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Annotated list and key to the stream fishes of Trinidad & Tobago

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Abstract

Based on historical and museum records and recent extensive collecting we compiled a checklist of 77 fish species reported from the streams of Trinidad and Tobago. A key with photographs is provided to aid in identifications, as well as brief notes on habitat, diet, reproduction, maximum size, local common names and distribution.

Key words: biodiversity, continental island, South America, West Indies, biogeography, freshwater

Introduction

Trinidad & Tobago (T&T) is a twin-island nation that sits on the South American continental shelf opposite the mouth of Venezuela's Orinoco River (Figure 1). This positions T&T between two distinct freshwater fish faunas, the Antillean from the islands to the northeast, and the South American from the continent to the south and west. Differing theories about the geological history of T&T place much of Trinidad as part of the Orinoco River delta, from which it made its final separation either 10,000 years ago (Curray 1964, Millinan & Emery 1968), or as recently as 1,000 years ago (Kenny 1989). Tobago's geological history differs somewhat from that of Trinidad. The southwestern portion of Tobago is a raised coral platform, whereas the Main Ridge mountains of Tobago and the Northern Range mountains of Trinidad are considered to be the eastern end of the Andean mountain range, contiguous with that of the Paria Peninsula in Venezuela. The three land masses are separated by drowned valleys. Tobago, however, was never part of the Orinoco River system. These differences in their development are mirrored by differences in the freshwater fauna of the two islands. Trinidad's proximity to the Paria peninsula and the Orinoco delta (Boos 1984), the sheer volume of rainy season freshwater input from the Orinoco, and to a lesser extent Amazon outflows, and the prevailing marine currents, conspire to facilitate movement of organisms from northeastern South America, especially Venezuela, to Trinidad (Alkins & de Souza 1984, Boos 1984, Ali 1989, Kenny 1995, Vanegas-Rios & Phillip in press). The Northern Range of Trinidad, running across the northernmost part of the island in line with the Andean mountain range in the Venezuelan Paria Peninsula, acts as a zoogeographic barrier that keeps freshwater fishes in southern streams from invading the north coast. Consequently, streams on the northern slopes of the range have Antillean affinity. Tobago's fauna more closely

resembles that of the Antillean islands to the north, streams of Trinidad's north coast (Phillip 1998, Rostant 2005), and the continental islands off northern Venezuela (*e.g.*, Debrot 2003), and generally lacks organisms from the Orinoco Delta region (Phillip 1998, Rostant 2005).

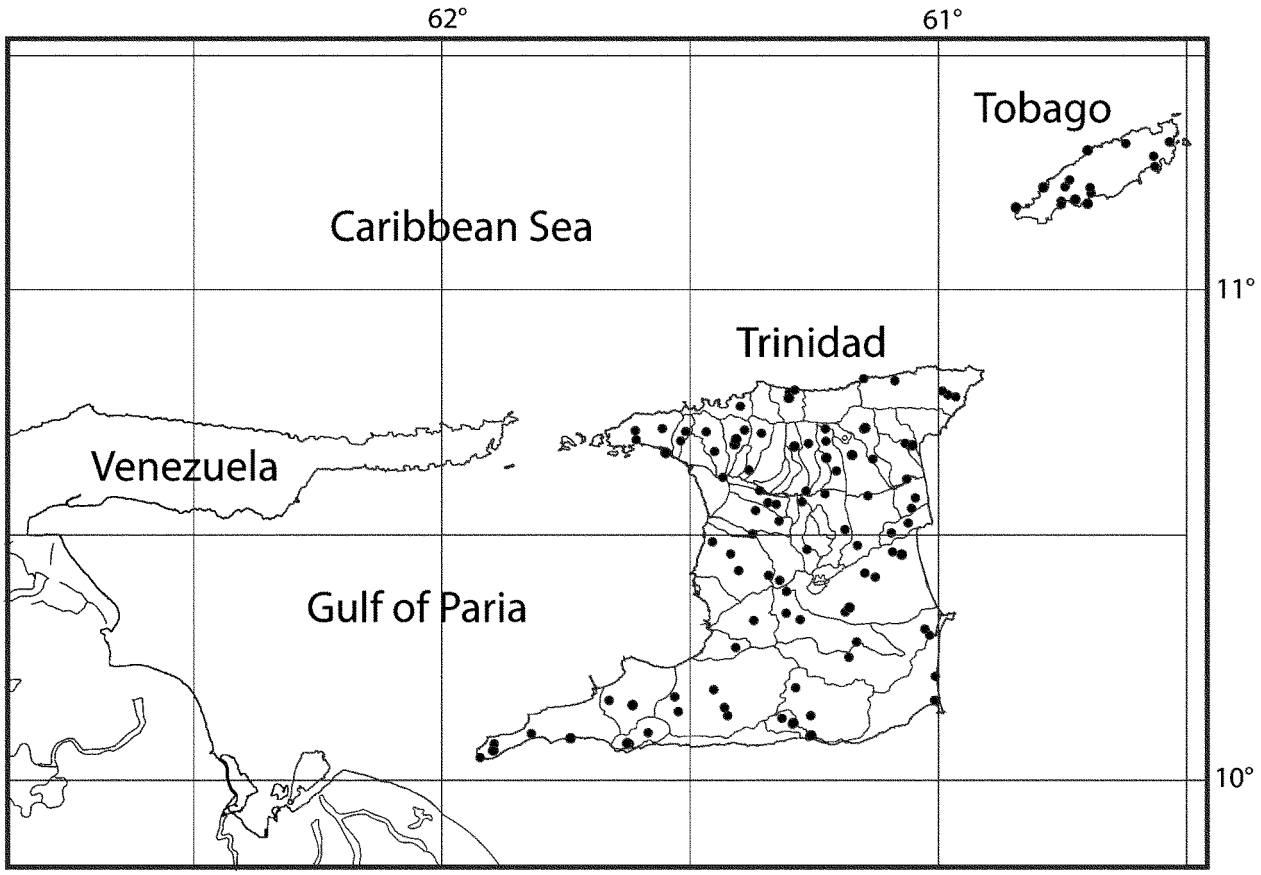

FIGURE 1. Map of Trinidad & Tobago showing the location of the islands opposite the Venezuelan Paria Peninsula. The main river basins of Trinidad are outlined, and the locations of the sites surveyed in the two islands by Phillip (1998) and the authors of the current publication are illustrated as black dots.

Europeans first discovered Trinidad in 1498, and the first mention of the island's freshwater fishes was made in 1617 when Sir Walter Raleigh commented on the Pitch Lake at La Brea in his ship's log (Raleigh 1887). The first records of freshwater fishes from Trinidad were made by Bennet (1831a, 1831b) who reported on the discovery of *Chromis taenia* (=*Cichlasoma taenia*), and Valenciennes (1840a, 1840b) who added two species of catfishes, *Callichthys laevigatus* (=*Hoplosternum littorale*) and *Hypostomus robinii*. Gill (1858) provided the first attempt at a geographic survey, listing 23 species of freshwater fishes from the western portion of the island. Léotaud (1858) published a short catalogue of the brackish and freshwater fishes of Trinidad that listed about 20 species of fishes, of which eight were from freshwater genera. Gill (1859) described a gobiid, *Evorthodus breviceps* (=*E. lyricus*), and Günther (1869) produced a note on three "cyprinodontes" from the island: *Strableps tetrophthalmus* (=*Anableps anableps*), *Rivulus micropus* (=*Anablepsoides hartii*) and *Girardinus guppii* (=*Poecilia reticulata*). In the 1870s, several works reviewed the characins and siluriforms (Lütken 1874, 1875a, 1875b), and Boulenger (1890) described what was believed to be a new species, *Haplochilus hartii* (=*Anablepsoides hartii*), from Trinidad.

Regan (1906a) presented notes on loricariid fishes, describing two new species, and Regan (1906b) provided a comprehensive list of 41 species of freshwater fishes based on collections by Lêchmere Guppy. This latter paper revised the number of freshwater fishes initially reported by Gill (1858) from 23 to 20, and the number of species reported by Gill (1858) as new to science from 19 to 10. Guppy (1910) was the first report from a T&T national on the freshwater fishes of T&T. Fowler (1915) enumerated 35 fish species from fresh and brackish water. In the

1920s, notes on the biology of *Rivulus* (=*Anablepsoides*) *hartii* were published by Jordan (1923), and a new species of blind catfish, *Caecorhamdia urichi* (=troglomorphic form of *Rhamdia cf. quelen*) was described (Norman 1926). Fowler (1931) enumerated about 22 species of freshwater fishes; La Monte (1932) added notes on colour variation in guppies, *Poecilia reticulata*, and synonymised *Stevardia aliata* with *Corynopoma riisei*; Guppy (1934) provided biological data and information on the distribution of 13 of the better known species; and Weber (1938) produced short notes on two species of fishes. Güntert (1942) published a report on catfishes held at the museum at Basle, Switzerland, which included specimens from Trinidad. Fowler (1943) listed 12 species of freshwater fishes from Trinidad, and he later described the loricariid *Ancistrus maracasae* (Fowler 1946). Inger (1949) published a paper with information on two species from the island, *Roeboides dayi* (=*R. dientonito*) and *Hypostomus robinii*.

Price (1955) published the first compilation of freshwater fishes of Trinidad from surveys covering the entire island, naming 51 species, and giving information on their distribution. He categorised freshwater fishes into four groups based on their distribution on the two islands: (1) relict South American; (2) recent colonising South American; (3) introduced; and (4) Tobago and north coast Trinidad faunas. Price's taxonomic work was reviewed and updated by Boeseman (1960, 1964), who produced the first identification keys, and an annotated checklist of 71 species of fishes that were found in the streams; these included coastal species that enter streams from time to time. He also suggested a plausible mechanism by which fishes from South America colonise Trinidad—the possibility of using a surface lens of fresh water that exists between the island and the mainland during the wet season. Alkins *et al*. (1981) reported on a study of the aquatic fauna of Aripo Savannahs. Then Alkins & de Souza (1984), and Sturm & de Souza (1984) reported on two species of freshwater fishes that were new records for Trinidad, *Brycon siebenthalae* (=*Brycon amazonicus*) and *Triportheus elongatus* (= *Triportheus auritus*).

The first study on the zoogeography of the freshwater fishes was conducted by Ali (1989), who produced evidence of possible multiple invasions of some species based on gel electrophoresis of blood plasma proteins. In that same year, Alkins-Koo (1989) published a study on the ecology of the Chatham River, a small stream on the south coast of Trinidad. She was able to distinguish at least 31 species of fishes from 21 families; of these, 12 species could be considered estuarine. In the following years, Carvalho *et al*. (1991) examined genetic variation among populations of *Poecilia reticulata* in both islands using gel electrophoresis of allozymes; they found that populations in the northern Oropuche River were markedly different from others on Trinidad. Fajen & Breden (1992) also found evidence of genetic variation among populations of *P. reticulata* across Trinidad, this time using mitochondrial DNA analysis. This research suggested either two arcs of colonisation from different sources, or several waves of colonisation followed by differentiation on the island. Gilliam *et al*. (1993) listed 13 species of freshwater fishes from 86 sites surveyed on the Guanapo River, Northern Range.

Three major surveys were conducted during the last two decades of the 20th Century. The first, Ramnarine *et al*. (1994), was an ecological survey of Tobago, which included the freshwater fishes. Then Kenny (1995) summarised the results of collections made mainly in 1980 and 1981. This book included distribution maps and notes on the biology and habitat preferences of 43 species of freshwater fishes from Trinidad, as well as comments on the occurrence and zoogeography of the group. He developed Price's (1955) zoogeographic observations into a solid hypothesis, adding a fifth category (unstable relict) to explain fishes with apparently diminishing distribution ranges on Trinidad. He also further developed Boeseman's idea of the freshwater lens to explain the movement of primary freshwater fishes across the physiological barrier between Trinidad and Venezuela. A more extensive survey that included both Trinidad and Tobago was conducted by Phillip (1998). This was the first quantitative fish survey. It also measured physicochemical descriptors of the streams visited, and was the first survey to include both islands. It analysed the spatial and temporal patterns evident in the fauna, and looked at the effects of habitat alteration on fish distribution and community structure.

Phillip & Ramnarine (2001) published an illustrated guide to the freshwater fishes of Trinidad and Tobago, which included keys to the families and species, as well as descriptions and colour photographs of the 41 species considered to be freshwater. Notes were also made on several other species that enter the streams. Romero *et al*. (2002) reported on the replacement of blind, troglomorphic forms of *Rhamdia cf. quelen* in the Cumaca cave by the normal epigean form. Poeser (2003), based on molecular evidence, described *Poecilia boesemani* (formerly identified as *P. sphenops*) from Trinidad. Ramsundar (2005) provided a list of the fish fauna of the Godineau Swamp, which included nine freshwater species among them. Later, Jowers *et al*. (2007) commented on the zoogeography of *Rivulus hartii* (=*Anablepsoides hartii*) within Trinidad and Tobago based on a molecular analysis of populations on both islands compared with South American populations. They provided evidence of two sources

of colonisation of *R. hartii*. The following year, Suk & Neff (2009) refuted claims of genetic divergence of the Oropuche populations. Later in the same year, Schories *et al*. (2009) declared the guppies of the northern Oropuche River to be a new species, *Poecilia* (*Acanthophacelus*) *obscura* (= *Poecilia reticulata*), based on new molecular evidence. Willing *et al*. (2010) and Walter *et al*. (2011) provided a different interpretation to the phylogeography of *P. reticulata* and *A. hartii*, believing that their data were consistent with multiple invasions of Trinidad by these species, and limited genetic exchange between drainages on the island, which lead to post-colonisation divergence. Bertaco & Malabarba (2010) provided a re-description of *Hemibrycon taeniurus* from T&T.

A history of the freshwater fish fauna of Trinidad and Tobago would not be complete without at least a brief mention of research on *Poecilia reticulata*, the common guppy. The Trinidadian population of this species was described as a separate species, *Girardinus guppii*, by Günther (1866), but later the name was synonymised with *P. reticulata*. The species did not appear in the research literature until the period 1919–1938 when it was used for a number of early laboratory studies on fish genetics (Schmidt 1919, 1920, Winge 1922, 1923, 1927, 1934, Winge & Ditlevsen 1938). Haskins conducted a number of classic experiments (*e.g*., Haskins & Druzba 1938, Haskins & Haskins 1949), and was the first to use this species to examine evolution in the natural habitat when they introduced laboratory-reared guppies into three populations in the wild in Trinidad (Haskins & Haskins 1954). These early works were the foundation for a vibrant and productive evolutionary biology and behavioral ecology industry that spans the globe and has resulted in a few thousand peer-reviewed publications to date. The species was the subject of more than a hundred publications in peer-reviewed journals in 2010 alone.

As it should be clear from the long history of its ichthyological research, Trinidad's stream fish fauna is a rich, dynamic one. While it is likely that most colonisers are transient, at least a few have become established, forming the currently permanent communities that inhabit the island's water bodies. More recently, man-made conditions have added to natural processes through the aquarium industry and a fledgling fisheries and aquaculture industry (Kenny 1995), resulting in further changes to T&T's fish fauna. For these reasons, in addition to several recent taxonomic revisions of Neotropical fishes, and a number of concerns arising from recent work (*e.g*., Phillip & Ramnarine 2001) about the identification of certain species, a review of the T&T stream fish fauna at this point in time appears once more justified. In this paper, we provide an updated and annotated list of the stream fishes of Trinidad & Tobago, summarise the taxonomic conventions used in the most commonly cited literature regarding the freshwater fish fauna of Trinidad, and provide an illustrated key for the identification of these species.

