Results of the March 2014 Expedition to Assess *Characidium amaila* and Associated Fish Populations and their Aquatic Habitats in the Upper Potaro and Kuribrong River Drainages

Final Report

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on behalf of WWF-Guyana as part of the Technical Cooperation Agreement:
Supplemental Endemic Fish Surveys for the Amaila Falls Hydroelectric Project (GY-T1108)
from the Inter-American Development Bank

Characidium amaila (photo: Nathan Lujan)

I. CONCLUSIONS

-*Characidium amaila* does not occur in the upper Potaro River drainage near Chenapau or near Ayanganna. Not only was *C. amaila* absent from those areas; no other species of *Characidium, Melanocharacidium or Ammocryptocharax* was found there either. Only one species of the family Crenuchidae, *Poecilocharax bovalii,* which inhabits quiet waters of forest streams and pools, was found in the area. Presumably, Kaieteur Falls is an insurmountable obstacle for these fishes.

-*Characidium amaila* is also absent from the Kuribrong River below Amaila Falls even though suitable habitat is present in the rapids sampled (Grass Shoals Rapids and Ram Sheep Rapids). It is also absent from Kiwikparu (Grass Falls) Creek (a tributary of the Kuribrong that enters at Grass Shoals Rapids), and all other sites surveyed in the lower Kuribrong River. Other species of *Characidium, Melanocharacidium* and *Ammocryptocharax* were present in these areas.

-*Characidium amaila* was found in additional rapids in the mainstem Kuribrong River that are exposed when water levels drop. This indicates that during lower water levels either: additional habitat is exposed that may then be occupied by *C. amaila*; or *Characidium amaila* lives in the newly exposed areas all the time, but we can only collect them there when it becomes possible to sample the habitat with seines.

-*Characidium amaila* was found to occupy all areas of Rapids 1, 2, and 3 as water levels changed. Fish team 1 experienced the almost complete drying of Rapids 1, which was near their first base camp, and so could make daily assessments of the distribution of *Characidium amaila* in the rapids. As water levels changed, fish were caught from one side of the river to the other throughout Rapids 1. This indicates that *Characidium amaila* is adaptable to the frequently changing water levels, and that it can use a wider range of rapids habitat subtypes than previously thought, moving as the rapids dry out. Because fluctuating water levels cause Rapids 1, 2 and 3 to dry out repeatedly, and for long periods of time during the driest seasons of the year (Feb-Mar, and Sep-Nov) these habitats may not be as critical for long-term survival of *Characidium amaila* as previously thought. Classifications of habitat subtypes in previous reports represent only a snapshot of a given time, and do not reflect habitat availability throughout the year as water levels fluctuate.

-*Characidium amaila* juveniles can inhabit tributary creeks. One juvenile *Characidium amaila* was found in a tributary creek in the lower section of the upper Kuribrong River just upstream from Rapids 1. Although this area will be impacted by dam construction, the implications of finding juveniles in tributaries are profound. This indicates that the species uses the non-mainstem river habitat found in creeks, perhaps temporarily or when dispersing.

-*Characidium amaila* is found in upland tributary creeks covered by forest canopy that have a substrate of sheetrock and appropriate aquatic plants such as Podostemaceae and Eriocaulaceae such as *Rondonanthus capillaceus*. The discovery in the upper Kuribrong River of a robust population outside of the rapids in the main channel is proof that this species is not restricted to the main channel (as previously thought). The relatively narrow, but large (approximately 16 500 m^2) habitat found in Itabu Creek indicates that this species probably inhabits similar regions throughout the headwaters of the Kuribrong and Amaila Rivers and their major tributaries.

-*Characidium amaila* did not show an association with only Podostemaceae, but was found along with several different submerged aquatic plants such as *Rondonanthus capillaceus*, and a wide leafed grass-like plant that still remains to be identified. We did not capture the fishes on bare rock, but there was very little of such habitat present.

- Appropriate habitat for *Characidium amaila* is present in the upper reaches of all tributaries of the Kuribrong River that we were able to reach, but *Characidium amaila* was found in only one of three such habitats. This leads us to surmise that additional habitat and populations are present in as yet unsampled tributaries of the Kuribrong River above Amaila Falls outside the area that would be affected by the reservoir and dam. In the Kuribrong and Amaila river headwaters, there are many more between 25 and 75 unnamed, unexplored tributaries, similar to Itabu Creek where we found *Characidium amaila* habitat (rocks with vegetation and swift water flow) of about 16,500 m^2. If we assume that just 25 of those have populations of *C. amaila*, we can estimate an additional 412,500 m^2 of habitat occupied by *C. amaila* probably exists in the hidden stream of the watershed.

- The probable IUCN classification for *Characidium amaila*, based on the relatively small area of the upper Kuribrong River drainage where it occurs (642km^2) is: Vulnerable.

- Principal threats to *Characidium amaila* populations are: gold mining, which already presents a real and present danger because miners now have easier access due to the construction of the new road to Amaila Falls, and if funded, the construction of the Amaila Hydroelectric project.

- The Kuribrong River above Amaila Falls has been well surveyed for fishes. No species not already found on previous surveys was collected.

II. INTRODUCTION

The Amaila Hydropower Project proposes the construction of a hydroelectric power plant in west-central Guyana, about 200 km southwest of Georgetown. If funded, it would consist of a 2.5-km long dam at the confluence of the Amaila and Kuribrong Rivers, a reservoir approximately 23.3 km^2 in area, a water tunnel, a powerhouse, turbine generators, an electric substation and switchyard, local access roads, and other ancillary systems required to collect, control, and efficiently use water to generate electricity. Concern for the fishes, wildlife and vegetation of the region generated studies to assess the environmental impact of the project and led to field surveys to inventory the biodiversity of the region and evaluate the impacts. Results of those studies are summarized in a report of the baseline and supplemental studies carried out to date by the Amaila Hydropower Project (2011) and Exponent (2011, 2013).

The Kuribrong River is a remote left bank tributary of the Potaro River in the Essequibo River Basin of in Region 8 of western Guyana with a total drainage area of about 1,504 km^2 that joins the Potaro River downstream from Kaieteur Falls. The upper Kuribrong River drainage (above Amaila Falls), includes the Amaila River; together they drain an area of about 642 km^2 with an

average elevation of 450 meters above sea level (masl) in the Guiana Shield's Pakaraima Mountain Range (Lujan and Armbruster, 2011). The Kuribrong and Amaila Rivers join immediately upstream of Amaila Falls, cascade through Amaila Falls to the lower Kuribrong River and after descending through a series of rapids in the Kuribrong, and more rapids in the Potaro River, eventually reach the coastal plains. Eigenmann (1912) documented the fish biodiversity of the Potaro River, and described several endemic species that he attributed to the isolating effects of Kaieteur Falls and the many rapids and found along that river. The fishes of the Potaro River were more recently studied by Hardman et al (2002) who reconfirmed the presence of many endemic fishes in the region.
Previous field surveys (see above) have shown the upper Kuribrong River (above Amaila Falls) to be a site of fish species endemism with some species possibly new to science (*Astyanax* sp. 2; *Lebiasina* sp 2.; *Brachyglanis* sp.; and the recently described *Characidium amaila* Lujan et al 2013). The upper Kuribrong River was therefore considered, in accord with the Bank's Environment and Safeguard Compliance Policy, to be Critical Natural Habitat. Three of the species above the Amaila Falls (Astyanax sp. 2; *Lebiasina* sp 2.; and *Brachyglanis* sp. have been shown to be habitat generalists and so are not considered to be seriously threatened by the Amaila Hydropower project; however, *Characidium amaila* was previously only known from five rapids above Amaila Falls. The consistency of results over the four different surveys suggests that this area has been thoroughly surveyed, (a conclusion supported by the lack of additional fish species being found in the present and most recent study).

Previous to this study only five separate rapids habitats had been identified in the upper Kuribrong River that support populations of *C. amaila*. It was thought that two of these locations would be substantively impacted by the construction and operation of the Amaila Falls Hydropower Project (AFHP). At that time, the estimated loss of 50% of the available known habitat for this species by construction of the AFHP was considered to present an unacceptable level of threat because of what was thought to be a significant conversion of the only known aquatic habitats of *C. amaila*. However, because not all possible areas and habitats for this fish had been surveyed to determine if the fish is more widely distributed outside of the area of influence, there was a possibility that *C. amaila* has a broader distribution than presently known. As yet undiscovered habitats in the upper Potaro River, in the Kuribrong River below Amaila Falls, and in unsurveyed rapids above Amaila Falls in the Kuribrong River. With that in mind, it was decided to undertake the additional survey presented here.

III. OBJECTIVES

The general objective of this study was to undertake intensive and focused surveys of potential habitats of *C. amaila* in the Kuribrong and Potaro Rivers (Figure 1). Specifically we set out to:

III.2.1 Identify and survey the rapids habitats in the upper Potaro River and suitable tributaries, above Kaieteur Falls.

III.2.2 Identify and survey the rapids habitats in the lower Kuribrong River and tributaries, in the watershed extending from Amaila Falls to the Potaro River.

III.2.3 Identify potential locations and survey new rapids habitats in the upper Kuribrong River and tributaries above Amaila Falls.

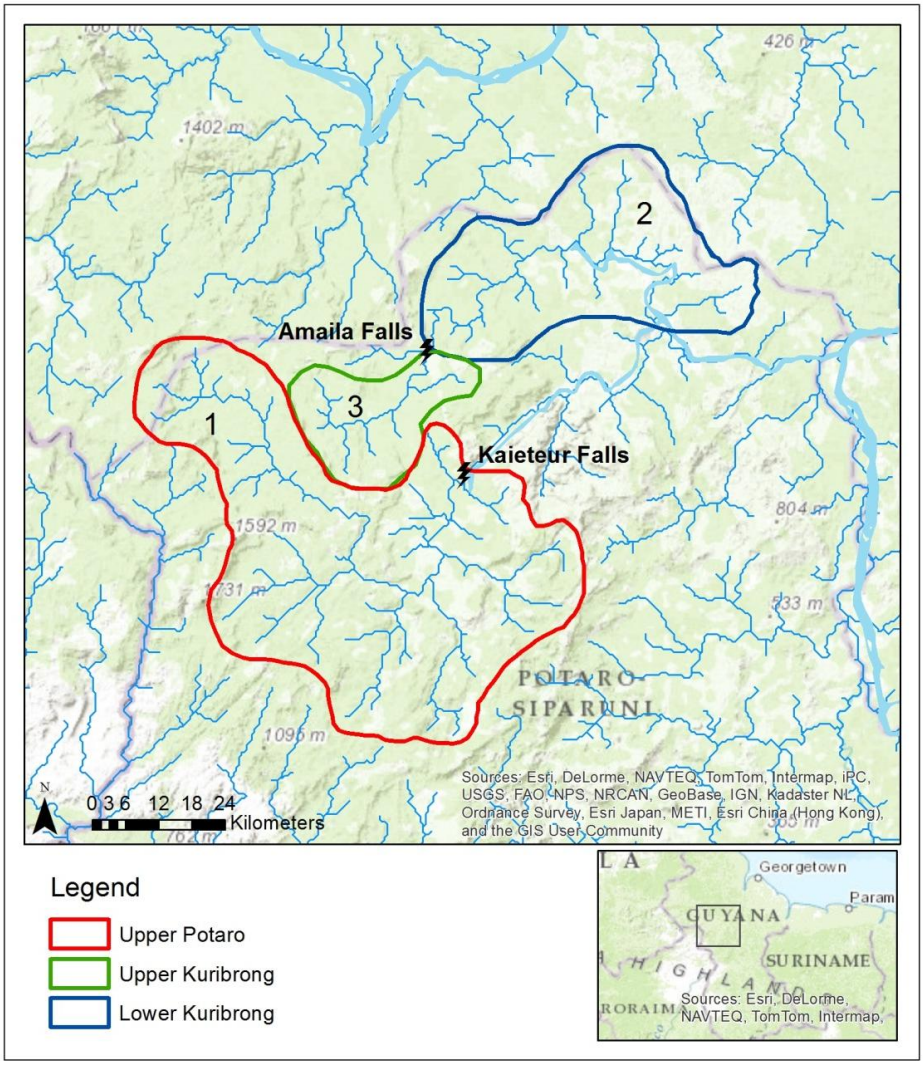

Figure 1. Areas that were to be sampled during this field survey.

IV. RESULTS

We briefly summarize below the results of the **70 sites** sampled for fishes during this field survey in the context of the original objectives stated in the terms of reference, and then provide a more detailed account of the results by team.

IV.1 Specific objective (2.1) was to identify and survey the rapids habitats in the upper Potaro River and suitable tributaries, above Kaieteur Falls. Both teams worked to accomplish this goal, and sampled fishes from **24 sites** in this area. Fish team 1 surveyed the uppermost Potaro River and its tributaries around the Ayanganna Old airstrip. No species of *Characidium* were found there. Fish team 2 surveyed the area of the Potaro River rapids and tributaries upstream from the village of Chenapau. No species of *Characidium* were found there either. So, *Characidium amaila* does not exist in the Potaro River drainage above Kaieteur Falls.

IV.2 Specific objective (2.2) was to identify and survey the rapids habitats in the lower Kuribrong River and tributaries, in the watershed extending from Amaila Falls to the Potaro River. Fish team 1 surveyed this area, sampling fishes from **9 sites**, including Grass Shoals and Ram Sheep rapids, and the Imbaima and Kiwikparu (Grass Falls) Creeks. No *Characidium amaila* were found, but in contrast with our findings for the upper Potaro River above Kaieteur Falls, other species of the genus *Characidium* and the related *Ammocryptocharax lateralis* and *Melanocharacidium* sp were found to inhabit both the rapids and the tributaries.

IV.3 Specific objective (2.3) was to identify potential locations and survey new rapids habitats in the upper Kuribrong River and tributaries above Amaila Falls. Fish team 1 was dedicated to this task during the first days of the survey and were joined by the scientists of Team 2 to continue during the last week of our efforts. A total of **37 sites** were sampled for fishes in this region. The teams succeeded in finding *Characidium amaila* in two new rapids, the first located between Rapids 1 and 2, and the second just upstream of Rapids 3, both in the main channel of the Kuribrong River. One juvenile *C. amaila* was found in the mouth of a tributary creek that joins the Kuribrong River near Rapids 1. A significant population of *C. amaila* was found in Itabu Creek, in the headwaters of the Kuribrong River, in a stream almost completely covered by forest canopy. Apparently suitable habitat was also found in Tributaries 1 and 2, but no *C. amaila* were collected there.

IV.4 Results from Fish Team 1: Kuribrong watershed and Upper Potaro River (Ayanganna)

IV.4.1. Fish Team 1 Members (Figure 2)

Figure 2. Fish Team 1 on March 15th at Amaila Falls bottom camp. This team included Dr. Donald C. Taphorn, Research Associate of the Royal Ontario Museum, Dr. Jonathan W. Armbruster, Curator of Fishes at the Auburn University Museum (AUM), David Werneke, Fish Collection Manager at AUM, Elford Liverpool, lecturer and coordinator of the Biodiversity Center at University of Guyana (UG) in Georgetown, and Diana Fernandes of the Environmental Protection Agency of Guyana, plus support personnel (Table 1).

IV.4.2. Sampling Dates for Team 1.

