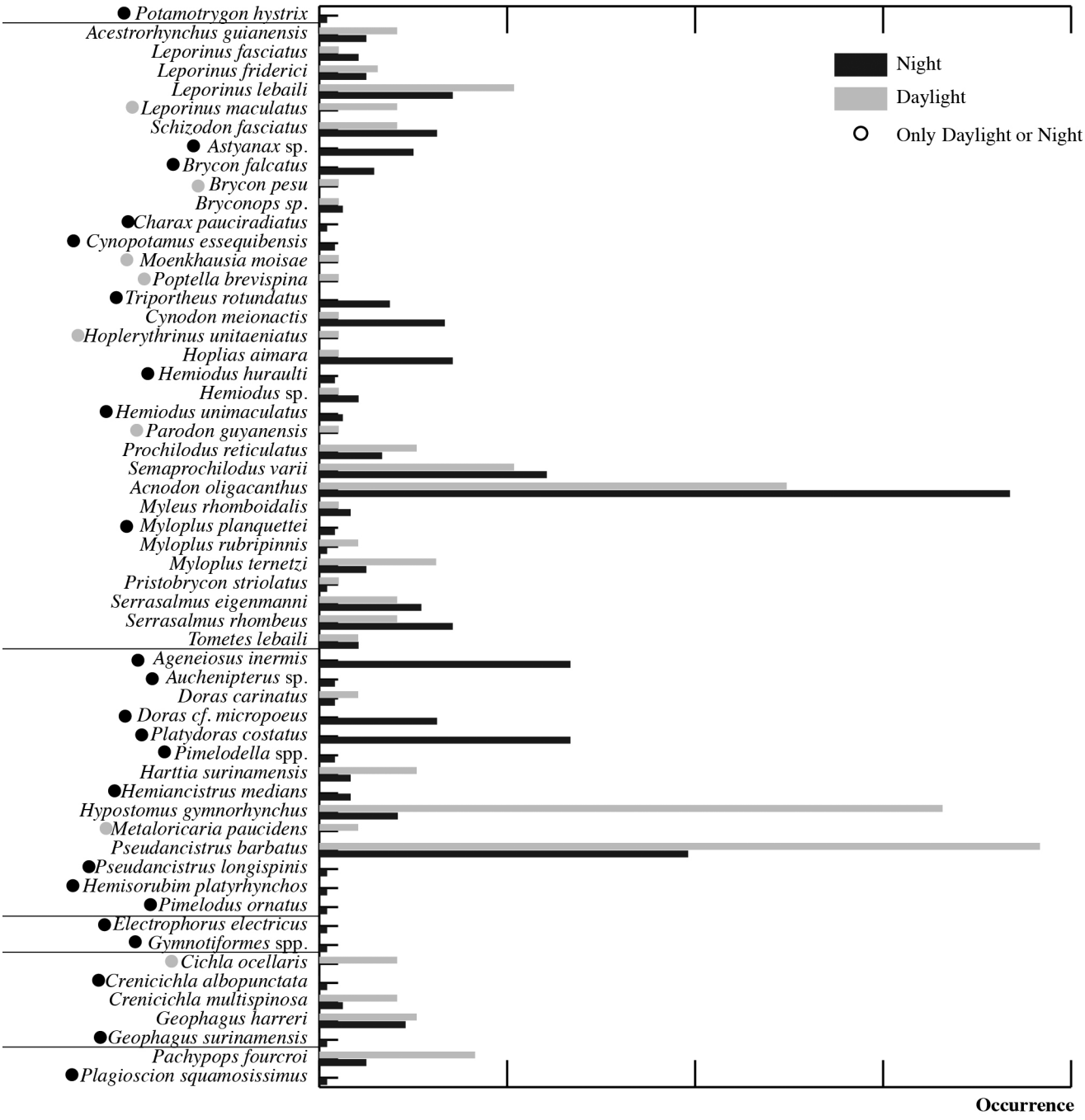

Figure 6. – Specific composition between Day and Night catches.

taye tributary of the Approuague (Boujard *et al*., 1997; Meunier and Boujard, 2001).

Moreover, the spatiotemporal distribution of species is strongly structured at habitat and seasonal scale. The fishes might also conduct longitudinal migrations in rivers or leave the main bed during the rainy season to reach the undergrowth or flooded creeks to feed or reproduce. For examples, *Tometes lebaili* Jégu, Keith & Belmont-Jégu, 2002 adults were found almost exclusively near rapids while juveniles were found in the rainforest during the flooding period (Fermon, pers. obs.).

Aquatic macrophytes are rare and almost exclusively limited to certain areas. One of these areas is the rapids, which are occupied by plants that grow rapidly (mainly species belonging to the family Podostemaceae). Many fish families are represented in these environments: Loricariidae