Methodology

Our main goal was to produce a comprehensive list of stream species present in the islands of Trinidad and Tobago. Since the focus is on stream taxa, we have only included marine or estuarine species whose adults may commonly be found in stream systems. To achieve this general goal, we combined literature searches with field collections. We performed two field surveys; one from 1996 to 1998 led by DATP, and a 2010 ROM-led collection. Sites covered in both surveys are illustrated in Figure 1. An initial list of the freshwater fishes reported for T&T was extracted from Eschmeyer & Fricke's (2011) online Catalogue of Fishes. We compared and complemented this list with information from the databases of museums with substantial holdings of T&T freshwater fish collections, including The University of the West Indies' Zoology Museum (UWIZM); the Royal Ontario Museum (ROM), Toronto; The British Museum of Natural History, London (BMNH); American Museum of Natural History, New York (AMNH); and Netherlands Centre for Biodiversity Naturalis, Leiden (RMNH). We also compared these lists with species caught in the most recently published surveys: Boeseman (1960, 1964), Kenny (1995), Phillip (1998), Ramsundar (2005) and Mohammed *et al*. (2010). Nomenclature used throughout follows that in Eschmeyer & Fricke (2011). Notes on the biology of species were compiled largely from original literature, Froese and Pauly (2012) (and literature cited therein), Kenny (1995), Phillip & Ramnarine (2001) and Eschmeyer & Fricke (2011). Finally, updated taxonomic keys were developed based on specimens from the ROM's and UWIZM's ichthyology collections, and the literature, when appropriate. The keys were tested using specimens of all species included.

Based on the literature on habitat preferences and taxonomy, the species in the combined list were divided into either stream species, including those found in the estuarine lower reaches (Table 1), or marine and coastal species that may enter streams (Table 2). We have attempted in these two tables to clarify the somewhat confusing issue of changing synonyms and misidentifications of the fishes. We did this by including the names of all species

mentioned in the main surveys dating from Gill's (1858) survey to the names that are valid at the present time, according to Eschmeyer & Fricke (2011).

The stream fishes of Trinidad & Tobago

Analysis of the species list

According to the literature reviewed and species caught by the authors during the two surveys (in 1996–1998 and 2010), a total of 144 species of fishes, belonging to 107 genera in 48 families from 19 orders, can be found in the streams of Trinidad & Tobago. Of these, we considered only 81 species to be mainly freshwater (Table 1), the remaining 63 being coastal species (Table 2) that occasionally enter the lower portions of streams.

On further examination of the 81 stream species, only 66, representing 57 genera in 25 families and 12 orders are, or may, still be found in the two islands. We removed 15 freshwater species for the following reasons: (a) seven species (*Tetragonopterus chalceus, Pimelodella gracilis, Haemomaster venezuelae, Megalechis thoracata*, *Hypostomus plecostomus, Brachyplatystoma vaillantii* and *Joturus pichardi*) were deemed to be misidentifications or errors since they are not known from T&T; (b) eight other species (*Leporinus friderici, Nannostomus unifasciatus, Brycon amazonicus, Hemigramms ocellifer, Megalechis picta, Corydoras melanistius, Chaetostoma trinitatis* and *Cleithracara maronii*) (see Table 3) were removed since they have not been collected on the islands in the last two or three surveys. These were either introduced species or natural colonists that had failed to become established in T&T.

At least 63 species of coastal and marine fishes have been recorded from the streams in T&T (Table 2). These belong to 42 genera from 25 families. Three of these, *Notarius bonillai*, *Ctenogobius claytoni*, and *Trinectes maculatus* were omitted from the list because we believe the records are based on misidentifications and their ranges as currently understood do not extend to Trinidad and Tobago.

Annotated checklist

The checklist includes a total of 77 species/genera. These species and original description references are given in the following checklist. The list is arranged in taxonomic order, though genera and species within the families are arranged in alphabetical order. Notes on the habitat preferences, distribution on T&T, reproduction, feeding and maximum size (as total length following Froese & Pauly (2012), unless stated otherwise) are given for each species, when the information is available. Where relevant, taxonomic notes were also appended.

Apart from the 66 species of freshwater fishes to be found in the streams of T&T, we included in the checklist a few freshwater fish species known from the Orinoco River delta (see Lasso *et al*. 2004), but not presently found in T&T, as we thought that it was likely that they may colonise the islands in the future. Some species (*e.g*., *Nannostomus unifasciatus* and *Leporinus friderici*) have previously been reported from T&T. We included *Megalechis thoracata*, (1) because it might easily colonise from the Orinoco River delta where they occur; they are very resistant to drying out, and when out of water, are able to breath air; and (2) to distinguish this species from the other specimens of *Hoplosternum*; *Megalechis* was, until recently, in the same genus, *i.e*., *Hoplosternum*, and the two are morphologically similar.

In this review, we follow Boeseman (1960) who included some euryhaline species that he believed could make the journey over water during the wet season. Six species (*Megalops atlanticus*, *Microphis lineatus*, *Ctenogobius boleosoma*, *Bathygobius soporator*, *Trinectes paulistanus*, and *Colomesus psittacus*), and two genera (*Centropomus* and *Mugil*) of marine and coastal fishes have also been included in the checklist and keys because of their abundance or ability to penetrate far up streams. In addition, *Microphis lineatus, Ctenogobius boleosoma*, and *Bathygobius soporator* were included in the key because they resemble their close freshwater relatives.

TABLE 1. Valid names of species of stream fishes that have been reported for Trinidad and Tobago. Other names are also reported. These include synonyms, misspellings and misidentifications.

Family	Valid species names	Names reported in selected surveys of the two islands
Anguillidae	*Anguilla rostrata*	*Anguilla rostrata*[4,5,6,7]
Curimatidae	*Steindachnerina argentea*	*Steindachnerina argentea*[4,5]; *Curimata argentea*[6,7]; *Curimatus argenteus*[8,9]
Anostomidae	*Leporinus friderici*[13,16]	*Leporinus frederici*[5]; *Leporinus friderici*[6]
Erythrinidae	*Erythrinus erythrinus*	*Erythrinus erythrinus*[2,4,5]
	Hoplerythrinus unitaeniatus	*Erythrinus unitaeniatus*[8], *Erythrinus cinereus*[9], *Hoplerythrinus cinereus*[10,12], *Hoplerythrinus unitaeniatus*[4,5,6,7]
	Hoplias malabaricus	*Hoplias malabaricus*[3,4,5,6,7]; *Macrodon trahira*[8]; *Macrodon ferox*[9]
Lebiasinidae	*Copella arnoldi*	*Copella arnoldi*[4,5]
	Nannostomus unifasciatus[13, 16]	*Nannostomus unifasciatus*[4,5]
	Pyrrhulina laeta	*Pyrrhulina laeta*[4,5]
Gasteropelecidae	*Gasteropelecus sternicla*	*Gasteropelecus sternicla*[2,4,5,6]; *Thoracothorax maculatus*[7]
Characidae	*Gymnocorymbus bondi*	*Moenkhausia bondi*[5,6]
	Brycon falcatus group[14]	
	Brycon amazonicus[13]	*Brycon siebenthalae*[5]
	Triportheus auritus	*Triportheus elongatus*[2,5]
	Roeboides dientonito	*Roeboides dayi*[3,4,5,6,7]
	Tetragonopterus chalceus[12]	*Tetragonopterus chalceus*[7]
	Odontostilbe pulchra[11]	*Odontostilbe pulcher*[4,5,6,7]; *Chirodon pulcher*[8]; *Poecilurichthys pulcher*[9]
	Hemigrammus ocellifer[13]	*Hemibrycon ocellifer*[4,5]

……*continued on the next page*

Where
1. 2010 ROM survey
2. Mohammed *et al.* (2010)
3. Ramsundar (2005)
4. Phillip & Ramnarine (2001)
5. Kenny (1995)
6. Boeseman (1960, 1964)
7. Price (1955)
8. Regan (1906b)
9. Gill (1858)
10. Considered endemic to T&T
11. May not be endemic, but type specimen from T&T
12. We believe this is based on a misidentification
13. Extirpated
14. The University of West Indies collection
15. Eschmeyer & Fricke (2011)
16. Potential invader

TABLE 1. (Continued)

Family	Valid species names	Names reported in selected surveys of the two islands
Characidae	*Hemigrammus unilineatus*	*Hemibrycon unilineatus*[4,5,6]; *Hemigrammus unilineatus*[7]; *Tetragonopterus unilineatus*[8]; *Poecilurichthys unilineatus*[9]
	Hyphessobrycon axelrodi[10]	*Megalamphodus axelrodi*[5]; *Aphyocharax axelrodi*[6], *Pristella riddlei*[6,7]
	Astyanax bimaculatus	*Astyanax bimaculatus*[3,4,5,6,7]; *Tetragonopterus maculatus*[8]; *Poecilurichthys brevoortii*[9]
	Corynopoma riisei	*Corynopoma riisei*[4,5,6,7,8,9]; *Stevardia albipinnis*[9]; *Nematopoma searlesii*[9]; *Corynopoma veedonii*[9]
	Gephyrocharax valencia	*Gephyrocharax* sp.[4]
	Hemibrycon taeniurus[10]	*Hemibrycon taeniurus*[4,5,6]; *Hemibrycon guppyi*[6,8]; *Hemibrycon dentatus*[7]; *Tetragonopterus guppyi*[8]; *Tetragonopterus taeniurus*[8]; *Poecilurichthys taenia*[9]
Auchenipteridae	*Pseudauchenipterus nodosus*	*Pseudauchenipterus nodosus*[2,3,4,5,6,7]; *Pseudauchenipterus guppyi*[8]
	Trachelyopterus galeatus	*Trachelyopterus galeatus*[6]; *Parauchenipterus paseae*[8]
Heptapteridae	*Pimelodella gracilis* group[12]	*Pimelodella gracilis*[7]
	Rhamdia cf. quelen	*Rhamdia quelen*[4,5,6]; *Rhamdia sebae*[6]; *Caecorhamdia urichi*[6]; *Pimelodella chagresi*[7]; *Pimelodus wilsoni*[8]; *Pimelotus vilsoni*[9]
Aspredinidae	*Aspredinichthys filamentosus*[15]	
	Aspredinichthys tibicen[15]	
	Aspredo aspredo[15]	
	Platystacus cotylephorus[15]	
Trichomycteridae	*Haemomaster venezuelae*[12]	*Haemomaster venezuelae*[6,7]
Callichthyidae	*Callichthys callichthys*	*Callichthys callichthys*[2,4,5,6,7]; *Callichthys kneri*[8]
	Hoplosternum littorale	*Hoplosternum littorale*[3,4,5,6,7]; *Callichthys littoralis*[8]; *Hoplosternum laevigatum*[9]

……continued on the next page

Where
1. 2010 ROM survey
2. Mohammed *et al.* (2010)
3. Ramsundar (2005)
4. Phillip & Ramnarine (2001)
5. Kenny (1995)
6. Boeseman (1960, 1964)
7. Price (1955)
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12. We believe this is based on a misidentification
13. Extirpated
14. The University of West Indies collection
15. Eschmeyer & Fricke (2011)
16. Potential invader

TABLE 1. (Continued)

Family	Valid species names	Names reported in selected surveys of the two islands
Callichthyidae	*Megalechis picta*[13]	
	Megalechis thoracata[12, 16]	*Hoplosternum thoracatum*[6,7]; *Callichthys thoracatus*[8]; *Hoplosternum stevardii*[9]
	Corydoras aeneus	*Corydoras aeneus*[4,5,6,7,8]; *Hoplosoma aeneum*[9]
	Corydoras melanistius[13]	*Corydoras melanistius*[5]
Loricariidae	*Hypostomus plecostomus*[12]	*Hypostomus plecostomus*[7]; *Plecostomus guacari*[8]
	Hypostomus robinii[11]	*Hypostomus robinii*[3,4,5,6,7,9]; *Plecostomus robini*[8]; *Plecostomus guacari*[8]
	Ancistrus maracasae[10]	*Ancistrus* c.f.[2]; *Ancistrus cirrhosus*[4,5,6]; *Ancistrus triradiatus*[7]; *Ancistrus trinitatis*[8]; *Ancistrus guacharote*[9]
	Chaetostoma trinitatis[10,13]	*Ancistrus triradiatus*[7]; *Ancistrus trinitatis*[8]
Pimelodidae	*Brachyplatystoma vaillantii*[12]	
Gymnotidae	*Gymnotus carapo*	*Gymnotus carapo*[2,4,5,6,7]; *Carapus fasciatus*[8]
Gobiesocidae	*Gobiesox nudus*	*Gobiesox nudus*[4,5]
Rivulidae	*Kryptolebias marmoratus*[1]	
	Anablepsoides hartii	*Rivulus hartii*[4,5,6]; *Rivulus hardi*[7]; *Haplochilus hartii*[8]
Poeciliidae	*Poecilia boesemani*[10,11]	*Poecilia sphenops*[4,5]; *Molliensia sphenops*[6,7]
	Poecilia picta	*Poecilia picta*[4,5]
	Poecilia reticulata	*Poecilia reticulata*[3,4,5]; *Lebistes reticulatus*[6,7]; *Girardinus guppyi*[8]
	Poecilia vivipara	*Poecilia vivipara*[4,5,6,7]
Sygnathidae	*Pseudophallus mindii*	
Synbranchidae	*Ophisternon aenigmaticum*	
	Synbranchus marmoratus	*Synbranchus marmoratus*[4,5,6]; *Symbranchus marmoratus*[7,8]
Polycentridae	*Polycentrus schomburgkii*	*Polycentrus schomburgkii*[4,5,6,7,8]; *Polycentrus tricolor*[9]

……*continued on the next page*

Where
[1] 2010 ROM survey
[2] Mohammed *et al.* (2010)
[3] Ramsundar (2005)
[4] Phillip & Ramnarine (2001)
[5] Kenny (1995)
[6] Boeseman (1960, 1964)
[7] Price (1955)
[8] Regan (1906b)
[9] Gill (1858)
[10] Considered endemic to T&T
[11] May not be endemic, but type specimen from T&T
[12] We believe this is based on a misidentification
[13] Extirpated
[14] The University of West Indies collection
[15] Eschmeyer & Fricke (2011)
[16] Potential invader

TABLE 1. (Continued)

Family	Valid species names	Names reported in selected surveys of the two islands
Mugiliidae	*Agonostomus monticola*	*Agonostomus monticola*[4,5,6,7,8]; *Agonostomus microps*[6]; *Agonostomus percoides*[6]
	Joturus pichardi[12]	
Cichlidae	*Oreochromis mossambicus*	*Oreochromis mossambicus*[4,5]; *Tilapia mossambica*[6,7]
	Oreochromis niloticus	
	Andinoacara pulcher[11]	*Aequidens pulcher*[3,4,5,6,7]; *Acara pulchra*[8]; *Cychlasoma pulchrum*[9]
	Cichlasoma taenia	*Cichlasoma taenia*[4,5]; *Cichlasoma bimaculatum*[6,7,8]; *Cychlasoma taenia*[9]
	Cleithracara maronii[13]	*Aequidens maronii*[5]
	Crenicichla frenata	*Crenicichla alta*[4,5,6]; *Crenicichla saxatilis*[8]; *Crenicichla frenata*[9]
	Crenicichla saxatilis	*Crenicichla saxatilis*[4,7]
Eleotridae	*Dormitator maculatus*	*Dormitator maculatus* [2,4,5,6,7,8]; *Philypnus dormitator*[8]
	Eleotris amblyopsis	*Eleotris amblyopsis*[6]
	Eleotris pisonis	*Eleotris pisonis*[2,4,5,6,7,8]
	Gobiomorus dormitor	*Gobiomorus dormitor*[4,5,6]; *Philypnus dormitor*[7]
	Guavina guavina	*Guavina guavina*[5,6,7]; *Eleotris guavina*[8]
Gobiidae	*Sicydium plumieri*	*Sicydium plumieri*[6,7]
	Sicydium punctatum	*Sicydium punctatum*[4,5,6,7]
	Awaous banana	*Awaous banana*[2]; *Awaous taiasica*[4,5,6,7]; *Chonophorus banana*[8]
	Ctenogobius fasciatus	*Ctenogobius fasciatus*[5,6,9]; *Gobionellus claytoni*[6]; *Gobius fasciatus* [8]
	Ctenogobius pseudofasciatus	
	Evorthodus lyricus	*Evorthodus lyricus*[5,6]; *Evorthodus breviceps*[8]
	Lophogobius cyprinoides	*Lophiogobius cyprinoides*[5,6,7]
Osphronemidae	*Trichopodus trichopterus*	*Trichogaster trichopterus*[2]
Achiridae	*Achirus novoae*[1]	
Tetraodontidae	*Colomesus asellus*[16]	

Where [1] 2010 ROM survey
[2] Mohammed *et al.* (2010)
[3] Ramsundar (2005)
[4] Phillip & Ramnarine (2001)
[5] Kenny (1995)
[6] Boeseman (1960, 1964)
[7] Price (1955)
[8] Regan (1906b)
[9] Gill (1858)
[10] Considered endemic to T&T
[11] May not be endemic, but type specimen from T&T
[12] We believe this is based on a misidentification
[13] Extirpated
[14] The University of West Indies collection
[15] Eschmeyer & Fricke (2011)
[16] Potential Invader

TABLE 2. Marine and coastal fishes of Trinidad and Tobago reported in the publications listed as occasionally found in freshwaters – valid names and synonyms used through time.