Team 1 began operations on March 3 in the Kuribrong River and worked until March 15th above and below Amaila Falls. Dr. Armbruster returned to Georgetown on March 15th. From March 16th to March 22 the team worked in the upper Potaro River near the Ayanganna Old airstrip village, then returned to the Kuribrong River from March 23 to March 28, where we were joined by Dr. Hernán López Fernández and Matthew Kolmann from fish team 2 (David Werneke returned to Georgetown on March 22nd). Detailed localities of sites sampled by both teams are given in Table 2. A map of the sites visited is given in Figure 3.

IV.4.3. Collecting Sites and Sampling Methods

A total of 53 collecting sites (Table 2) was sampled by Team 1 during this time using mainly small (6x15 foot) seines but also including gillnets, rotenone stations, minnow traps, hoop net traps, as well as hook and line. The geographic area covered is shown in Figure 3. Seining was the predominant method used and our efforts were concentrated in rapids (but see below) because *Characidium amaila* had only been collected previously from rapids. Seining in rapids involved placing the net at a fixed point in the rapids where it was held in place by two persons, who also ensured the net's lead line remained on the bottom of the river. Once the net was set up 1-3 additional persons proceeded to "kick" the substrate from 2-5 m away such that fishes dwelling between rocks, plants or other structural components of the substrate could be dislodged and carried into the net by the current.

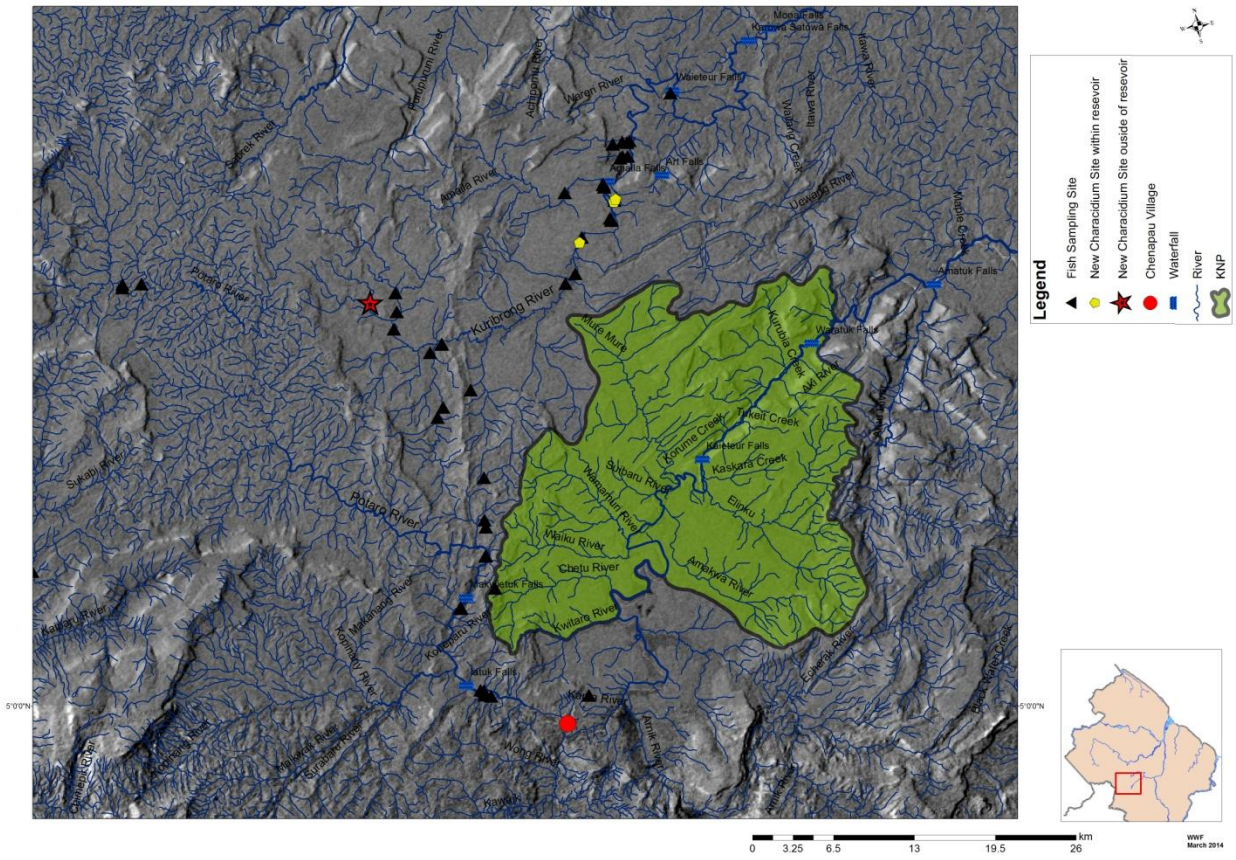

Figure 3. Collecting sites visited by fish teams 1 and 2 in the Amaila, Kuribrong and Potaro River drainages.

IV.4.4. Results from Fish Team 1

IV.4.4.1. Amaila River

The following **10 sites** were sampled for fishes in the Amaila River or its tributaries: GUY14-01*, GUY14-02, 03, 04, 06, 07*, 08*, 12, 19, 21; an asterisk indicates those collections where *Characidium amaila* was collected (see details of the sites in Table 2).

We collected *Characidium amaila* by small seine and in hoop traps from the rapids at the mouth of the Amaila River (Figure 4) where it intersects with the Kuribrong River just above Amaila Falls and found a population of *Characidium amaila* there that included large adults. Attempts to locate *Characidium amaila* in the middle and upper reaches of the Amaila River were not successful (Figure 5). Promising habitat in the uppermost Amaila River drainage where it reaches the hills (that had been located by a scouting party sent up the Amaila River in the previous weeks to find possible locations for a helipad in the upper Purupununi River) could not be reached because water levels had dropped so low that boat travel was impeded by the abundance of fallen logs. The research team attempting to reach the headwaters had not travelled even half the distance to that region after one full day's efforts to hack their way through the fallen trees (using a chain saw).

Figure 4. Mouth of the Amaila River near Rapids 1, with hoop net trap set in rapids.

Figure 5. Fish Team 1 members attempt to reach the headwaters of the Amaila River.

Attempts were also made to trawl using a small otter trawl in the Amaila River (Figure 6); however, the trawl got stuck each time after the boat had moved very little (less than 5 feet). No fishes were collected in the trawl.

Figure 6. Mounting a pole on the boat with which to pull the trawl.

IV.4.4.2. Kuribrong River

We sampled fishes at **14 sites** on the upper Kuribrong River between Amaila Falls and Yarrow Pond. (GUY14- 05, 06, 09, 10*, 11*, 13, 14, 15, 16, 17*, 18, 20*, 22*, 23*) An asterisk indicates sites where *Characidium amaila* was collected (see Fig. 3 above for a map of these sites, and Table 2 for details on the localities). Table 5 lists water quality data for many sites.

Our initial efforts on the Kuribrong River just upstream from Amaila Falls were concentrated between Amaila Falls and the widened area of the river known as Yarrow Pond, which is above Rapids 3. We attempted to collect *Characidium amaila* from deeper water habitats that had not been previously sampled using small trawls but were unsuccessful because of the highly irregular bottom contour of the river and (Figure 7), and the very high number of submerged trees that prevented deployment of small trawls. We extensively surveyed the river bottom using portable sonar but no suitable (that is flat, soft substrates) areas to use the trawls were located. For example, in our aluminum boat with and 8HP motor, it was typical to encounter a submerged obstacle (usually logs) or rocky outcrops every 30-45 seconds in a two and a half hour transect in which we surveyed the Kuribrong River bottom between Rapids 2 and Rapids 3.

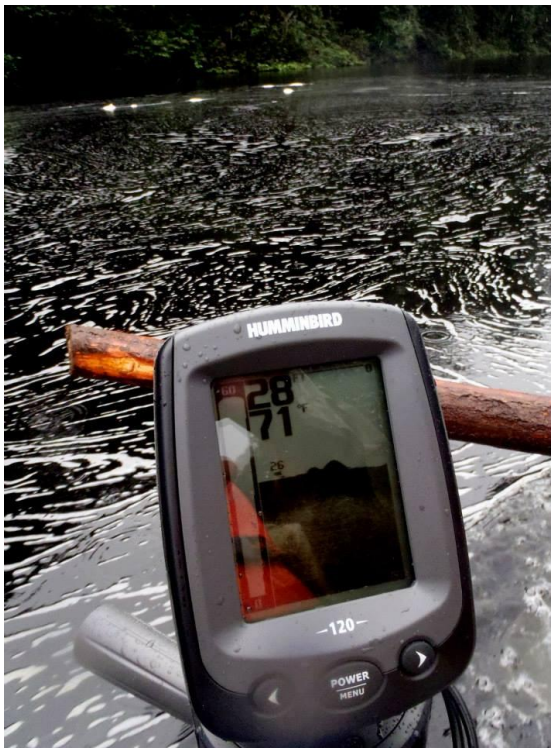

Figure 7. Sonar display showing bottom contour of Kuribrong River.

Given the impossibility of using the trawls, we changed our efforts in an attempt to find novel habitat types using small seines, baited minnow traps, hoop nets set in rapids, and rotenone. The most effective gear-type for this manner of sampling was small seines, with which we located a juvenile *Characidium amaila* in the mouth of a tributary creek of the Kuribrong (GUY14-23). We also located *Characidium amaila* at a new site in rapids that emerged with falling waters in the main channel of the Kuribrong River, just above Rapids 1 (GUY14-17 and 22). When water-levels fell, we took transects across Rapids 1, 2, and 3, and found *C. amaila* in any habitat we

could access that had vegetation. The hoop nets captured just a few *Characidium amaila* when set in rapids, but only in previously known localities. The baited minnow traps were effective in capturing mainly Characidae, Heptapteridae, Trichomycteridae and Cichlidae but did not capture any *Characidium amaila*. No *Characidium amaila* were captured in the rotenone stations, probably because the use of rotenone is restricted to regions with low flow rates so as not to dilute it before it affects the fishes. We did not find any correlation between plant species type and *C. amaila*; the fishes were found equally as common in the Podostemaceae plants (Figure 8) as in stands of *Rondonanthus capillaceus* (a fine, hair-like grass-like semiaquatic plant, Figure 9) and sheetrock covered with broad-leaved grass (Figure 10).

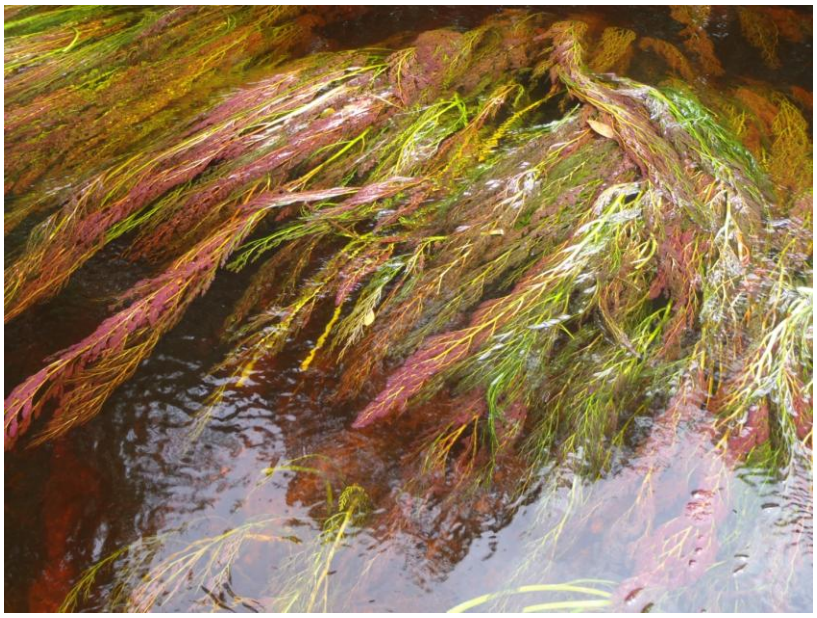

Figure 8. Podostemaceae growing in the Kuribrong River.

Figure 9. Leon Benjamin with *Rondonanthus capillaceus* growing on rock.

Figure 10. Broad leaf "grass" growing on rocks in the Kuribrong River (to the left and behind of the feet of Donald Taphorn).

IV.4.4.3 Lower Kuribrong River (and tributaries below Amaila Falls; GUY14-24 to 32)

Because they were the most likely habitats for *Characidium amaila*, we concentrated our initial efforts in this area on two sets of rapids in the main channel of the Kuribrong River below Amaila Falls: Grass Shoals (Figures 11 and 12) and Ram Sheep Rapids (Figures 13 and 14);see Figure 2 for a map showing their locations. We also sampled sites in Kiwikparu (Grass Falls) Creek (Figure 15) for a total of **9 sites**. The fish fauna below Amaila Falls is different from that above, showing higher species diversity and greater (apparent) relative abundance of fishes. In this stretch of the river many species not found above the falls were collected, but even though the habitat in the rapids and the tributaries were superficially similar to where *Characidium amaila* was found previously (above the falls), the species was not present. *Characidium amaila* was replaced by the related *Ammocryptocharax lateralis* (Figure 16), *Characidium crandellii* (Figure 17), and an unidentified species of *Melanocharacidium* (Figure 18). We also collected *Lebiasina* sp 1 (Figure 19) only *Lebiasina* sp 2 (Figure 20) was found above Amaila Falls). It is possible that the *Lebiasina* from above and below Amaila Falls may be conspecific. Detailed morphological and DNA analyses are needed to determine their taxonomic status.

Figure 11. Grass Shoals Rapids on the Kuribrong River below Amaila Falls.

Figure 12. Grass Shoals Rapids on the Kuribrong River below Amaila Falls.

Figure 13. Fish Team 1 members at Ram Sheep Rapids on the Kuribrong River below Amaila Falls.

Figure 14. Fish Team 1 members at Ram Sheep Rapids on the Kuribrong River below Amaila Falls.

Figure 15. D. Werneke, D. Taphorn, J. Armbruster and E. Liverpool in Grass Falls or Kiwikparu Creek, a tributary of the lower Kuribrong River. No *Characidium amaila* were found here, but *Characidium crandellii* and *Ammocryptocharax lateralis* were abundant.

Figure 16. *Ammocryptocharax lateralis.* This species inhabits the rapids found in the Kuribrong River below Amaila Falls.

Figure 17. *Characidium crandellii* was abundant in Kiwikparu Creek, a tributary of the Kuribrong River below Amaila Falls.

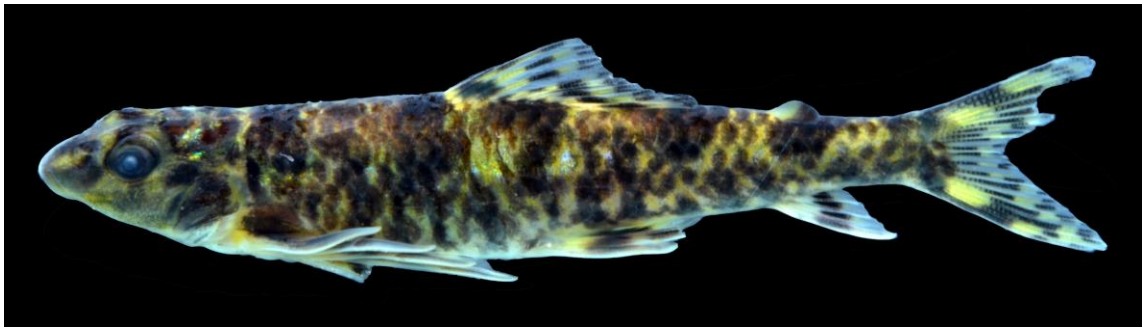

Figure 18. An unidentified species of *Melanocharacidium* was only collected once during the survey, in rapids below Amaila Falls in the Kuribrong River.

