CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Sixteenth meeting of the Conference of the Parties
Bangkok (Thailand), 3-14 March 2013

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Listing of the species *Potamotrygon motoro* and *Potamotrygon schroederi* in Appendix II in accordance with Article II 2a (b) of the Convention, and Resolution Conf. 9.24 (Rev. CoP15) for:

Potamotrygon motoro (Müller and Henle, 1841)

Potamotrygon schroederi Fernández-Yépez, 1958

Note

The entry into effect of the inclusion of *Potamotrygon motoro* and *Potamotrygon schroederi* in CITES Appendix II will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues.

B. Proponent

Colombia and Ecuador*.

C. Supporting statement

1. Taxonomy

1.1	Class:	Chondrichthyes
1.2	Order:	Myliobatiformes
1.3	Family :	Potamotrygonidae
1.4	Genus, species or subspecies:	*Potamotrygon motoro* (Müller and Henle, 1841)
1.5	Scientific synonyms:	*Paratrygon laticeps* (Garman, 1913) *Potamotrygon alba* Castex, 1963 *Potamotrygon circularis* Garman, 1913 *Potamotrygon labradori* Castex, 1963 *Potamotrygon laticeps* Garman, 1913 *Potamotrygon pauckei* Castex, 1963 *Trygon garrapa* Jardine, 1843 *Trygon mulleri* Castelnau, 1855

* *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

1.6 Common names: Spanish: Raya, raya motoro, raya tigra, raya pintada, raya amazónica, chucho de río
English: South American freshwater stingray, ocellate river stingray
Portuguese: Boro, raia motoro, raia maca, arraia de fogo, arraia grande

Potamotrygon schroederi Fernández-Yépez, 1958

1.6 Common names: English: Rosette river stingray
Spanish: Guacamaya, raya guacamaya, raya guayanesa, guacamaya bandera

1.7 Code numbers: none

2. Overview

The species *Potamotrygon motoro* and *Potamotrygon schroederi* belong to the family of freshwater stingrays (Potamotrygonidae), native to South America and recognized as an economically highly important ornamental fishery resource. Harvesting of it for "mainly international" trade is considered one of the principal threats to it and the cause of diminishing wild populations (Araujo *et al*. 2004, Ramos 2009, Lasso and Sánchez-Duarte 2012a, b).

More than 500,000 specimens of the family Potamotrygonidae have been recorded as being exported from Colombia during 1995-2012 (Barreto *et al.* 2009, CEP 2010, Barreto *et al.* 2011) and more than 36,000 specimens from other countries, such as Brazil between 2003 and 2005 (Ramos 2009).

According to Ramos (2009) (IBAMA – Brazilian Institute of Environment and Renewable Natural Resources), the specimens exported from Brazil are sent principally to some 18 countries, notably Germany, the United States and Asian countries and territories such as Taiwan Province of China and Japan, into which more than 600 specimens were imported (Ramos 2009) (Annex 3).

The family Potamotrygonidae includes 25 species spread over four genera: *Heliotrygon*, *Potamotrygon*, *Paratrygon* and *Plesiotrygon* (Froese and Pauly 2012, de Carvalho and Lovejoy 2011). However, the present proposal covers only two species of the genus *Potamotrygon: P. motoro* and *P. schroederi*, on the basis of the biological conditions, the situation of vulnerability and the trade, which make them eligible for listing in CITES Appendix II.

The data or information available on exports of these two species of the genus *Potamotrygon* is not complete. However, it is possible to reconstruct the statistics for *P. motoro* in Colombia for the period from 1999 to 2009 (excluding 2003), during which time 81,109 specimens were exported (Lasso unpublished data, Incoder 2007-2011). There are data for the period 2003 to 2005 for Brazil, which before the introduction of the domestic regulation (2008), exported 17,840 specimens of *P. motoro* and 1,049 specimens of *P. schroederi* (Ramos 2009).

In addition, in Colombia, the statistics for landings or catches can be matched to the demand from international trade. Thus, for the period 2007 – 2010, 7,954 specimens of *P. schroederi were* reported (data from SIPA-Convenio MADR-CCI (2007 - 2010).

In terms of the IUCN overall categories, the species are classified as DD (Data Deficient). However, the analysis of the risk of extinction of freshwater fish from Colombia classifies these species as endangered (Lasso and Sánchez-Duarte 2012a, b, Mojica *et al.* 2012). *Potamotrygon motoro* has been classified as VU (Vulnerable), under the subcategory A4d on the basis of a rapid 30% decline in population size as a result of potential levels of exploitation (Lasso and Sánchez-Duarte 2012a). *Potamotrygon schroederi* has also been classified as VU (vulnerable) primarily under the subcategory A4d (Lasso and Sánchez-Duarte 2012b).

Potamotrygon motoro and *Potamotrygon schroederi* are eligible to be listed in Appendix II in accordance with Article II 2^{a} (b) of the Convention, and Resolution Conf. 9.24 (Rev. CoP15), since it is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.

Finally, and as agreed at the 15th meeting of the Conference of the Parties (CoP15) in 2010, Decision 15.85 on freshwater stingrays was adopted in accordance with the provisions of Resolution Conf. 4.6 (Rev. CoP15), calling on the Parties that are range States of species of the family Potamotrygonidae to:

a) note the findings and conclusions of the freshwater stingrays workshop (document AC24 Doc. 14.2), and increase their efforts to improve data collection on the scale and impact of the threats facing stingray species and populations from collection for ornamental trade, commercial fisheries for food and habitat damage;

b) consider implementing or reinforcing national regulations regarding the management and reporting of capture and international trade of freshwater stingrays for all purposes, including commercial fisheries for food and ornamental trade, and standardizing these measures across the region, for example through existing South American intergovernmental bodies; and

c) consider the listing of endemic and threatened species of freshwater stingrays (Potamotrygonidae) in CITES Appendix III as needing the cooperation of other Parties in the control of trade.

Listing in Appendix II of these species of freshwater stingrays, *Potamotrygon schroederi* and *Potamotrygon motoro*, would guarantee the sustainability of a resource identified as commercially important, also taking into account the vulnerability resulting from exploitation.

Listing of *Potamotrygon motoro* and *Potamotrygon schroederi* in Appendix II would also contribute to the monitoring of the statistics relating to legal activity and to reducing illegal trade and supporting the management, administration and regulation of these species in the countries

3. Species characteristics

3.1 Distribution

Potamotrygon motoro (Müller and Henle, 1841)

The range States include: Argentina, the Plurinational State of Bolivia, Brazil, Colombia, Ecuador, French Guyana, Guyana, Paraguay, Peru, Suriname, Uruguay and the Bolivarian Republic of Venezuela (Lasso and Sánchez-Duarte 2012a) (see Annex 1).