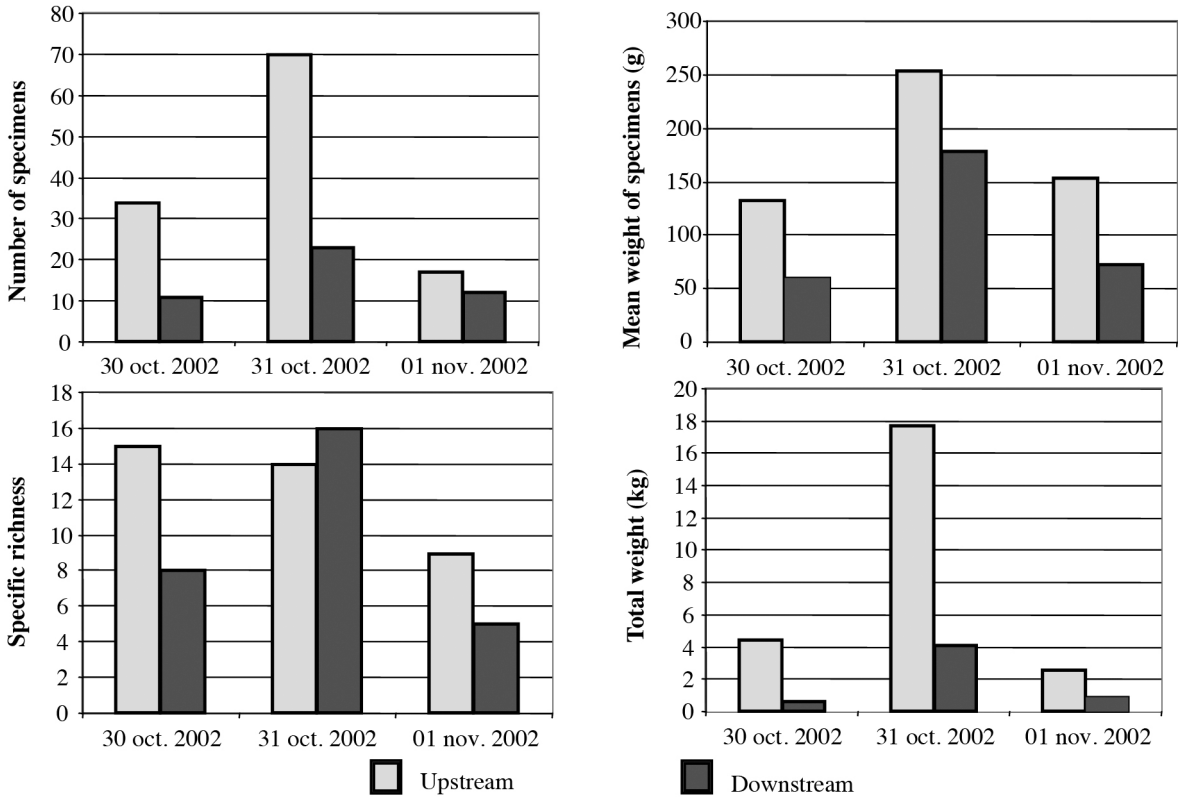

Figure 7. – Comparison between the catches near Antecume Pata and upstream.

(Siluriformes), Anostomidae and Serrasalminae (Characiformes) are the three most abundant. Most of these species include Podostemaceae in their diet (Boujard *et al.,* 1990; Leite and Jégu, 1990, 1991; Ferreira, 1993; Silva Pinto, 1995; Santos *et al*., 1997) but to varying degrees depending on the size of the specimens, the species and the season.

We assume that most of the differences in mean size and weight of the specimens and in fish diversity between Antecume Pata sites and upstream site are due to anthropogenic pressure, including the settlement of Amerindians population (and local fisheries) and gold mining. It was clearly noted that large fishes were more abundant in areas lacking human activities. In contrast, the absence of large species and specimens near human settlements allows species not targeted by fishermen to increase in density. Our results also show a clear relationship between the disappearance of large specimens and overfishing. Indeed, the fishery pressure is high nearby the village, and those species absent or scarce at this site are large species preferred by local fishermen. Moreover, fishing pressure increases with motor engine use and commercial fishing activity, that has accompanied the higher human population levels, associated with gold mining activity and consequently increased the local fish demand (Meunier, 2004). However, these resultsshould be interpreted with caution since they are based only on three consecutive days of data

Since our field campaign, the gold mining rush and the inflation of the human use of the Maroni River have deeply modified the water habitats and quality, notably at Antecume Pata and downstream. This activity considerably altered the fish community along the Maroni River. The related decrease of the fish stock and the appearance of new needs for the local population, appeal for vigilance and sustainable management of fish resources (Meunier, 2004). We hope that this work provides an historical overview of the fish fauna in Upper Maroni quite 20 years ago, constitutes a useful comparative dataset for further ecological studies of this endangered ecosystem and will eventually serve conservation aims.

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Annex 1. – Standard length and weight of the fishes caught by gillnets.

Species	n	Standard length (mm)			Fresh weight (g)		
		Mean ± SD	Min	Max	Mean ± SD	Min	Max
Pomatotrygon hystrix	1		340	340		2350.0	2350.0
Acestrorhynchus guianensis	34	192.10 ± 38.42	113	243	78.54 ± 40.09	13.6	150.0
Leporinus despaxi	2		215	215	157.50 ± 24.75	140.0	175.0
Leporinus fasciatus	7	231.00 ± 74.22	107	313	271.84 ± 224.72	23.5	640.0
Leporinus friderici	14	242.00 ± 36.34	164	287	336.34 ± 154.50	91.0	581.0
Leporinus lebaili	34	193.09 ± 44.89	77	273	201.07 ± 137.50	9.5	570.0
Leporinus maculatus	4	205.00 ± 17.32	190	220	190.00 ± 34.64	160.0	220.0
Schizodon fasciatus	30	201.00 ± 36.56	90	265	186.74 ± 100.93	14.7	410.0
Brycon falcatus	13	247.50 ± 63.18	159	353	583.78 ± 452.22	90.0	1300.0
Brycon pesu	1		132	132		41.3	41.3
Bryconops caudomaculatus	66	91.35 ± 6.19	78	104	13.40 ± 3.54	5.9	21.1
Bryconops melanurus	5	93.25 ± 1.89	92	96	13.60 ± 0.66	12.9	14.3
Chalceus macrolepidotus	1		153	153		65.7	65.7
Charax pauciradiatus	1		145	145		535.0	535
Cynopotamus essequibensis	4	119.00 ± 31.50	74	147	30.77 ± 17.38	6.2	46.5
Jubiapa meunieri	3	55.33 ± 1.15	54	56	3.63 ± 0.75	3.2	4.5
Moenkhausia moisae	4	92.67 ± 2.08	91	95	22.67 ± 1.53	21.0	24.0
Tetragonopterus chalceus	1		113	113		23.0	23.0
Triportheus rotundatus	29	146.58 ± 17.48	117	181	55.55 ± 18.80	27.5	93.0
Caenotropus maculosus	12	101.17 ± 13.41	84	126	25.10 ± 10.48	11.5	42.7
Cyphocharax spilurus	18	75.76 ± 17.86	53	116	12.29 ± 9.45	3.9	41.0
Cynodon meionactis	41	218.84 ± 40.03	163	310	112.09 ± 81.49	30.0	340.0
Hoplerythrinus unitaeniatus	1						
Hoplias aimara	55	405.44 ± 133.00	177	685	1900.12 ± 1754.36	83.8	7500.0