Figure 19. *Lebiasina* sp 2 from GUY14-27. This species is common in the Kuribrong River and its tributaries below Amaila Falls.

Figure 20. *Lebiasina* sp 1. This species is found in the Kuribrong and Amaila Rivers above Amaila Falls.

Severe gold mining impacts on the Kuribrong River channel, riparian zone and adjacent areas were observed along most of the area explored below Amaila Falls (Figure 21). Large mounds of tailings from dredges, shoreline deforestation and excavation, and huge pits were common (Figure 22).

Figure 21. Gold mining impacts on shoreline of Kuribrong River below Amaila Falls.

Figure 22. Gold mining tailings deposited in the Kuribrong River below Amaila Falls.

IV.4.4. Results from Kuribrong River Headwaters. (GUY14- 39 to 47, 48*, 49 to 51, 52*).

Because it was not possible to explore the upper Purupununi River (for logistical reasons) we used the final days of the expedition to return to the Kuribrong River drainage above Amaila Falls to survey the upper Kuribrong and its tributaries. The Kuribrong main channel was travelled from Amaila Falls to Rapids 4 (see map in Figure 2) looking for new rapids habitats that might have emerged because of lowering water levels, but no new rapids were found in that stretch of river (about a seven hour trip in our boat). Boat travel above Rapids 4 and in Kuribrong River tributaries was severely impeded by numerous fallen trees that blocked passage and had to be removed using a chain saw, or bypassed by carrying the boat around the obstacle (Figure 23). A new base camp was erected and a new helipad cleared in the forest about one hour and fifteen minutes (by boat with 8HP motor) below Rapids 4. (Figure 24).

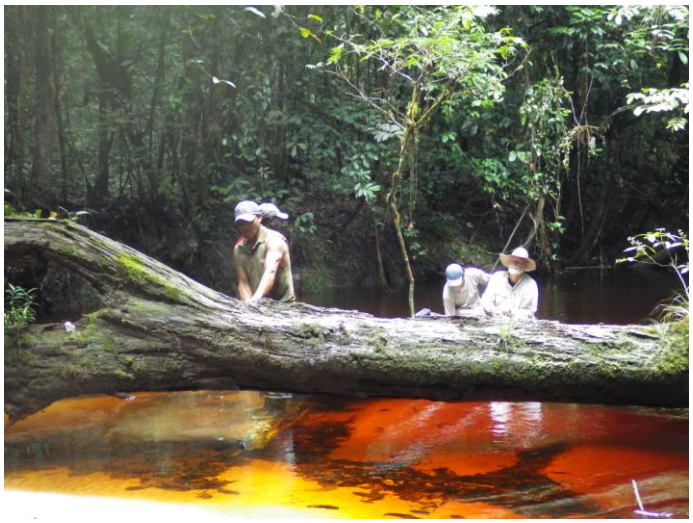

Figure 23. Progress on the upper Kuribrong River and its tributaries was impeded by numerous fallen trees blocking the way.

Figure 24. Base camp and new helipad on upper Kuribrong River.

From the new base camp, typical sampling consisted of day trips to Tributaries 2 or 3 or the Kuribrong headwaters using the boat to ascend as far as possible into a given stream, and then subsequent hiking 2-3 hours towards the headwaters. No *Characidium amaila* were found in tributaries 2 and 3, but we only sampled the headwaters at a few collecting sites in each (GUY14-44 & 47) given the time available (daylight). Habitat appropriate for *Characidium amaila* (swift water flowing over rock with aquatic plants) was present in the headwaters of Tributary 2, but not Tributary 3. In Tributary 2, seining in what seemed to be good habitat (i.e. sheetrock with aquatic plants and swift flow) produced very few fish, and *Characidium amaila* was not found (Figure 25). Few fish were also obtained from a rotenone station is a nearby stream.

Figure 25. Fish sampling site in headwaters of Tributary 3.

Two day trips were made to the streams in the upper Kuribrong River watershed, the first was along the channel with the most flow, in an apparently unnamed tributary. After spending all day clearing logs and other debris (making the river almost un-navigable), the hills were not reached, no appropriate rapids habitat was discovered, and *Characidium amaila* was not found in three sites surveyed (GUY14-40, 41 and 42).

On the last day of the expedition we mounted a final day trip to Itabu Creek, another headwater tributary of the Kuribrong River tributary. After three hours of clearing the creek channel with the chain saw, and another 35 minutes on foot, we reached a narrow channel, almost completely covered by the forest canopy, where the stream exited the higher portion of the watershed. We had discovered an extensive system of rapids (designated Rapids 6), about 1100 m long and averaging 15 m wide with extensive stands of the aquatic plant *Rondonanthus capillaceus*. *Characidium amaila* was found in this habitat (GUY14-52, Figures 26, 27 and 28). The stream

divided just below where we were sampling and the other branch had identical habitat (Fig. 29) that we didn't have time to sample. The total habitat available to *Characidium amaila* in Rapid 6 is estimated to be around 16,500m^2

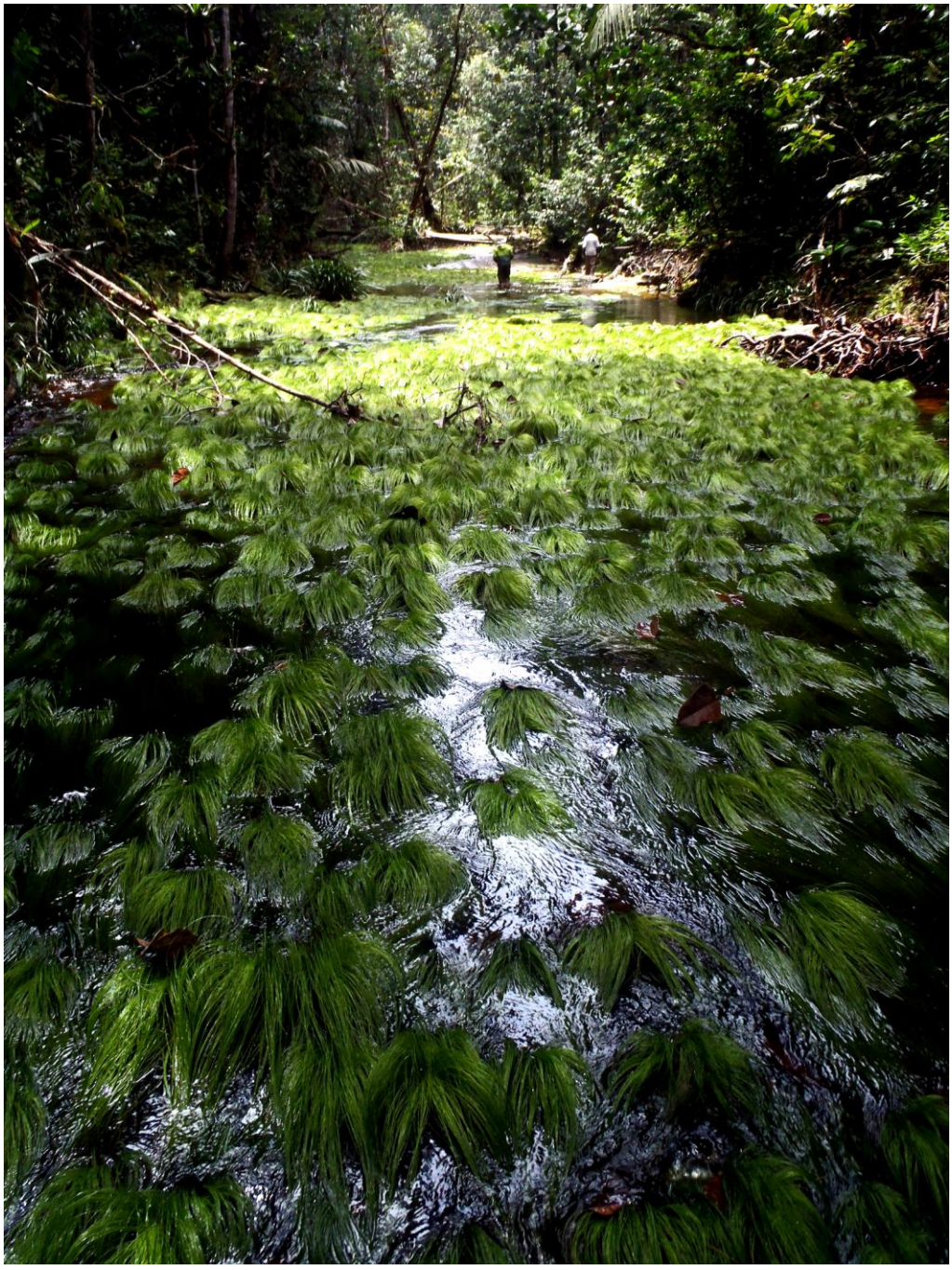

Figure 26. Itabu Creek GUY14-52 (Rapids 6) a forest stream where *Characidium amaila* was found.

Figure 27. Itabu Creek GUY14-52 (Rapids 6) a forest stream where *Characidium amaila* was found.

Figure 28. Seining in Itabu Creek, GUY14-52 (Rapids 6) a forest stream where *Characidium amaila* was collected.

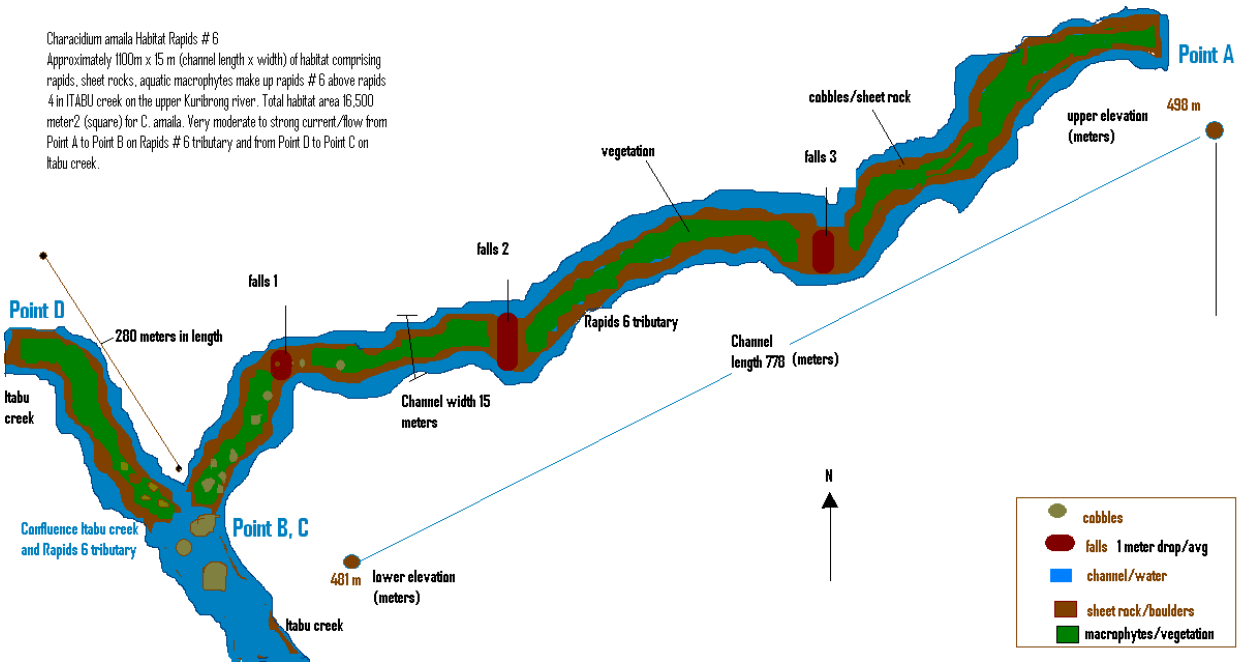

Figure 29. Rapids 6, Itabu Creek.

IV.4.5. Results from Potaro River near Ayanganna Old Village (GUY14- 33 to 38)

Our base camp was established near the banks of the upper Potaro River at Ayanganna Old airstrip village (Figure 30). We had no available boats at this camp so exploration was done on foot. We sampled the Potaro River at Moyow Falls, which was habitat suitable for *Characidium amaila* (with sheetrock and the same species of aquatic plants) similar to what is coincident with their occurrence in the Kuribrong River rapids. However, no *Characidium amaila* were present. In fact, no species of *Characidium* or *Ammocryptocharax*, both members of the family Crenuchidae and usually found in rapids-type habitats in the lower Potaro River below Kaieteur Falls, as well as the Kuribrong River below Amaila Falls were present.

Figure 30. Rapids at Moyow Falls near Ayanganna Old; *above:* 15 March at low water on left (rocks and plants exposed); *below:* 16 March with high water (no rocks or plants visible, water levels raised about 5 feet overnight).

We were fortunate however to collect other species of fishes associated with fast water rapids such as *Trichomycterus guianense* (Figure 31) and *Lithogenes villosus* (Figure 32). The latter was a most fortuitous catch because it is a species long sought after by ichthyologists interested in reconstructing a DNA phylogeny of the family Loricariidae and determining its most closely related taxa; the species had formerly been known by only 6 specimens, and we increased this 10 times. Heavy rains during much of the time spent at this camp turned the river into a raging torrent, making it impossible to sample with such high water. So we explored smaller streams and forest pools where we discovered what will probably turn out to be a new species of *Trichomycterus* catfish (Figure 33), and possible a new species of *Laimosemion* (Figure 34).

Figure 31. *Trichomycterus guianense*.

Figure 32. *Lithogenes villosus*.

Figure 33. *Trichomycterus* sp (probably new to science).

Figure 34. *Laimosemion* sp (possibly new to science).

IV.4.6. Summary of Fish Collections by Fish Team 1

Fish Team 1 collected a total of 3,928 specimens of fishes from five taxonomic orders and sixteen families (Figures 35 & 36) about 59 different species from all localities sampled (Table 3).

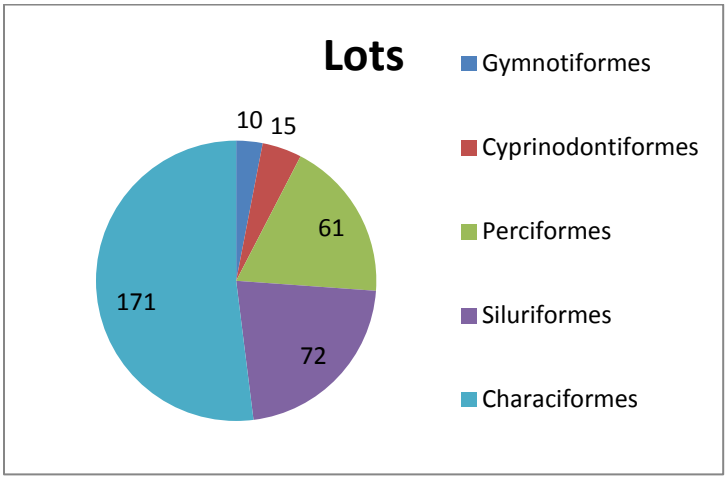

Figure 35. Number of lots collected by taxonomic Order (Fish Team 1).