In Colombia it is found in the basins of the Orinoco (Guaviare, Inírida, Meta and Tomo sub-basins) and the Amazon (Amazonas, Río Negro, Guainía and Putumayo sub-basins) (Lasso *et al.* 2004, Ortega *et al.* 2006, Maldonado-Ocampo *et al.* 2008, Lasso and Sánchez-Duarte 2012a). In the Bolivarian Republic of Venezuela, it is found in the basin of the Orinoco (Casiquiare, Ventuari, Atabapo, Cinaruco, Capanaparo, Apure, Caura and Orinoco sub-basins) (Lasso *et al.* 2004). In Guyana, Suriname and French Guyana, it is found in all the major rivers. In the case of Ecuador it has been reported in the basin of the Pastaza river and in Peru, in the basin of the Amazon (de Carvalho *et al.* 2003). In Brazil it is found most commonly in the Cuiabá river (State of Mato-Grosso) (Ross and Schafer 2000). In the case of Paraguay it has been reported in the basins of the Paraná and Paraguay rivers; in Uruguay in the basin of the Uruguay river (Cappato and Yanosky 2009) and finally, in Argentina in the basin of the River Plate (*río de La Plata*) (AC20 Inf. 8) (See Annex 1).

Potamotrygon schroederi Fernández-Yépez, 1958

The range States include the Bolivarian Republic of Venezuela, Brazil and Colombia.

In Colombia it is found in the Orinoco and Amazon basins (Maldonado-Ocampo *et al*. 2008, Lasso and Sánchez-Duarte 2012b). In the Orinoco, in the Arauca and Meta rivers and the main course of the Orinoco between the estuary of the Tomo and Guaviare rivers (Lasso and Sánchez-Duarte 2012b); in the Amazon, in the Putumayo and Amazon basins (Ortega *et al*. 2006) (Annex 1). In Brazil it is found in the basin of the Rio Negro river (de Carvalho *et al*. 2003) and in the Bolivarian Republic of Venezuela in the Orinoco (Alto Orinoco, Cataniapo, Cinaruco, Capanaparo, Apure, Caura, Delta and Orinoco sub-basins) (Lasso *et al*. 2004) (See Annex 1).

3.2 Habitat

Generally speaking, freshwater stingrays are restricted to aquatic environments with a salinity lower than 3 ppt (Brooks *et al.* 1981). They are found in various freshwater environments including sandy beaches, flooding forests, small streams with rocky or muddy bottoms, as well as lakes (Charvet-Almeida, 2001). They can be found in all three water types, white, clear and black, although certain species show a preference for or are more common in one particular type or another.

Potamotrygon motoro (Müller and Henle, 1841)

Species characteristic of clear and black water in both the Orinoquia and the Amazonia regions (Lasso and Sánchez-Duarte 2012a). It is found in the main course of clear or black water rivers and channels, and in lagoons on the flood plain (Maldonado-Ocampo 2000).

Potamotrygon schroederi Fernández-Yépez, 1958

Species characteristic of clear and black water, rare in white water. It has only been caught in the course of the major rivers and channels and has not been observed in areas subject to flooding (Lasso and Sánchez-Duarte 2012b).

3.3 Biological characteristics

Potamotrygon motoro (Müller and Henle, 1841)

The males reach sexual maturity at 31 cm DW (disc width) and the females at 35 cm DW (Rosa 1985). As reported by Torzón *et al.* (1983), only the left ovary is normally present and functional. In the basin of the Orinoco, according to Lasso (personal communication), reproduction takes place throughout the year, producing 3 to 6 foetuses, at a size of sexual maturity of 31.8 cm DW in males and greater than 38 cm DW in females. Males may reach a maximum size of 43.7 cm DW and females of 43.4 cm DW, at a weight of 3.1 and 3.4 kg respectively (Lasso personal communication). In the Paraná river basin in Argentina, Chavet-Almeida *et al.* (2005) note a fertility varying between 4 and 11 foetuses (average 7). In the case of Brazil, Achenbach and Achenbach (1976, quoted by Falla-Mejía-Falla *et al.* 2009), have recorded between 9 and 15 foetuses and Thorson *et al.* (1983), between 6 and 7 foetuses (observations made in captivity). The differences may be population-related. For this species it has been estimated that there is an ovarian fertility of between 6 and 11 eggs, a gestation period of six months, with birth occurring in the rainy season (over a period of 4 months) and that the age of maturity is 3.5 years for Brazil in the Amazon trapezoid (Charvet-Almeida *et al.* 2005).

Potamotrygon schroederi Fernández-Yépez, 1958

The rosette river stingray reaches a maximum size of 54 cm DW (Góes de Araújo 2009). The left ovary is atrophied and consequently only the right one is functional (Rosa *et al.* 2010). A study in Brazil indicates that the gestation period is six months, the pups are born in the rainy season over a period of four months, the females have an ovarian fertility of 3 to 7 eggs, producing between 1 and 3 foetuses per litter (although the sample size was very small); the males mature at 42 cm AD and the females at 44 cm DW (Góes de Araújo 2009). In the Colombian/Venezuelan Orinoquia region it has been observed that males mature at sizes greater than 39.5 cm DW (Lasso unpublished data). The remaining biological features of the species are unknown.

3.4 Morphological characteristics

Potamotrygon motoro (Müller and Henle, 1841)

Subcircular disc; colour of dorsal surface olive-brown to dark brown or dark grey. It has numerous yellow and orangish-reddish spots, larger than the diameter of the eye, but differing in size from one another and arranged in about five elliptical series (pattern very variable depending on the different basins). It may reach 50 cm and the largest specimens may weigh 10 kg (Rosa 1985, de Carvalho *et al.* 2003). The maximum size recorded is 100 cm for the length of the disc and 15 kg in weight (Froese and Pauly 2010). At sexual maturity at an age of three years it reaches a DW between 30 and 35 cm (Drioli and Chiaramonte 2005). In the Colombian/Venezuelan Orinoquia region males may

reach a maximum size of 43.7 cm DW and females 43.4 cm DW, at a weight of 3.1 and 3.4 kg respectively (Lasso unpublished data).

Tail moderately thick and short, and may be shorter than the disc. Has 18 to 39 longitudinal rows of teeth in the upper jaw (Rosa 1985).

Its colouring pattern distinguishes it clearly from other species of the genus.

Potamotrygon schroederi Fernández-Yépez, 1958

Oval disc, dorsal surface dark grey and bluish in colour with yellow or orangish markings, vermiculate, in an irregular pattern diminishing towards the edges of the disc. This pattern is more marked in clear water and black water specimens than in white water ones. A maximum size exceeding 52.4 cm DW in males and 61.2 cm DW in females has been recorded (Lasso unpublished data). It has a fairly thick and short tail, which may be shorter than the disc (Froese and Pauly 2011). It has small teeth, with a concave front edge, arranged in 36 to 53 longitudinal rows in the upper jaw (Rosa 1985, Lasso personal communication).