Family	Valid species names	Names reported in surveys of the two islands
Carcharhinidae	*Carcharinus leucas*	
	Rhizoprionodon lalandii	*Rhizoprionodon lalandei*[5]
Pristidae	*Pristis microdon*	
	Pristis pectinata	
Dasyatidae	*Dasyatis americana*	*Dasyatis americana*[5]
Clupeidae	*Odontognathus mucronatus*	
Engraulidae	*Anchoa parva*	
	Anchoa spinifer	
	Anchovia surinamensis	
	Lycengraulis grossidens	
	Pterengraulis atherinoides	
Megalopidae	*Megalops atlanticus*	*Megalops atlanticus*[3]; *Tarpon atlanticus*[6,7]
Ariidae	*Cathorops laticeps*	
	Cathorops spixii	*Cathorops spixii*[4]; *Arius spixii*[5,6,7,8]
	Notarius bonillai[11]	*Hexanematichthys bonilla*[3]
	Sciades couma	*Arius couma*[4]
	Sciades herzbergii	*Arius herzbergii*[4,8]; *Selenaspis herzbergii*[5,6,7]; *Hexanematichthys herzbergii*[3]
	Sciades proops	*Hexanematichthys proops*[3]
Batrachoididae	*Batrachoides surinamensis*	*Batrachoides surinamensis*[3]
Atherinidae	*Atherinomorus stipes*	*Atherinomorus spp.*[4,5]
Anablepidae	*Anableps anableps*	*Anableps anableps*[5,6]
	Anableps microlepis	*Anableps microlepis*[5,6]
Belonidae	*Strongylura marina*	
	Strongylura timucu	*Strongylura timucu*[5]
	Tylosurus crocodilus	*Tylosurus crocodilus*[5]
Hemiramphidae	*Hemiramphus brasiliensis*[10]	*Hemiramphus brasiliensis*[5]
Sygnathidae	*Microphis lineatus*	*Oostethus lineatus*[5,6]; *Dorichthys lineatus*[8]
Centropomidae	*Centropomus ensiferus*	*Centropomus ensiferus*[5,6,7,8]
	Centropomus parallelus	*Centropomus parallelus*[6]
	Centropomus pectinatus	*Centropomus pectinatus*[5,6]
	Centropomus undecimalis	*Centropomus undecimalis*[3,4,5,6,7,8]
Serranidae	*Epinephelus itajara*	*Epinephelus itajara*[3,5]
Carangidae	*Caranx hippos*	*Caranx hippos*[3,4]
	Oligoplites palometa	
Lutjanidae	*Lutjanus cyanopterus*	*Lutjanus cyanopterus*[3]
	Lutjanus griseus	*Lutjanus griseus*[4,5,6,7]
Gerreidae	*Diapterus rhombeus*	*Diapterus rhombeus*[3]
	Eucinostomus argenteus	*Eucinostomus argenteus*[5,6]
	Eucinostomus jonesii	*Eucinostomus pseudogula*[7]
	Eugerres plumieri	

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TABLE 2. (Continued)

Family	Valid species names	Names reported in surveys of the two islands
Haemulidae	*Genyatremus luteus*	*Genyatremus luteus*[3]
	Haemulon bonariense	*Haemulon bonariense*[3]
	Pomadasys crocro	
Sciaenidae	*Bairdiella ronchus*	*Bairdiella ronchus*[4]
	Cynoscion acoupa	*Cynoscion acoupa*[3]
Sciaenidae	*Macrodon ancylodon*	*Macrodon ancylodon*[3]
	Ophioscion punctatissimus	*Ophioscion punctatissimus*[3]
	Stellifer spp.	*Stellifer* spp.[3]
Polynemidae	*Polydactylus oligodon*	*Polydactylus oligodon*[5]
Mugilidae	*Mugil cephalus*	*Mugil cephalus*[3,4,5,6]
	Mugil curema	*Mugil curema*[3,4,5,6]
	Mugil incilis	*Mugil incilis*[6]
	Mugil liza	*Lugil liza*[5,6]*; Mugil brasiliensis*[8]
	Mugil trichodon	*Mugil trichodon*[6,8]
Gobiidae	*Ctenogobius boleosoma*	
	Ctenogobius claytoni[11]	*Gobionellus claytoni*[5]
	Bathygobius curacao	
	Bathygobius soporator	*Bathygobius soporator*[5,6]
Achiridae	*Achirus achirus*[1]	*Achirus achirus*[3,4]
	Achirus lineatus	*Achirus lineatus*[6]
	Trinectes paulistanus	
	Trinectes maculatus[11]	*Trinectes maculatus fasciatus*[6]
	Trinectes spp.	*Trinectes* spp.[4,5]
Tetraodontidae	*Colomesus psittacus*	*Colomesus psittacus*[5,6,7]

[1]2010 ROM survey; [2]Mohammed *et al.* (2010); [3]Ramsundar (2005); [4]Phillip & Ramnarine (2001); [5]Kenny (1995); [6]Boeseman (1960, 1964);[7]Price (1955); [8]Regan (1906b); [9]Gill (1858); [10]Considered endemic to T&T; [11] We believe this is based on a misidentification.

TABLE 3. Freshwater species reported for T&T in the literature, but which are not considered to be extant on the island. The discrepancies are either because they are transient or misidentified species. Transients are natural colonists from Orinoco River that do not become established in T&T.

Family	Species	Surveys in which the species were reported
Anostomidae	*Leporinus friderici*	5,6
Lebiasinidae	*Nannostomus unifasciatus*[12]	5
Characidae	*Brycon amazonicus*	5
	Hemigrammus ocellifer[12]	5
Auchenipteridae	*Trachelyopterus galeatus*	6,8
Callichthyidae	*Megalechis picta*	5
	Megalechis thoracata[11]	6,7,8,9
	Corydoras melanistius[12]	5
Loricariidae	*Chaetostoma trinitatis*[10]	8
Cichlidae	*Cleithracara maronii*	5
Eleotridae	*Guavina guavina*	5,6,7,8

[5]Kenny (1995); [6]Boeseman (1960, 1964); [7]Price (1955); [8]Regan (1906b); [9]Gill (1858); [10]Considered endemic to T&T; [11]We believe this is based on a misidentification; [12]Introduced.

CLASS ACTINOPTERYGII

ORDER ELOPIFORMES

FAMILY MEGALOPIDAE

Megalops atlanticus Valenciennes 1847 [tarpon, grand caille]

Coastal waters, estuaries, mangroves, lower parts of streams, penetrating far up streams. Facultative air breather that can therefore tolerate low dissolved oxygen conditions (Geiger *et al*. 2000). Dioecious, multiple-spawning, broadcast spawner (Crabtree *et al*. 1997). Carnivore. 2438 mm.

ORDER ANGUILLIFORMES

FAMILY ANGUILLIDAE

Anguilla rostrata (Lesueur 1817) [eel, American eel]

Perennial, clear-water, fast-flowing streams (Kenny 1995); Antillean fauna, found in Tobago (Phillip 1998) and the north coast of Trinidad (Kenny 1995, Phillip 1998); historic records from the upper regions on south-flowing streams of the Northern Range (Kenny 1995). Native. Catadromous. Evidence for environmental influences on sex determination (Côté *et al*. 2009). Carnivore (Lookabaugh & Angermeier 1992). 1500 mm.

ORDER CHARACIFORMES

FAMILY ANOSTOMIDAE

Leporinus friderici (Bloch 1794) [three-spot leporinus]

Slow-moving streams and ponds; single record collected from Matura River on the east coast of Trinidad; believed to be locally extinct (Kenny 1995). Probably a natural colonist (Kenny 1995). Potamodromous. Extended (Ponton & de Mérona 1998) or seasonal spawning (Lopes *et al*. 2000); eggs deposited in lentic habitats in benthic nest, guarded by parents. Omnivore (de Melo *et al*. 2004). 500 mm.

As with many “species" in this genus, *Leporinus friderici* is a poorly understood species complex currently being investigated; taxonomic changes can be expected.

FAMILY CURIMATIDAE

Steindachnerina argentea (Gill 1858) [silver fish, hump-backed sardine, stout sardine]

Clear or slightly turbid water (Kenny 1995, Winemiller *et al*. 2008) in ponds, drainage ditches, and the middle courses of streams, where it prefers muddy or sandy substrates; tolerant of hypoxic conditions (Winemiller 1989). South American fauna, with limited distribution in north central Trinidad (Kenny 1995, Phillip 1998). Native (Kenny 1995). Lays sticky eggs on substrate. Epibenthic mud-feeder (Winemiller 1992). 110 mm.

FAMILY ERYTHRINIDAE

Erythrinus erythrinus (Bloch & Schneider 1801) [red wolf fish]

Slow-moving lowland streams; facultative air breather (Stevens & Holeton 1978). In Trinidad, found only on the southwestern peninsula (Kenny 1995, Phillip 1998), including the South Oropuche drainage. Native (Kenny 1995). Probably deposits eggs in pits in the stream bed. Carnivore; young may mimic prey species (Brosset 1997). 200 mm.

Hoplerythrinus unitaeniatus (Spix & Agassiz 1829) [yarrow]

Variety of habitats including clear, free-flowing, and sluggish streams and swamps, including anoxic waters (Kenny 1995); facultative air breather (Stevens & Holeton 1978); South American fauna, with distribution on Trinidad limited to populations in streams draining to the east coast (Kenny 1995), easternmost drainages of the Caroni River (Phillip 1998), and the southwestern peninsula. Native or natural colonist (Kenny 1995). Seasonal spawning (Ponton & de Mérona 1998); likely spawns in benthic pits. Carnivore. 250 mm.

Gill (1858) described *Hoplerythrinus cinereus* as an endemic species from Trinidad, however, in the absence of more collections, we currently treat all *Hoplerythrinus* from Trinidad as *H. unitaeniatus*, which also occurs in the nearby Orinoco basin. Further studies should reveal whether this treatment is warranted.

Hoplias malabaricus (Bloch 1794) [guabine, wolf fish].

Ponds, drainage ditches, and streams from lowlands to some headwaters; clear or turbid, fast- or slow-flowing water (Kenny 1995); dermal lip protuberances allow aquatic surface breathing in hypoxic conditions (Winemiller 1989). South American fauna, widely distributed in streams below the Northern Range zoogeographic barrier (Kenny 1995, Phillip 1998). Native. Potamodromous on mainland. Spawns all year (Ponton & de Mérona 1998); spawns in pits dug in shallow areas, male guards eggs and young (Lowe McConnel 1999). Piscivore (Winemiller 1992, Ibañez *et al*. 2007), juveniles carnivorous (Meschiatti & Arcifa 2002). 560 mm.

FAMILY LEBIASINIDAE

Copella arnoldi (Regan 1912) [splashing tetra, copeina]

Sluggish or stagnant forested streams and swamps. Introduced (Kenny 1995); distribution initially restricted to the eastern part of the island (Kenny 1995), but it has spread to the far inland drainages of the Caroni River, which empties along the upper regions of the west coast (Kenny 1995; Phillip 1998). Lays eggs on leaves overhanging water (Krekorian & Dunham 1972); male splashes water onto developing eggs (Krekorian & Dunham 1972). Carnivore. 50 mm.

Nannostomus unifasciatus Steindachner 1876 [one-lined pencil fish]

Slow-moving streams among vegetation or other cover (Staeck & Schindler 2008). Introduced from Guyana, but believed to be locally extinct (Kenny 1995). Eggs laid in open water or among vegetation (Vorderwinkler 1957). Carnivore/omnivore (Taphorn 1992). 70 mm.

Pyrrhulina laeta (Cope 1872) [half-banded pyrrhulina]

Large and small streams. Distribution in Trinidad limited to eastern streams (Kenny 1995, Phillip 1998). Introduced (Kenny 1995). Eggs shed in open water or deposited on various substrates. Carnivore. 90 mm.

FAMILY GASTEROPELECIDAE

Gasteropelecus sternicla (Linnaeus 1758) [silver hatchet fish]

Slow-moving, turbid, lowland streams (Kenny 1995). Two populations on Trinidad: one on the southwestern peninsula (Kenny 1995), and the other in the eastern part of the island (Phillip 1998, Mohammed *et al.* 2010). Recent colonist (Kenny 1995). Oviparous; brief spawning period in the wet season (Alkins-Koo 2000); eggs deposited on various substrates. Insectivore (Planquette *et al*. 1996); frequently breaches water surface to take flying insects. 65 mm.

FAMILY CHARACIDAE

Astyanax bimaculatus (Linnaeus 1758) [sardine, two-spot sardine, sardine doree, pink-finned sardine]

Midwater dweller (Winemiller 1992) in large, clear streams to small, turbid drainage ditches and ponds (Kenny

1995); tolerates hypoxic conditions by aquatic surface respiration (Winemiller 1989). Native; widely distributed throughout Trinidad (Kenny 1995, Phillip 1998). Oviparous; spawning season likely to be brief (Alkins-Koo 2000), during the early wet season (Ponton & de Mérona 1998); eggs deposited on various substrates. Omnivore (Alkins-Koo 2000, de Melo *et al*. 2004). 150 mm.

The *Astyanax bimaculatus* species group has recently been reviewed (Garutti 2003), but the species present in the Orinoco Basin, and hence Trinidad, are still under study.

Brycon falcatus group [No local name]

Large and small streams. South coast, Trinidad, based on one specimen (catalogue no. UWIZM.2011.29). Natural colonist. Oviparous. Omnivore (de Melo *et al*. 2004). 600mm.

Species of the *Brycon falcatus* group are in need of revision. Other names are often assigned to Orinoco Basin species such as *Brycon bicolor* Pellegrin 1909.

Members of this genus are found in Trinidad from time to time, *e.g*., *Brycon amazonicus* (Alkins and de Souza 1984), but they generally fail to become established.