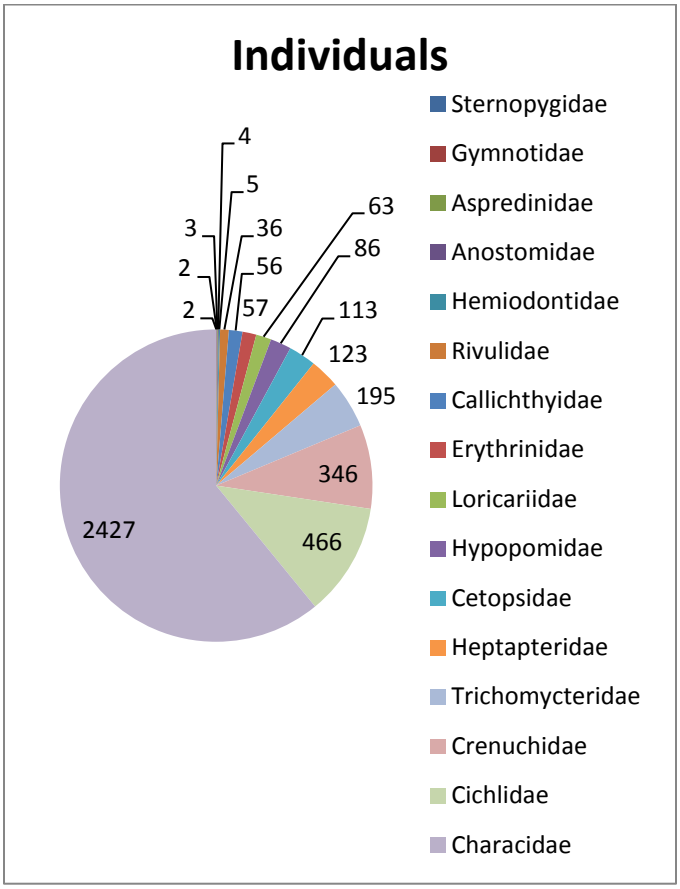

Figure 36. Number of individuals by taxonomic Family (Fish Team 1)

IV.5. Results from Fish Team 2: Potaro River

IV.5.1. Fish Team 2 Members

Fish Team 2 was formed by Dr. Hernán López-Fernández (Curator of Fishes, Royal Ontario Museum, Toronto, Canada) and Mr. Matthew Kolmann, M.Sc. (Department of Ecology and Evolutionary Biology, University of Toronto, Toronto, Canada), with help from Danny Gordon, Mr. Mark Burnett (University of Guyana), the associated water quality team (Ms. Denise Simmons, M.Sc. University of Guyana and Mr. Wenceslaus Washington, Guyana Protected Areas Commission), and various members of the support crew (Table 1).

IV.5.2. Sampling Dates and Sites

From March 15 to March 22 Fish Team 2 surveyed the upper Potaro River drainage (Figure 37) between the bottom of Iatuk Falls (Base Camp 1) and upstream from Makwietuk Falls (Base Camp 2).

Figure 37. Waterfall and Rapids in upper Potaro River. Waterfall photo by Andrew Snyder.

IV.5.3. Collecting Sites and Sampling Methods

Fish Team 2 surveyed fishes from 17 localities (Table 2) in the area using a combination of seines, gillnets, rotenone stations and hook and line. As for the other areas sampled, seining was the predominant method used in rapids. Complementary sampling was done at the bottom of rapids and in other habitats with less current by using gillnets which were checked every 1-2 hours. We sampled several small tributaries and one pond (sites with no to moderate current) using rotenone, which allows capturing fishes in highly structured environments that cannot be sampled otherwise.

Finally, we recruited the help of camp workers to complement sampling using hook and line. These methods, combined, should provide a thorough sampling of all types of fishes present in the sampled sites.

IV.5.4. Results from Fish Team 2

IV.5.4.1. Potaro River near Chenapau

Although the same sheetrock substrate and the same species of plants and rapid flow, and similar water quality was observed in the Potaro River, no *Characidium amaila* or any other species of *Characidium* or *Ammocryptocharax* were collected from any of the sites in this region of the Potaro River drainage even though the aquatic habitats were very similar to those of the Kuribrong River drainage where *Characidium amaila* occurs.

It is relevant to highlight that almost constant rain in the upper Potaro caused the water level of the river to go up several feet (>2m) from the day of our arrival. As a result, many rapids that could have been sampled under low water conditions became inaccessible to our team. We were able to sample only three sites that can be considered true rapids, including two with bedrock substrates (HLF14-05, HLF14-14) near flooded sections of rapids with attributes similar to those considered typical habitat for *Characidium amaila* (i.e. rapids on gradually sloping bedrock with cover of *Rondonanthus capillaceus*). We could not fish most of these habitats directly because they were either too deep or had strong current, making sampling impossible. Sampling was however adequate to determine the absence of *Characidium amaila* from this drainage.

Fish Team 2 obtained collections from 17 sites in the upper Potaro basin around Chenapau. The collections produced a total of 651 specimens belonging to 19 species in 5 orders (Figure 38) and 9 families (Figure 39). Diversity documented during our trip was relatively low, and there is little doubt that we failed at collecting several species either known to occur in the basin (e.g. Eigenmann 1912, Hardman et al. 2002) or collected by Fish Team 1 in the Ayanganna sites upstream from the area we sampled (e.g. *Hypopomus artedi*, *Laimosemion breviceps*, *Nannacara bimaculata*).

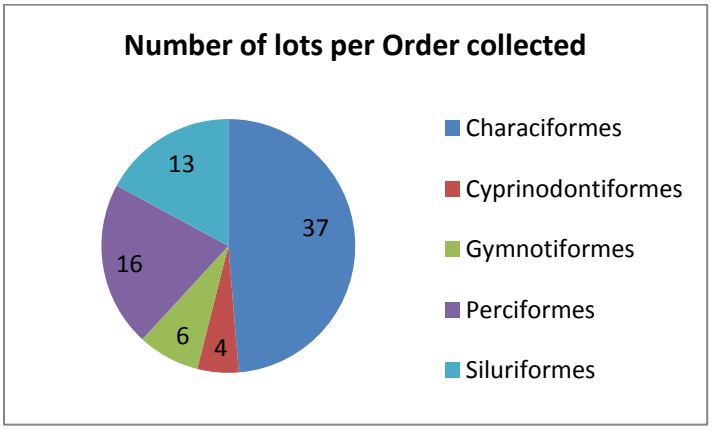

Figure 38. Number of lots of fishes collected by Fish Team 2 by taxonomic order.

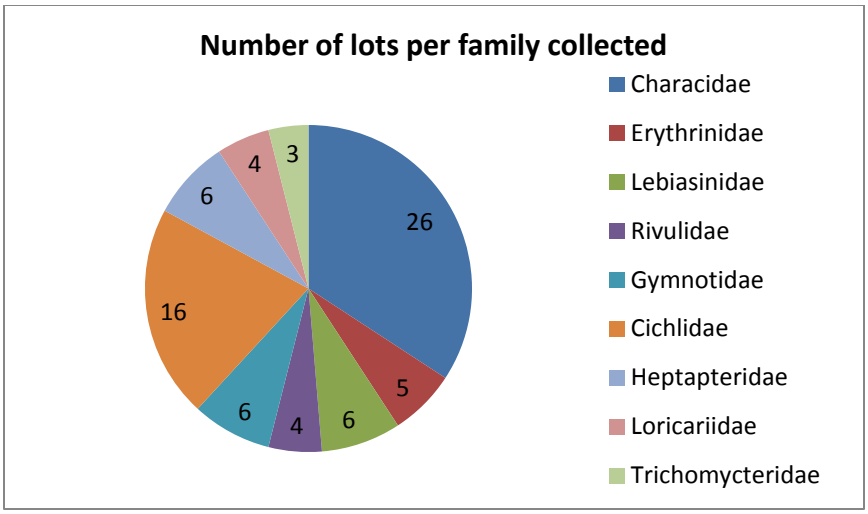

Figure 39. Number of lots of fishes collected by Fish Team 2 by family.

V. IUCN Threatened taxon evaluation for *Characidium amaila*.

As shown in the chart below, there are five ways a species can be classified according to the IUCN's guidelines (2014):

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.

A2 Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) *[(a) cannot be used for A3]*.

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation *[except A3]*
(b) an index of abundance appropriate to the taxon
(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality
(d) actual or potential levels of exploitation
(e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)

	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented **OR** Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** area, extent and/or quality of habitat; **(iv)** number of locations or subpopulations; **(v)** number of mature individuals			
(c) Extreme fluctuations in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** number of locations or subpopulations; **(iv)** number of mature individuals			

C. Small population size and decline

	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 250	< 2,500	< 10,000
AND at least one of C1 or C2			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(ii) % of mature individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals			

D. Very small or restricted population

	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	**D1.** < 1,000
D2. *Only applies to the VU category* Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	-	-	**D2.** typically: AOO < 20 km² or number of locations ≤ 5

E. Quantitative Analysis

	Critically Endangered	Endangered	Vulnerable
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

1 Use of this summary sheet requires full understanding of the *IUCN Red List Categories and Criteria* and *Guidelines for Using the IUCN Red List Categories and Criteria*. Please refer to both documents for explanations of terms and concepts used here.

Figure 40. Chart of threat categories of the IUCN.

The only criterion that applies to *Characidium amaila* is B. We have insufficient data on the population size of *Characidium amaila*, which rules out criteria A, C, D and E, leaving only B, which considers the size of a species geographic range. Sampling in the Kuribrong River and adjacent watersheds indicate that this species is only present in the Kuribrong River above Amaila Falls. That watershed has an area of 642 km^2, which we consider to be the area of occupancy (AOO) for *Characidium amaila*, leading to a classification as VULNERABLE. The other possibly endemic and possibly new to science species identified from the Kuribrong River above Amaila Falls, *Brachyglanis sp, Astyanax sp,* and *Lebiasina sp* would, using the same criterion, also be considered as Vulnerable in this scheme.

VI. Impacts threatening populations of *Characidium amaila*.

Our observations indicate that *C. amaila* is adapted to quickly fluctuating water levels (as observed during the four weeks of this field survey in Rapids 1, 2, 3 and 5). Water levels can drop or raise up to 2 m overnight. The dynamic nature of these rapids then, requires *C. amaila* to make at least local movements to avoid desiccation when water levels fall, and (perhaps) into shallower areas when water depths reach flood peaks. Thus, the area utilized by *Characidium amaila* in the rapids habitats of the main channel of the Kuribrong River change abruptly, without apparent harm to the fish.

Figure 41. Kuribrong Rapids 1 on 3 March (left) and 15 March (right).

The main threat to populations of *C. amaila* at this time is from gold and diamond miners. Excavations of the shoreline and interior areas can already be found above Amaila Falls (Figure 42). The close proximity of major gold and diamond mines in the lower Kuribrong River, the Potaro River near Chenapau, and the upper Mazaruni River all but guarantee the rapid exploitation of these minerals in the upper Kuribrong River unless extensive, well funded rigorous measures are taken to monitor and conserve the watershed.

Figure 42. Gold mine seen above Amaila Falls in the Kuribrong River drainage.

VII. Estimates of possible additional populations of *Characidium amaila* in the Kuribrong River above Amaila Falls.

Gap analysis is simply an estimate of possible populations of a species in areas that are as yet unexplored. For *Characidium amaila*, we now have a good profile of suitable habitat: they have been found in swift, clean, well oxygenated water with acid pH and low conductivity, in rapids flowing over rocks (but in one locality with sand and wood substrates) with aquatic vegetation, usually Podostemaceae, *Rondonanthus capillaceus* and other species of Eriocaulaceae, or other grass-like semi aquatic vegetation. They are found small to moderate sized forest streams, as well as full sun exposed rapids in the main stem of the Kuribrong River, above Amaila Falls.

Visual examination of topographic maps led us to explore the headwaters of Tributary 1 and 2 (Fig. 43), where we were able to reach apparently suitable habitat at one site in each, but where no *C. amaila* were found. Using similar estimates of habitat suitability, we found a viable population of *C. amaila* in Itabu Creek, thus demonstrating that our predictive ability to find this species worked for 1 in 3 attempts. Using slope and topographic maps of the Kuribrong River, we observe that there are many other still unexplored similar streams that may harbor populations of *C. amaila.* A count of such streams yields an estimate of somewhere between 25 to 100 possible additions streams. If, as we found in Itabu Creek, they inhabit about 16,500 m2 in each, then it seems apparent that a vast amount of possible habitat for *C. amaila* exists in the hidden forest streams.

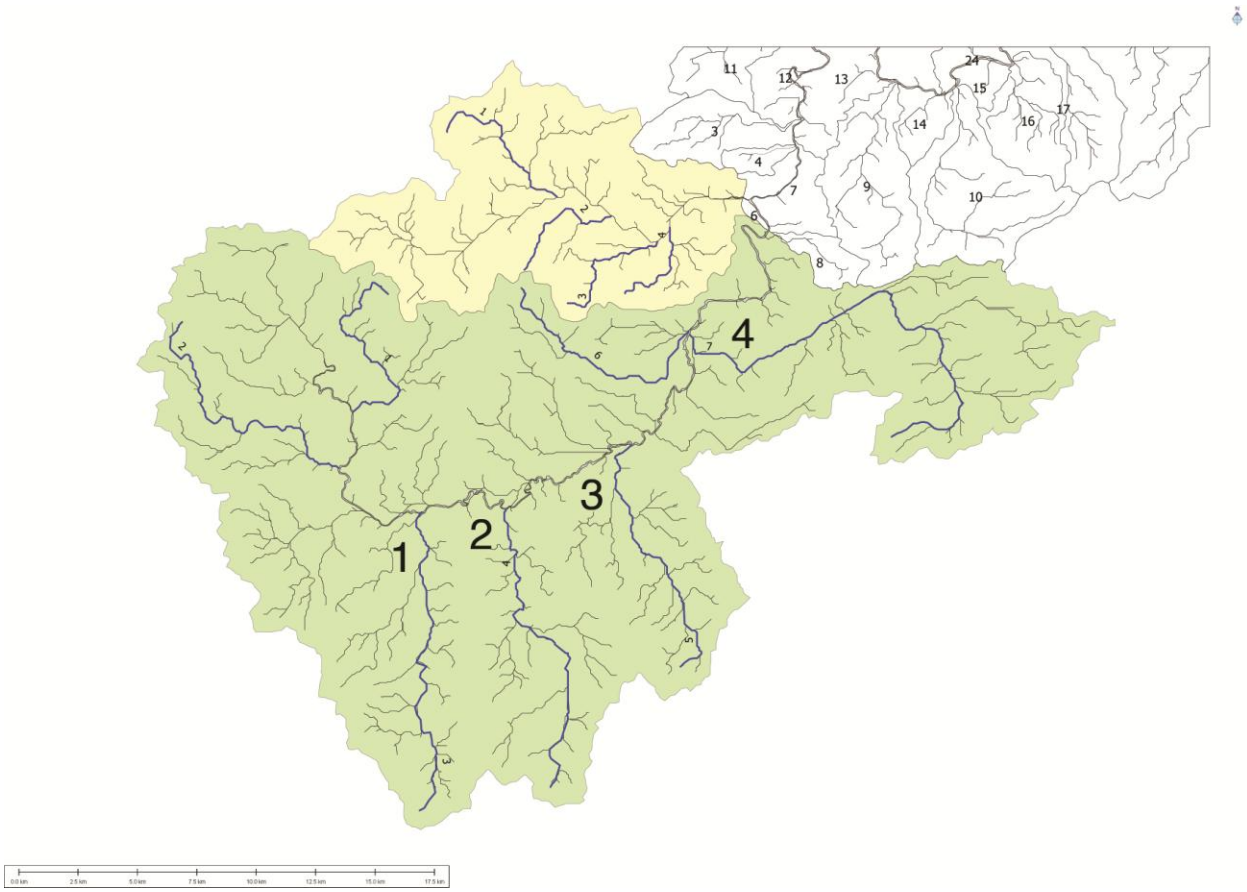

Figure 43. Tributaries 1 to 4 of the upper Kuribrong River. (source: Exponent)

Table 1. List of participants in Fish Team 1 and Fish Team 2.