This species is clearly different from the others in the genus, except for *Potamotrygon tigrina*, which is a species found in the Amazonia region of Peru (de Carvalho *et al.* 2011).

3.5 Role of the species in its ecosystem

According to Araujo *et al.* (2004), in all types of habitat where freshwater stingrays are found, they are considered as predators at the top of the food chain. ***Potamotrygon motoro*** is considered a carnivorous species which consumes fish and aquatic invertebrates (Santos *et al.* 2004). The diet of the juveniles consists of small molluscs, crustaceans and larvae of aquatic insects (Drioli and Chiaramonte 2005), while the adults consume some fish of the family Loricariidae. In the Amazon and in the Orinoquia region, cancrivorous habits have been observed, with the species feeding on shrimp and crayfish (Shibuya *et al.* 2009; Lasso personal communication). ***Potamotrygon schroederi*** consumes small fish, shrimp, annelids and insect larvae (Araújo 2009).

4. Status and trends

4.1 Habitat trends

Habitat degradation and productive activities such as agriculture and mining may affect the ecosystems and populations of the species of the family Potamotrygonidae, including *P. motoro* and *P. schroederi* (Araujo *et al.* 2004, Pinto 2011, Abt *et al.* 2012).

In Ecuador, the large waterways such as the Napo river and its tributaries (habitat of *P. motoro*), have suffered degradation and fragmentation, and consequently a decline in the populations of this species may be anticipated. This trend is worsened by other activities such as tourism, mine workings and oil-drilling (Barriga unpublished data).

In the basin of the Paraná river, the habitat degradation resulting from the construction of hydroelectric plants and the building of ports is a risk factor for the populations of *P. motoro* (Drioli and Chiaramonte 2005).

4.2 Population size

In the IUCN global lists these species of the family Potamotrygonidae appear as DD (Data Deficient). However the risk analysis for freshwater fish in Colombia (Lasso and Sánchez- Duarte 2012a, b, Mojica *et. al.* 2012) includes *P. motoro* and *P. schroederi* as endangered species, in the category of VU (vulnerable) (Lasso and Sánchez-Duarte 2012a,b). The main criteria for categorization of the species include decrease in population size owing to overfishing (See Section 2).

4.3 Population structure

In Ecuador in the years 1994 and 2010 Barriga (unpublished data) reported a total of 65 specimens of *P. motoro*. Of these, 31 fish, 47% of the total, were specimens both male and female having a disc width of less than 25 cm, and sexually immature.

In the Orinoquia region of Colombia, recent studies at the meeting of the Orinoco, Guaviare, Inírida and Atabapo rivers, known as the Estrella Fluvial de Inírida, show a catch per unit effort (CPUE) of 0.75 specimens/hour, equivalent to 0.5 specimens/km, with a relative proportion of males to females of 2:1. The specimens having a disc width of less than 25 cm accounted for 60% (32 specimens) in males and 81% (22 specimens) in females (Sierra-Quintero and Lasso unpublished data).

4.4 Population trends

The Negro channel, in the Orinoquia region of Colombia, is known as an important location for the catching of ornamental fish, including freshwater stingrays. Prada-Pedreros *et al.* (2009) found low densities in the catches of *P. motoro* as the target species, this tendency being confirmed by the series of visual censuses carried out in 2012, in which no specimens of this species were recorded (Sánchez-Duarte personal communication.).

While originally the two species were abundant at the meeting of the Orinoco, Guaviare, Inírida and Atabapo rivers (Bolivarian Republic of Venezuela and Colombia), namely the Estrella Fluvial de Inírida, they are not found there in current fishing activities (Sierra-Quintero, Lasso personal communication). The visual censuses carried out at night in this area during the dry period (November 2010 – March 2011) aimed at three species, including *P. motoro* and *P. schroederi,* show very worrying results, since not one specimen (juvenile or adult) of *Potamotrygon schroederi*, and only 79 adult specimens of *Potamotrygon motoro* (52 males and 27 females), were observed (Sierra-Quintero and Lasso personal communication), over a very extensive area (area of the Estrella Fluvial de Inárida, 252,943.37 ha) (MADS 2012).

In addition and despite the fact that no specific data are available to help to calculate the population size of the species [Definitions, Resolution Conf. 9.24 (Rev. CoP15)] in order to draw up a finding on its decline, it may be stressed that *P. motoro* and *P. schroederi* have a low internal fecundity, long gestation periods, slow growth and long life (Araujo *et al.* 2004).

4.5 Geographic trends

No information is available on the geographic trends of the species.

5. Threats

Araujo *et al.* (2004), Oldfield (2005 in Abt *et al.* 2012) and Lasso and Sánchez-Duarte (2012a, b) list commercial, artisanal and ornamental fishing, negative fishing practices (targeted fishing owing to possible conflicts with tourism activities) and consumption as the main threats, together with destruction of habitat through the construction of hydroelectric plants and ports, and mining. Additionally, Barriga in MAE 2012 lists further threats to the family Potamotrygonidae in Ecuador, namely oil-drilling and mining, causing clearing of vegetation, spillage of chemicals, removal of the substrate and suspension of solids.

In relation to overexploitation as fishery resources, *P. motoro* and *P. schroederi* have been subject to major harvesting pressure in Colombia, particularly targeting juveniles, as at that stage of development they are the most in demand and the most traded (Lasso and Sánchez-Duarte 2012a, b). In Colombia, recent censuses in the Estrella Fluvial de Inírida did not record any specimens of *P. schroederi,* which is a matter for concern owing to the possible consequences and population decline (Sierra-Quintero and Lasso unpublished data).

Similarly, the evaluation of the risk of extinction of freshwater fish in Colombia carried out in accordance with IUCN criteria (Lasso and Sánchez-Duarte 2012a, b, Mojica *et. al*. 2012) includes overfishing for ornamental or commercial purposes as one of the principal threats to *Potamotrygon motoro* and *Potamotrygon schroederi* (Lasso and Sánchez-Duarte 2012a, b).

6. Utilization and trade

6.1 National utilization

In Colombia, the methods used to catch rays of the family Potamotrygonidae chiefly include diving with masks and the catching basket (known as a *rayero*) (Prada-Pedreros *et al.* 2009, Ajiaco *et al.* 2012).

With regard to artificial reproduction, there is undocumented information indicating that *Potamotrygon schroederi* is bred in Southeast Asia (Ramos personal communication 2009), as is *Potamotrygon motoro.* It is even reported that there are populations established in the wild in Singapore (Bassler personal communication 2008, Ng *et al.* 2010).

With regard to the range States such as Brazil and Ecuador, there is no information on artificial reproduction and only a few cases are known of interest in carrying out this type of activity (Lasso unpublished data, Ramos 2009, Barriga in MAE 2012). In Colombia and Peru, however, there does exist undocumented information on artificial reproduction in an experimental stage (Sánchez personal communication and Ortiz personal communication).