Corynopoma riisei Gill 1858 [swordtail sardine, swallowtail sardine]

Large and small streams, slow, turbid waters (Nelson 1964); tolerates brackish conditions. Widely distributed in lowland streams south of the Northern Range divide (Kenny 1995, Phillip 1998); does not penetrate far up Northern Range valleys, but reaches higher elevations on the South and Central ranges (Kenny 1995). Native. Oviparous, internal fertilisation with extended spawning coincident with high rainfall (Alkins-Koo 2000), females capable of storing viable sperm for months (Alkins-Koo 2000); eggs laid on submerged plants. Carnivore, feeding mostly on insects (Bushman & Burns 1994, Alkins-Koo 2000, Arnqvist & Kolm 2010). 80 mm.

Gephyrocharax valencia Eigenmann 1920 [No known common names]

Moriquite and Moruga drainages on south coast of Trinidad (Phillip 1998) (UWIZM.2010.14.253) (Vanegas-Rios & Phillip in press). Recent arrival (Phillip 1998). Internal fertilisation, eggs laid on various substrates; four months generation time; fecundity: about 734 embryos/female; egg diameter: approximately 0.75 mm. Spawns during rainy season, possibly more than once per season (Winemiller & Taphorn 1989). Omnivore, but feeds mainly on terrestrial and aquatic insects and microcrustaceans (Taphorn 1992). Origin on the island uncertain. 60 mm.

Gymnocorymbus bondi (Fowler 1911) [silver tetra]

Clear or turbid, slow-flowing streams. Lower reaches of coastal streams on the western south coast of Trinidad (Kenny 1995). Native. Eggs shed in open water or deposited on various substrates (Taphorn 1992). Omnivore. 60 mm.

This species was originally described as *Phenacogaster bondi* by Fowler (1911), later considered a species of *Moenkhausia*, and finally placed in *Gymnocorymbus* (Reis *et al.* 2003).

Hemibrycon taeniurus (Gill 1858) [mountain stream sardine, sardine, bandtail tetra]

Clear upper reaches of streams. Endemic to Trinidad (Bertaco & Malabarba 2010); previously restricted to the upper reaches of streams on the southern slopes of the Northern Range and Nariva Swamp (Kenny 1995), more recently in streams draining the Central Range (Phillip 1998). Omnivore. 80mm.

There was some confusion regarding the correct identity of the species on Trinidad, which was described three times. According to Kenny (1995), Boeseman confirmed that the species was *H. taeniurus*, but listed it as *H. guppyi* based on a description of the species by Regan (1906b); Kenny (1995) concluded that the species was an island race of *H. taeniurus*, rejecting the idea of an island endemic, *H. guppyi*. It was also described as *Tetragonopterus (Hemibrycon) trinitatis* Lütken (1875a), a name now also considered to be a synonym of *H. taeniatus* (Bertaco & Malabarba 2010).

Hemigrammus unilineatus (Gill 1858) [featherfin tetra, featherfin]

Fresh and weakly brackish water (Kenny 1995). Clear and turbid waters in ponds, slow-flowing steams, and drainage ditches; swamp forests (Kenny 1995). Historically found in streams throughout most of Trinidad, except for those on the north coast (Kenny 1995), but some evidence of retraction of the distribution toward the north east

(Phillip 1998); does not penetrate far up stream valleys. Native. Extended spawning coincident with high rainfall (Ponton & de Mérona 1998, Alkins-Koo 2000); eggs deposited on various substrates. Omnivore (Alkins-Koo 2000). 40 mm.

Hyphessobrycon axelrodi (Travassos 1959) [riddlei, pristella, calypso tetra]

Clear to slightly turbid, standing, fresh and mildly brackish waters at low elevations (Kenny 1995); swamp forests. Usually found in the lower parts of the water column. Native. Oviparous (Baensch & Riehl 1995). Omnivore. 30 mm.

Originally described as an *Aphyocharax*, ongoing research into the phylogenetic relationships of *Hyphessobrycon* species indicates that this species groups with those described as *Megalamphodus*, which is currently considered a subgenus of *Hyphessobrycon* by most authors (García-Alzate 2009). Mistakenly identified as *Pristella riddlei* (=*maxillaris*) by Price (1955).

Odontostilbe pulchra (Gill 1858) [sardine, sardine doree]

Clear to slightly turbid, flowing large and small streams, ponds, and drainage ditches; tolerant of hypoxic conditions by using aquatic surface respiration (Winemiller 1989). Southern slopes of the Northern Range (Kenny 1995) to northern slopes of the Central Range (Phillip 1998). Native (Kenny 1995). Oviparous (Winemiller & Taphorn 1989). Carnivore (Taphorn 1992). 50 mm.

Roeboides dientonito Schultz 1944 [hunchback or glass sardine, glass fish]

Slow-moving streams and slightly turbid, standing waters (Kenny 1995); can tolerate hypoxic conditions (Winemiller 1989). Previously widely distributed only in streams throughout east Trinidad, except those on the north and south coasts (Kenny 1995), but more recently also found in streams draining to the west and south coasts (Phillip 1998). Natural colonist. Extended breeding season with peak in wet season (Peterson & Winemiller 1997). Carnivore; eats fish scales (Winemiller 1992) and aquatic invertebrates (Peterson & Winemiller 1997). 120 mm.

Triportheus auritus (Valenciennes 1850) [No local name]

Moderate to slow-moving large and small streams, tidal regions of streams, and freshwater swamps; can breathe at the surface during hypoxic conditions (Winemiller 1989), but prefers well-oxygenated waters (de Melo *et al*. 2009). South coast, Trinidad; recent colonist from South America first collected from two western streams on the south coast in mid 1980s (Alkins and de Souza 1984; Sturm and de Souza 1984). Thought to have gone locally extinct (Kenny 1995), but recently collected from a stream on the eastern portion of the south coast (Mohammed *et al*. 2010). These may represent separate colonising events. Eggs deposited on various substrates. Omnivore. 260 mm.

ORDER SILURIFORMES

FAMILY AUCHENIPTERIDAE

Pseudauchenipterus nodosus (Bloch 1794) [yellow catfish]

Estuaries (Teixeira Bonecker *et al*. 2007) and lower parts of streams, especially those with muddy substrate; fresh- and brackish-water adventitious visitor to mangrove areas at high tides in the wet season (Barletta *et al*. 2003). Native; collected from tidal portions of largest drainage basins, particularly in Trinidad (Kenny 1995, Phillip 1998); presence on Trinidad apparently sporadic. Breeds in the wet season (Barletta *et al*. 2003), internal fertilisation (Loir *et al*. 1989), eggs scattered on various substrates. Omnivore/detritivore. 250 mm.

Trachelyopterus galeatus (Linnaeus 1766) [grouper catfish]

Once believed to be locally extinct (Kenny 1995), but recently collected in two drainages of the central west coast (Mohammed & Lalla, in press). Swamps, estuaries, and slow-moving streams with fresh or brackish water; tolerant of habitats with low dissolved oxygen. Native. Internal fertilisation (Downing Meisner *et al*. 2000, Costa Melo *et al*. 2011), eggs hidden but with no additional parental care (Bailly *et al*. 2008). Carnivore. 220 mm.

This species was formerly placed in *Parauchenipterus* Bleeker (1862), but that genus is now considered a synonym of *Trachelyopterus* Valenciennes (1840).

FAMILY HEPTAPTERIDAE

Rhamdia cf. quelen (Quoy & Gaimard 1824) [silver catfish, catfish, cacalaw, river catfish, barbe]

Clear to turbid, fast to still streams. Widely distributed in streams south of the Northern Range divide, often penetrating far upstream (Kenny 1995, Phillip 1998). Native. Spawns year-round (Olaya-Nieto *et al*. 2010); eggs deposited on stream bed. Omnivore: carnivore (Orlandi Bonato *et al*. 2012), piscivore (Rondineli *et al*. 2011), herbivore (Ibañez *et al*. 2007). Nocturnal. 480 mm.

This species is similar to *R. quelen,* which was originally described from Peru. Perdices *et al.* (2002), using DNA evidence, have shown that the wholescale lumping of many "species" of *Rhamdia quelen* proposed by Silfvergrip (1996) was an unwarranted oversimplification. A troglomorphic form of the species had been misidentified as a separate species, *Caecorhamdia urichi* Norman (1926), and is now considered a synonym of *R. cf. quelen*.

FAMILY ASPREDINIDAE

Aspredinichthys filamentosus (Valenciennes 1840) [seven-barbed banjo]

Demersal, found in the flooded lower portions of coastal streams and along the coast in freshwater, brackish and marine habitats; sandy to muddy-bottomed estuaries (Le Bail *et al*. 2000). Native. External fertilisation; female carries eggs attached to her ventral surface (Le Bail *et al*. 2000). 218 mm.

Aspredinichthys tibicen (Valenciennes 1840) [ten-barbed banjo]

Benthic species found mainly on soft-bottomed habitats in brackish water near stream mouths, but also found in fresh and marine waters. Native. External fertilisation; female carries eggs attached to her ventral surface (Le Bail *et al*. 2000). Carnivore/omnivore. 240 mm.

Aspredo aspredo (Linnaeus 1758) [banjo catfish]

Sandy- to muddy-bottomed reaches in brackish (Barletta & Barletta-Bergan 2009) to fresh water in coastal streams (Barros *et al*. 2011). Native. External fertilisation; female carries eggs attached to her ventral surface (Bruton 1996). Carnivore/omnivore. 410 mm.

Platystacus cotylephorus Bloch 1794 [banjo catfish]

Mainly brackish estuaries but also muddy lowland streams. Native. External fertilisation; female carries eggs attached to her ventral surface (Sands 1984). Carnivore/omnivore. 370 mm.

FAMILY CALLICHTHYIDAE

Callichthys callichthys (Linnaeus 1758) [flat-head cascadu, chatoo]

Lower stream reaches; free-flowing and stagnant reaches, which are often slightly turbid and anoxic; facultative air-breather (Carter & Beadle 1931); capable of moving over land (Alkins *et al*. 1981). Widespread in streams south of the Northern Range divide, Trinidad, penetrating far upstream (Kenny 1995). Native. Spawns in the wet season (Ponton & de Mérona 1998), males build a bubble nest at the water surface from mucous and vegetation (Mol 1995). Omnivore (Tedesco *et al*. 2007). 180 mm.

Corydoras aeneus (Gill 1858) [pui pui, souci, river goldfish, aeneus, small cascadura]

Stream riffles of moderate flow, and also slower pools, but with an apparent preference for running water (Kenny 1995); clear and turbid waters; facultative air-breather (Kramer & McClure 1980). Widely distributed south of the main divide of the Northern Range (Kenny 1995, Phillip 1998). Native. Extended spawning coincident with high rainfall (Alkins-Koo 2000); females drink sperm, which is then passed through the gut, fertilising eggs as they are shed (Kodha *et al*. 1995), eggs deposited on nest prepared on leaves, but are not guarded (Bruton 1996). Detritivore/scavenger (Alkins-Koo 2000), omnivore, insectivore (Rondineli *et al*. 2011), benthophagous (Orlindi Bonato *et al*. 2012). 80 mm.

Hoplosternum littorale (Hancock 1828) [cascadu, cascadura]

Muddy habitats in the lower, larger reaches of streams, canals, drainage ditches, ponds and swamps (Kenny 1995); facultative air-breather (Carter & Beadle 1931, Brauner *et al*. 1995, Persaud *et al*. 2006). Widely distributed in streams south of the Northern Range divide (Kenny 1995, Phillip 1998). Native. Breeding takes place at the beginning of the wet season (Oliveira 2000); females deposit eggs in a bubble nest built by the male from saliva and bits of vegetation at the water surface; male guards the nest (Ramnarine 1990). Omnivore. 230 mm.

Megalechis thoracata (Valenciennes 1840) [hoplo, cascadura, bush fish, spotted cascadura]

Slow lowland streams, ditches, and ponds; facultative air breather (Gee & Graham 1978); no specimens of this species have been collected since the 1860s; its presence on the island is doubtful. Native. Male builds bubble nest and guards eggs. Omnivore. 150 mm.

This is possibly a misidentified *H. littorale*; its listing for Trinidad is based on a single stuffed specimen from around 1864, that was examined by Boeseman in the 1960s (see Kenny 1995).

FAMILY LORICARIIDAE

Hypostomus robinii Valenciennes 1840 [teta, mama teta, Anne Marie]

Various habitats from free-flowing, clear-water streams to very turbid, stagnant waters (Kenny 1995). Widely distributed south of the Northern Range divide (Kenny 1995, Phillip 1998). Native. Male guards sticky egg mass deposited on various substrates. Herbivore/detritivore (Kenny 1995). 200 mm.

This species was misidentified as *H. guacari* (Regan 1906a) and *H. plecostomus* by various authors.

Ancistrus maracasae Fowler 1946 [jumbie teta, bearded teta]

Various habitats from free-flowing, clear-water streams to very turbid, stagnant waters (Kenny 1995). Distributed in streams south of the Northern Range divide (Kenny 1995, Phillip 1998). Native and endemic. Male guards sticky egg mass deposited on hard substrates. Herbivore/detritivore. 100mm.

All reports of other species of *Ancistrus* from Trinidad are in error, including a species referred to as *Chaetostoma trinitatis* Günther (1864) that was probably based on *Ancistrus maracasae*. Extensive sampling throughout Trinidad in appropriate habitat has failed to reveal the presence of *Chaetostoma* anywhere on the island today. It may have been present in 1864 and later became extinct, but no specimens are available to corroborate this hypothesis.

ORDER GYMNOTIFORMES

FAMILY GYMNOTIDAE

Gymnotus carapo Linnaeus 1758 [cutlass fish, tiger knife fish, electric fish]

Turbid, shallow, slow-flowing or stagnant waters (Barbieri & Cruz Barbieri 1983, Albert & Crampton 2003) in canals and streams, prefers turbid water, but occasionally found in clear-water streams; capable of air breathing (Liem *et al*., 1984). Distributed in streams south of the Northern Range divide (Kenny 1995). Native. Potamodromous on mainland. Breeds in the wet season (Cruz Barbieri 1981, Ponton & de Mérona 1998); males are mouth-brooders (Albert & Crampton 2003). Carnivorous; adults feed on fishes (Winemiller 1992, Albert & Crampton 2003); juveniles feed on insects (Meschiatti & Arcifa 2002) and mollusks (Albert & Crampton 2003). 760 mm.

ORDER GOBIESOCIFORMES

FAMILY GOBIESOCIDAE

Gobiesox nudus (Linnaeus 1758) [clingfish]

Adults in fast-flowing riffles and chutes in streams (Bussing 1998); juveniles in lower reaches. Adheres to stones using ventral sucker (McLarney *et al*. 2010). Probably amphidromous (McLarney *et al*. 2010). Clear-water streams on Tobago and the middle and eastern north coast of Trinidad (Kenny 1995; Phillip 1998). Native. Insectivore (Bussing 1998). 170 mm.

ORDER CYPRINODONTIFORMES

FAMILY POECILIIDAE

Poecilia boesemani Poeser 2003 [liberty Molly (in Trinidad)]

Brackish and fresh water (Kenny 1995). Endemic to Trinidad, but possibly also present on adjacent mainland Venezuela; described from the Maraval River, Trinidad (Poeser 2003). Internal fertilisation; livebearer; capable of breeding in oceanic water (Kristensen 1970). Omnivore. 40 mm.

Recent work by Poeser (2003) has resulted in the division of previous, supposedly widespread, *Poecilia* "species" into several more locally distributed species, among them *P. boesemani* from Trinidad. Before this, *P. boesemani* in Trinidad was identified as *P. sphenops*, with populations in Diego Martin (immediately west of Maraval) and St. Augustine, but Poeser did not include samples from these other populations. It is believed that *P. sphenops* may have been introduced (Kenny 1995).