Royal Ontario Museum (ROM) - Research Associate	Dr. Donald C. Taphorn taphorn@gmail.com	Project Coordinator
ROM - Curator of Fishes	Dr. Hernán López Fernández hlopez_fernandez@yahoo.com	Fish sampling and identification, leader of Fish team 2
Auburn University Museum of Natural History (AUM) Curator of Fishes	Dr. Jonathan W. Armbruster armbrjw@auburn.edu	Fish sampling and identification, Fish team 1
AUM Fish Collection Manager	Mr. David Werneke M.Sc. wernedc@auburn.edu	Fish sampling and identification, Fish team 1
University of Toronto (UT) Ichthyology Doctoral Student	Mr. Matthew Kolmann M.Sc. matthew.kolmann@mail.utoronto.ca	Fish sampling and identification, Fish team 2
University of Guyana (UG) Lecturer	Mr. Elford A. Liverpool M.Sc. elfordliverpool@yahoo.com	fish sampling & water quality, Fish team 1
UG - Lecturer	Ms. Denise Simmons den.simmons100@gmail.com	water quality, Fish team 2
Kaieteur National Park Warden	Ms. Nadine Johnson	water quality, Fish team 2
Environmental Protection Agency of Guyana	Ms. Diana P. Fernandes dianafernandes2300@gmail.com	Fish sampling, water quality, Fish team 1
UG Student	Mr. Mark Burnett	
	Mr. Ovid Williams ovidkapong@yahoo.com	Camp coordinator, translator, logistics, Fish team 1
	Mr. Maurice Benjamin	Boat Captain, Fish team 1
	Mr. Kendall Salvadore	Boat Captain, Fish team 1
	Mrs. Agatha Salvador	fish sampling (hook and line)
	Mr. Leon Benjamin	laborer, Fish team 1
	Mr. Mark Benjamin	laborer, Fish team 1
	Mr. Gavin Pablo	boat bowman, laborer, Fish team 1
	Mr. Bronnel Salvadore	Laborer, Fish team 1
	Mr. Ovid Erigot	laborer, fish sampling, Ayanganna Old
	Mr. John Bassett Samuel	laborer, fish sampling, Ayanganna Old
	Mr. Patterson Joseph	laborer, fish sampling, Ayanganna Old
	Mr. Desmond Joseph	laborer, fish sampling, Ayanganna Old
	Ms. Juliana Joseph	fish sampling, Ayanganna Old
	Ms. Lucita Erigot	fish sampling, Ayanganna Old
	Ms. Terasina Samuel	fish sampling, Ayanganna Old
	Ms. Betsy Erigot	fish sampling, Ayanganna Old
	Mrs. Lolita Fleming	Cook
	Mrs. Rosie Edmonds	Assistant Cook
GDF	Benjamin Hooper	Medical Personnel
	Mr. Danny Gordon	fish sampling, logistics, fish team 2
Guyana Protected Areas Commission)	Mr. Wenceslaus Washington awilli73@yahoo.com	

Table 2. List of Collection sites For Fish Team 1 and Fish Team 2.

Field #	Date	Drainage	Locality	Latitude	Longitude	Sampling method
GUY14-01	4-Mar-14	upper Kuribrong	Amaila River at the confluence with Kuribrong River	5.37608	-59.55053	6' x 15' seine with 1/8 " mesh
GUY14-02	4-Mar-14	upper Kuribrong	Amaila River at campsite boat landing, just upstream of confluence with the Kuribrong River	5.37626	-59.55114	minnow traps
GUY14-03	4-5-Mar-14	upper Kuribrong	Amaila River at campsite near confluence with Kuribrong	5.37626	-59.55114	minnow traps
GUY14-04	5-6-Mar-14	upper Kuribrong	Amaila River at campsite near confluence with Kuribrong	5.37626	-59.55114	gill net, hook and line
GUY14-05	5-Mar-14	upper Kuribrong	Salaniparu Creek (first creek along trail from campsite to upper Kuribrong above Amaila Falls)	5.37440	-59.55019	6' x 15' seine with 1/8 " mesh
GUY14-06	6-Mar-14	upper Kuribrong	side channel of Kuribrong River, left bank below Amaila River mouth, just upstream from Amaila Falls	5.37608	-59.55053	rotenone
GUY14-07	8-Mar-14	upper Kuribrong	Amaila River mouth	5.37626	-59.55114	minnow traps, hoop nets, gill net
GUY14-08	7-8-Mar-14	upper Kuribrong	Amaila River, just upstream from mouth	5.37626	-59.55114	minnow traps, hoop nets, gill net
GUY14-09	8-Mar-14	upper Kuribrong	Small intermittent stream entering Rapids 2 above Amaila Falls on Kuribrong River	5.35193	-59.54593	hand net
GUY14-10	8-Mar-14	upper Kuribrong	Kuribrong River, Rapids 3, right bank	5.33816	-59.56625	6' x 15' seine with 1/8 " mesh
GUY14-11	8-Mar-14	upper Kuribrong	Kuribrong River, Rapids 2 above Amaila Falls	5.35081	-59.54483	6' x 15' seine with 1/8 " mesh
GUY14-12	8-Mar-14	upper Kuribrong	Amaila River, upstream from camp at mouth			hook and line
GUY14-13	9-Mar-14	upper Kuribrong	drying pools along Kuribrong River portage trail at Rapids 1, above Amaila Falls	5.37440	-59.55019	Hand nets
GUY14-14	9-Mar-14	upper Kuribrong	drying pools along Kuribrong River portage trail at Rapids 2, above Amaila Falls	5.35017	-59.54465	Hand nets
GUY14-15	9-Mar-14	upper Kuribrong	Kuribrong River, side channel and sandbar 8.6 km SSW of confluence with Amaila River	5.30480	-59.57802	6' x 15' seine with 1/8 " mesh
GUY14-16	9-Mar-14	upper Kuribrong	Kuribrong River, side channel 7.5 km S of confluence with Amaila River	5.31184	-59.57089	6' x 15' seine with 1/8 " mesh
GUY14-17	9-Mar-14	upper Kuribrong	Kuribrong River, rocky outcropping, 5 km SSW of Amaila River confluence	5.33470	-59.56809	6' x 15' seine with 1/8 " mesh
GUY14-18	9-Mar-14	upper Kuribrong	Kuribrong River, side channel between first and second rapids above Amaila Falls	5.36476	-59.54256	hook and line
GUY14-19	9-Mar-14	upper Kuribrong	Amaila River at first large flowing left bank tributary	5.37030	-59.57860	6' x 15' seine with 1/8 " mesh
GUY14-20	9-Mar-14	upper Kuribrong	Kuribrong River above Amaila Falls in Rapids 1	5.37608	-59.55053	6' x 15' seine with 1/8 " mesh
GUY14-21	10-Mar-14	upper Kuribrong	Amaila River near confluence with Kuribrong River	5.37626	-59.55114	hook and line
GUY14-22	10-Mar-14	upper Kuribrong	Kuribrong River at riffle midway between Rapids 1 and 2, 1.58 km SSE of Amaila River confluence	5.36405	-59.54318	6' x 15' seine with 1/8 " mesh
GUY14-23	10-Mar-14	upper Kuribrong	right-bank tributary of Kuribrong River, 300 meters upstream from the top of Rapids 1, 1.5 km SE of Amaila river confluence	5.36599	-59.54198	6' x 15' seine with 1/8 " mesh
GUY14-24	11-Mar-14	lower Kuribrong	small stream, possibly ephemeral, along trail from Amaila Falls summit camp to base camp	5.39656	-59.53691	hand net
GUY14-25	11-Mar-14	lower Kuribrong	small stream along trail from Amaila Falls summit camp to base camp	5.39537	-59.53863	hand net
GUY14-26	12-Mar-14	lower Kuribrong	Kuribrong River in rapids at Grass Shoals	5.40791	-59.53179	6' x 15' seine with 1/8 " mesh
GUY14-27	12-Mar-14	lower Kuribrong	unnamed creek, left bank tributary of Kuribrong River, just upstream from Imbaima Creek, at lower end of Amaila Falls gorge	5.39653	-59.53312	hook and line
GUY14-28	12-13-14 Mar 14	lower Kuribrong	Kuribrong River at campsite boat landing	5.39653	-59.53312	minnow traps and hook and line
GUY14-29	13-Mar-14	lower Kuribrong	Kuribrong River at Ram Sheep Rapids	5.44236	-59.50210	6' x 15' seine with 1/8 " mesh
GUY14-30	13-Mar-14	lower Kuribrong	Kiwikparu Creek (Grass Falls Creek) just upstream from mouth with Kuribrong River	5.40650	-59.53361	6' x 15' seine with 1/8 " mesh
GUY14-31	14-Mar-14	lower Kuribrong	Kiwikparu Creek (Grass Falls Creek) near top of falls	5.40532	-59.54390	rotenone

GUY14-32	14-Mar-14	lower Kuribrong	side pool of small tributary to Grass Falls Creek (Kiwikparu Creek), 1.5 km SE of Amaila Falls base camp	5.40703	-59.53706	hand net
GUY14-33	16-Mar-14	upper Potaro	Potaro River at Ayanganna Old village	5.30181	-59.89838	6' x 15' seine with 1/8 " mesh
GUY14-34	16-17-18-Mar-14	upper Potaro	Potaro River at Ayanganna Old village, nets and traps set upstream from campsite, also in Aluyawongpalu (Porcupine Creek)	5.30181	-59.89838	hook and line, 3/4 "gill net, Amerindians basket traps
GUY14-35	17-18-19-Mar-14	upper Potaro	streams around Ayanganna Old village	5.30181	-59.89838	hand nets, minnow traps, gill nets
GUY14-36	19-Mar-14	upper Potaro	Potaro River at Ayanganna Old village, western side	5.30181	-59.89838	6' x 15' seine with 1/8 " mesh
GUY14-37	19-Mar-14	upper Potaro	Potaro River downstream from Ayanganna Old	5.30436	-59.88450	6' x 15' seine with 1/8 " mesh
GUY14-38	20-Mar-14	upper Potaro	Moyow Creek, upstream from Ayanganna Old	5.30400	-59.89819	rotenone
GUY14-39	23-24-Mar-14	upper Kuribrong	campsite about 4 km downstream from Rapids 4	5.26103	-59.66753	minnow traps, hook and line
GUY14-40	24-Mar-14	upper Kuribrong	shallow side pools with slight input from Kuribrong River	5.29800	-59.70090	rotenone
GUY14-41	24-Mar-14	upper Kuribrong	side channel of Kuribrong river in grass along shore, elevation 477m,	5.29800	-59.70088	6' x 15' seine with 1/8 " mesh
GUY14-42	24-Mar-14	upper Kuribrong	Kuribrong River in grass like aquatic plants in sand along shore	5.28440	-59.69992	6' x 15' seine with 1/8 " mesh
GUY14-43	25-Mar-14	upper Kuribrong	Tributary 1 (Blackwater Creek) near mouth with Kuribrong	5.25487	-59.67597	hook and line
GUY14-44	25-Mar-14	upper Kuribrong	Tributary 2 (Whitewater Creek) at small waterfall	5.22800	-59.64655	rotenone
GUY14-45	25-Mar-14	upper Kuribrong	Tributary 1 (Blackwater Creek) in whitewater tributary, about 39 minutes walking upstream from mouth at Kuribrong			hook and line
GUY14-46	26-Mar-14	upper Kuribrong	small pools in forest along trail to headwaters of Tributary 1 of the Kuribrong River	5.21545	-59.66642	hand net
GUY14-47	26-Mar-14	upper Kuribrong	headwaters of Tributary 1 (about 2.5 hrs walking up from mouth with Kuribrong	5.20802	-59.67045	seine, rotenone
GUY14-48	27-Mar-14	upper Kuribrong	Rapids 4 above Amaila Falls on Kuribrong River	5.27182	-59.70220	6' x 15' seine with 1/8 " mesh
GUY14-49	27-28-Mar-14	upper Kuribrong	mouth of Tributary 1			
GUY14-50	28-Mar-14	upper Kuribrong	Rapids 4 above Amaila Falls on Kuribrong River	5.27182	-59.70220	gill net
GUY14-51	28-Mar-14	upper Kuribrong	creek by base camp	5.26078	-59.66728	hand nets, seine
GUY14-52	28-Mar-14	upper Kuribrong	Itabu Creek, Rapids 6, tributary of upper Kuribrong	5.29113	-59.71923	6' x 15' seine with 1/8 " mesh
GUY14-53	28-Mar-14	Potaro	Muremure near Kaieteur Falls	5.27500	59.51600	hook
HLF14-01	15-Mar-14	Potaro	Two little creeks at Base Camp 1	5.01089	-59.63700	Night sampling with gillnets and Electric Organ Discharge (EOD) detectors
HLF14-02	16-Mar-14	Potaro	Riffles 5 minutes by boat downstream from Base Camp 1	5.09694	-59.96362	Seine
HLF14-03	16-Mar-14	Potaro	Low current channel section just upstream of HLF14-02	5.12889	-59.63558	2 Gillnets
HLF14-04	16-Mar-14	Potaro	Bank opposite HLF 14-02	5.12889	-59.63558	1 Gillnet
HLF14-05	16-Mar-14	Potaro	Gillnet by rocks on farthest raids downstream from camp	5.08472	-59.62883	1 Gillnet
HLF14-06	16-Mar-14	Potaro	Small creek flowing into the Potaro; sampled the lowermost 100 m	5.00703	-59.63183	Rotenone
HLF14-07	16-Mar-14	Potaro	Area between the first falls and their opposite bank, right by the camp	5.01111	-59.63942	1 Gillnet
HLF14-08	17-Mar-14	Potaro	Potaro River on top of the rapids/falls that end at Base Camp 1	5.00760	-59.56110	Seine
HLF14-09	18-Mar-14	Potaro	Isolated pool by the River, about 10 minutes walk downstream from Base Camp 1	5.16472	-59.63690	Rotenone
HLF14-10	18-Mar-14	Potaro	Small creek tributary to the upper Potaro, just downstream of Base Camp 1 on the right bank	5.00781	-59.63653	Rotenone
HLF14-11	18-Mar-14	Potaro	Creek on the right bank of the upper Potaro, just downstream from Base Camp 1	5.13417	-59.63652	Rotenone

HLF14-12	20-Mar-14	Potaro	Surroundings of Base Camp 2, upstream on Potaro channel and in front of camp	5.07011	-59.65369	Hook and line
HLF14-13	20 -21 Mar-14	Potaro	Creek upstream from camp on left bank of the Potaro (~15 min walking)	5.07011	-59.65369	Dipnets/Rotenone
HLF14-14	21-Mar-14	Potaro	Potaro River at the lower end of the rapids of Base Camp 2 (Boat landing, about 10 minutes walk from camp)	5.06263	59.66042	Seine
HLF14-15	21-Mar-14	Potaro	Creek upstream from Base Camp 2	5.07114	-59.65372	Night seining
HLF14-16	21-Mar-14	Potaro	Creek upstream from Base Camp 2	5.10789	-59.63575	Night seining
HLF14-17	22-Mar-14	Potaro	Creek upstream from Base Camp 2	5.10858	-59.63564	Rotenone

Table 3. List of fish species collected during the expedition by both fish teams.