Other uses for the species of the family Potamotrygonidae reported in Brazil and Ecuador include their barbs, used for ornaments and small arrows and harpoons (Barriga in MAE 2012). In addition, Araujo (2004, reported by Ramos 2009) states that another of the major uses of stingrays is the consumption of their flesh, especially of *P. motoro*, the demand for which is concentrated in the cities of central and southern Brazil and Asian countries such as Korea and Japan.

In Colombia, in the Orinoquia region, it is reported that the liver fat of *Potamotrygon motoro* is used to control asthma and influenza and the skin from the back of the disc as sandpaper (Lasso 1985, Castro and Peñuela 2006).

6.2 Legal trade

Potamotrygon motoro and *Potamotrygon schroederi* are in international trade as ornamental species (Mejía-Falla *et al.* 2009, Abt *et al.* 2012, Lasso and Sánchez-Duarte 2012a, b).

According to the information on exports from Brazil and Colombia (Ramos 2009, Mejia-Falla *et al.* 2010), the principal importers of freshwater stingrays include China, Germany, Japan, Malaysia and the United States, and others (Annex 3). In the case of the United States, the information on imports in 2010 only from Colombia indicates that *P. motoro* (1,261 specimens) and *P. schroederi* (139 specimens) are among the principal species imported (Abt *et al.* 2012). The selling prices of these species vary between EUR 130 and 210 per specimen for *P. motoro* and between EUR 145 and 225 per specimen for *Potamotrygon schroederi* (Bustamente *et al.* 2010).

With respect to trade by the range States of the family Potamotrygonidae, information from the United States authorities (Abt *et al.* 2012) indicates that in 2010 no imports of specimens of freshwater stingrays from the Bolivarian Republic of Venezuela and Ecuador were recorded, while Brazil, Colombia and Peru appeared to be the principal exporting countries. Similarly the Ministry of the Environment of Ecuador reports that to date no exports of or trade in stingrays has been recorded (MAE 2012).

In Colombia, 81,109 specimens of *P. motoro* were exported in the period 1999 to 2009 (excluding 2003), (Lasso unpublished data, Incoder 2012), while Brazil exported 17,840 specimens from 2003 to 2005 (before the introduction of the domestic regulation in 2008), (Annex 5). Brazil it also exported 1,049 specimens of *P. schroederi* (Ramos 2009). An important factor is that in Colombia, after 2010, Bustamante and Sánchez (2010) on behalf of Incoder issued a technical paper to define minimum catch sizes for the species, which may be reflected in the exports since the figures show a drop (Annex 5).

In Colombia the body responsible for tracking catches and statistics of freshwater fish (Corporación Colombia Internacional - CCI), reports catches of 7,954 specimens for *P. schroederi* between 2007 and 2011, while for *P. motoro* in the same period, the statistics show catches of 19,459 specimens (data from SIPA-Convenio MADR-CCI 2007 – 2011). An important factor is that in Colombia the information on export volumes used to be processed at the level of the family (Potamotrygonidae), but when the importance of this commercial resource and its overfishing were identified, the Ministry of Agriculture and Rural Development, responsible for managing the resource, established catch quotas starting in 2009 (Barreto *et al.* 2009). From 2007 on the Ministry has tried to break down the catch volumes by species, as is reflected in the statistics referred to above (Ajiaco personal communication).

Although they are not readily found offered for sale on the Internet, *P. motoro* and *P. schroederi* are on offer in the forums and pages for advanced fish enthusiasts, in which case it is not known whether

they are of legal origin (Annex 4). The asking prices for the specimens average out at USD 200 and the higher values on the market are for *P. schroederi*, from USD 125 to USD 780, while for *P. motoro* princes range from USD 79 to USD 325. Specimens from Colombia sold abroad come in the case of *P. motoro* in sizes of 15-20, 20-25, 25-30 and 30-35 cm DW, while specimens of *P. schroederi* are sold in sizes of 12-15, 15-20, 20-25 and 25-30 cm DW (Bustamente and Sánchez. 2010).

6.3 Parts and derivatives in trade

Although international trade in these species is based on live animals used as ornamental fish (Araujo *et al.* 2004), in the case of Brazil Ramos (2009) reports that the flesh of stingrays is another export, sent mainly to Asian countries.

6.4 Illegal trade

In the region there are indications of illegal trade in the species *Potamotrygon motoro* and *Potamotrygon schroederi* dating back at least five years, in the region of the Estrella Fluvial de Inírida (Lasso personal communication). Similarly, Ramos (2009) refers to the problems of illegal trade relating to the frontier areas, having to do with the possible harvesting of specimens in Brazil which are then exported from Peru or Colombia.

In Ecuador, the Ministry of the Environment MAE) has a record of juvenile *Potamotrygon motoro* stingrays averaging between 15 and 18 cm in diameter, which were discovered dead in polyethylene containers from Peru. Also, the Ministry (MAE 2012) reported on the penalty applied to a citizen of Peruvian nationality who was transporting aquatic species, including *P. motoro*.

Listing of the species *P. motoro* and *P. schroederi* in CITES Appendix II will improve communication on trade between exporting and importing Parties and will assist in reducing illegal trade, as well as supporting processes of preservation and management of the species.

6.5 Actual or potential trade impacts

Although local use of the species of freshwater stingrays is known, their principal use is for international trade as ornamental fish. Past volumes of exports from Brazil and Colombia total 98,913 specimens of *P. motoro*. In the case of *P. schroederi,* Brazil exported 1,049 specimens between 2003 and 2005, while Colombia has records between 2007 and 2011 of 14,081 specimens (Ramos 2009, Lasso unpublished data, Incoder 2012).

The large volumes exported to date make the species highly vulnerable, based on the demand for it, highlighting the necessity not only of implementing better measures for managing the resources in the range States, but also of taking measures to regulate international trade.

7. Legal instruments

7.1 National

Of the 12 range States of *Potamotrygon motoro* and *Potamotrygon schroederi*, only Brazil has a specific legal framework to regulate the export of freshwater stingrays for use as ornamental fish (Araujo *et al.* 2004).

Colombia. The rules in force regulate the overall management and rational use of fishery resources with the aim of ensuring their sustainable use, as well as the maintenance and protection of aquatic ecosystems. The country also has a regulatory and administrative framework to regulate the commercial fishing of specimens for ornamental use which, in the specific case of *Potamotrygon motoro* and *Potamotrygon schroederi*, requires that fishing for them and other activities may be performed only after obtaining the relevant permits and authorizations issued by the Fisheries Authority (Resolution 3532 of 2007). In addition this authority determines the closed seasons, during which catching, transportation, stockpiling and trade are prohibited. Similarly, the Management Authority, headed by the Minister of Agriculture and Rural Development, lays down global annual quotas for fishing the various species intended for ornamental use, including the family Potamotrygonidae (Resolution 0301 of 2011). Finally, the Fisheries Authority in 2010 adopted the decision, based on the precautionary principle, to establish a range of catch sizes for the two species *Potamotrygon motoro* and *Potamotrygon schroederi* (Bustamente and Sánchez, 2010).