Annex 1. – Continued.

Species	n	Standard length (mm)			Fresh weight (g)		
		Mean ± SD	Min	Max	Mean ± SD	Min	Max
Bivibranchia bimaculata	7	121.83 ± 26.94	73	150	35.10 ± 18.74	6.3	58.5
Hemiodopsis hureaulti	19	116.35 ± 24.37	89	178	26.58 ± 18.68	8.8	80.0
Hemiodus sp.	13	173.64 ± 17.27	140	195	82.28 ± 24.07	51.0	131
Hemiodus unimaculatus	7	184.50 ± 31.52	142	239	128.13 ± 59.35	72.0	226.6
Prochilodus reticulatus	21	206.05 ± 42.59	103	275	237.81 ± 143.16	26.0	580.0
Semaprochilodus varii	51	251.65 ± 45.05	138	323	503.58 ± 234.61	66.0	1200.0
Acnodon oligacanthus	194	138.09 ± 19.25	90	186	85.88 ± 41.01	8.0	238.2
Myleus rhomboidalis	20	215.95 ± 89.80	82	317	703.59 ± 609.88	25.3	1700.0
Myloplus planquettei	8	501.75 ± 29.37	458	548	5806.25 ± 1258.81	4400.0	8000.0
Myloplus rubripinnis	5	105.60 ± 11.76	90	122	40.90 ± 22.48	16.5	77.0
Myloplus ternetzi	52	126.56 ± 30.25	73	187	94.06 ± 129.4	10.0	950.0
Pristobrycon striolatus	7	88.43 ± 20.71	46	109	24.54 ± 12.46	2.4	42.7
Serrasalmus eigenmanni	49	101.41 ± 16.84	75	139	42.88 ± 36.47	4.0	160.0
Serrasalmus rhombeus	85	196.44 ± 76.30	90	393	323.42 ± 417.82	15.0	1700.0
Tometes lebaili	10	189.80 ± 80.88	119	323	422.00 ± 609.45	65.0	1500.0
Ageneiosus inermis	67	292.64 ± 52.98	120	420	337.84 ± 199.89	10.0	1000.0
Auchenipterus spp.	5	108.00 ± 8.77	93	115	14.78 ± 4.55	7.5	19.2
Doras carinatus	7	142.00 ± 37.03	94	187	48.43 ± 33.58	10.0	97.0
Doras micropoeus	15	208.14 ± 38.27	141	272	184.14 ± 92.74	90.0	340.0
Platydoras costatus	99	215.43 ± 30.59	167	323	210.45 ± 96.84	80.0	523.0
Pimelodella cristata	2	129.50 ± 3.53	127	132	19.15 ± 0.64	18.7	19.6
Pimelodella geryi	1		92	92		7.0	7.0
Cteniloricaria maculata	8	135.25 ± 7.99	126	147	15.08 ± 4.78	8.9	22.1
Guyanancistrus brevispinis	1						
Harttia surinamensis	17	155.59 ± 49.97	107	266	35.43 ± 33.69	8.3	130.0
Hemiancistrus medians	8	193.50 ± 32.74	135	238	245.76 ± 82.14	91.8	354.5
Hypostomus gymnorhynchus	76	127.55 ± 27.45	71	179	53.37 ± 35.85	5.6	172.9
Metaloricaria paucidens	12	193.81 ± 36.20	137	227	44.51 ± 17.69	18.9	71.6
Pseudancistrus barbatus	143	144.81 ± 28.13	71	224	83.08 ± 46.31	8.0	280.0
Hemisorubim platyrhynchos	2	166.00 ± 45.25	134	198	79.50 ± 0.71	79.0	80.0
Pimelodus ornatus	5	201.50 ± 20.42	176	218	103.00 ± 41.71	66.0	154;0
Cephalosilurus nigricaudus	1						
Electrophorus electricus	6	918.67 ± 243.10	582	1230	1691.67 ± 1183.39	300.0	3500.0
Rhamphichthys rostratus	1		771	771		220.0	220.0
Distocyclus guchereauae	1		228	228		80.0	80.0
Eigenmania virescens	5	201.80 ± 38.60	150	248	12.28 ± 5.39	4.1	17.4
Rhabdolichops jegui	3	203.50 ± 96.87	135	272	13.60 ± 3.25	11.3	15.9
Cichla ocellaris	7	209.00 ± 59.62	146	305	275.26 ± 269.72	53.5	750.0
Crenicichla albopunctata	1		177	177		92.0	92.0
Crenicichla multispinosa	8	214.00 ± 38.07	141	256	148.46 ± 53.80	87.0	207.9
Geophagus harreri	25	143.00 ± 22.53	100	182	86.84 ± 45.63	10.0	191.6
Geophagus surinamensis	4	114.25 ± 22.60	100	148	43.70 ± 27.99	25.8	85.0
Pachypops fourcroi	22	214.71 ± 26.42	177	250	154.61 ± 63.61	68.0	255.0
Plagioscon squamosisimus	1		310	310		630.0	630.0
Total	1534	183.44 ± 101.04	46	1230	259.94 ± 681.48	2.4	8000.0

