

Inclusion of Ocellate River Stingray *Potamotrygon motoro* and Rosette River Stingray *Potamotrygon schroederi* in Appendix II

Proponent: Colombia and Ecuador

Summary: The Ocellate River Stingray *Potamotrygon motoro* and Rosette River Stingray *P. schroederi* are freshwater stingrays from South America in the family Potamotrygonidae, a family of around 25 species of freshwater elasmobranch fishes confined to South America. *P. motoro* has a wide distribution in Argentina, the Plurinational State of Bolivia (hereafter Bolivia), Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname and Bolivarian Republic of Venezuela (hereafter Venezuela); *P. schroederi* has a more restricted distribution and is found in Brazil, Colombia and Venezuela. Little information is available on the biology and fecundity of these species. *P. motoro* can reach a maximum reported weight of 10 kg with a wing diameter of around 50 cm. *P. schroederi* is similar in size or somewhat larger (wing diameter around 60 cm). Gestation periods are thought to be long and growth slow. *P. motoro* reaches sexual maturity during its third year; the litter size is always an odd number, varying from three to 21. *P. schroederi* has an average uterine fecundity of two embryos. Information on the population sizes of these species is also sparse, although both were apparently historically abundant in the main harvest area of Estrella Fluvial de Inírida in Venezuela and Colombia. There are consequently few data to evaluate the impact of harvest and trade. Both species have been assessed as Data Deficient by IUCN, *P. motoro* in 2005, *P. schroederi* in 2009. Both species were classified as vulnerable in the Colombian National Red List Assessment in 2012.

The species are harvested in commercial and artisanal fisheries for the ornamental fish trade, particularly targeting juveniles; they are reportedly also harvested for food, both for local consumption and export, although the extent of such harvest is unclear. They may also be affected by habitat modification. Some recent surveys targeting these species have obtained low catches or failed to find them in areas where they were previously known to occur.

Potamotrygon motoro and *P. schroederi* are traded internationally as ornamental fish. Based on export records, which are not entirely consistent, it seems that an average of around 8000 specimens a year of *P. motoro* were exported from Colombia in the period 1999–2009, with an additional several thousand specimens a year exported from Brazil up to 2008, when domestic regulations on the fishery were introduced. Peak export year for Colombia was 2009, when over 12 000 specimens were reported as exported. Since 2007, recorded annual export of *P. schroederi* from Colombia has been at around half the level of that of *P. motoro*, amounting to several thousand specimens a year. There is little information on export of this species from Colombia before 2007, although it is not clear whether this is because little export was taking place, or data are lacking. A large proportion of reported *P. schroederi* landings in the Inírida region of Colombia (the apparent source of many of the specimens in trade) are believed to have been in fact landed in Venezuela.

Brazil is the only range State for either of these species known to have specific regulations in place to control exports of aquatic species for ornamental purposes (quotas agreed). Harvesting in Colombia can only be carried out during specified seasons and with the necessary permits and authorisations. In Argentina (a range State for *P. motoro*), there has reportedly been little export of any live freshwater stingrays since 2000.

The proposed listing would include an annotation to delay entry into effect of the inclusion by 18 months, to enable Parties to resolve technical and administrative issues.

Analysis: *Potamotrygon motoro* and *P. schroederi* occur in fresh waters in South America. Both are targeted in fisheries for the international ornamental fish trade.

Potamotrygon motoro has a very wide distribution. The main harvesting areas appear to be the Estrella Fluvial de Inírida region in Venezuela and Colombia and the Rio Negro tributary of the Orinoco in Colombia. It is not clear whether harvest for export occurs in any significant numbers in any other parts of its extensive range, although this seems unlikely. In the past, some collection for export appears to have taken place in Argentina, the far south of the species'

range, but this has apparently now ceased. Export levels are unknown, although may number in the region of 10 000 per year, predominantly from Colombia. Some studies have shown *P. motoro* at low densities in harvested areas. However, there is little quantitative information regarding the magnitude of any declines.

Potamotrygon schroederi is a more restricted species, although it still has an extensive range. There are some indications of local declines, ascribed to over-exploitation, and the species is considered rare in parts of its range; reported export is almost entirely from Colombia, although it is thought that a significant proportion of reported landings in that country in fact originate in Venezuela, suggestive of depletion within harvesting areas in Colombia. However, it is not known how extensive harvest for export is within the overall range of the species, nor what impact such harvest has on the population of the species as a whole.