Brazil. In addition to requiring a fishery permit as a general rule, the country has a regulatory system covering export by quotas of seven species of the genus *Potamotrygon*. These quotas are laid down in accordance with the biological information relating to *Potamotrygon* sp. *Caruru* as applied to other species by analogy, based on the known distribution and population dynamics. The quotas are established in December and distributed on an equitable basis among the fishery undertakings in the area. Cancellation of quotas is used to penalize companies that are caught exporting specimens of a size greater than the maximum permitted or belonging to protected species. Control at airports is strict and all boxes containing ornamental fish must have a precise identifying record (Ramos 2009).

Ecuador. The country has a sustainable model of conservation of biodiversity as a constitutional matter. The policies of environmental management are applied in a cross-cutting manner and are binding at all levels and for all individuals and all companies in the country. In the event that there is doubt on the scope and reach of the law on environmental matters, the protection that is more favourable for nature will prevail. Additionally, Ecuador has two environmental laws for the protection of biodiversity: the Law on Environmental Management and the Law on Forests and Conservation of Natural Areas and Wildlife. The main legal instrument is the Harmonized Text of Secondary Environmental Legislation (TULAS) of the Ministry of the Environment, in which the requirements for management, conservation, protection and selling of Ecuadorian native wild species are stipulated. As a general rule, the regulation empowers the Ministry of the Environment to lay down partial or total closed seasons, of short, medium or long duration, with the objective of protecting wildlife and ensuring the maintenance of ecosystem equilibrium. There is a specific regulation covering the harvesting of ornamental fish, to cover the species that are not in CITES Appendix I or II (MAE 2012).

Peru. The national regulations covering fishing include the Fisheries Act (Law 25977) and its implementing regulations (D.S No. 012-2001-PE), together with the Regulations on Management of the Peruvian Amazonia Region (D.S. No. 015-2009-PRODUCE). There are only a few regulations at national level covering inland fish in Peru and the harvesting thereof. This is covered by Supreme Decree No. 005-84-pe and distribution by Ministerial Resolution No. 287-2000-Pe on hydro-biological resources. At regional level, inland fishing comes under regional regulations covering five species in the department of Ucayali and also measures proposed for commercial fishing in Puerto Maldonado (Riofrío 1998, Cañas 2000, Tello 2002). Flores (personal communication 1995) proposed a plan for implementing preliminary general regulations for fisheries in the Amazon. There are also regional regulations covering trade in ornamental fish in Loreto. At least 150 species are traded, with exports of some of them exceeding a million fish.

Argentina. The trade in ornamental fish imported into the country or exported to another one falls under the remit of the Directorate for Aquaculture of the Ministry of Agriculture, Stockbreeding, Fisheries and Food, Department of Fisheries and Aquaculture. This body, practically from the time it was created, designed a management policy, with regulations established in 1994, subsequently replaced by the current rules which are still in force but currently under review. The Directorate regulates the trade, with subsequent processing of the certificates issued through the National Agricultural and Food Health Service (SENASA) and the national customs service, assisting the permit-holders (whether breeders or harvesters) with the procedures to be carried out as appropriate to the situation. Similarly, in order to be able to import or export to or from Argentina, the producers or companies interested in marketing their own products or those stockpiled to be sold have to be listed in the National Registry of Aquaculture Establishments, in accordance with the provisions of the rule referred to. Subsequent to their approval (granted either by the Directorate itself or by the competent provincial authority on its behalf), the permit-holders may undertake their activities. Before being listed in the National Registry, companies must first be recognized by the provincial or municipal registries, as appropriate. (Regulation 987/97 of the Directorate for Aquaculture of the Ministry of Agriculture, Stockbreeding, Fisheries and Food, Department of Fisheries and Aquaculture).

Bolivia (Plurinational State of). The Centres for Forestry Development are the bodies with responsibility for surveillance and monitoring of any kind of fishing in the Plurinational State of Bolivia. The administration of specific resources varies depending on the jurisdiction of the body, since being territorial bodies their policies may vary. These entities implement a specific regulatory system, covering the species, volumes harvested, catch method, closed and open seasons and other relevant factors. The introduction and seeding of new species of fish and other aquatic animals are prohibited without prior authorization from the Centre for Forestry Development; also prohibited is the seeding, without explicit authorization, of species foreign to the different bodies of water. The same applies to export of fish and other live native animals from aquaculture (Decree Law No. 12301 of 1975).

Uruguay. One of the implementing units of the Ministry of Stockbreeding, Agriculture and Fisheries is the National Directorate for Aquatic Resources (DINARA), which is the entity responsible for promoting the sustainable utilization of fishery resources, by means of responsible fishery, with the aim of achieving the maximum benefit possible from the available fishery resources, preserving them for the long term and thus maintaining the harmony of the marine environment (Decree Law No. 14.484). Further, Law No. 16.466 states that protection of the environment against any type of predation, destruction or contamination is a matter of general interest (Domingo *et al,* 2008).

Bolivarian Republic of Venezuela. In addition to the provisions enshrined in the Constitution of the Bolivarian Republic of Venezuela (1999) and the Law on Fishery and Aquaculture (2003), in 1992 Resolution No. 52 of the Directorate-General for Fisheries and Aquaculture was enacted, establishing rules to regulate activities relating to live specimens of ichthyofauna of ornamental value. This legal framework requires that those fishing, distributing and selling ornamental species must be properly registered and have a permit issued by the authority. Similarly, they must have plans for investment in reproduction and breeding. A totally closed season of two months' duration is applied every year to the catching of inland ornamental fish, over the entire national territory. This closed season runs extends from 15 May to 15 July, and is based on Resolution No. 52 of the Directorate-General for Fisheries and Aquaculture (República Bolivariana de Venezuela, Ministerio del Ambiente y de los Recursos Naturales, 2006).

7.2 International

Convention on International Trade in Endangered Species of Wild Fauna and Flora

The countries concerned must monitor the trade in those species that are listed in the various Appendices of the Convention. Each Party shall keep records, expressed in numbers of specimens, of the trade in the species in those Appendices. Likewise, each Party shall undertake to prepare and submit to the Secretariat periodic reports on the application of the provisions of the Convention. Currently, Decision 15.85 calls on the range States of species of the family Potamotrygonidae to:

a) note the findings and conclusions of the freshwater stingrays workshop (document AC24 Doc. 14.2), and increase their efforts to improve data collection on the scale and impact of the threats facing stingray species and populations from collection for ornamental trade, commercial fisheries for food and habitat damage;

b) consider implementing or reinforcing national regulations regarding the management and reporting of capture and international trade of freshwater stingrays for all purposes, including commercial fisheries for food and ornamental trade, and standardizing these measures across the region, for example through existing South American intergovernmental bodies; and

c) consider the listing of endemic and threatened species of freshwater stingrays (Potamotrygonidae) in CITES Appendix III as needing the cooperation of other Parties in the control of trade.