Annex 2. – Checklist of fish found in freshwater from the Maroni river with information on their presence signalled upstream Maripasoula and during our campaigns.

Order	Family	Species	Known in Upper Maroni (upstream Maripasoula)	Our study: total catches	Our study: catches by gillnets
Rajiformes	Potamotrygonidae	*Potamotrygon hystrix* (Müller & Henle, 1841)	1	1	1
Rajiformes	Potamotrygonidae	*Potamotrygon marinae* Deynat, 2006	1	1	0
Clupeiformes	Engraulidae	*Anchovia surinamensis* (Bleeker, 1865)	0	0	0
Clupeiformes	Engraulidae	*Lycengraulis batesii* (Günther, 1868)	1	1	0
Clupeiformes	Engraulidae	*Pterengraulis atherinoides* (Linnaeus, 1766)	0	0	0
Characiformes	Acestrorhynchidae	*Acestrorhynchus falcatus* (Bloch, 1794)	0	0	0
Characiformes	Acestrorhynchidae	*Acestrorhynchus guianensis* (Menezes, 1969)	1	1	1
Characiformes	Anostomidae	*Anostomus brevior* Géry, 1960	1	1	0
Characiformes	Anostomidae	*Anostomus ternetzi* Fernandez-Yepez, 1950	1	1	0
Characiformes	Anostomidae	*Leporinus despaxi* Puyo, 1943	1	1	1
Characiformes	Anostomidae	*Leporinus fasciatus* (Bloch, 1794)	1	1	1
Characiformes	Anostomidae	*Leporinus friderici* (Bloch, 1794)	1	1	1
Characiformes	Anostomidae	*Leporinus gossei* Géry, Planquette & Le Bail, 1991	0	0	0
Characiformes	Anostomidae	*Leporinus granti* Eigenmann, 1912	1	0	0
Characiformes	Anostomidae	*Leporinus lebaili* Géry & Planquette, 1983	1	1	1
Characiformes	Anostomidae	*Leporinus maculatus* Müller & Troschel, 1844	1	1	1
Characiformes	Anostomidae	*Leporinus pellegrini* Steindachner, 1910	0	0	0
Characiformes	Anostomidae	*Schizodon fasciatus* Spix & Agassiz, 1829	1	1	1
Characiformes	Characidae	*Astyanax bimaculatus* (Linnaeus, 1758)	1	0	0
Characiformes	Characidae	*Astyanax maroniensis* Géry, planquette & Le Bail, 1996	1	1	0
Characiformes	Characidae	*Astyanax meunieri* Géry, planquette & Le Bail, 1996	1	1	0
Characiformes	Characidae	*Astyanax validus* Géry, Planquette & Le Bail, 1991	1	0	0
Characiformes	Characidae	*Brycon falcatus* Müller & Troschel, 1844	1	1	1
Characiformes	Characidae	*Brycon pesu* Müller & Troschel, 1845	1	1	1
Characiformes	Characidae	*Bryconamericus guyanensis* Zarske, Le Bail & Géry, 2010	1	0	0
Characiformes	Characidae	*Bryconamericus heterestes* Eigenmann, 1908	1	1	0
Characiformes	Characidae	*Bryconamericus stramineus* Eigenmann, 1908 [doubtful]	1	0	0
Characiformes	Characidae	*Bryconops affinis* (Günther, 1864)	1	1	0
Characiformes	Characidae	*Bryconops caudomaculatus* (Günther, 1864)	1	1	1
Characiformes	Characidae	*Bryconops melanurus* (Bloch, 1794)	1	1	1
Characiformes	Characidae	*Chalceus macrolepidotus* Cuvier, 1818	1	1	1
Characiformes	Characidae	*Charax pauciradiatus* (Günther, 1864)	1	1	1
Characiformes	Characidae	*Creagrutus melanzonus* Eigenmann, 1909	0	0	0
Characiformes	Characidae	*Ctenobrycon spilurus* (Valenciennes, 1850)	0	0	0
Characiformes	Characidae	*Cynopotamus essequibensis* Eigenmann, 1912	1	1	1
Characiformes	Characidae	*Hemibrycon surinamensis* Géry, 1962	1	0	0
Characiformes	Characidae	*Hemigrammus bellottii* (Steindachner, 1882)	0	0	0
Characiformes	Characidae	*Hemigrammus boesemani* Géry, 1959	0	0	0
Characiformes	Characidae	*Hemigrammus guyanensis* Géry, 1959	0	0	0
Characiformes	Characidae	*Hemigrammus ocellifer* (Steindachner, 1882)	0	0	0
Characiformes	Characidae	*Hemigrammus rodwayi* Durbin, 1909	0	0	0
Characiformes	Characidae	*Hemigrammus unilineatus cayennensis* Gill, 1858	0	0	0
Characiformes	Characidae	*Hyphessobrycon borealis* Zarske, Le Bail & Géry, 2006	0	0	0
Characiformes	Characidae	*Hyphessobrycon roseus* (Géry, 1960)	1	1	0
Characiformes	Characidae	*Hyphessobrycon simulatus* (Géry, 1960)	1	0	0
Characiformes	Characidae	*Jupiaba abramoides* (Eigenmann, 1909)	1	0	0
Characiformes	Characidae	*Jupiaba keithi* (Géry, Planquette & Le Bail, 1996)	1	0	0
Characiformes	Characidae	*Jupiaba maroniensis* (Géry, Planquette & Le Bail, 1996)	1	0	0
Characiformes	Characidae	*Jupiaba meunieri* (Géry, Planquette & Le Bail, 1996)	1	1	1

Annex 2. – Continued.