Order	**Family**	***Genus***	***species***
Characiformes	Anostomidae	*Anostomus*	*anostomus*
Characiformes	Characidae	*Astyanax*	*bimaculatus*
Characiformes	Characidae	*Astyanax*	*mucronatus*
Characiformes	Characidae	*Astyanax*	*mutator*
Characiformes	Characidae	*Astyanax*	*sp stripetail*
Characiformes	Characidae	*Bryconops*	*affinis*
Characiformes	Characidae	*Bryconops*	*caudomaculatus*
Characiformes	Characidae	*Hemigrammus*	*erythrozonus*
Characiformes	Characidae	*Hemibrycon*	*n. sp.*
Characiformes	Characidae	*Hyphessobrycon*	*eos*
Characiformes	Characidae	*Hyphessobrycon*	*sp*
Characiformes	Characidae	*Jupiaba*	*abramoides*
Characiformes	Characidae	*Jupiaba*	*pinnata*
Characiformes	Characidae	*Jupiaba*	*potaroensis*
Characiformes	Characidae	*Moenkhausia*	*browni*
Characiformes	Characidae	*Moenkhausia*	*collettii*
Characiformes	Characidae	*Moenkhausia*	*oligolepis*
Characiformes	Characidae	*Moenkhausia*	*sp*
Characiformes	Characidae	*Phenacogaster*	*megalostictus*
Characiformes	Characidae	*Poptella*	*sp*
Characiformes	Crenuchidae	*Ammocryptocharax*	*lateralis*
Characiformes	Crenuchidae	*Characidium*	*amaila*
Characiformes	Crenuchidae	*Characidium*	*crandellii*
Characiformes	Crenuchidae	*Melanocharacidium*	*sp*
Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*
Characiformes	Curimatidae	*Cyphocharax*	*sp*
Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*
Characiformes	Erythrinidae	*Hoplerythrinus*	*unitaeniatus*
Characiformes	Erythrinidae	*Hoplias*	*aimara*
Characiformes	Hemiodontidae	*Hemiodus*	*quadrimaculatus*
Characiformes	Lebiasinidae	*Lebiasina*	*sp 1*
Characiformes	Lebiasinidae	*Lebiasina*	*sp 2*
Characiformes	Lebiasinidae	*Pyrrhulina*	*filamentosa*
Characiformes	Lebiasinidae	*Pyrrhulina*	*stoli*
Cyprinodontiformes	Rivulidae	*Anablepsoides*	*holmiae*
Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*
Cyprinodontiformes	Rivulidae	*Laimosemion*	*breviceps*
Cyprinodontiformes	Rivulidae	*Laimosemion*	*sp*

Gymnotiformes	Gymnotidae	*Electrophorus*	*electricus*
Gymnotiformes	Gymnotidae	*Gymnotus*	*carapo*
Gymnotiformes	Hypopomidae	*Hypopomus*	*artedi*
Gymnotiformes	Sternopygidae	*Sternopygus*	*macrurus*
Perciformes	Cichlidae	*Apistogramma*	*steindachneri*
Perciformes	Cichlidae	*Crenicichla*	*alta*
Perciformes	Cichlidae	*Crenicichla*	*sp*
Perciformes	Cichlidae	*Krobia*	*potaroensis*
Perciformes	Cichlidae	*Nannacara*	*bimaculata*
Siluriformes	Aspredinidae	*Aspredinidae*	*sp*
Siluriformes	Aspredinidae	*Bunocephalus*	*sp*
Siluriformes	Callichthyidae	*Callichthys*	*callichthys*
Siluriformes	Callichthyidae	*Corydoras*	*griseus*
Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*
Siluriformes	Heptapteridae	*Brachyglanis*	*sp*
Siluriformes	Heptapteridae	*Chasmocranus*	*longior*
Siluriformes	Heptapteridae	*Mastiglanis*	*sp*
Siluriformes	Heptapteridae	*Rhamdia*	*sp*
Siluriformes	Loricariidae	*Ancistrus*	*sp*
Siluriformes	Loricariidae	*Corymbophanes*	*kaiei*
Siluriformes	Loricariidae	*Hypostomus*	*hemiurus*
Siluriformes	Loricariidae	*Lithogenes*	*villosus*
Siluriformes	Loricariidae	*Parotocinclus*	*cf collinsae*
Siluriformes	Loricariidae	*Parotocinclus*	*sp*
Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*
Siluriformes	Trichomycteridae	*Trichomycterus*	*sp long*
Siluriformes	Trichomycteridae	*Trichomycterus*	*sp small spots*

Table 4. Localities where specimens of *Characidium amaila* were collected during this expedition. Sites in bold text are new localities.

Field #	Sites of *Characidium amaila*	Latitude	Longitude	Ind.	sites outside reservoir area
GUY14-01	Amaila River at the confluence with Kuribrong River	5.37608	-59.55053	7	
GUY14-07	Amaila River mouth	5.37626	-59.55114	3	
GUY14-08	Amaila River, just upstream from mouth	5.37626	-59.55114	1	
GUY14-10	Kuribrong River, Rapids 3, right bank	5.33816	-59.56625	32	X
GUY14-11	Kuribrong River, Rapids 2 above Amaila Falls	5.35081	-59.54483	6	
GUY14-17	**Kuribrong River, rocky outcropping, 5 km SSW of Amaila River confluence**	**5.3347**	**-59.56809**	**5**	
GUY14-20	Kuribrong River above Amaila Falls in Rapids 1	5.37608	-59.55053	7	
GUY14-22	**Kuribrong River at riffle midway between Rapids 1 and 2, 1.58 km SSE of Amaila River confluence**	**5.36405**	**-59.54318**	**30**	
GUY14-23	**right-bank tributary of Kuribrong River, 300 meters upstream from the top of Rapids 1, 1.5 km SE of Amaila river confluence**	**5.36599**	**-59.54198**	**1**	
GUY14-48	Rapids 4 above Amaila Falls on Kuribrong River	5.27182	-59.7022	22	X
GUY14-52	**Itabu Creek, Rapids 6, tributary of upper Kuribrong**	**5.29113**	**-59.71923**	**16**	X

Table 5. Water quality data by field site.

Field #	Date	Drainage	Locality	T. ° C	D.O mg/ L	D.O. % sat	Turbi dity NTU	Cond. µS/cm	pH	flow m/s
GUY14-01	4-Mar-14	upper Kuribrong	Amaila River at the confluence with Kuribrong River	23	7.5		2.09	20.95		0.7
GUY14-05	5-Mar-14	upper Kuribrong	Salaniparu Creek (first creek along trail from campsite to upper Kuribrong above Amaila Falls)	23	5.77	70.7	0.6	36.4	3.9	0.3
GUY14-19	9-Mar-14	upper Kuribrong	Amaila River at first large flowing left bank tributary	22.4	6.9	83.2	3.74	16.62	4.6	0-0.2
GUY14-20	9-Mar-14	upper Kuribrong	Kuribrong River above Amaila Falls in Rapids 1	23.3	8.04	98.8	1.85	24.4	4	1.3
GUY14-22	10-Mar-14	upper Kuribrong	Kuribrong River at riffle midway between Rapids 1 and 2, 1.58 km SSE of Amaila River confluence	23	6.38	78.1	1.71	24.7	4.4	0.6
GUY14-23	10-Mar-14	upper Kuribrong	right-bank tributary of Kuribrong River, 300 meters upstream from the top of Rapids 1, 1.5 km SE of Amaila river confluence	22.4	5.92	73.5	10.1	36.9	4	0.3
GUY14-26	12-Mar-14	lower Kuribrong	Kuribrong River in rapids at Grass Shoals	23.5	8.41	102. 3	1.32	28.5	4.4	0.5
GUY14-28	12-13-14 Mar 14	lower Kuribrong	Kuribrong River at campsite boat landing	24.8	8.06	97.8	7.04	19.59	5.1	0-0.1
GUY14-29	13-Mar-14	lower Kuribrong	Kuribrong River at Ram Sheep Rapids	26.1	7.81	97.2	9.68	21.69	4.1	1.5
GUY14-33	16-Mar-14	upper Potaro	Potaro River at Ayanganna Old village	21.1	6.06	74	6.64	10.64	4.7	0.1-0.6
GUY14-39	23-24-Mar-14	upper Kuribrong	campsite about 4 km downstream from Rapids 4	23.1	5.7	73.7		28	4.2	0-0.1
HLF14-01	15-Mar-14	Potaro	Two little creeks at Base Camp 1		5.65	69.6	0.8	13		
			(water quality measured separately)		5.68	70.0	0.7	14		
HLF14-02	16-Mar-14	Potaro	Riffles 5 minutes by boat downstream from Base Camp 1	23.1	4.88	59.9	2.4	12		

HLF14-03	16-Mar-14	Potaro	Low current channel section just upstream of HLF14-02	23.33	5.28	65.0	2.2	12		
HLF14-05	16-Mar-14	Potaro	Gillnet by rocks on farthest raids downstream from camp		5.57	69.5	2	12		
HLF14-06	16-Mar-14	Potaro	Small creek flowing into the Potaro; sampled the lowermost 100 m		5.35	65.4	1.1	31		
HLF14-07	16-Mar-14	Potaro	Area between the first falls and their opposite bank, right by the camp		6.05	75.7	2.4	12		
HLF14-08	17-Mar-14	Potaro	Potaro River on top of the rapids/falls that end at Base Camp 1		6.26	77.9	3.7	11		
HLF14-10	18-Mar-14	Potaro	Small creek tributary to the upper Potaro, just downstream of Base Camp 1 on the right bank	21.9	6.59	79.4	2.1	44		
HLF14-11	18-Mar-14	Potaro	Creek on the right bank of the upper Potaro, just downstream from Base Camp 1	22.3	6.26	76.1	1.4	19		
HLF14-12	20-Mar-14	Potaro	Surroundings of Base Camp 2, upstream on Potaro channel and in front of camp	21.6	7.41	89.3	3.1	11		
HLF14-13	20 and 21 - Mar-14	Potaro	Creek upstream from camp on left bank of the Potaro (~15 min walking)	21.6	6.15	74.8	1.6	15		
HLF14-14	21-Mar-14	Potaro	Potaro River at the lower end of the rapids of Base Camp 2 (Boat landing, about 10 mins walk from camp)	22.00	7.19	87.6	3.5	10		
HLF14-17	22-Mar-14	Potaro	Creek upstream from Base Camp 2 -right bank	21.5	5.27	63.4	1.0	23		
			Creek upstream from Base Camp 2 - left bank	21.5	6.05	72.8	1.1	14		

Table 6. List of fish species by collection. A total of 4924 specimens were collected.

Field No	Order	Family	Genus	Species	#	Museum
GUY14-01	Characiformes	Characidae	*Astyanax*	*sp stripetail*	5	AUM
GUY14-01	Characiformes	Characidae	*Bryconops*	*affinis*	13	AUM
GUY14-01	Characiformes	Characidae	*Moenkhausia*	*browni*	19	AUM
GUY14-01	Characiformes	Crenuchidae	*Characidium*	*amaila*	7	AUM
GUY14-01	Perciformes	Cichlidae	*Crenicichla*	*alta*	4	AUM
GUY14-01	Perciformes	Cichlidae	*Krobia*	*potaroensis*	3	AUM
GUY14-01	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	AUM
GUY14-02	Characiformes	Characidae	*Moenkhausia*	*browni*	16	AUM
GUY14-02	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	2	AUM
GUY14-03	Characiformes	Lebiasinidae	*Pyrrhulina*	*filamentosa*	4	AUM
GUY14-03	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	AUM
GUY14-03	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	7	AUM
GUY14-04	Characiformes	Characidae	*Astyanax*	*sp stripetail*	18	AUM
GUY14-04	Characiformes	Characidae	*Bryconops*	*affinis*	34	AUM
GUY14-04	Characiformes	Characidae	*Astyanax*	*mutator*	4	AUM
GUY14-04	Characiformes	Characidae	*Moenkhausia*	*browni*	23	AUM
GUY14-04	Perciformes	Cichlidae	*Crenicichla*	*alta*	8	AUM
GUY14-04	Perciformes	Cichlidae	*Krobia*	*potaroensis*	23	AUM
GUY14-04	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	3	AUM
GUY14-04	Siluriformes	Heptapteridae	*Brachyglanis*	*sp*	1	AUM
GUY14-04	Siluriformes	Loricariidae	*Corymbophanes*	*kaiei*	2	AUM
GUY14-05	Characiformes	Characidae	*Astyanax*	*sp stripetail*	19	AUM
GUY14-05	Characiformes	Characidae	*Moenkhausia*	*browni*	9	AUM
GUY14-05	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	7	AUM
GUY14-05	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	1	AUM
GUY14-05	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	1	AUM
GUY14-06	Characiformes	Characidae	*Astyanax*	*sp stripetail*	84	AUM
GUY14-06	Characiformes	Characidae	*Bryconops*	*affinis*	9	AUM
GUY14-06	Characiformes	Characidae	*Moenkhausia*	*browni*	89	AUM
GUY14-06	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	6	AUM
GUY14-06	Characiformes	Lebiasinidae	*Lebiasina*	*sp*	1	AUM
GUY14-06	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	1	AUM
GUY14-06	Perciformes	Cichlidae	*Krobia*	*potaroensis*	36	AUM
GUY14-06	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	9	AUM
GUY14-06	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	1	AUM
GUY14-06	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	6	AUM
GUY14-07	Characiformes	Characidae	*Astyanax*	*sp stripetail*	2	AUM
GUY14-07	Characiformes	Characidae	*Bryconops*	*affinis*	26	AUM