Convention on Biological Diversity

This Convention has as its objectives the conservation of biodiversity, sustainable utilization of the components of biodiversity and a fair and equitable sharing in the benefits arising from the utilization of genetic resources, by way of appropriate access to those resources and suitable transfer of the relevant technologies, taking into account all rights over such resources and to such technologies (Domingo *et al*. 2008).

Regional Biodiversity Strategy for the Andean Tropic Region

The four member countries of the Andean Community (CAN), namely Colombia, Ecuador, Peru and the Plurinational State of Bolivia, taking into account the important natural heritage in their territory, have signed and ratified the Convention on Biological Diversity and within that framework have drawn up the Regional Biodiversity Strategy (CAN, 2012a). This includes the BioCAN programme, which seeks to promote the sustainable use of resources, improved utilization of the benefits of scientific information and traditional knowledge and sound management of national territory. The strategy is based on lines of action which in turn are based on six major goals: 1) Conserving and making sustainable use of ecosystems, species and genetic resources in situ, together with related ex situ

activities; 2) Distributing benefits on an equitable basis, taking into consideration a fair valuation of the components of biodiversity; 3) Protecting and reinforcing the knowledge, innovations and practices of indigenous, Afro-American and local communities, on the basis of a recognition of those peoples' individual, community and collective rights; 4) Developing scientific knowledge, innovations and technologies for the conservation and sustainable use of biodiversity, including preventing and minimizing the risks to the environment and to human health; 5) Ensuring that sectoral policies and development projects having a subregional impact include the conservation and sustainable use of biodiversity; and 6) Developing capacities for international negotiations in the area of conservation and sustainable use of biodiversity in the Andean Community (CAN 2012b)

Committee on Fisheries of the FAO Council

This Committee is a global intergovernmental forum where major international fisheries and aquaculture problems and issues are examined and recommendations addressed to governments, regional fishery bodies, NGOs, fishworkers, FAO and the international community, periodically on a world-wide basis. The Committee has also been used as a forum in which global agreements and non-binding instruments were negotiated. Its functions include reviewing the programmes of work of FAO in the field of fisheries and aquaculture and their implementation, conducting periodic general reviews of fishery and aquaculture problems of an international character and appraising such problems and their possible solutions with a view to concerted action by nations, FAO, inter-governmental bodies and civil society. The Committee also reviews specific matters relating to fisheries and aquaculture referred to it by the Council or the Director-General of FAO, or placed by the Committee on its agenda at the request of Members or of the United Nations General Assembly (FAO, 2012a).

Code of Conduct for Responsible Fisheries

At the present time, there are no international instruments that directly regulate the species in question. However, the FAO Member States have drawn up an instrument that sets forth international principles and rules for the application of responsible practices, in order to ensure the conservation, management and development of live aquatic resources, with respect for the ecosystem and biodiversity. Although the FAO Code of Conduct for Responsible Fisheries is a voluntary instrument, its guiding principles are internationally accepted for the management of fisheries. The Code was developed to cover both inland and marine fisheries and is suitable for the management of the majority of populations of fish, including those that cross national borders (FAO 2012b).

Amazon Cooperation Treaty

The Amazon Cooperation Treaty (ACT) has been signed by the eight countries of the Amazon region: the Bolivarian Republic of Venezuela, Brazil, Colombia, Ecuador, Guyana, Peru, the Plurinational State of Bolivia and Suriname. It is a legal instrument, technical in scope, aimed at promoting the harmonious and integrated development of the Amazon basin, as a basis for sustaining a model of regional economic complementarity with a view to improving the quality of life of its inhabitants and conserving and making rational use of its resources. The Treaty provides for collaboration among the member countries in order to promote scientific and technological research and exchange of information, rational utilization of natural resources, freedom of shipping movements on the rivers of the Amazon basin, protection of shipping movements and trade, preservation of the cultural heritage, work on health care, creation and operation of research centres, establishment of an adequate transport and communication infrastructure and increasing tourism and cross-border trade. All of these measures must be implemented through bilateral action or cooperation within groups of countries, with the objective of promoting the harmonious development of the various territories (TCA, 2012).

8. Species management

8.1 Management measures

Some countries, such as Colombia and Uruguay, have national action plans: in the case of Colombia, the National Plan of Action for the Conservation and Management of Sharks, Rays and Chimeras (Caldas *et al.* 2010); for Uruguay the National Plan of Action for the Conservation of Chondrichthyes in Uruguayan Fisheries (Domingo *et al.* 2008).

Brazil and Colombia are implementing regulatory measures to set up export quotas more in line with biological criteria adjusted to take account of the characteristics of ornamental fish species, including the stingray species of the family Potamotrygonidae (Araujo *et. al.* 2004, Ramos 2009, Bustamante *et al.* 2010). In the case of Colombia, the Colombian Institute for Rural Development, or Incoder, which is the body with responsibility for managing fishery resources, has proposed a range of minimum catch sizes (18-22 cm DW) for all species of the family Potamotrygonidae in trade in the country (Bustamante *et al.* 2010). Other Incoder species management rules include the Resolution on global fish quotas for 2012 and Resolution 3532 of 2007 which permits trade in stingrays as ornamental fish species.

8.2 Population monitoring

No information is available.

8.3 Control measures

8.3.1 International

Reference may be made to instruments both binding and voluntary. The principal voluntary ones would be the pronouncements of the Committee on Fisheries of the FAO Council and the Code of Conduct for Responsible Fisheries for FAO member States (FAO 2012a, b).

8.3.2 Domestic

Colombia has a technical document developed by Bustamante and Sánchez in 2010 for Incoder, in which minimum catch sizes are defined for the species. It also has the National Strategy for the Prevention and Control of Illegal Trade in Wild Species (Ministerio del Medio Ambiente 2002). In the context of the global quotas the specimens exported are tracked, on the basis of the reports which authorized exporters submit every month to the National Authority for Aquaculture and Fisheries (AUNAP). Once the quota that has been established is reached, exports stop and for any more to be authorized, the Ministry of Trade requests approval from the AUNAP and the Colombian Institute for Agriculture and Stockbreeding (ICA) (in connection with health requirements), on the basis of the procedure established at the Single Window for Foreign Trade (VUCE).

In the case of Brazil, Ramos (2009) states that the IBAMA is working on an electronic system for monitoring fisheries, based on the “Fisheries Document of Origin” and has plans in hand to develop species identification manuals as an aid to inspections. It is also developing quotas based on sustainability criteria.

8.4 Captive breeding and artificial propagation

In some of the range States, such as Brazil, only a few cases are known of interest in carrying out artificial reproduction activities (Ramos 2009). In others, such as Colombia and Peru, information has been found on at least two organizations that are in an experimental stage of artificial reproduction of freshwater stingrays. One of them, in Colombia, has an experimental permit (Sánchez 2012 personal communication, Universidad Agraria La Molina 2012).