Order	Family	Species	Known in Upper Maroni (upstream Maripasoula)	Our study: total catches	Our study: catches by gillnets
Characiformes	Characidae	*Moenkhausia chrysargyrea* (Günther, 1864)	0	0	0
Characiformes	Characidae	*Moenkhausia collettii* (Steindachner, 1882)	1	1	0
Characiformes	Characidae	*Moenkhausia georgiae* Géry, 1965	1	0	0
Characiformes	Characidae	*Moenkhausia grandisquamis* (Müller & Troschel, 1845)	1	1	0
Characiformes	Characidae	*Moenkhausia hemigrammoides* Géry, 1965	1	0	0
Characiformes	Characidae	*Moenkhausia inrai* Géry, 1992	1	0	0
Characiformes	Characidae	*Moenkhausia intermedia* Eigenmann, 1908	1	1	0
Characiformes	Characidae	*Moenkhausia moisae* Géry, Planquette & Le Bail, 1995	1	1	1
Characiformes	Characidae	*Moenkhausia oligolepis* (Günther, 1864)	1	0	0
Characiformes	Characidae	*Moenkhausia rara* Zarske, Géry & Isbrücker, 2004	0	0	0
Characiformes	Characidae	*Odontostilbe gracilis* (Géry, 1960)	0	0	0
Characiformes	Characidae	*Phenacogaster megalostictus* Eigenmann, 1909	1	1	0
Characiformes	Characidae	*Poptella brevispina* Reis, 1989	1	0	0
Characiformes	Characidae	*Pristella maxillaris* (Ulrey, 1894)	0	0	0
Characiformes	Characidae	*Pygopristis denticulata* (Cuvier, 1819)	0	0	0
Characiformes	Characidae	*Roeboexodon guyanensis* (Puyo, 1948)	1	1	0
Characiformes	Characidae	*Tetragonopterus chalceus* Spix & Agassiz, 1829	1	1	1
Characiformes	Characidae	*Thayeria ifati* Géry, 1959	1	1	0
Characiformes	Characidae	*Triportheus rotundatus* (Jardine, 1841)	1	1	1
Characiformes	Chilodontidae	*Caenotropus maculosus* (Eigenmann, 1912)	1	1	1
Characiformes	Crenuchidae	*Aphyocharacidium melandetum* (Eigenmann, 1912)	0	0	0
Characiformes	Crenuchidae	*Characidium pellucidum* Eigenmann, 1909	0	0	0
Characiformes	Crenuchidae	*Characidium zebra* Eigenmann, 1909	1	1	0
Characiformes	Crenuchidae	*Crenuchus spilurus* Günther, 1863	0	0	0
Characiformes	Crenuchidae	*Melanocharacidium blennioides* (Eigenmann, 1909)	1	1	0
Characiformes	Crenuchidae	*Melanocharacidium dispilomma* Buckup, 1993	1	0	0
Characiformes	Crenuchidae	*Microcharacidium eleotrioides* (Géry, 1960)	1	1	0
Characiformes	Curimatidae	*Curimata cyprinoides* (Linnaeus, 1758)	1	0	0
Characiformes	Curimatidae	*Curimatopsis crypticus* Vari, 1982	1	0	0
Characiformes	Curimatidae	*Cyphocharax helleri* (Steindachner, 1910)	1	0	0
Characiformes	Curimatidae	*Cyphocharax punctatus* Vari & Nijssen, 1986	0	0	0
Characiformes	Curimatidae	*Cyphocharax spilurus* (Günther, 1864)	1	1	1
Characiformes	Curimatidae	*Steindachnerina varii* Géry, Planquette & Le Bail, 1991	1	0	0
Characiformes	Cynodontidae	*Cynodon gibbus* (Agassiz, 1829)	1	0	0
Characiformes	Cynodontidae	*Cynodon meionactis* Géry, Le Bail & Keith, 1999	1	1	1
Characiformes	Erythrinidae	*Erythrinus erythrinus* (Bloch & Schneider, 1801)	1	1	0
Characiformes	Erythrinidae	*Hoplerythrinus unitaeniatus* (Spix & Agassiz, 1829)	1	1	1
Characiformes	Erythrinidae	*Hoplias aimara* (Valenciennes, 1847)	1	1	1
Characiformes	Erythrinidae	*Hoplias malabaricus* (Bloch, 1794)	1	0	0
Characiformes	Gasteropelecidae	*Carnegiella strigata* (Günther, 1864)	1	0	0
Characiformes	Gasteropelecidae	*Gasteropelecus sternicla* (Linnaeus, 1758)	1	1	0
Characiformes	Hemiodontidae	*Argonectes longiceps* (Kner, 1858)	1	0	0
Characiformes	Hemiodontidae	*Bivibranchia bimaculata* Vari, 1985	1	1	1
Characiformes	Hemiodontidae	*Hemiodus huraulti* (Géry, 1964)	1	1	1
Characiformes	Hemiodontidae	*Hemiodus unimaculatus* (Bloch, 1794)	1	1	1
Characiformes	Lebiasinidae	*Copella arnoldi* (Regan, 1912)	1	1	0
Characiformes	Lebiasinidae	*Copella carsevennensis* (Regan, 1912)	1	1	0
Characiformes	Lebiasinidae	*Nannostomus beckfordi* Günther, 1872	1	1	0
Characiformes	Lebiasinidae	*Nannostomus bifasciatus* Hoedeman, 1954	1	1	0
Characiformes	Lebiasinidae	*Pyrrhulina filamentosa* Valenciennes, 1847	1	0	0

Annex 2. – Continued.