GUY14-07	Characiformes	Characidae	*Astyanax*	*mutator*	49	AUM
GUY14-07	Characiformes	Characidae	*Moenkhausia*	*browni*	27	AUM
GUY14-07	Characiformes	Crenuchidae	*Characidium*	*amaila*	3	AUM
GUY14-07	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	AUM
GUY14-07	Siluriformes	Heptapteridae	*Brachyglanis*	*sp*	4	AUM
GUY14-07	Siluriformes	Heptapteridae	*Chasmocranus*	*sp*	2	AUM
GUY14-07	Siluriformes	Loricariidae	*Corymbophanes*	*kaiei*	1	AUM
GUY14-07	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	13	AUM
GUY14-08	Characiformes	Characidae	*Astyanax*	*sp stripetail*	5	AUM
GUY14-08	Characiformes	Characidae	*Moenkhausia*	*browni*	3	AUM
GUY14-08	Characiformes	Crenuchidae	*Characidium*	*amaila*	1	AUM
GUY14-08	Gymnotiformes	Hypopomidae	*Hypopomus*	*artedi*	1	AUM
GUY14-08	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	AUM
GUY14-08	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	AUM
GUY14-08	Siluriformes	Heptapteridae	*Chasmocranus*	*sp*	1	AUM
GUY14-08	Siluriformes	Loricariidae	*Corymbophanes*	*kaiei*	1	AUM
GUY14-08	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	1	AUM
GUY14-09	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	3	AUM
GUY14-10	Characiformes	Characidae	*Bryconops*	*affinis*	7	AUM
GUY14-10	Characiformes	Characidae	*Moenkhausia*	*browni*	23	AUM
GUY14-10	Characiformes	Crenuchidae	*Characidium*	*amaila*	32	AUM
GUY14-10	Perciformes	Cichlidae	*Krobia*	*potaroensis*	3	AUM
GUY14-10	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	16	AUM
GUY14-11	Characiformes	Characidae	*Astyanax*	*sp stripetail*	1	AUM
GUY14-11	Characiformes	Characidae	*Bryconops*	*affinis*	6	AUM
GUY14-11	Characiformes	Characidae	*Moenkhausia*	*browni*	7	AUM
GUY14-11	Characiformes	Crenuchidae	*Characidium*	*amaila*	6	AUM
GUY14-11	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	AUM
GUY14-11	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	11	AUM
GUY14-12	Characiformes	Characidae	*Astyanax*	*mucronatus*	1	AUM
GUY14-12	Characiformes	Characidae	*Bryconops*	*affinis*	8	AUM
GUY14-12	Characiformes	Characidae	*Astyanax*	*mutator*	5	AUM
GUY14-12	Characiformes	Characidae	*Moenkhausia*	*browni*	2	AUM
GUY14-12	Characiformes	Erythrinidae	*Hoplerythrinus*	*unitaeniatus*	1	AUM
GUY14-12	Gymnotiformes	Hypopomidae	*Hypopomus*	*artedi*	3	AUM
GUY14-12	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	AUM
GUY14-12	Siluriformes	Heptapteridae	*Brachyglanis*	*sp*	3	AUM
GUY14-12	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	13	AUM
GUY14-13	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	5	AUM
GUY14-14	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	2	AUM
GUY14-14	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	1	AUM

GUY14-15	Characiformes	Characidae	*Bryconops*	*affinis*	10	AUM
GUY14-15	Characiformes	Characidae	*Moenkhausia*	*browni*	19	AUM
GUY14-15	Characiformes	Lebiasinidae	*Lebiasina*	*sp*	1	AUM
GUY14-15	Characiformes	Lebiasinidae	*Pyrrhulina*	*filamentosa*	1	AUM
GUY14-15	Perciformes	Cichlidae	*Krobia*	*potaroensis*	13	AUM
GUY14-16	Characiformes	Characidae	*Astyanax*	*sp stripetail*	88	AUM
GUY14-16	Characiformes	Characidae	*Bryconops*	*affinis*	1	AUM
GUY14-16	Characiformes	Characidae	*Astyanax*	*mutator*	5	AUM
GUY14-16	Characiformes	Characidae	*Moenkhausia*	*browni*	22	AUM
GUY14-16	Perciformes	Cichlidae	*Krobia*	*potaroensis*	24	AUM
GUY14-16	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	AUM
GUY14-16	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	8	AUM
GUY14-16	Siluriformes	Heptapteridae	*Chasmocranus*	*sp*	1	AUM
GUY14-16	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	1	AUM
GUY14-17	Characiformes	Characidae	*Astyanax*	*mutator*	1	AUM
GUY14-17	Characiformes	Characidae	*Moenkhausia*	*browni*	10	AUM
GUY14-17	Characiformes	Crenuchidae	*Characidium*	*amaila*	5	AUM
GUY14-17	Perciformes	Cichlidae	*Krobia*	*potaroensis*	6	AUM
GUY14-18	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	2	AUM
GUY14-18	Characiformes	Lebiasinidae	*Pyrrhulina*	*filamentosa*	8	AUM
GUY14-18	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	8	AUM
GUY14-19	Characiformes	Characidae	*Astyanax*	*sp stripetail*	6	AUM
GUY14-19	Characiformes	Characidae	*Bryconops*	*affinis*	19	AUM
GUY14-19	Characiformes	Characidae	*Astyanx*	*mutator*	5	AUM
GUY14-19	Characiformes	Characidae	*Moenkhausia*	*browni*	72	AUM
GUY14-19	Characiformes	Lebiasinidae	*Pyrrhulina*	*filamentosa*	3	AUM
GUY14-19	Perciformes	Cichlidae	*Crenicichla*	*alta*	3	AUM
GUY14-19	Perciformes	Cichlidae	*Krobia*	*potaroensis*	19	AUM
GUY14-19	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	AUM
GUY14-19	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	3	AUM
GUY14-20	Characiformes	Characidae	*Bryconops*	*affinis*	2	AUM
GUY14-20	Characiformes	Crenuchidae	*Characidium*	*amaila*	7	AUM
GUY14-20	Siluriformes	Loricariidae	*Corymbophanes*	*kaiei*	1	AUM
GUY14-20	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	19	AUM
GUY14-21	Characiformes	Lebiasinidae	*Lebiasina*	*sp*	5	AUM
GUY14-21	Siluriformes	Heptapteridae	*Brachyglanis*	*sp*	1	AUM
GUY14-22	Characiformes	Characidae	*Astyanax*	*sp stripetail*	1	AUM
GUY14-22	Characiformes	Characidae	*Bryconops*	*affinis*	8	AUM
GUY14-22	Characiformes	Characidae	*Moenkhausia*	*browni*	76	AUM
GUY14-22	Characiformes	Crenuchidae	*Characidium*	*amaila*	30	AUM
GUY14-22	Perciformes	Cichlidae	*Krobia*	*potaroensis*	7	AUM

GUY14-22	Siluriformes	Heptapteridae	*Chasmocranus*	*sp*	1	AUM
GUY14-22	Siluriformes	Loricariidae	*Corymbophanes*	*kaiei*	1	AUM
GUY14-22	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	8	AUM
GUY14-23	Characiformes	Characidae	*Astyanax*	*sp stripetail*	10	AUM
GUY14-23	Characiformes	Characidae	*Moenkhausia*	*browni*	40	AUM
GUY14-23	Characiformes	Crenuchidae	*Characidium*	*amaila*	1	AUM
GUY14-23	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	1	AUM
GUY14-23	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	1	AUM
GUY14-23	Perciformes	Cichlidae	*Krobia*	*potaroensis*	2	AUM
GUY14-23	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	2	AUM
GUY14-24	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	5	AUM
GUY14-25	Characiformes	Lebiasinidae	*Lebiasina*	*sp*	5	AUM
GUY14-26	Characiformes	Anostomidae	*Anostomus*	*anostomus*	2	AUM
GUY14-26	Characiformes	Characidae	*Astyanax*	*abramoides*	3	AUM
GUY14-26	Characiformes	Characidae	*Bryconops*	*affinis*	34	AUM
GUY14-26	Characiformes	Characidae	*Bryconops*	*caudomaculatus*	2	AUM
GUY14-26	Characiformes	Characidae	*Hemigrammus*	*erythrozonus*	40	AUM
GUY14-26	Characiformes	Characidae	*Jupiaba*	*pinnata*	55	AUM
GUY14-26	Characiformes	Characidae	*Jupiaba*	*potaroensis*	1	AUM
GUY14-26	Characiformes	Characidae	*Moenkhausia*	*browni*	3	AUM
GUY14-26	Characiformes	Characidae	*Poptella*	*sp*	1	AUM
GUY14-26	Characiformes	Crenuchidae	*Ammocryptocharax*	*lateralis*	47	AUM
GUY14-26	Characiformes	Crenuchidae	*Characidium*	*crandellii*	2	AUM
GUY14-26	Characiformes	Crenuchidae	*Melanocharacidium*	*sp*	2	AUM
GUY14-26	Characiformes	Curimatidae	*Cyphocharax*	*sp*	1	AUM
GUY14-26	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	1	AUM
GUY14-26	Characiformes	Hemiodidae	*Hemiodus*	*quadrimaculatus*	3	AUM
GUY14-26	Gymnotiformes	Gymnotidae	*Electrophorus*	*electricus*	1	AUM
GUY14-26	Gymnotiformes	Sternopygidae	*Sternopygus*	*macrurus*	2	AUM
GUY14-26	Perciformes	Cichlidae	*Crenicichla*	*sp*	1	AUM
GUY14-26	Perciformes	Cichlidae	*Krobia*	*potaroensis*	2	AUM
GUY14-26	Siluriformes	Aspredinidae	*Aspredinidae*	*sp*	1	AUM
GUY14-26	Siluriformes	Aspredinidae	*Bunocephalus*	*sp*	2	AUM
GUY14-26	Siluriformes	Callichthyidae	*Corydoras*	*griseus*	9	AUM
GUY14-26	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	1	AUM
GUY14-26	Siluriformes	Heptapteridae	*Brachyglanis*	*sp*	2	AUM
GUY14-26	Siluriformes	Heptapteridae	*Chasmocranus*	*sp*	13	AUM
GUY14-26	Siluriformes	Heptapteridae	*Mastiglanis*	*sp*	16	AUM
GUY14-26	Siluriformes	Loricariidae	*Ancistrus*	*sp*	3	AUM
GUY14-26	Siluriformes	Loricariidae	*Parotocinclus*	*collinsae*	156	AUM
GUY14-27	Characiformes	Lebiasinidae	*Lebiasina*	*sp*	11	AUM

GUY14-27	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	3	AUM
GUY14-28	Characiformes	Characidae	*Astyanax*	*abramoides*	11	AUM
GUY14-28	Characiformes	Characidae	*Bryconops*	*caudomaculatus*	1	AUM
GUY14-28	Characiformes	Characidae	*Moenkhausia*	*collettii*	7	AUM
GUY14-28	Characiformes	Characidae	*Moenkhausia*	*sp*	6	AUM
GUY14-28	Perciformes	Cichlidae	*Apistogramma*	*steindachneri*	3	AUM
GUY14-28	Perciformes	Cichlidae	*Crenicichla*	*sp*	3	AUM
GUY14-28	Perciformes	Cichlidae	*Krobia*	*potaroensis*	4	AUM
GUY14-28	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	3	AUM
GUY14-28	Siluriformes	Callichthyidae	*Corydoras*	*griseus*	16	AUM
GUY14-29	Characiformes	Anostomidae	*Anostomus*	*anostomus*	2	AUM
GUY14-29	Characiformes	Characidae	*Bryconops*	*affinis*	6	AUM
GUY14-29	Characiformes	Characidae	*Bryconops*	*caudomaculatus*	13	AUM
GUY14-29	Characiformes	Characidae	*Hyphessobrycon*	*sp*	31	AUM
GUY14-29	Characiformes	Characidae	*Jupiaba*	*pinnata*	113	AUM
GUY14-29	Characiformes	Characidae	*Moenkhausia*	*collettii*	2	AUM
GUY14-29	Characiformes	Characidae	*Moenkhausia*	*sp*	64	AUM
GUY14-29	Characiformes	Characidae	*Phenacogaster*	*megalostictus*	1	AUM
GUY14-29	Characiformes	Characidae	*Poptella*	*sp*	2	AUM
GUY14-29	Characiformes	Crenuchidae	*Characidium*	*crandellii*	8	AUM
GUY14-29	Characiformes	Erythrinidae	*Hoplias*	*aimara*	1	AUM
GUY14-29	Characiformes	Hemiodidae	*Hemiodus*	*quadrimaculatus*	2	AUM
GUY14-29	Perciformes	Cichlidae	*Krobia*	*potaroensis*	3	AUM
GUY14-29	Siluriformes	Callichthyidae	*Corydoras*	*griseus*	6	AUM
GUY14-29	Siluriformes	Loricariidae	*Parotocinclus*	*collinsae*	33	AUM
GUY14-30	Characiformes	Characidae	*Astyanax*	*abramoides*	1	AUM
GUY14-30	Characiformes	Characidae	*Bryconops*	*affinis*	23	AUM
GUY14-30	Characiformes	Characidae	*Hemigrammus*	*erythrozonus*	5	AUM
GUY14-30	Characiformes	Characidae	*Hyphessobrycon*	*eos*	8	AUM
GUY14-30	Characiformes	Characidae	*Hyphessobrycon*	*sp*	24	AUM
GUY14-30	Characiformes	Crenuchidae	*Ammocryptocharax*	*lateralis*	19	AUM
GUY14-30	Characiformes	Crenuchidae	*Characidium*	*crandellii*	1	AUM
GUY14-30	Gymnotiformes	Gymnotidae	*Electrophorus*	*electricus*	1	AUM
GUY14-30	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	AUM
GUY14-30	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	AUM
GUY14-30	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	1	AUM
GUY14-30	Siluriformes	Heptapteridae	*Chasmocranus*	*sp*	1	AUM
GUY14-30	Siluriformes	Loricariidae	*Parotocinclus*	*collinsae*	30	AUM
GUY14-31	Characiformes	Crenuchidae	*Ammocryptocharax*	*lateralis*	13	AUM
GUY14-31	Characiformes	Crenuchidae	*Characidium*	*crandellii*	78	AUM
GUY14-31	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	2	AUM