Although there is officially no documented information on breeding and reproduction of *P. motoro* and *P. schroederi* in captivity, there are indications that such reproduction does occur in Southeast Asia (Ramos 2009, Ng *et al*. 2010).

8.5 Habitat conservation

In the Amazonia region of Ecuador there are two protected areas which are located at less than 400 m above sea-level, the Reserva Producción Faunística Cuyabeno (Cuyabeno Wildlife Breeding Reserve) and the Yasuní National Park. Together, they cover an area of 15,854 km^2 and a corridor which is in a good state of conservation runs between them (MAE 2012).

In the Colombian Orinoquia and Amazonia regions there are national protected areas in which *P. motoro* and *P. schroederi* are found. In the Orinoquia region these are the El Tuparro National Nature Park and the Puinawai and Nukak National Nature Reserves, while in the Amazonia region of

Colombia there are the Amacayacu, La Paya, Cahuinari, Río Puré and Yaigojé Apaporis National Nature Parks.

In addition, as a habitat conservation measure, the wetlands area of the Estrella Fluvial de Inirida is in the process of being designated a RAMSAR site (MADS 2012).

9. Information on similar species

By its colouring pattern *Potamotrygon motoro* is similar in external appearance to other species of the genus, namely *Potamotrygon boesemani,* found in Suriname, and *Potamotrygon brachyura*, found in Argentina, Brazil, Paraguay and Uruguay. By comparison with these two species, *P. motoro* has a darker background colour on the back, the black edge of the dorsal spots is wider and the shape of the spots is more rounded (Rosa 1985, Rosa *et al.* 2008). This species is also similar to *Potamotrygon henlei,* found in the basin of the Tocantins river, which has two or three rows of spines and the colouring of the spots extending as far as the tail (Rosa 1985), while *P. motoro* has only one row of spines on the tail and the spots are found on the disc and at the base of the tail. It is also similar to *Potamotrygon ocellata*, found in Brazil, and differing from *Potamotrygon motoro* by having irregular markings on its back, dark orange to oxide red in colour (Rosa 1985).

The only species similar to *P. schroederi* is *P. tigrina,* described recently (de Carvalho *et al.* 2011). However, although the colour of the back is similar in both species. *P. schroederi* has a particular pattern given by the arrangement of the markings, which are in the shape of a rosette or brain and are further apart than those of *P. tigrina*.

10. Consultations

Some preliminary consultations were carried out, followed by questions to the range States. Still awaiting a response from most of the countries consulted.

Country	Support indicated (Yes/No/ Pending/ No objection)	Summary of the information provided
Brazil	Pending	
Venezuela (Bolivarian Republic of)	Pending	
Ecuador	Pending	
Peru	Pending	
Guyana	Pending	
Suriname	Pending	
Argentina	Pending	
Uruguay	No objection	Considers it important that measures are taken for the conservation of the family Potamotrygonidae. Will consult with its Scientific Authority on getting the relevant information sent.

11. Additional remarks

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Range of the species *Potamotrygon motoro* and *P. schroederi*

Source: Humboldt Institute 2012.

Potamotrygon motoro

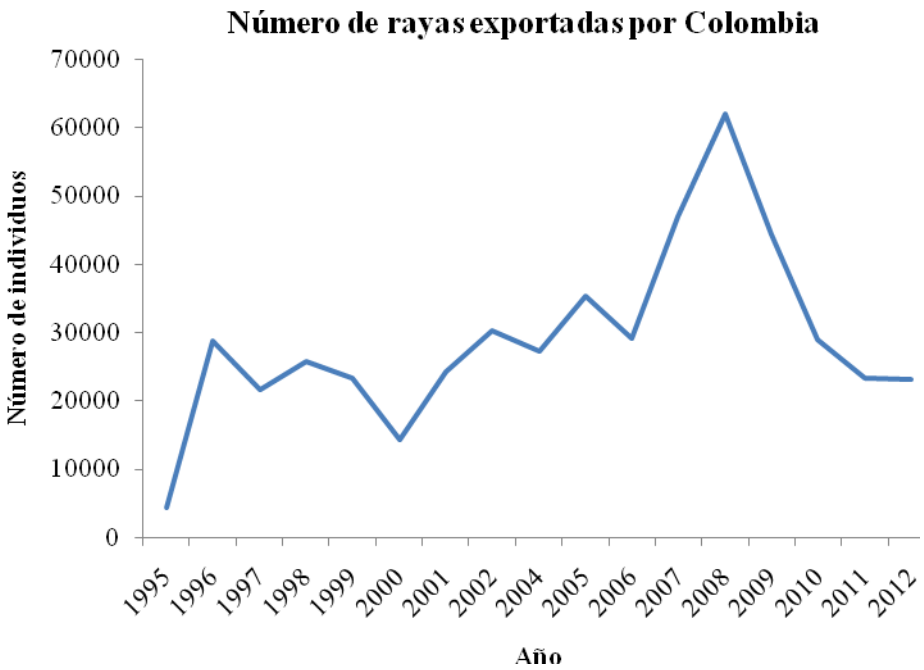
Source: Lasso and Sánchez-Duarte 2012a

Potamotrygon schroederi

Source: Lasso and Sánchez-Duarte 2012b

Graph of the number of specimens of the family Potamotrygonidae exported from Colombia in the period 1995 – 2012

Taken from Ajiaco-Martínez *et al.* 2012. 1995 – 2008 Sources: Barreto *et al.* (2009); 2009 data CEP 2010, 2010-2012 data Barreto *et al.* 2011



Title: Number of stingrays exported by Colombia

Horizontal axis: Year

Vertical axis: Number of specimens

Number of specimens of freshwater stingrays exported from Brazil and Colombia and principal importing countries and territories

Source: Ramos 2009 and Mejía-Falla *et al.* 2010, Incoder 2012; N.D. = No data.