Order	Family	Species	Known in Upper Maroni (upstream Maripasoula)	Our study: total catches	Our study: catches by gillnets
Characiformes	Parodontidae	*Parodon guyanensis* Géry, 1959	1	1	0
Characiformes	Prochilodontidae	*Prochilodus reticulatus* Valenciennes, 1850	1	1	1
Characiformes	Prochilodontidae	*Prochilodus rubrotaeniatus* Schomburk, 1841	0	0	0
Characiformes	Prochilodontidae	*Semaprochilodus varii* Castro, 1988	1	1	1
Characiformes	Serrasalmidae	*Acnodon oligacanthus* (Müller & Troschel, 1844)	1	1	1
Characiformes	Serrasalmidae	*Myleus rhomboidalis* (Cuvier, 1818)	1	1	1
Characiformes	Serrasalmidae	*Myloplus planquettei* Jégu, Keith & Le Bail, 2003	1	1	1
Characiformes	Serrasalmidae	*Myloplus rubripinnis luna* (Müller & Troschel, 1844)	0	0	0
Characiformes	Serrasalmidae	*Myloplus rubripinnis rubripinnis* (Müller & Troschel, 1844)	1	1	1
Characiformes	Serrasalmidae	*Myloplus ternetzi* (Norman, 1929)	1	1	1
Characiformes	Serrasalmidae	*Pristobrycon striolatus* (Steindachner, 1908)	1	1	1
Characiformes	Serrasalmidae	*Serrasalmus eigenmanni* Norman, 1929	1	1	1
Characiformes	Serrasalmidae	*Serrasalmus humeralis valenciennes, 1850*	1	1	0
Characiformes	Serrasalmidae	*Serrasalmus rhombeus* (Linnaeus, 1766)	1	1	1
Characiformes	Serrasalmidae	*Tometes lebaili* Jégu, Keith & Belmont-Jégu, 2002	1	1	1
Siluriformes	Aspredinidae	*Bunocephalus amaurus* Eigenmann, 1912	1	0	0
Siluriformes	Aspredinidae	*Bunocephalus coracoideus* (Cope, 1874)	1	1	0
Siluriformes	Auchenipteridae	*Ageneiosus inermis* (Linnaeus, 1766)	1	1	1
Siluriformes	Auchenipteridae	*Ageneiosus ucayalensis* Castelnau, 1855	0	0	0
Siluriformes	Auchenipteridae	*Auchenipterus dentatus* Valenciennes, 1840	1	1	1
Siluriformes	Auchenipteridae	*Auchenipterus nuchalis* (Spix & Agassiz, 1829)	1	1	1
Siluriformes	Auchenipteridae	*Glanidium leopardum* (Hoedeman, 1961)	1	1	0
Siluriformes	Auchenipteridae	*Pseudauchenipterus nodosus* (Bloch, 1794)	0	0	0
Siluriformes	Auchenipteridae	*Tatia brunnea* Mees, 1974	0	0	0
Siluriformes	Auchenipteridae	*Tatia intermedia* (Steindachner, 1877)	0	0	0
Siluriformes	Auchenipteridae	*Trachelyopterus galeatus* (Linnaeus, 1766)	0	0	0
Siluriformes	Callichthyidae	*Callichthys callichthys* (Linnaeus, 1758)	1	1	0
Siluriformes	Callichthyidae	*Corydoras aeneus* (Gill, 1858)	0	0	0
Siluriformes	Callichthyidae	*Corydoras baderi* Geisler, 1969	0	0	0
Siluriformes	Callichthyidae	*Corydoras geoffroy* Lacepède, 1803	1	1	0
Siluriformes	Callichthyidae	*Corydoras guianensis* Nijssen, 1970	1	0	0
Siluriformes	Callichthyidae	*Hoplosternum littorale* (Hancock, 1828)	0	0	0
Siluriformes	Callichthyidae	*Megalechis thoracata* (Valenciennes, 1840)	0	0	0
Siluriformes	Cetopsidae	*Cetopsidium orientale* (Vari, Ferraris & Keith, 2003)	0	0	0
Siluriformes	Cetopsidae	*Helogenes marmoratus* Günther, 1863	0	0	0
Siluriformes	Doradidae	*Doras carinatus* (Linnaeus, 1766)	1	1	1
Siluriformes	Doradidae	*Doras micropoeus* (Eigenmann, 1912)	1	1	1
Siluriformes	Doradidae	*Platydoras costatus* (Linnaeus, 1758)	1	1	1
Siluriformes	Heptapteridae	*Chasmocranus brevior* Eigenmann, 1912	1	0	0
Siluriformes	Heptapteridae	*Chasmocranus longior* Eigenmann, 1912	1	0	0
Siluriformes	Heptapteridae	*Heptapterus bleekeri* Boeseman, 1953	0	0	0
Siluriformes	Heptapteridae	*Heptapterus tapanahoniensis* Mees, 1967	1	1	0
Siluriformes	Heptapteridae	*Imparfinis minutus* (Lütken, 1874)	1	1	0
Siluriformes	Heptapteridae	*Mastiglanis asopos* Bockmann, 1994	0	0	0
Siluriformes	Heptapteridae	*Pimelodella cristata* (Müller & Troschel, 1849)	1	1	1
Siluriformes	Heptapteridae	*Pimelodella geryi* Hoedeman, 1961	1	1	1
Siluriformes	Heptapteridae	*Pimelodella leptosoma* (Fowler, 1914)	1	1	0
Siluriformes	Heptapteridae	*Pimelodella macturki* Eigenmann, 1912	0	0	0
Siluriformes	Heptapteridae	*Pimelodella megalops* Eigenmann, 1912	1	1	0
Siluriformes	Heptapteridae	*Pimelodella procera* Mees, 1983	1	0	0