Poecilia picta Regan 1913 [millions, swamp guppies]

Lowland, fresh, and brackish (Reznick *et al*. 1992; Kenny 1995), stagnant and flowing, clear and turbid water (Kenny 1995), in habitats including stream mouths, lagoons and sluggish-flowing water (Reznick *et al*. 1992), penetrating far inland in low-elevation streams in Trinidad and Tobago (Kenny 1995). Native. Internal fertilisation; livebearer (Reznick *et al*. 1992). Omnivore. 50 mm.

Poecilia reticulata Peters 1859 [millions, rainbow fish, seven colours, guppy, mosquitofish, big belly fish]

Various habitats, from clear headwaters to turbid lowland streams, standing waters and drainage ditches, throughout Trinidad (Kenny 1995); also some streams in southwest Tobago (Phillip 1998). Native. Viviparous with continuous, year-long reproduction (Alkins-Koo 2000). Omnivore, feeding on algae and insects (Dussault & Kramer 1981). 65 mm.

Schories *et al*. (2009), based a molecular phylogenetic analysis using mitochondrial DNA, split *P. reticulata*, describing a new, cryptic species, *Poecilia* (*Acanthophacelus*) *obscura*, from part of the North Oropuche drainage in east Trinidad. Baillie (2012) rejects this position based on an analysis of genetic differentiation of *P. reticulata* throughout T&T, citing insufficient genetic separation between the Oropuche and other guppies; there is evidence of gene flow and introgression between the Oropuche guppies and those from other parts of the island. We follow Baillie (2012) in not recognising *P. obscura* as a valid species.

Poecilia vivipara Bloch & Schneider 1801 [swamp guppy, swamp millions]

Rarely in fresh water, preferring brackish water (Kenny 1995); canals and ditches near swamps (Kenny 1995), in upper, middle, and lower reaches of stream catchments (Figueiredo Medeiros *et al*. 2006). In Trinidad, it is found in brackish reaches of streams on all but the north coast (Kenny 1995). Native. Internal fertilisation; livebearer. Omnivore. 50 mm.

FAMILY RIVULIDAE

Anablepsoides hartii (Boulenger 1890) [jumping guabine, jump and bend, madfish, small guabine]

Widely distributed in streams throughout Trinidad (Kenny 1995, Phillip 1998), from headwater streams to drainage ditches and swamps, and from fresh to weakly brackish water; also in some streams accross Tobago (Kenny 1995, Phillip 1998). Tolerant of low dissolved oxygen conditions; can tolerate exposure to moist air, and move short distances over land. Native. Sticky eggs deposited on various substrates including living or dead vegetation and gravel. Carnivore. 110 mm.

Removed from the genus *Rivulus* to *Anablepsoides* by Costa (2011). Although we here refer to all *Rivulus* (=*Anablepsoides*) from Trinidad as *A. hartii*, recent genetic work (Walter *et al*. 2011) indicates that differentiation has occurred, some of which warrants taxonomic recognition.

Kryptolebias marmoratus (Poey 1880) [mangrove rivulus]

Salt marshes, estuaries, ditches, and puddles with salt to fresh water; tolerant of habitats with low dissolved oxygen; can tolerate long exposure to air (Abel *et al*. 1987, Sayer 2005). Southwestern peninsula, Trinidad. Native. Simultaneous, self-fertilising hermaphrodite (Harrington 1961), though there are true males and sexual reproduction in some populations (Mackiewicz *et al*. 2006); eggs attached to various surfaces. Carnivore/ omnivore. 80 mm.

ORDER SYGNATHIFORMES

FAMILY SYGNATHIDAE

Microphis lineatus (Kaup 1856) [opposum pipefish]

Found hiding under vegetation along the margins of freshwater and estuarine parts of streams (Dawson 1982, Teixeira & Perrone 1998), as well as among a variety of vegetation types, including *Sargassum* and *Spartina* in marine habitats (Dawson 1982). Native. Breeding occurs in the wet season (Frias-Torres 2002) or year-round (Miranda-Marure *et al*. 2004); adults may breed in fresh water (Herald & Dawson 1972, Dawson 1982, Gilmore & Gilbert 1992) and marine habitats (Herald & Dawson 1972, Dawson, 1982), though larvae and juveniles are usually found at higher salinities (Gilmore 1977, Dawson 1982); ovoviviparous; male carries eggs in a semi-enclosed brood pouch (Teixeira & Perrone 1998). Opportunistic carnivore (Teixeira & Perrone 1998). 95 mm.

Pseudophallus mindii (Meek & Hildebrand 1923) [Y]

Freshwater-estuarine (Teixeira Bonecker *et al*. 2009). Ovoviparous; male broods eggs in pouch under tail. Carnivore (Correa & Uieda 2007). 160 mm.

ORDER SYNBRANCHIFORMES

FAMILY SYNBRANCHIDAE

Ophisternon aenigmaticum Rosen & Greenwood 1976 [zangie, obscure swamp eel]

Benthic (Miller *et al*. 2005), in hypersaline (Tyler & Feller 1996), brackish (Schofield & Nico 2009) and fresh water; wide range of habitats from small muddy pools to clear streams and lakes; also reported from a cave (Tobler *et al*. 2007); facultative air breather. Native (Smith 1997). Eggs likely deposited in burrows dug into bank or floodplain, guarded by male. Carnivore (Miller *et al*. 2005)/omnivore. 800 mm.

Synbranchus marmoratus Bloch 1795 [zangie, swamp eel, dog-head eel]

Wide range of habitats, from brackish water to extreme headwaters, drainage ditches, ponds, swamps, in clear or turbid water (Kenny 1995); facultative air breather (Lüling 1975); capable of moving over land (Alkins *et al*. 1981). Widely distributed in Trinidad, except for streams draining the south coast (Kenny 1995). Native. Potamodromous. Diandric, protogynous hermaphrodite (Breder & Rosen 1966, Liem 1968). Eggs deposited in burrows dug into bank or floodplain, tended by male (Taylor 1913, Vazzoler 1996). Feeds on benthic invertebrates (Winemiller 1992); juveniles carnivorous (Rodriguez, 1999, Meschiatti & Arcifa 2002); nocturnal, but will forage in the day (Kenny 1995). 1500 mm.

ORDER PERCIFORMES

FAMILY CENTROPOMIDAE

Centropomus spp. [snook]

There are several species of "snook" in the region; they can be identified using the FAO key available on the Internet (Orrell, 2011). Coastal in marine, estuarine and fresh waters; juveniles common in lower parts of streams. Carnivore. 362–1500 mm.

FAMILY CICHLIDAE

Andinoacara pulcher (Gill 1858) [coscorob, green coscorob, blue coscorob, small coscorob, coscie, blue acara]

Clear or turbid, stagnant or free-flowing water (Kenny 1995). Widely distributed throughout streams in Trinidad (Kenny 1995), including mid-north-coast streams (Phillip 1998). Native. Males and females guard prepared benthic nest (Mills & Vevers 1989). Omnivore (Winemiller 1992). 160 mm.

Those cichlids commonly known as blue acaras were recently removed from *Aequidens* and placed in the new genus *Andinoacara* by Musilová *et al*. (2009).

Cichlasoma taenia (Bennett 1831) [brown coscorob, large coscorob, red-eye]

Clear or turbid water in swamps, free-flowing and sluggish streams (Kenny 1995). Widely distributed throughout Trinidad (Kenny 1995, Phillip 1998), including streams in the middle of the north coast (Kenny 1995). Native. Brief spawning period coinciding with the dry season (Ponton & de Mérona 1998), both parents guard prepared benthic nest. Carnivore. 220 mm.

Crenicichla frenata Gill 1858 [matawal, millet, pike cichlid]

Clear to slightly turbid, preferably free-flowing, streams (Kenny 1995). Widely distributed in Trinidadian streams south of the Northern Range divide (Kenny 1995, Phillip 1998), but does not appear to overlap with *C. saxatilis*. Native. Male guards nests on benthos or in vegetation such as hollow bamboo stems. Carnivore. 130 mm.

Often referred to in the literature on Trinidad fishes as *Crenicichla alta*, a species not known from Trinidad. This is a result of the confusing taxonomic state of the so-called *Crenicichla* "*saxatilis group*" (*e.g.*, Kullander 1986; Ploeg 1991). One of the main characters given by Gill to distinguish *C. frenata* is the presence of a humeral spot bisected by the upper lateral line. However, we have found that this character varies broadly, with the humeral spot clearly bisected by the lateral line in some individuals, but not in others captured simultaneously. In a few cases we also noticed individual variation in this character, *i.e*., the same individual would have the humeral spot bisected by the lateral line on one side, but below the lateral line on the other side of the body. While Gill's original description approximately fits the specimens we have observed, we find that the more vivid colouration (*i.e*., blotchy lateral band, silvery spotting on the sides of the body, strong sexual dimorphism with breeding females bearing a pink or reddish belly) in the southern slopes of the Northern Range may be a more reliable character for identification.

Crenicichla saxatilis (Linnaeus 1758) [matawal, millet, pike cichlid]

Clear and turbid, free-flowing streams. Found in some western (Phillip 1998) and southern drainages of Trinidad. Native. Extended spawning during wet and dry seasons (Ponton & de Mérona 1998); parents guard a nest on benthos or in vegetation such as hollow bamboo stems. Carnivore. 220 mm.

The identity of so-called *C. saxatilis* from Trinidad needs further study, as *C. saxatilis* is a widely spread species in South America, and likely a species complex (*e.g*., see Kullander 1986, Ploeg 1991). The situation in Trinidad is not clear because, unlike Gill's (1858) description of *C. frenata*, the description provided by Regan (1905) for *C. saxatilis* reads as though it might have been based on a mixture of specimens of the two forms. In general, specimens referred to as *C. saxatilis* are much more sparsely coloured, especially in the absence of an obvious lateral band, and are usually found in western and southern stream drainages that do not overlap with those of the Northern Range where *C. frenata* is found.

Oreochromis mossambicus (Peters 1852) and *Oreochromis niloticus* (Linnaeus 1758) [black tilapia, Mozambique tilapia, silver tilapia, Nile tilapia]

Several species of African tilapias are commonly used in aquaculture and some of them may easily hybridise, thus the identity of some of them may not be easily established. Tilapias commonly escape from aquaculture facilities, and an enormous tolerance for varied environmental conditions facilitates their establishment and dispersal. In Trinidad, they are found in reservoirs and brackish swamps draining the southwestern peninsula and west coasts (Kenny 1995; Phillip 1998); also found in Tobago (Phillip 1998). Introduced. Males build nests; parents mouth brood. Tilapia species are generalist feeders that can eat almost anything available, but often prefer a detritus and vegetable diet. 400–600 mm depending on the species.

FAMILY MUGILIDAE

Agonostomus monticola (Bancroft 1834) [mountain mullet]

Adults in clear, fast-flowing, freshwater streams (Kenny 1995); young occasionally in brackish waters. Coastal streams draining the Northern Range (Kenny 1995; Phillip 1998) and Tobago (Phillip 1998); populations from high-elevation streams draining the southern slopes of the Northern Range up to the 1950s have now been lost, perhaps due to habitat alteration (Kenny 1995). Native. Single, clearly-defined breeding period in the rainy season (Cruz 1987, Phillip 1993), with evidence of total spawning (Phillip 1993); catadromous (Cruz 1987), postlarvae have been found at sea (Anderson 1957). Omnivore (Phillip 1993). 360 mm.

Mugil spp. [mullet]

There are several species of sea mullet that can be identified using Harrison (2002). Generally catadromous; coastal, marine, estuarine and brackish waters. Herbivore/omnivore/detritivore. 300–1000 mm.

FAMILY POLYCENTRIDAE

Polycentrus schomburgkii Müller & Troschel 1849 [king coscorob, black coscorob, leaf fish]

Clear to turbid, fresh or brackish water streams, swamps, and lagoons (Kenny 1995). Found in low-lying areas south of the Northern Range divide, Trinidad, including the Pitch Lake (Kenny 1995, Phillip 1998). Native. Spawns all year (Ponton & de Mérona 1998); spawns on structures overhanging the water; male tends to the developing eggs (Barlow 1967). Carnivore (Mills & Vevers 1989). 100 mm.

FAMILY ELEOTRIDAE

Dormitator maculatus (Bloch 1792) [sleeper]

Fresh and brackish waters (amphidromous) (Teixeira 1994, Teixeira Bonecker *et al*. 2009), static or slow-moving waters, *e.g.*, marshes, ponds and mangroves; turbid, standing water, edges of swamps (Kenny 1995). Lower reaches of streams south of the Northern Range divide (Kenny 1995). Native. Peak spawning occurs in the wet season (Teixeira 1994); attached, sticky eggs are fanned. Omnivore (Nordie 1981, Teixeira 1994). 600 mm.

Eleotris amblyopsis (Cope 1871) [large-scaled spiny-cheek sleeper]

Fresh and brackish water in the lower courses of streams and estuaries. Native. Amphidromous. Year-round spawning (Ponton & de Mérona 1998). Omnivore (Nordie 1981). 100 mm.

Eleotris pisonis (Gmelin 1789) [spiny-cheek sleeper]

Fresh and brackish water (Teixeira 1994) in the lower courses of streams and estuaries; clear and turbid, free-flowing and standing waters (Kenny 1995). Stream mouths, penetrating to low elevations in streams throughout Trinidad (Kenny 1995) and in Tobago (Phillip 1998). Native. Peak spawning in the wet season (Teixeira 1994); amphidromous reproduction: hatched larvae have a marine phase of a few weeks. Carnivore (Teixeira 1994; Pezold & Cage 2002), omnivore (Nordie 1981). 250 mm.

Gobiomorus dormitor Lacepède 1800 [giant goby, sand guabine, guabine]

Fresh and brackish water of streams and estuaries; occurs farther inland than *Eleotris pisonis*. Found in larger coastal streams draining Northern Range, Trinidad (Kenny 1995, Phillip 1998), as well as small coastal streams in the northwestern peninsula and throughout Tobago (Phillip 1998). Native. Amphidromous reproduction: hatched larvae have a marine phase of a few weeks. Carnivore. 600 mm.

Guavina guavina (Valenciennes 1837) [No known local name]

Fresh and brackish water. Amphidromous reproduction: hatched larvae have a marine phase of a few weeks. Carnivore (Teixeira 1994). 230 mm.

FAMILY GOBIIDAE

Awaous banana (Valenciennes 1837) [river goby, sand fish]

Free-flowing riffles and pools in clear streams, often on sandy substrates (Kenny 1995); also in turbid streams. Tobago (Phillip 1998), and coastal streams of Nothern Range, Trinidad (Kenny 1995); occasionally in the southern slopes of the Northern Range (Kenny 1995). Native. Amphidromous reproduction: hatched larvae have a marine phase of a few weeks. Omnivore/carnivore. 300mm.

The distribution and taxonomy of the species of *Awaous* in Venezuela were recently treated by Lasso-Alcala & Lasso (2008). This species was previously identified as *A. taiasica or A. tajasica* (Lichtenstein 1822) (Boeseman 1960, Kenny 1995, Phillip & Ramnarine 2001).

Awaous flavus (Valenciennes 1837) [goby, sand fish]

Occurs from Colombia, all along the north coast of South America, to the Amazon River Delta, in fresh to moderately saline waters of muddy estuarine beaches, main river channels, tidal mangrove and coastal streams, usually on substrates of mud or mud and sand (Lasso-Alcala & Lasso 2008). Native. Amphidromous. Spawning migrations suspected but not well documented in Orinoco River Delta (Lasso-Alcala & Lasso 2008). Omnivore/carnivore. Smaller than *A. banana*, often around 44 mm SL, but reaching 77 mm.