Overall, there is currently insufficient information to determine if either species meets the criteria for inclusion in Appendix II.

Supporting Statement (SS)	Additional information
<u>Range</u>	
<p><i>P. motoro</i> is found in Colombia, Venezuela, Guyana, Suriname, Brazil, French Guiana, Ecuador, Bolivia, Peru, Paraguay, Uruguay and Argentina.</p> <p><i>P. schroederi</i> is found in Colombia, Brazil and Venezuela.</p>	
<u>IUCN Global Category</u>	
<p><i>P. motoro</i>: Data Deficient Globally. Vulnerable in Colombian Red List Assessment (2012).</p> <p><i>P. schroederi</i>: Data Deficient Globally. Vulnerable in Colombian Red List Assessment (2012).</p>	<p>Assessed 2005 (ver. 3.1).</p> <p>Assessed 2009(ver. 3.1).</p>

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

<u>Biology</u>	<u>Biology</u>
<p><i>P. motoro</i> and <i>P. schroederi</i> have low fertility, long gestation periods and slow growth.</p> <p><i>P. motoro</i>: Males reach sexual maturity at 31 cm DW (disc width) and females at 35 cm DW and only the left ovary is normally present and functional in females. In the basin of the Orinoco breeding occurs throughout the year and size at maturity is 31.8 cm DW in males and greater than 38 cm DW in females. It can reach a maximum size of 43.7 cm DW in males and 43.4 cm DW in females, weighing 3.1</p>	<p>A study of <i>P. motoro</i> has indicated that it is one of the most fecund stingrays (Araújo et al., 2004a). This study also found no evidence of reduction in the abundance of this species.</p>

Supporting Statement (SS)	Additional information
<p>and 3.4 kg, respectively. For the Paraná Basin (Argentina), fertility varies between 4 and 11 embryos (average 7). For Brazil, fertility is between 9 and 15 embryos though in captivity they have been shown to have between 6 and 7 embryos. The length of gestation has been approximated as six months and age at maturity of 3.5 years in Brazilian Amazon. It can reach 50 cm and larger animals can weigh 10 kg. The known record maximum is 100 cm long and 15 kg.</p> <p><i>P. schroederi</i>: Specimens reach a maximum size of 54 cm DW, the left ovary is atrophied and the right is functional. It has been suggested that the gestation period is six months and young are born in the rainy season over a period of four months. Females have ovarian fecundity of 3-7 eggs and embryo fertility between 1 and 3 (although the sample size was low). Males mature at 42 cm DW and females at 44 cm DW. In the Venezuelan Orinoco males seem to mature at larger sizes to 39.5 cm DW. Maximum size in males is 52.4 cm DW and 61.2 cm DW in females.</p> <p><u>Population and decline information</u></p> <p><i>P. motoro</i> and <i>P. schroederi</i> were reportedly historically abundant in the Estrella Fluvial de Inírida region in Venezuela and Colombia, due to the confluence of many rivers. No specimens of <i>P. schroederi</i> and only 79 specimens of <i>P. motoro</i> (52 males and 27 females) were found during night-time visual surveys in the dry season in 2010-2011 (November to March). An average of 0.75 <i>P. motoro</i> were captured per hour, which is equivalent to there being 0.5 individuals per kilometre in the region (2530 km²). Two males were captured for every female, and immature rays (less than 25cm disc width, DW) represented 60% of all males collected and 81% of all females.</p> <p><i>P. motoro</i> was found only in low densities in fisheries captures specifically looking for this species in the Rio Negro of the Colombian Orinoco, which is renowned for its importance for harvesting ornamental fish.</p> <p>In Ecuador, a total of 64 individuals of <i>P. motoro</i> were collected during two surveys in 1994 and 2010. 31 of these were immature rays with DW less than 25 cm.</p> <p><u>Trade</u></p> <p>Internationally <i>P. motoro</i> and <i>P. schroederi</i> are traded as an ornamental fish. Export data is available for the Potamotrygonidae family as a whole and also to species level for Colombia and Brazil.</p>	<p><u>Population and decline information</u></p> <p><i>The Estrella Fluvial de Inírida region is the area where most P. motoro have historically been caught (Lasso and Sanchez-Duarte, 2012).</i></p> <p><i>P. motoro has been highlighted as the most abundant and widespread endemic ray species of the Parano-plata Basin, it is poorly known and its status is uncertain (Driolo and Chiaramonte, 2005). P. schroederi, although reasonably widespread within its known range, it is not a common species (Araújo, 2009).</i></p> <p><i>In Brazil, P. schroederi is a rare stingray with few export records (Araújo et al., 2004a).</i></p> <p><i>It must be noted that detection rates of these rays depend on a number of factors. P. motoro rays are most commonly caught when water levels are low and they can be observed partly buried during the warmest period of the day. P. motoro catches have historically coincided with a rise in water temperature, with abundance increasing in the Paraná Medio from September to mid-January, stabilizing in early March, declining in April, then disappearing (Martinez Achenbach and Martinez Achenbach 1976). It is possible that they remain permanently in the area, but are concealed on the bottom at other times (Driolo and Chiaramonte, 2005).</i></p> <p><u>Trade</u></p> <p><i>P. motoro is the second-most harvested and exported freshwater ray in Colombia, and P. schroederi the third (and increasing in importance) (Lasso and Sanchez-Duarte, 2012). In 2009, over 12 000 specimens of P. motoro and 6349 specimens of P. schroederi were reportedly exported from Colombia.</i></p>