Annex 2. – Continued.

Order	Family	Species	Known in Upper Maroni (upstream Maripasoula)	Our study: total catches	Our study: catches by gillnets
Siluriformes	Heptapteridae	*Rhamdia quelen* (Quoy & Gaimard, 1824)	1	0	0
Siluriformes	Loricariidae	*Ancistrus cirrhosus* (Valenciennes, 1836)	0	0	0
Siluriformes	Loricariidae	*Ancistrus hoplogenys* (Günther, 1864)	1	1	1
Siluriformes	Loricariidae	*Ancistrus leucostictus* (Günther, 1864)	1	0	0
Siluriformes	Loricariidae	*Ancistrus temminckii* (Valenciennes, 1840)	1	0	0
Siluriformes	Loricariidae	*Cteniloricaria maculata* (Boeseman, 1971)	1	1	1
Siluriformes	Loricariidae	*Farlowella reticulata* Boeseman, 1971	1	1	0
Siluriformes	Loricariidae	*Guyanancistrus brevispinis* (Heitmans, Nijssen & Isbrücker, 1983)	1	1	0
Siluriformes	Loricariidae	*Harttia surinamensis* Boeseman, 1971	1	1	1
Siluriformes	Loricariidae	*Hemiancistrus medians* (Kner, 1854)	1	1	1
Siluriformes	Loricariidae	*Hemiodontichthys acipenserinus* (Kner, 1853)	0	0	0
Siluriformes	Loricariidae	*Hypostomus gymnorhynchus* (Norman, 1926)	1	1	1
Siluriformes	Loricariidae	*Hypostomus plecostomus* (Linnaeus, 1758)	0	0	0
Siluriformes	Loricariidae	*Hypostomus tapanahoniensis* Boeseman, 1969	1	0	0
Siluriformes	Loricariidae	*Hypostomus ventromaculatus* Boeseman, 1968	0	0	0
Siluriformes	Loricariidae	*Lithoxus planquettei* Boeseman, 1982	1	0	0
Siluriformes	Loricariidae	*Lithoxus stocki* Boeseman, 1982	1	1	0
Siluriformes	Loricariidae	*Loricaria cataphracta* Linnaeus, 1758	1	1	0
Siluriformes	Loricariidae	*Loricaria nickeriensis* Isbrücker, 1979	1	0	0
Siluriformes	Loricariidae	*Metaloricaria paucidens* Isbrücker, 1975	1	1	1
Siluriformes	Loricariidae	*Otocinclus mariae* Fowler, 1940	0	0	0
Siluriformes	Loricariidae	*Panaqolus koko* Fisch-Muller & Covain, 2012	1	1	0
Siluriformes	Loricariidae	*Peckoltia otali* Fisch-Muller & Covain, 2012	1	1	0
Siluriformes	Loricariidae	*Pseudacanthicus serratus* (Valenciennes, 1840)	1	1	0
Siluriformes	Loricariidae	*Pseudancistrus barbatus* (Valenciennes, 1840)	1	1	1
Siluriformes	Loricariidae	*Pseudancistrus brevispinis* (Heitmans, Nijssen & Isbrücker, 1983)	1	0	0
Siluriformes	Loricariidae	*Pseudancistrus longispinis* (Heitmans, Nijssen & Isbrücker, 1983)	1	1	1
Siluriformes	Loricariidae	*Pseudancistrus niger* (Norman, 1926)	0	0	0
Siluriformes	Loricariidae	*Rineloricaria stewarti* (Eigenmann, 1909)	1	1	0
Siluriformes	Pimelodidae	*Brachyplatystoma vaillanti* (Valenciennes, 1840)	1	0	0
Siluriformes	Pimelodidae	*Hemisorubim platyrhynchos* (Valenciennes, 1840)	1	1	1
Siluriformes	Pimelodidae	*Pimelabditus moli* Parisi & Lundberg, 2009	1	0	0
Siluriformes	Pimelodidae	*Pimelodus blochii* Valenciennes, 1840	1	0	0
Siluriformes	Pimelodidae	*Pimelodus ornatus* Kner, 1858	1	1	1
Siluriformes	Pimelodidae	*Pseudoplatystoma tigrinum* (Valenciennes, 1840)	1	0	0
Siluriformes	Pseudopimelodidae	*Batrochoglanis raninus* (Valenciennes, 1840)	0	0	0
Siluriformes	Pseudopimelodidae	*Cephalosilurus nigricaudus* (Mees, 1974)	1	1	1
Siluriformes	Pseudopimelodidae	*Microglanis poecilus* Eigenmann, 1912	1	1	0
Siluriformes	Pseudopimelodidae	*Pseudopimelodus bufonius* (Valenciennes, 1840)	1	1	0
Siluriformes	Trichomycteridae	*Ituglanis amazonicus* (Steindachner, 1882)	0	0	0
Siluriformes	Trichomycteridae	*Ituglanis nebulosus* de Pinna & Keith, 2003	0	1	1
Siluriformes	Trichomycteridae	*Ochmacanthus alternus* Myers, 1927	0	0	0
Gymnotiformes	Apteronotidae	*Apteronotus albifrons* (Linnaeus, 1766)	1	1	0
Gymnotiformes	Apteronotidae	*Porotergus gymnotus* Ellis, 1912	1	1	0
Gymnotiformes	Apteronotidae	*Sternarchorhynchus oxyrhynchus* (Müller & Troschel, 1849)	1	1	0
Gymnotiformes	Gymnotidae	*Electrophorus electricus* (Linnaeus, 1766)	1	1	1
Gymnotiformes	Gymnotidae	*Gymnotus anguillaris* Hoedeman, 1962	1	0	0