	Colombia		Brazil
Importing country or territory	***Potamotrygon motoro***	***Potamotrygon schroederi***	***Potamotrygonidae***
Austria	129	27	9
Belgium	41	4	N.D.
Canada	775	572	46
China	5,458	4,390	6
Costa Rica	66	25	N.D.
Czech Republic	420	15	N.D.
England	323	81	N.D.
France	51	0	N.D.
Germany	1515	416	667
Hong Kong SAR	18,158	2,578	271
Hungary	8	30	N.D.
Indonesia	N.D.	N.D.	32
Israel	49	9	N.D.
Italy	30	0	N.D.
Japan	10,411	1,761	370
Korea	759	483	39
Malaysia	2,200	233	N.D.
Mexico	601	5	N.D.
Netherlands	232	37	3
Panama	3	10	N.D.
Philippines	30	24	N.D.
Poland	87	74	N.D.
Russian Federation	108	61	N.D.
Serbia	2	15	N.D.
Spain	60	8	2
Singapore	987	855	318
Sweden	73	11	5
Switzerland	15	33	3
Taiwan Province of China	7,211	513	362
Thailand	2,479	1,049	N.D.
United Kingdom	N.D.	N.D.	16
United States	7,694	762	496

Offers for sale on the Internet of species of the genus Potamotrygon (*P. motoro* and *P. schroederi*)

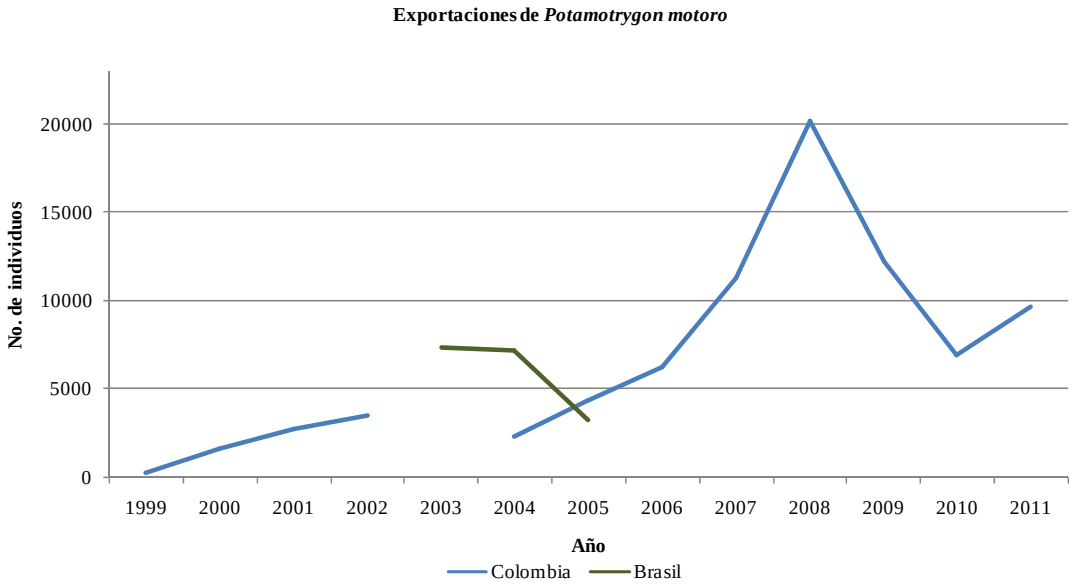
Source: Humboldt Institute, 2012

Potamotrygon motoro				
NOMBRE COMÚN	**PAÍS VENDEDOR**	**ESTABLECIMIENTO /VENDEDOR**	**PRECIO DE VENTA (USD)**	**REFERENCIA**
Motoro	Colombia	Mi Mundo Animal	25	Carrera 14 55-04, Bogotá DC.
Motoro Stingray	Colombia	CI StingrayAquário Colombia Ltda.	60	http://stingrayaquarium.com
Motoro	Colombia	Krohne Ornamental Fish	60	http://krohneornamentalfish.net
Motoro	España	Tienda Maquetas & Mas	115	http://www.milanuncios.com/peces/raya.htm -- El Centre comercial de la vila olímpica, Calle salvador espriu 61, local 56-57 Barcelona
Raya de Agua Dulce	España	PortalPez	60	http://www.portalpez.com
Raya de Agua Dulce	Venezuela	Plaza Macaracuay	36	http://www.acuaristasdevenezuela.com.ve
Raya de Agua Dulce	Venezuela	Catia La Mar	24	http://www.acuaristasdevenezuela.com.ve
Motoro Stingray	Inglaterra	Aquarist	135	http://www.aquarist-classifieds.co.uk
Motoro Stingray	Alemania	Potamotrygon	160	http://www.potamotrygon.de/
Motoro Stingray	Alemania	Fische-Aquaristik	60	http://www.quoka.de/tiermarkt/fische-aquaristik/
Motoro Stingray	USA	Aquascape	125	http://www.aquascapeonline.com/
Motoro Stingray	USA	Amazonstingrays	170	http://www.amazonstingrays.com
Motoro Stingray	USA	Amazonstingrays	150	http://www.amazonstingrays.com
Orinoco Motoro Stingray	Holanda	rfi Tropical Fish	325	http://www.rfitropicalfish.com
Raia Motoro	Portugal	Ciclideos	150	http://www.ciclideos.com
Raied'eaudouce	Suiza	Aquatopic	170	http://www.aquatropic.ch/
Motoro	Korea	Arowana	140	http://www.arowana.co.kr
Motoro	Korea	HelloAqua	150	http://www.helloaqua.com
Motoro	Korea	Fishprice	170	http://www.fishprice.net
Motoro	Canadá	Sudbury	230	http://sudbury.kijiji.ca
Motoro	Bélgica	Au Poissond'Or	170	http://www.poisson-or.com
Motoro Stingray	Grecia	HellasFishFarm	180	http://www.hellasfishfarm.com
Motoro	Brasil	Universo dos Peixes	70	http://www.universodospeixes.com.br
Motoro Stingray	Japón	Arowana	138	http://www.arowana.in
Stingray	Francia	Potamotrygon Frencshop	80	http://www.potamotrygon-frenchshop.com/
Motoro raied'eaudouce	Francia	Oxyfish	79	http://www.oxyfish.fr
Motoro Stingray	China	AquariaHome	150	http://www.aquariahome.cn
Motoro Stingray	República Checa	Petra Aqua	150	http://www.petra-aqua.com

Potamotrygon schroederi				
NOMBRE COMÚN	**PAÍS VENDEDOR**	**ESTABLECIMIENTO /VENDEDOR**	**PRECIO DE VENTA (USD)**	**REFERENCIA**
SakuraStingray	Colombia	CI Stingray Aquário Colômbia Ltda.	240	http://stingrayaquarium.com
Flowerray	USA	Aquascape	325	http://www.aquascapeonline.com/
Tiger	Japón	A-kano	780	http://www.a-kano.co.jp
Tiger	Japón	DancingDragon	700	http://www.dancing-dragon.biz
Schroederiraied'eaudouce	Francia	Animaux	375	http://www.leboncoin.fr/animaux
Tigre	Italia		350	http://italian.alibaba.com
Schroederi	Brasil	Universo dos Peixes	260	http://www.universodospeixes.com.br
Flowerrayfrom Perú	USA	Aquascape	125	http://www.aquascapeonline.com/

Statistics of specimens of *P. motoro* exported from Colombia between 1999 and 2009 (excluding 2003, 2007 and 2008) and Brazil 2003-2005

Sources: Inpa, Incoder, SIPA-Convenio MADR-CCI (2007 - 2010) modified by Lasso unpublished data



Title: Exports of Potamotrygon motoro

Horizontal axis: Year, Colombia / Brazil

Vertical axis: Number of specimens