The distribution and taxonomy of the species of *Awaous* were recently treated by Lasso-Alcala & Lasso (2008) who reported that this species is mostly estuarine or marine but can be found in fresh water and has been reported from the Orinoco River Delta. It was misidentified as *Gobionellus* sp., or *Ctenogobius* sp., by Cervigón (1982), Ponte *et al.* (1999) and Lasso *et al.* (2002), or as or *Chonophorus badius* (Taphorn *et al.* 1997). Commercially important to subsistence fisheries (Lasso-Alcala & Lasso 2008) and as an ornamental in Brazil (Watson & Horsthemke 1995).

Bathygobius soporator (Valenciennes 1837) [frillfin goby]

Demersal; in marine (Baldwin & Smith 2003), estuarine, and occasionally fresh water. Benthic spawner. Carnivore (Correa & Uieda 2007). 150 mm.

Ctenogobius boleosoma (Jordan & Gilbert 1882) [darter goby]

Amphidromous; marine (Baldwin & Smith 2003), estuarine (Rozas *et al*. 2012), fresh water; coastal habitats, reefs (Baldwin & Smith 2003), lagoons. Benthic spawner. Carnivore (Correa & Uieda 2007)/detritivore (Carle & Hastings 1982). 75 mm.

Ctenogobius fasciatus Gill 1858 [blotchcheek goby]

Estuaries and lower reaches of streams. Native. Amphidromous. Carnivore/omnivore. 75 mm.

Ctenogobius pseudofasciatus (Gilbert & Randall 1971) [slashcheek goby]

Estuaries and lower reaches of streams. Native (Pezold 2004). Amphidromous (McDowall 1977); eggs deposited on underside of submerged objects, guarded by male. Carnivore/omnivore. 70 mm.

Evorthodus lyricus (Girard 1858) [lyre goby]

Muddy-bottomed backwaters of estuaries (Wyanski & Targett 1985) and freshwater streams. Native.

Amphidromous; pronounced sexual dimorphism (Foster & Fuiman 1987); seasonal breeding (Wyanski & Targett 1985); males excavate a covered, cave-like burrow; eggs attached to underside of cover items and guarded by males (Foster & Fuiman 1987). Omnivore (Harrington & Harrington 1961, Wyanski & Targett 1985), carnivore/detritivore (Foster & Fuiman 1987). 150 mm.

Lophogobius cyprinoides (Pallas 1770) [crested goby]

Tidal creeks and mangroves to lower reaches of freshwater streams. Native. Protogynous hermaphrodite (Cole 1990, Bouchereau *et al*. 2012); amphidromous or fully marine reproduction; main reproductive period May to July (Bouchereau *et al*. 2012). Omnivore (Darcy 1981, Bouchereau *et al*. 2012). 100 mm.

Sicydium plumieri (Bloch 1786) [sijaro, sand shark (local name only)]

Slow to fast-moving chutes, riffles, and pools in clear, coastal streams with rocks (Lyons 2005); penetrates far inland by climbing waterfalls using mouth and pelvic sucker (Winemiller *et al*. 2008). Tobago and north coast, Trinidad. Native. Amphidromous reproduction: hatched larvae have a marine phase of a few weeks. Herbivore, mainly algivorous (Watson 2000). 140 mm.

Kenny (1995) believed that there is only one species of *Sicydium, S. punctatum*, on Trinidad; we have chosen to leave *S. plumieri* in the list pending further investigation.

Sicydium punctatum Perugia 1896 [sand shark (local name only)]

Slow to fast-moving chutes, riffles, and pools in clear coastal streams with rocks (Lyons 2005). Found in Tobago (Phillip 1998), and throughout Trinidad, except for west coast streams (Kenny 1995); in Trinidad, penetrating far upstream in the clear, fast-flowing coastal streams of the Northern Range, but restricted to near the mouths of other streams (Kenny 1995). Native. Amphidromous reproduction: spawning occurs year-round in caves excavated below rocks (Bell 1994, Bell *et al*. 1995); males tend to the eggs (Bell 2009); hatched larvae drift downstream immediately (Bell 2009); marine phase is of a few weeks (Bell 1994, Bell *et al*. 1995). Herbivore, incidental carnivore. 100 mm.

FAMILY OSPHRONEMIDAE

Trichopodus trichopterus (Pallas 1770) [three-spot gourami]

Shallow, sluggish or standing fresh water in lowland marshes, swamps and canals, also in seasonally-flooded forests; prefers habitats with a lot of aquatic vegetation. Restricted to south Oropuche drainage, Trinidad (Mohammed *et al*. 2010). Aquarium species introduced to the south Oropuche River system in Trinidad. Air breather (Burggren 1979). Male gathers floating eggs and guards them in surface bubble nest (Cole *et al*. 1999). Carnivore (Degani 1990). 150–200 mm (Axelrod *et al*. 1985).

ORDER PLEURONECTIFORMES

FAMILY ACHIRIDAE

Achirus novoae Cervigón 1982 [No common name]

Species was described from the freshwaters of the Orinoco River Delta (Ramos *et al*. 2009), and has been collected from the mouths of rivers in both Trinidad (ROM 88786, ROM 88856) and Tobago (USNM 319084). Native. Very little is known about this species. Misidentified in the past as *Achirus achirus* or *A. lineatus.* 106 mm.

Trinectes paulistanus (Miranda Ribeiro 1915) [slipper sole]

Marine, brackish (Costa de Azevedo *et al*. 2007) and fresh water; shallow, soft-bottomed coastal areas (Costa de Azevedo *et al*. 2007), hypersaline lagoons, estuaries, enters streams. Carnivore (Correa & Uieda 2007, Guedes & Araújo 2008). 180 mm.

We follow Lasso and Sánchez-Duarte (2011) in identifying the species of *Trinectes* in Trinidad & Tobago as *T. paulistanus*. *T. maculatus* substitutes for this species to the north, along coasts of the Gulf of Mexico.

ORDER TETRAODONTIFORMES

FAMILY TETRAODONTIDAE

Colomesus asellus (Müller & Troschel 1849) [Amazon puffer, pufferfish]

Demersal; freshwater streams (Yamanoue *et al*. 2011); can tolerate estuarine conditions. 128 mm SL.

Included here, despite the lack of museum material, because its proximity and tolerance to estuarine conditions means that it may also be present on Trinidad.

Colomesus psittacus (Bloch & Schneider 1801) [banded puffer, pufferfish]

Euryhaline species (Yamanoue *et al*. 2011) in soft-bottomed habitats. Native. Eggs shed in water column, drift with current; potentially amphidromous. Carnivore (Krumme *et al*. 2007). 150 mm.

Key to the freshwater fishes of T & T

This key can be used to identify the freshwater fishes listed in Table 1. Species that have not been collected in more than one survey since Gill's (1858) species list was published were not included since we believe that their presence was only transient. Finally, a selection of the coastal species, those most likely to enter the freshwater portions of streams on the two islands, was also included in the key (see relevant note in Table 2).

1a. Body very elongated, maximum body depth fits 9 times or more in total length 2
1b. Body not very elongated, maximum body depth fits fewer than 9 times in total length 11
2a. Body naked, covered with smooth skin; maxillary and mental barbels never present 3
2b. Body, at least in part, covered with scales, bony plates or with bony plates or tubercles embedded in skin; maxillary and mental barbels sometimes present. 4
3a. Branchial opening reduced to a single ventral rounded pore . . . . . *Synbranchus marmoratus*
3b. Branchial opening reduced to a single ventral crescent shaped slit . . . . . *Ophisternon aenigmaticum*
4a. Body encased in bony rings, with bony plates or tubercles embedded in skin 5
4b. Body covered at least in part with scales, these may sometimes be small, embedded and difficult to see without magnification 10
5a. Mouth very small, about equal to eye diameter; snout tubular; no barbels; body completely encased in bony rings—Family Sygnathidae. 6
5b. Mouth wide, at least twice eye diameter; snout compressed; maxillary and mental barbels present; body with bony plates and knobs embedded in skin—Family Aspredinidae 7
6a. Snout very long, its length nearly twice as long as head length; dorsal-fin rays usually 40–47. . . . . *Microphis lineatus*
6b. Snout very short, its length much less than head length; dorsal-fin rays usually 35 . . . . . *Pseudophallus mindii*
7a. 9 principal caudal-fin rays; tubercle rows well developed; no barbel at base of maxillary barbel. . . . . *Platystacus cotylephorus*
7b. 10 principal caudal-fin rays; tubercle rows not well developed; barbel at base of maxillary barbel present 8
8a. 7 pectoral-fin rays; 2 pairs of barbels present on underside of head. . . . . *Aspredo aspredo*
8b. 8 pectoral-fin rays; 7 or more pairs of barbels present on underside of head and ventral surface of body—*Aspredinichthys* . . 9
9a. Ventral surface of the head and breast with 14 barbels, arranged in two lateral rows and one pair placed more medially; first dorsal-fin ray of adult over 3 times the length of the second ray . . . . . *Aspredinichthys filamentosus*
9b. Ventral surface of the head and breast with 18–21 (mode 20) barbels, arranged in two lateral rows of eight each, and 2 pairs placed more medially; first dorsal-fin ray of adults less than 2 times the length of the second ray . . . . . *Aspredinichthys tibicen*
10a. Dorsal and caudal fins absent; anus located beneath opercles; sides of body marked with alternating light and dark vertical bars . . . . . *Gymnotus carapo*
10b. Dorsal fin present, continuous with caudal and anal fins; anus located near midbody, well behind opercles; body uniform in colour, no vertical bars . . . . . *Anguilla rostrata*
11a. Body armored, covered with bony dermal plates 12
11b. Body naked, or covered with scales or dermal denticles (these can be very small and inconspicuous as in *Colomesus)* 17
12a. Sides of body covered with 2 series of large plates that overlap on the mid-line of the sides – Family Callichthyidae 13
12b. Sides of body covered with 4 or 5 series of bony plates. 16
13a. Lower lip simple, without median extensions; 2 pairs of nuchal plates between posterior margin of braincase (parieto-occipital), and the shield at base of dorsal-fin spine. 14
13b. Lower lip with a pair of medial extensions on posterior margin; no pairs of nuchal plates between posterior margin of braincase, posterior margin of braincase (parieto-occipital) extended as a process that connects with the basal shield of dorsal-fin spine . . . . . *Corydoras aeneus*
14a. Coracoid bones not exposed on ventral surface of chest, which is fleshy in adults; 10 or more plates present on dorsal midline

between dorsal and adipose fins; 26 principal (excluding smaller plates at base of caudal fin) plates in lateral series . . . . . *Callichthys callichthys*

14b. Coracoids exposed on bony ventral surface of chest; 9 or fewer plates present on dorsal midline between dorsal and adipose fins; 23 principal plates in lateral series 15

15a. Adults (over 50 mm SL) uniform grey or brown in life and preservative, and without spots on fins (juveniles have 8–11 vertical bars on the sides that disappear as they grow); caudal fin bilobed . . . . . *Hoplosternum littorale*

15b. Adults brown or grey with numerous dark spots, irregular blotches or other markings on both the body and the fins, caudal fin often with dark vertical bar; caudal fin truncate or rounded, not bilobed . . . . . *Megalechis thoracata*

16a. Cheek without rosette of spines; upper surface of snout hard, covered with granular plates, without tentacles; 5 rows of plates on caudal peduncle; colour pattern consisting of rounded black spots over tan background . . . . . *Hypostomus robinii*

16b. Cheek with evertible rosette of spines; upper surface of snout soft, naked, bearing prominent fleshy tentacles in males, smaller in females; 3 rows of plates on caudal peduncle; colour pattern consisting of white spots over dark background (white spots may not be evident on preserved specimens) . . . . . *Ancistrus maracasae*

17a. Body naked, without scales or minute denticles 18

17b. Body scaled, or with minute denticles 23

18a. Gill membranes with a free posterior margin, not united to the isthmus, or side of head 19

18b. Gill membranes broadly united to the isthmus, leaving one gill aperture on each side of head 22

19a. Adipose fin present; pelvic fins not united to form a disc 20

19b. Adipose fin absent; pelvic fins united to form a disc . . . . . *Gobiesox nudus*

20a. Adipose fin short, the length of its base fits four or more times in distance from posterior margin of dorsal-fin base to anterior margin of caudal fin—Family Ariidae.

20b. Adipose fin very long, the length of its base fitting less than twice in distance from posterior margin of dorsal-fin base to anterior margin of caudal fin 21

21a. Supraoccipital process extending back to unite with plate at base of dorsal fin; often with distinct, thin, dark, horizontal midlateral stripe extending along entire length of fish . . . . . *Pimelodella gracilis* group

21b. Supraoccipital process not reaching plate at base of dorsal fin; usually without distinct, dark midlateral stripe, extending along entire length of body . . . . . *Rhamdia* cf. *quelen*

22a. Posterior margin of caudal fin straight, truncate; colour of sides of body usually mottled with grey, brown and black in irregular shapes . . . . . *Trachelyopterus galeatus*

22b. Caudal fin forked with pointed lobes; body uniform in colour, bluish to silvery, with whitish stripe down midlateral sides, sometimes with whitish spots . . . . . *Pseudauchenipterus nodosus*

23a. Both eyes situated on one side of head 24

23b. One eye on each side of head 25

24a. Interbranchial septum pierced by a foramen; ocular-side pectoral fin usually with 2–8 rays; blind side pectoral fin either with a single ray, or absent . . . . . *Achirus novoae*

24b. Interbranchial septum entire, without foramen; ocular-side pectoral fin rudimentary, normally with a single ray (rarely with 2–3 fin rays), or fin absent altogether . . . . . *Trinectes paulistanus*

25a. Only one dorsal fin present, without spines (adipose fin present or absent) 26

25b. Two separate dorsal fins present, or if just one, the anterior part formed of spines followed by rays (adipose fin absent) 54

26a. No adipose fin 27

26b. Adipose fin present 41

27a. Mouth large, much wider than eye diameter 28

27b. Mouth small, its width smaller or about equal to eye diameter 31

28a. Caudal fin forked with 2 pointed lobes; mouth superior, with bony "tongue"; body uniformly silver . . . . . *Megalops atlanticus*

28b. Caudal fin rounded or truncate; mouth terminal, "tongue" not bony; body not uniformly silver 29

29a. At least 37 lateral line scales; maxillary bone with 2–3 small canines plus a series of conical teeth . . . . . *Hoplias malabaricus*

29b. 23–36 lateral line scales; maxillary bone with a series of conical teeth, but no canine teeth 30

30a. Caudal fin spotted, usually with dark blotch near base extending onto caudal peduncle . . . . . *Erythrinus erythrinus*

30b. Caudal fin plain, no dark blotch near its base . . . . . *Hoplerythrinus unitaeniatus*

31a. First pelvic-fin ray extremely elongated into a filament extending backwards to base of caudal fin or beyond . . . . . *Trichopodus trichopterus*

31b. First pelvic-fin ray not elongated into a filament 32

32a. Four large teeth fused together to form a "beak" in upper and lower jaws; body inflatable (with air or water) to form sphere . . . . . *Colomesus asellus* or *C. psittacus*

32b. Teeth separate, not fused, unicuspid or multicuspid; body not inflatable 33

33a. Males with filamentous extensions on opercles; teeth multicuspid . . . . . *Corynopoma riisei*

33b. No filamentous extensions on opercles of males; teeth conical, unicuspid 34

34a. Anal-fin origin anterior, or slightly posterior to dorsal-fin origin 35

34b. Anal-fin origin distinctly posterior to dorsal-fin origin 40

35a. Dark spot or blotch on side of body just behind opercle and above pectoral-fin base; sides of body often with scattered small, pale spots . . . . . *Kryptolebias marmoratus*

35b. No dark spot behind opercle; sides of body usually without scattered small, pale spots 36