Annex 2. – Continued.

Order	Family	Species	Known in Upper Maroni (upstream Maripasoula)	Our study: total catches	Our study: catches by gillnets
Gymnotiformes	Gymnotidae	*Gymnotus carapo* Linnaeus, 1758	1	1	0
Gymnotiformes	Hypopomidae	*Brachyhypopomus beebei* (Schultz, 1944)	1	1	0
Gymnotiformes	Hypopomidae	*Hypopomus artedi* (Kaup, 1856)	1	0	0
Gymnotiformes	Hypopomidae	*Hypopygus lepturus* Hoedeman, 1962	0	0	0
Gymnotiformes	Rhamphichthyidae	*Rhamphichthys rostratus* (Linnaeus, 1766)	1	1	1
Gymnotiformes	Sternopygidae	*Archolaemus blax* Korringa, 1970	1	0	0
Gymnotiformes	Sternopygidae	*Distocyclus guchereauae* Meunier, Jégu & Keith, 2014	1	1	0
Gymnotiformes	Sternopygidae	*Eigenmannia humboldtii* (Steindachner, 1878)	0	0	0
Gymnotiformes	Sternopygidae	*Eigenmannia virescens* (Valenciennes, 1836)	1	1	1
Gymnotiformes	Sternopygidae	*Rhabdolichops jegui* Keith & Meunier, 2000	1	1	1
Gymnotiformes	Sternopygidae	*Sternopygus macrurus* (Bloch & Schneider, 1801)	1	1	0
Cyprinodontiformes	Anablepidae	*Anableps anableps* (Linnaeus, 1758)	0	0	0
Cyprinodontiformes	Poeciliidae	*Micropoecilia picta* (Regan, 1913)	0	0	0
Cyprinodontiformes	Poeciliidae	*Poecilia vivipara* (Eigenmann, 1894)	0	0	0
Cyprinodontiformes	Rivulidae	*Rivulus agilae* Hoedeman, 1954	0	0	0
Cyprinodontiformes	Rivulidae	*Rivulus geayi* Vaillant, 1899	1	1	0
Cyprinodontiformes	Rivulidae	*Rivulus holmiae* Eigenmann, 1909	0	0	0
Cyprinodontiformes	Rivulidae	*Rivulus igneus* Huber, 1991	1	1	0
Cyprinodontiformes	Rivulidae	*Rivulus lungi* Berkenkamp, 1984	1	0	0
Beloniformes	Belonidae	*Potamorrhaphis guianensis* (Jardine, 1843)	0	0	0
Synbranchiformes	Synbranchidae	*Synbranchus marmoratus* Bloch, 1795	1	1	0
Cichliformes	Cichlidae	*Aequidens paloemeuensis* Kullander & Nijssen, 1989	0	0	0
Cichliformes	Cichlidae	*Aequidens tetramerus* (Heckel, 1840)	1	0	0
Cichliformes	Cichlidae	*Cichla ocellaris* Bloch & Schneider, 1801	1	1	1
Cichliformes	Cichlidae	*Cichlasoma bimaculatum* (Linnaeus, 1758)	1	0	0
Cichliformes	Cichlidae	*Cleithracara maronii* (Steindachner, 1881)	1	0	0
Cichliformes	Cichlidae	*Crenicichla albopunctata* Pellegrin, 1904	1	1	1
Cichliformes	Cichlidae	*Crenicichla multispinosa* Pellegrin, 1903	1	1	1
Cichliformes	Cichlidae	*Crenicichla saxatilis* (Linnaeus, 1758)	0	0	0
Cichliformes	Cichlidae	*Geophagus harreri* Gosse, 1976	1	1	1
Cichliformes	Cichlidae	*Geophagus surinamensis* Heckel, 1840	1	1	1
Cichliformes	Cichlidae	*Guianacara geayi* (Pellegrin, 1902)	0	0	0
Cichliformes	Cichlidae	*Guianacara oelemariensis* Kullander & Nijssen, 1989	1	0	0
Cichliformes	Cichlidae	*Guianacara owroewefi* Kullander & Nijssen, 1989	1	1	0
Cichliformes	Cichlidae	*Krobia itanyi* (Puyo, 1943)	1	1	0
Perciformes	Sciaenidae	*Pachypops fourcroi* (Lacepède, 1802)	1	1	1
Perciformes	Sciaenidae	*Plagioscion squamosissimus* (Heckel, 1840)	1	1	1
Pleuronectiformes	Achiridae	*Apionichthys dumerili* Kaup, 1858	0	0	0