GUY14-31	Cyprinodontiformes	Rivulidae	*Laimosemion*	*breviceps*	1	AUM
GUY14-31	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	86	AUM
GUY14-31	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	88	AUM
GUY14-32	Characiformes	Characidae	*Hyphessobrycon*	*eos*	10	AUM
GUY14-33	Characiformes	Characidae	*Bryconops*	*affinis*	2	AUM
GUY14-33	Characiformes	Characidae	*Moenkhausia*	*browni*	2	AUM
GUY14-33	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	AUM
GUY14-33	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	AUM
GUY14-33	Siluriformes	Loricariidae	*Corymbophanes*	*kaiei*	1	AUM
GUY14-33	Siluriformes	Loricariidae	*Lithogenes*	*villosus*	30	AUM
GUY14-33	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	14	AUM
GUY14-33	Siluriformes	Trichomycteridae	*Trichomycterus*	*sp small spots*	3	AUM
GUY14-34	Characiformes	Characidae	*Bryconops*	*affinis*	43	AUM
GUY14-34	Characiformes	Characidae	*Moenkhausia*	*browni*	64	AUM
GUY14-34	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	2	AUM
GUY14-34	Gymnotiformes	Hypopomidae	*Hypopomus*	*artedi*	13	AUM
GUY14-34	Perciformes	Cichlidae	*Crenicichla*	*alta*	14	AUM
GUY14-34	Perciformes	Cichlidae	*Krobia*	*potaroensis*	20	AUM
GUY14-34	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	2	AUM
GUY14-34	Siluriformes	Callichthyidae	*Callichthys*	*callichthys*	21	AUM
GUY14-34	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	2	AUM
GUY14-35	Characiformes	Characidae	*Bryconops*	*affinis*	10	AUM
GUY14-35	Characiformes	Characidae	*Moenkhausia*	*browni*	32	AUM
GUY14-35	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	2	AUM
GUY14-35	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	5	AUM
GUY14-35	Characiformes	Lebiasinidae	*Lebiasina*	*sp*	18	AUM
GUY14-35	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	2	AUM
GUY14-35	Perciformes	Cichlidae	*Crenicichla*	*alta*	3	AUM
GUY14-35	Perciformes	Cichlidae	*Krobia*	*potaroensis*	21	AUM
GUY14-35	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	7	AUM
GUY14-35	Siluriformes	Callichthyidae	*Callichthys*	*callichthys*	4	AUM
GUY14-35	Siluriformes	Heptapteridae	*Brachyglanis*	*sp*	2	AUM
GUY14-35	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	2	AUM
GUY14-35	Siluriformes	Trichomycteridae	*Trichomycterus*	*sp small spots*	1	AUM
GUY14-36	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	1	AUM
GUY14-36	Siluriformes	Loricariidae	*Lithogenes*	*villosus*	27	AUM
GUY14-36	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	1	AUM
GUY14-37	Characiformes	Characidae	*Bryconops*	*affinis*	6	AUM
GUY14-37	Characiformes	Characidae	*Moenkhausia*	*browni*	1	AUM
GUY14-37	Siluriformes	Trichomycteridae	*Trichomycterus*	*sp small spots*	1	AUM
GUY14-38	Characiformes	Characidae	*Bryconops*	*affinis*	7	AUM

GUY14-38	Characiformes	Characidae	*Moenkhausia*	*browni*	421	AUM
GUY14-38	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	4	AUM
GUY14-38	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	30	AUM
GUY14-38	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	2	AUM
GUY14-38	Cyprinodontiformes	Rivulidae	*Laimosemion*	*breviceps*	4	AUM
GUY14-38	Gymnotiformes	Hypopomidae	*Hypopomus*	*artedi*	63	AUM
GUY14-38	Perciformes	Cichlidae	*Krobia*	*potaroensis*	93	AUM
GUY14-38	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	37	AUM
GUY14-38	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	4	AUM
GUY14-38	Siluriformes	Trichomycteridae	*Trichomycterus*	*sp long*	15	AUM
GUY14-39	Characiformes	Characidae	*Astyanax*	*sp stripetail*	49	ROM
GUY14-39	Characiformes	Characidae	*Bryconops*	*affinis*	3	ROM
GUY14-39	Characiformes	Characidae	*Astyanax*	*mutator*	29	ROM
GUY14-39	Characiformes	Characidae	*Moenkhausia*	*browni*	58	ROM
GUY14-39	Characiformes	Lebiasinidae	*Pyrrhulina*	*filamentosa*	2	ROM
GUY14-39	Gymnotiformes	Hypopomidae	*Hypopomus*	*artedi*	4	ROM
GUY14-39	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	ROM
GUY14-39	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	ROM
GUY14-39	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	ROM
GUY14-39	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	1	ROM
GUY14-40	Characiformes	Characidae	*Moenkhausia*	*browni*	1	ROM
GUY14-40	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	17	ROM
GUY14-40	Cyprinodontiformes	Rivulidae	*Laimosemion*	*sp*	2	ROM
GUY14-40	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	ROM
GUY14-40	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	1	ROM
GUY14-41	Characiformes	Characidae	*Astyanax*	*sp stripetail*	1	ROM
GUY14-41	Characiformes	Characidae	*Bryconops*	*affinis*	2	ROM
GUY14-41	Characiformes	Characidae	*Astyanax*	*mutator*	3	ROM
GUY14-41	Characiformes	Characidae	*Moenkhausia*	*browni*	61	ROM
GUY14-41	Cyprinodontiformes	Rivulidae	*Laimosemion*	*sp*	1	ROM
GUY14-41	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	ROM
GUY14-41	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	1	ROM
GUY14-42	Characiformes	Characidae	*Astyanax*	*sp stripetail*	1	ROM
GUY14-42	Characiformes	Characidae	*Moenkhausia*	*browni*	18	ROM
GUY14-42	Perciformes	Cichlidae	*Krobia*	*potaroensis*	25	ROM
GUY14-42	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	7	ROM
GUY14-43	Characiformes	Characidae	*Astyanax*	*sp stripetail*	4	ROM
GUY14-43	Characiformes	Characidae	*Bryconops*	*affinis*	2	ROM
GUY14-43	Gymnotiformes	Hypopomidae	*Hypopomus*	*artedi*	1	ROM
GUY14-43	Siluriformes	Heptapteridae	*Brachyglanis*	*sp*	2	ROM
GUY14-43	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	4	ROM

GUY14-44	Characiformes	Characidae	*Astyanax*	*sp*	4	ROM
GUY14-44	Characiformes	Characidae	*Astyanax*	*sp stripetail*	3	ROM
GUY14-44	Characiformes	Characidae	*Bryconops*	*affinis*	22	ROM
GUY14-44	Characiformes	Characidae	*Astyanax*	*mutator*	1	ROM
GUY14-44	Characiformes	Characidae	*Moenkhausia*	*browni*	128	ROM
GUY14-44	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	1	ROM
GUY14-44	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	10	ROM
GUY14-44	Characiformes	Erythrinidae	*Hoplerythrinus*	*unitaeniatus*	1	ROM
GUY14-44	Characiformes	Lebiasinidae	*Lebiasina*	*sp*	1	ROM
GUY14-44	Gymnotiformes	Hypopomidae	*Hypopomus*	*artedi*	1	ROM
GUY14-44	Perciformes	Cichlidae	*Krobia*	*potaroensis*	2	ROM
GUY14-44	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	6	ROM
GUY14-44	Siluriformes	Heptapteridae	*Chasmocranus*	*longior*	15	ROM
GUY14-44	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	23	ROM
GUY14-45	Characiformes	Lebiasinidae	*Lebiasina*	*sp*	2	ROM
GUY14-46	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	4	ROM
GUY14-47	Characiformes	Characidae	*Bryconops*	*affinis*	6	ROM
GUY14-47	Characiformes	Characidae	*Moenkhausia*	*browni*	19	ROM
GUY14-47	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	2	ROM
GUY14-47	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	1	ROM
GUY14-47	Characiformes	Lebiasinidae	*Pyrrhulina*	*stoli*	1	ROM
GUY14-47	Perciformes	Cichlidae	*Crenicichla*	*alta*	4	ROM
GUY14-47	Perciformes	Cichlidae	*Krobia*	*potaroensis*	4	ROM
GUY14-47	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	5	ROM
GUY14-47	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	2	ROM
GUY14-48	Characiformes	Crenuchidae	*Characidium*	*amaila*	22	ROM
GUY14-48	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	ROM
GUY14-48	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	1	ROM
GUY14-49	Characiformes	Characidae	*Astyanax*	*sp stripetail*	6	ROM
GUY14-49	Characiformes	Characidae	*Bryconops*	*affinis*	11	ROM
GUY14-49	Characiformes	Characidae	*Moenkhausia*	*browni*	9	ROM
GUY14-50	Characiformes	Characidae	*Bryconops*	*affinis*	5	ROM
GUY14-50	Characiformes	Characidae	*Moenkhausia*	*browni*	1	ROM
GUY14-50	Characiformes	Erythrinidae	*Hoplerythrinus*	*unitaeniatus*	1	ROM
GUY14-50	Perciformes	Cichlidae	*Crenicichla*	*alta*	2	ROM
GUY14-51	Characiformes	Crenuchidae	*Poecilocharax*	*bovalii*	2	ROM
GUY14-52	Characiformes	Characidae	*Astyanax*	*sp*	9	ROM
GUY14-52	Characiformes	Characidae	*Bryconops*	*affinis*	3	ROM
GUY14-52	Characiformes	Characidae	*Moenkhausia*	*browni*	4	ROM
GUY14-52	Characiformes	Crenuchidae	*Characidium*	*amaila*	16	ROM
GUY14-52	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	ROM

GUY14-52	Perciformes	Cichlidae	*Nannacara*	*bimaculata*	2	ROM
GUY14-52	Siluriformes	Loricariidae	*Corymbophanes*	*kaiei*	2	ROM
GUY14-52	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	2	ROM
GUY14-53	Characiformes	Erythrinidae	*Hoplerythrinus*	*unitaeniatus*	1	ROM
GUY14-53	Siluriformes	Cetopsidae	*Helogenes*	*marmoratus*	1	ROM
HLF14-01	Characiformes	Characidae	*Bryconops*	*affinis*	1	ROM
HLF14-01	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	1	ROM
HLF14-01	Characiformes	Lebiasinidae	*Pyrrhulina*	*stoli*	2	ROM
HLF14-01	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	6	ROM
HLF14-01	Gymnotiformes	Gymnotidae	*Gymnotus*	*carapo*	4	ROM
HLF14-02	Siluriformes	Heptapteridae	*Chasmocranus*	*longior*	1	ROM
HLF14-02	Siluriformes	Loricariidae	*Hypostomus*	*hemiurus*	1	ROM
HLF14-02	Siluriformes	Loricariidae	*Lithogenes*	*villosus*	1	ROM
HLF14-02	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	4	ROM
HLF14-03	Characiformes	Characidae	*Astyanax*	*bimaculatus*	7	ROM
HLF14-03	Characiformes	Characidae	*Bryconops*	*affinis*	5	ROM
HLF14-03	Characiformes	Characidae	*Moenkhausia*	*browni*	1	ROM
HLF14-03	Characiformes	Characidae	*Moenkhausia*	*oligolepis*	1	ROM
HLF14-03	Perciformes	Cichlidae	*Krobia*	*potaroensis*	6	ROM
HLF14-03	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	2	ROM
HLF14-04	Characiformes	Characidae	*Bryconops*	*affinis*	12	ROM
HLF14-04	Characiformes	Characidae	*Moenkhausia*	*browni*	15	ROM
HLF14-04	Perciformes	Cichlidae	*Crenicichla*	*alta*	3	ROM
HLF14-04	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	1	ROM
HLF14-05	Perciformes	Cichlidae	*Crenicichla*	*alta*	4	ROM
HLF14-06	Gymnotiformes	Gymnotidae	*Gymnotus*	*carapo*	10	ROM
HLF14-06	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	ROM
HLF14-06	Siluriformes	Heptapteridae	*Brachyglanis*	*sp*	1	ROM
HLF14-07	Characiformes	Characidae	*Astyanax*	*bimaculatus*	10	ROM
HLF14-07	Characiformes	Characidae	*Bryconops*	*affinis*	13	ROM
HLF14-07	Characiformes	Characidae	*Moenkhausia*	*browni*	6	ROM
HLF14-07	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	ROM
HLF14-07	Perciformes	Cichlidae	*Krobia*	*potaroensis*	2	ROM
HLF14-07	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	3	ROM
HLF14-07	Siluriformes	Loricariidae	*Hypostomus*	*hemiurus*	5	ROM
HLF14-08	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	2	ROM
HLF14-09	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	2	ROM
HLF14-09	Characiformes	Lebiasinidae	*Pyrrhulina*	*stoli*	39	ROM
HLF14-09	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	3	ROM
HLF14-09	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	ROM
HLF14-10	Characiformes	Characidae	*Moenkhausia*	*browni*	22	ROM

HLF14-10	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	2	ROM
HLF14-10	Characiformes	Lebiasinidae	*Pyrrhulina*	*stoli*	1	ROM
HLF14-10	Cyprinodontiformes	Rivulidae	*Anablepsoides*	*waimacui*	3	ROM
HLF14-10	Gymnotiformes	Gymnotidae	*Gymnotus*	*carapo*	5	ROM
HLF14-10	Perciformes	Cichlidae	*Crenicichla*	*alta*	3	ROM
HLF14-10	Perciformes	Cichlidae	*Krobia*	*potaroensis*	2	ROM
HLF14-11	Characiformes	Characidae	*Bryconops*	*affinis*	25	ROM
HLF14-11	Characiformes	Characidae	*Moenkhausia*	*browni*	3	ROM
HLF14-11	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	5	ROM
HLF14-11	Characiformes	Lebiasinidae	*Pyrrhulina*	*stoli*	3	ROM
HLF14-11	Gymnotiformes	Gymnotidae	*Gymnotus*	*carapo*	5	ROM
HLF14-11	Perciformes	Cichlidae	*Crenicichla*	*alta*	1	ROM
HLF14-11	Perciformes	Cichlidae	*Krobia*	*potaroensis*	3	ROM
HLF14-11	Siluriformes	Heptapteridae	*Rhamdia*	*sp*	4	ROM
HLF14-12	Characiformes	Characidae	*Bryconops*	*affinis*	3	ROM
HLF14-12	Characiformes	Characidae	*Moenkhausia*	*browni*	17	ROM
HLF14-12	Perciformes	Cichlidae	*Crenicichla*	*alta*	32	ROM
HLF14-12	Perciformes	Cichlidae	*Krobia*	*potaroensis*	20	ROM
HLF14-13	Characiformes	Characidae	*Bryconops*	*affinis*	7	ROM
HLF14-13	Characiformes	Characidae	*Moenkhausia*	*browni*	12	ROM
HLF14-13	Characiformes	Erythrinidae	*Erythrinus*	*erythrinus*	4	ROM
HLF14-13	Gymnotiformes	Gymnotidae	*Gymnotus*	*carapo*	2	ROM
HLF14-13	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	ROM
HLF14-14	Characiformes	Characidae	*Bryconops*	*affinis*	3	ROM
HLF14-14	Characiformes	Characidae	*Moenkhausia*	*browni*	5	ROM
HLF14-14	Siluriformes	Loricariidae	*Lithogenes*	*villosus*	12	ROM
HLF14-14	Siluriformes	Trichomycteridae	*Trichomycterus*	*guianense*	1	ROM
HLF14-15	Characiformes	Characidae	*Bryconops*	*affinis*	2	ROM
HLF14-15	Characiformes	Characidae	*Moenkhausia*	*browni*	52	ROM
HLF14-15	Characiformes	Characidae	*Moenkhausia*	*oligolepis*	1	ROM
HLF14-15	Characiformes	Lebiasinidae	*Pyrrhulina*	*stoli*	1	ROM
HLF14-15	Perciformes	Cichlidae	*Krobia*	*potaroensis*	1	ROM
HLF14-16	Characiformes	Characidae	*Bryconops*	*affinis*	1	ROM
HLF14-16	Characiformes	Characidae	*Moenkhausia*	*browni*	66	ROM
HLF14-16	Characiformes	Lebiasinidae	*Pyrrhulina*	*stoli*	2	ROM
HLF14-17	Characiformes	Characidae	*Bryconops*	*affinis*	36	ROM
HLF14-17	Characiformes	Characidae	*Moenkhausia*	*browni*	102	ROM
HLF14-17	Gymnotiformes	Gymnotidae	*Gymnotus*	*carapo*	1	ROM
HLF14-17	Perciformes	Cichlidae	*Krobia*	*potaroensis*	3	ROM

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