36a. Anal fin with 15–17 rays; males lack gonopodia . . . . . *Anablepsoides hartii*

36b. Anal fin with 6–10 rays, modified in males to form an intromittent fertilisation organ (gonopodium) 37

37a. Dorsal fin usually with seven rays; live males multi-coloured with red, orange, yellow, blue and green in various combinations on body and dorsal and caudal fins; males typically much smaller than females 38
37b. Dorsal fin usually with more than seven rays; males not multicoloured, drab in comparison, bodies uniformly coloured, fins sometimes with flecks of colour; males reaching same size as females 39
38a. Females usually with single dark spot on sides of body often surrounded by lighter "halo"; females with mottled spotting around gonopore; a lowland species usually in brackish water; male colour pattern not extremely variable, caudal fin usually with dark upper margin and distinct spot; posterior tip of gonopodium not reaching back beyond vertical through posterior margin of dorsal-fin base. . . . . *Poecilia picta*
38b. Females without single dark spot on side of body surrounded by lighter "halo"; male colour pattern extremely variable, most lack dark margin and spot on dorsal fin; females lacking mottled spotting around gonopore; posterior tip of gonopodium reaching back beyond vertical through posterior margin of dorsal-fin base . . . . . *Poecilia reticulata*
39a. No dark marks on sides . . . . . *Poecilia boesemani*
39b. Females and often males with dark mark on sides . . . . . *Poecilia vivipara*
40a. Narrow black stripe through eye continuing back to beneath dorsal fin; predorsal region with one or two dark spots (seen from above); anterior margin of maxilla a simple concave curve as in most fishes, its dorsal tip slipping under maxilla; gill membrane united only anteriorly . . . . . *Pyrrhulina laeta*
40b. Narrow black stripe through eye continuing back only a short distance onto opercle; predorsal region without spots visible from above; anterior margin of maxilla sharply convex, its dorsal tip not slipping under maxilla; gill membranes completely united, but free from isthmus . . . . . *Copella arnoldi*
41a. Teeth absent. . . . . *Steindachnerina argentea*
41b. Teeth present 42
42a. Mouth with 8 large, rabbit-like incisors on both upper and lower jaws . . . . . *Leporinus friderici*
42b. Teeth variable, but not as above 43
43a. Chest forming sharp keel. 44
43b. Chest not forming sharp keel 45
44a. Anal-fin origin anterior to dorsal-fin origin; lateral line incomplete and curved ventrally towards anal fin . . . . . *Gasteropelecus sternicla*
44b. Anal-fin origin posterior to dorsal-fin origin; lateral line complete, running along sides of body from opercle to caudal peduncle, not curved ventrally towards anal fin . . . . . *Triportheus auritus*
45a. Black lateral stripe present from tip of conical snout to posterior margin of caudal-fin rays; body long and slender, pencil-shaped . . . . . *Nannostomus unifasciatus*
45b. No black stripe as above; body not pencil-shaped 46
46a. Snout with tiny bony protuberances, like small "tusks", used to scrape scales from other fishes . . . . . *Roeboides dientonito*
46b. Snout without bony protuberances 47
47a. Lateral line incomplete; black spot usually present in dorsal fin, occasionally faint or absent 48
47b. Lateral line complete; dorsal fin without a black spot 49
48a. Premaxillary teeth in two rows; oblique black line (not spot) usually present on anterior anal-fin rays, extending to anal fin base . . . . . *Hemigrammus unilineatus*
48b. Premaxillary teeth in a single row; dark black line on first anal-fin rays, if present, not extending to base of anal fin. . . . . *Hyphessobrycon axelrodi*
49a. Anal-fin origin anterior to dorsal-fin origin . . . . . *Gephyrocharax valencia*
49b. Anal-fin origin posterior to dorsal-fin origin 50
50a. Premaxilla with three rows of teeth; caudal fin with oblique, asymmetrical, black bar from lower margin of caudal peduncle and up through dorsal caudal-fin lobe. . . . . *Brycon falcatus* group
50b. Premaxilla with one or two rows of teeth; caudal fin not as above 51
51a. Body very deep, maximum depth equal to or less than 2.2 times in standard length; no black blotch or bar on caudal peduncle or middle caudal-fin rays. . . . . *Gymnocorymbus bondi*
51b. Body not very deep, maximum body depth usually more than 2.2 times in standard length; black caudal spot, blotch or bar present 52
52a. Premaxillary teeth in one row; caudal spot usually extending to both upper and lower edges of caudal peduncle . . . . . *Odontostilbe pulchra*
52b. Premaxillary teeth in two rows; caudal spot or bar not extending to both upper and lower edges of caudal peduncle 53
53a. Maxilla with 4–20 teeth (the number increases with size); humeral spot vertically elongated, usually diffuse; caudal spot continued to tips of middle caudal-fin rays as dark black stripe. . . . . *Hemibrycon taeniurus*
53b. Maxilla with 0–2 teeth; humeral spot not vertically elongated, may be intensely pigmented; caudal spot usually limited to caudal peduncle and base of middle caudal-fin rays . . . . . *Astyanax bimaculatus*
54a. One dorsal fin present, consisting of an anterior portion supported by sharp spines and a posterior portion supported by soft rays 55
54b. Two separate dorsal fins present 60
55a. Anal fin with 13 or14 spines . . . . . *Polycentrus schomburgkii*
55b. Anal fin with 3 or 4 spines 56
56a. Body elongate, maximum body depth usually fits more than 3 times in SL; lower jaw longer than upper jaw; 50 or more scales in row above lateral lines—*Crenicichla* 57

56b. Body not especially elongate, maximum body depth less, fits fewer than 3 times in SL; lower and upper jaws of approximately the same length; fewer than 30 scales in row above lower lateral line 58

57a. Sides of body in specimens over 6 cm standard length with a distinct, irregular, dark, lateral stripe, sometimes expressed as a series of dark, loosely-connected, blotches. Lateral line usually passes through humeral spot; humeral spot rarely below lateral line . . . . . *Crenicichla frenata*

57b. Sides of body in specimens over 6 cm standard length with a faint, or no, dark, lateral stripe. Humeral spot below lateral line . . . . . *Crenicichla saxatilis*

58a. Four anal-fin spines . . . . . *Cichlasoma taenia*

58b. Three anal-fin spines 59

59a. Dorsal fin with 13 or 14 spines . . . . . *Andinoacara pulcher*

59b. Dorsal fin with 15–20 spines . . . . . *Oreochromis* spp.

60a. Pelvic fins united to form a suction disc—Family Gobiidae 61

60b. Pelvic fins separate 70

61a. Head with a flap of skin along dorsal midline, forming a crest . . . . . *Lophiogobius cyprinoides*

61b. No flap on head 62

62a. Dentary teeth in 2 or more rows 63

62b. Dentary teeth in a single row 68

63a. Tips of upper pectoral-fin rays free, forming a frill of filaments . . . . . *Bathygobius soporator*

63b. Upper pectoral-fin rays normal, joined to rest of fin 64

64a. Lateral scales 50 or more 65

64b. Lateral scales 49 or fewer 66

65a. Body with 6–10 dark, thin, vertical bars over light background; lateral scales 51–58; transverse scales (from base of first dorsal fin to anal fin base) 13–17 . . . . . *Awaous flavus*

65b. Body irregularly pigmented with dark spots and blotches, sometimes with up to 3 vertical bars in juveniles; lateral scales 59–75; transverse scales 20–31 . . . . . *Awaous banana*

66a. Shoulder with patch of dark pigment; second dorsal fin not with a total of 11 rays; anal fin usually with a total of 12 rays . . . . . *Ctenogobius boleosoma*

66b. Shoulder with or without dark pigment; second dorsal fin with a total of 12 rays; anal fin with a total of 13 rays 67

67a. Margin of preopercle (cheek) darkly pigmented . . . . . *Ctenogobius fasciatus*

67b. Margin of preopercle, if pigmented, not darker than rest of head . . . . . *Ctenogobius pseudofasciatus*

68a. None of the ventral sucking disc attached to body (not adnate) . . . . . *Evorthodus lyricus*

68b. Some of the ventral sucking disc is attached to belly 69

69a. Lateral scales 70 or fewer . . . . . *Sicydium punctatum*

69b. Lateral scales 79 or more . . . . . *Sicydium plumieri*

70a. Lateral line prominent, easily visible along sides of body . . . . . *Centropomus* spp.

70b. Lateral line not visible along sides of body or absent 71

71a. First dorsal fin with 6 or more spines—Family Eleotridae 72

71b. First dorsal fin with 4 spines—Family Mugilidae 76

72a. Prominent, pointed spine often covered by skin on ventral margin of preopercle present 73

72b. Preopercular spine absent 74

73a. Scales in longitudinal series 54–68 . . . . . *Eleotris pisonis*

73b. Scales in longitudinal series 40–48 . . . . . *Eleotris amblyopsis*

74a. First dorsal fin with 6 spines; longitudinal scale rows 40–65; snout long, its length much greater than the depth of its head at the eyes . . . . . *Gobiomorus dormitor*

74b. First dorsal fin with 7 spines; body with fewer than 40 or more than 85 longitudinal scale rows; snout short, its length about equal to the depth of the head at the eyes 75

75a. Scales large, about 25–35 scales on longitudinal row . . . . . *Dormitator maculatus*

75b. Scales very small, more than 80 scales on longitudinal row . . . . . *Guavina guavina*

76a. Adipose eyelid absent; anal fin with two spines; teeth in patches of more than 10 rows; 17–20 gill rakers on lower limb of first arch; body base colour white, overlain with brown pigment outlining scales; light scale centers of upper sides and dorsum often aligned to form rows . . . . . *Agonostomus monticola*

76b. Adipose eyelid present; anal fin with three spines, the first very small and inconspicuous; teeth in 1 row, weak; 25 or more gill rakers on lower limb of first arch; body mostly silvery . . . . . *Mugil* spp. [brackish and marine species that sometimes enter fresh water]

FIGURE 2. *Synbranchus marmoratus*, ROM 88813, 247 mm SL, Aripo River, Trinidad.

FIGURE 3. *Platystacus cotylephorus*, ROM 66328, 218 mm SL, beach between Pomeroon and Moruka rivers, Guyana.

FIGURE 4. *Aspredo aspredo*, ROM 66327, 274 mm SL, beach between Pomeroon and Moruka rivers, Guyana.

FIGURE 5. *Aspredinichthys filamentosus*, ROM 41497, 153 mm TL, Gulf of Paria, Trinidad.

FIGURE 6. *Aspredinichthys tibicen*, ROM 66330, 75 mm SL, beach between Pomeroon and Moruka rivers, Guyana.

FIGURE 7. *Gymnotus carapo*, ROM 61638, 256 mm TL, exact locality unknown, Trinidad.

FIGURE 8. *Anguilla rostrata*, ROM 20869, 300 mm TL, Shark River, Trinidad.

FIGURE 9. *Corydoras aeneus*, 45 mm SL, Chatham River, Trinidad.

FIGURE 10. *Callichthys callichthys*, ROM 61957, 137 mm SL Essequibo River, Guyana.

FIGURE 11. *Hoplosternum littorale*, ROM 88782, 90 mm SL, drainage canal in Sangre Grande, Trinidad.

FIGURE 12. *Megalechis thoracata*, ROM 61956, 60 mm SL, Essequibo River at Kurupukari, Guyana.

FIGURE 13. *Hypostomus robinii*, ROM 87552, 90.7 mm SL, Rio Barro, Trinidad.

FIGURE 14. *Ancistrus maracasae*, ROM 88768, 97 mm SL, Maracas River, Trinidad.

FIGURE 15. *Pimelodella* sp., DAG 110 83.2 mm SL, rio Totoremoa-Tocuyo, Venezuela.

FIGURE 16. (a) *Rhamdia cf. quelen*, ROM 88811, 113 mm SL, Aripo River, Trinidad, and (b) the troglomorphic form of *Rhamdia cf. quelen*, ROM 45631, 142 mm SL, Oropuche Caves, Trinidad.

FIGURE 17. *Trachelyopterus galeatus*, ROM 88549, 145 mm SL, Berbice River, Guyana.

FIGURE 18. *Pseudauchenipterus nodosus*, ROM 66354, 117 mm SL, Moruka River, Guyana.

FIGURE 19. *Achirus novoae*, ROM 88856, 57.1 mm SL, Chatham River, Trinidad.

FIGURE 20. *Trinectes paulistanus*, ROM 41801, 53 mm SL, south of 'Soldado', a small rock off the west coast of Cedros, Gulf of Paria, Trinidad.

FIGURE 21. *Hoplias malabaricus*, ROM 88821, 91.6 mm SL, Chatham River, Trinidad.

FIGURE 22. *Erythrinus erythrinus*, ROM 63286, 105 mm SL, Essequibo River, Guyana.

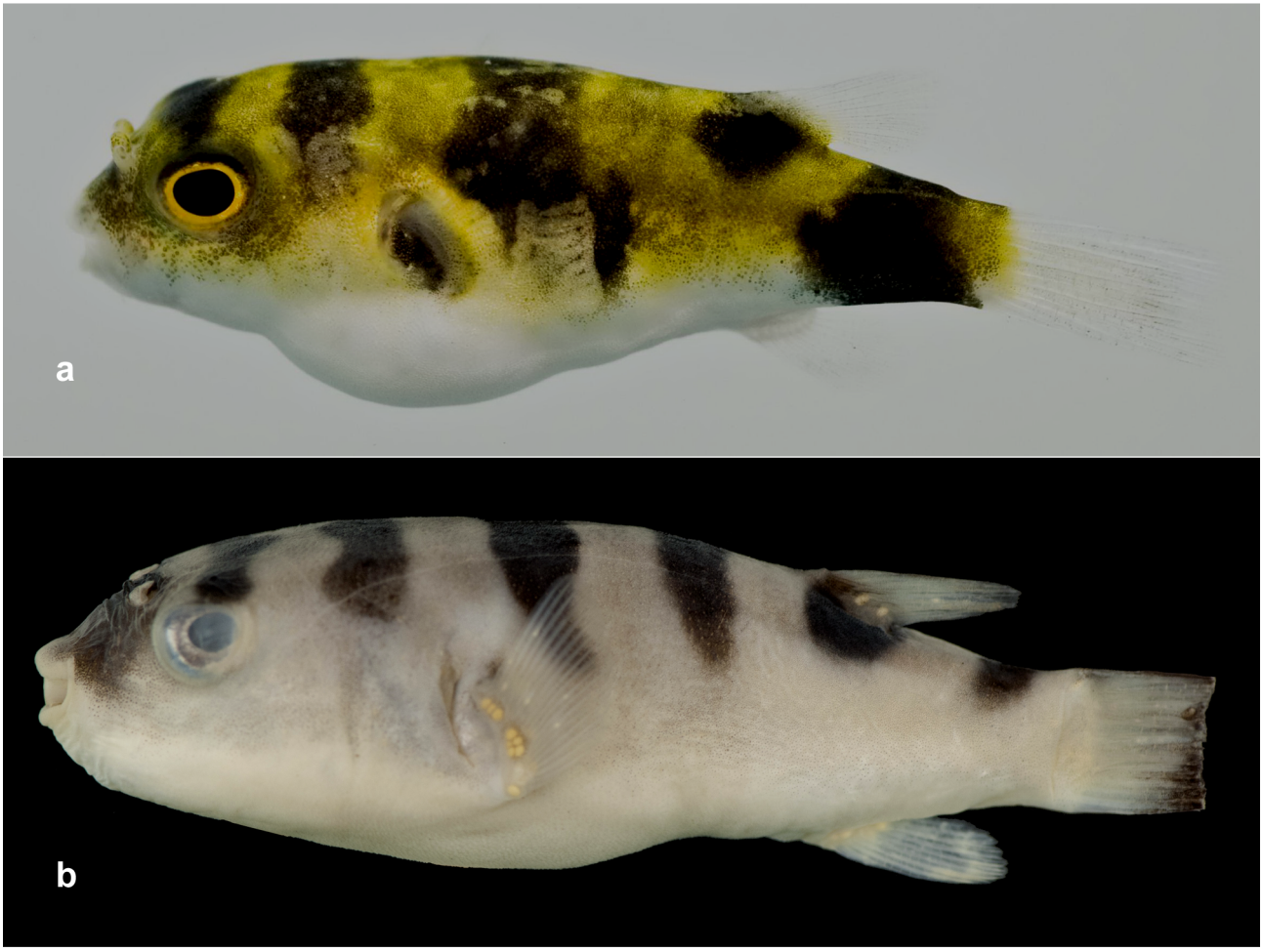

FIGURE 23. (a) *Colomesus asellus*, ROM 85408, 37.4 mm SL, Rupununi River, Guyana, (b) *Colomesus psittacus*, ROM 88795, 55 mm SL, Moruga River, Trinidad.

FIGURE 24. (a) *Corynopoma riisei*, male, (b) *Corynopoma riisei*, female, ROM 87578, unidentified stream and nearby ditch, Trinidad.

FIGURE 25. *Kryptolebias marmoratus*, ROM 87580, 39 mm SL, unnamed coastal stream, Icacos, Trinidad.

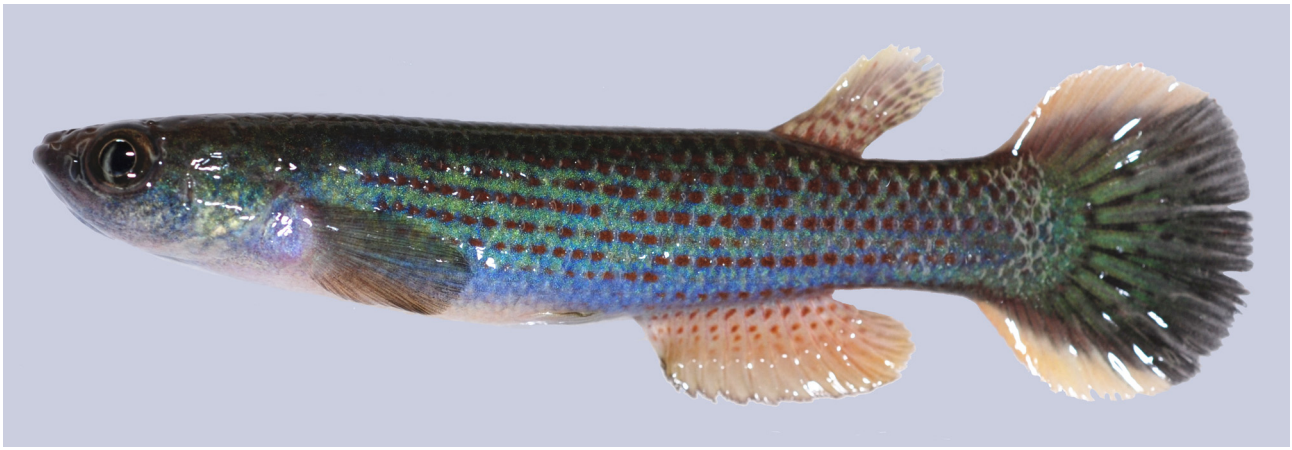

FIGURE 26. *Anablepsoides hartii*, male, ROM 87528, 38 mm SL, Erin River, Trinidad.

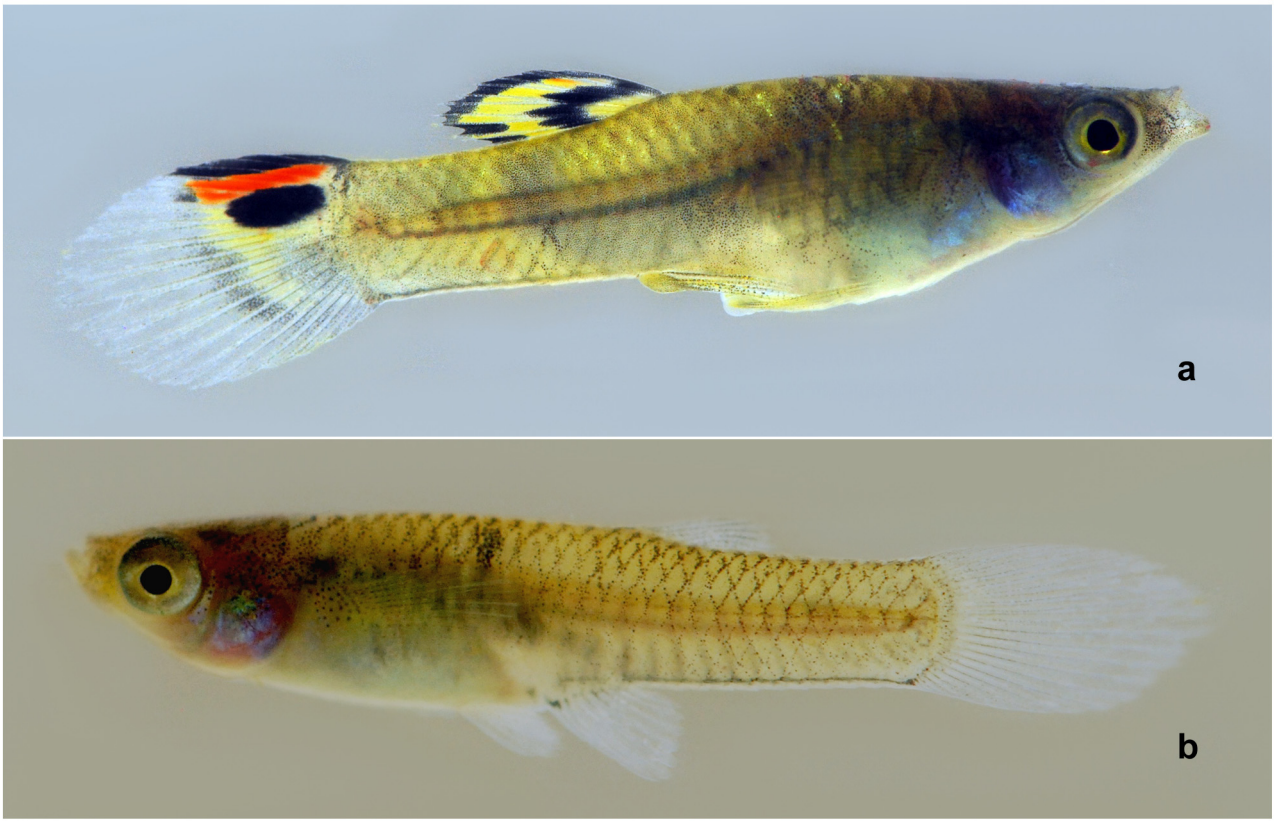

FIGURE 27. (a) *Poecilia picta*, male, ROM 88853, Trinidad, (b) *Poecilia picta*, female, ROM 88853, Chatham River, Trinidad.

FIGURE 28. *Poecilia* (*Acanthophacelus*) *reticulata*, (a) male, Tobago, (b) female, Tobago. Photos courtesy Ronny Lundkvist.

FIGURE 29. *Poecilia boesemani*, ROM 44741, 44 mm SL, St. Joseph River, Trinidad.

FIGURE 30. *Poecilia vivipara*, ROM 61654, 42 mm SL, Cocorite Swamp, Trinidad.

FIGURE 31. *Steindachnerina argentea*, ROM 67251, 53 mm SL, Creek near Hacienda Fundo Malama ca. 11 km N of Caicara-Ciudad Bolivar Highway at Sipao, Venezuela.

FIGURE 32. *Leporinus friderici*, ROM 66240 114 mm SL, Waini R., Guyana.

FIGURE 33. *Gasteropelecus sternicla*. ROM 87559, Rio Barro, Trinidad.

FIGURE 34. *Triportheus auritus*, ROM 67298, 167 mm SL, Barama River, Guyana.

FIGURE 35. *Nannostomus unifasciatus*, ROM 65409, 30 mm SL, Essequibo River, Guyana.

FIGURE 36. *Roeboides dientonito*. ROM 87553, Rio Barro, Trinidad.

FIGURE 37. *Hemigrammus unilineatus*. ROM 87556, Rio Barro, Trinidad.

FIGURE 38. *Gephyrocharax valencia*, ROM 87531, 29 mm SL, Moriquite River, Trinidad.

FIGURE 39. *Brycon falcatus* group, not preserved, Rio Cinaruco, Venezuela.

FIGURE 40. *Gymnocorymbus bondi*, ROM 88745, 32 mm SL, Río Cinaruco, at Laguna Larga, Venezuela.

FIGURE 41. *Odontostilbe pulchra*, ROM 88868, 35 mm SL, Rio Barro, Trinidad.

FIGURE 42. *Hemibrycon taeniurus*. ROM 88749, Maracas River, Trinidad.

FIGURE 43. *Astyanax bimaculatus*. ROM 88750, Maracas River, Trinidad.

FIGURE 44. *Polycentrus schomburgkii*, ROM 88781, 26 mm SL, drainage canal in Sangre Grande, Trinidad.

FIGURE 45. *Crenicichla frenata*. ROM 88870, Rio Barro, Trinidad.

FIGURE 46. *Crenicichla saxatilis*. ROM 88823, 166.7 mm SL, Chatham River, Trinidad.

FIGURE 47. *Cichlasoma taenia*, ROM 88783, 104.6 mm SL, drainage canal at approximately 10.459°N 61.074°W, Trinidad.

FIGURE 48. *Andinoacara pulcher*, ROM 88885, Maracas River, Trinidad.

FIGURE 49. *Oreochromis mossambicus*, ROM 22180, 151 mm SL, Maple fish hatchery, ON, from Trinidad stock.

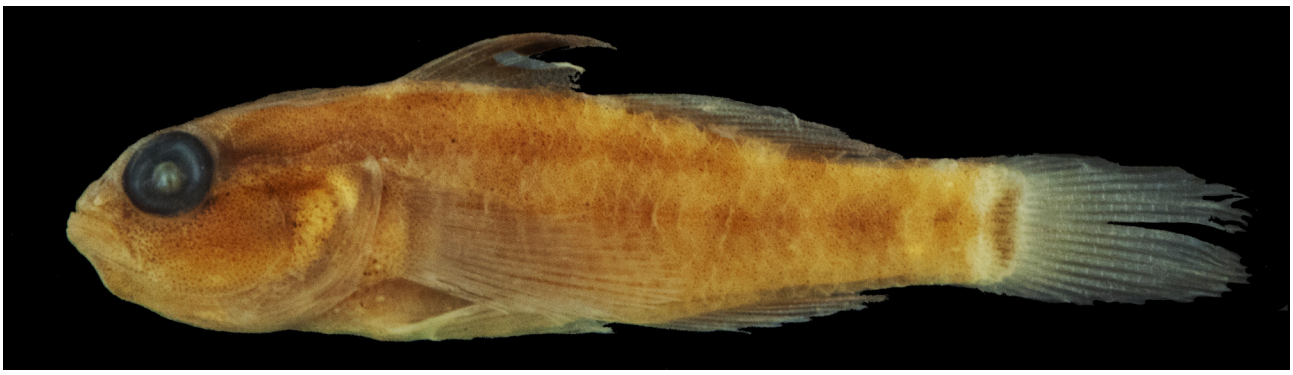

FIGURE 50. *Lophiogobius cyprinoides*, ROM 40909, 18.4mm SL, exact locality unknown, Trinidad.

FIGURE 51. *Bathygobius soporator*, ROM 35311, 57 mm SL, tide pool in north east, Trinidad.

FIGURE 52. *Awaous flavus*, ROM 66480, 55.0 mm SL, Waini River, Guyana.

FIGURE 53. *Awaous banana,* ROM 88830, 105 mm SL, Matura River, Trinidad.

FIGURE 54. *Ctenogobius boleosoma*, ROM 88841, 54 mm SL, Chatham River, Trinidad.

FIGURE 55. *Ctenogobius fasciatus*, ROM 61660, 29 mm SL, Cocorite Swamp, Trinidad.

FIGURE 56. *Sicydium punctatum*, ROM 87702, 90 mm SL, Avocat River, Trinidad.

FIGURE 57. *Centropomus pectinatus*, ROM 88858, 125 mm SL, Chatham River, Trinidad.

FIGURE 58. *Eleotris pisonis*, ROM 24318, 62 mm SL, Bathsheba, Barbados.

FIGURE 59. *Eleotris amblyopsis*, ROM 66484, 49.0 mm SL, Waini River, Guyana.

FIGURE 60. *Dormitator maculatus*, ROM 44756, 137.0 mm SL, Caroni Swamp, Trinidad.

FIGURE 61. *Agonostomus monticola*. ROM 61666, Salybia River tributary, Trinidad.

FIGURE 62. *Mugil incilis*, ROM 88859, 86 mm SL, Chatham beach and Chatham River mouth, Trinidad.

Conclusions

The T&T stream fish fauna showed characteristics typical of continental island biogeography. We reviewed 144 fishes recorded from streams of Trinidad and Tobago. Close examination of these revealed that only 126 species may still be valid records at present. Of these, 66 species, representing 57 genera in 25 families, can be considered stream species still extant in the islands, the remaining 60 being coastal species that may enter streams. With 66 species in a land space of only 5,128 square kilometres, T&T's stream fish fauna can be considered to be speciose, which can be expected of a continental island in close proximity to a source as species rich as the Orinoco River. The Orinoco as a source of fishes to T&T is supported by evidence provided by Lasso *et al*. (2004, 2010), who provided a list 995 species of freshwater and estuarine fishes found in the Orinoco River system and the rivers draining into the Gulf of Paria. About 56% of the freshwater and coastal fishes currently found in T&T streams can be found on that list. If freshwater fishes alone are considered, 58% of the species currently in T&T are also found in the Orinoco, according to Lasso *et al*. (2004).

The stream fish fauna is also a dynamic one with a history of colonisations and extirpations. We have described 17% of the stream fishes considered to be valid records for T&T as transients, species that were either deliberately introduced or colonised naturally, but did not establish viable populations. Sixty-three percent of these transient species are also listed by Lasso *et al*. (2004) from the Orinoco. Apart from these, the most recent documented colonist, *Gephyrocharax valencia* (see Phillip 1998), is found in the Orinoco (Lasso *et al*. 2004). This dynamic characteristic of the freshwater fish fauna, and its affinity with South American streams have been hypothesised in earlier accounts (Price 1955, Boeseman 1960, Kenny 1995, Phillip 1998).

Only three species of stream fishes are considered to be endemic to Trinidad, the characid *Hemibrycon taeniurus* (Bertaco & Malabarba 2010), the poeciliid *Poecilia boesemani* (Poeser 2003), and a loricariid catfish *Ancistrus maracasae* Fowler (1946).

Though an accurate review of the fish fauna of Tobago is hampered by the fact that there have been few reported surveys on the island (limited to Ramnarine *et al*. 1994 and Phillip 1998), recent phylogenetic evidence from *Anablepsoides hartii* (Walter *et al*. 2011) has shown that the zoogeography of Tobago may be more complex than previously expected.

Finally, tables 1, 2 and 3 show the value of periodic reviews such as this one. A total of 18 fishes have been removed from the species listed for T&T in the literature and other sources used for the present study, most likely due to misidentifications, but some due to taxonomic revisions. There are 11 name changes among the fishes listed in table 1 alone, and we expect that several others are pending as ongoing taxonomic revisions are completed.

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