Supporting Statement (SS)	Additional information
<p>More than 500 000 specimens of the family Potamotrygonidae have been recorded as being exported from Colombia during 1995-2012 and more than 36 000 specimens from other countries, such as Brazil between 2003 and 2005.</p> <p>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 <i>P. motoro</i> and 1049 specimens of <i>P. schroederi</i>.</p> <p>Colombian export data has always been recorded at the family (Potamotrygonidae) level, however, from 2007 onwards attempts have been made to record capture and trade data to the species level, and from 2009, quotas have been set for these commercially important species. Based on reconstructed statistics it is estimated that between 1999 and 2009 (excluding 2003) in Colombia 81 109 specimens of <i>P. motoro</i> were exported. According to Colombian fisheries data, 19 459 specimens of <i>P. motoro</i> and 7954 specimens of <i>P. schroederi</i> were captured between 2007 and 2010. Prices range from EUR130 to EUR210 per specimen of <i>P. motoro</i> and from EUR145 to EUR225 for <i>P. schroederi</i>.</p> <p>Colombia has records between 2007 and 2011 of 14 081 specimens of <i>P. schroederi</i>.</p> <p>Illegal trade in both species in the Estrella Fluvial de Inírida region (between Venezuela and Colombia) is known to have occurred for at least the last five years. Specimens are also thought to be illegally traded from Brazil to Peru or Colombia and then exported from there. There have also been cases of illegal trade from Peru to Ecuador. Adults for use in captive-breeding operations are apparently for sale on the Asian black market.</p> <p>The principal importing countries (in order) are Germany, USA, Japan, Taiwan POC, Singapore and Hong Kong. The main destinations for <i>P. motoro</i> and <i>P. schroederi</i> exported from Colombia (in order of importance) are Hong Kong, Japan, USA, Taiwan POC, China, Thailand, Malaysia and Germany. The USA reported importing 1261 <i>P. motoro</i> and 139 <i>P. schroederi</i> from Colombia in 2010. No US imports of South American freshwater stingrays were reported from Venezuela or Ecuador (only Colombia, Brazil and Peru).</p> <p><i>P. motoro</i> (USD79 – USD325) and <i>P. schroederi</i> (USD125 - USD780) are offered for sale on various websites and forums. The country of origin of the specimens is not indicated in the majority of these adverts and whether the specimens come from legal sources is unclear.</p>	<p><i>Interpretation of the trade data presented in the SS is difficult, as figures are provided for different or unspecified time periods. The number of Potamotrygonidae specimens recorded in the table in Annex 3 (years unspecified) as exported from Brazil totals 2645. According to the text of the proposal, a total of 81 109 specimens of <i>P. motoro</i> were exported from Colombia; exports reported in Annex 3 from Colombia total 59 985 <i>P. motoro</i> and 14 081 <i>P. schroederi</i>. These inconsistencies could reflect variations in the source of the data (dos Reis in litt., 2012). The title of the figure in Annex 5 states that the data for Colombia are for 1999–2009, excluding 2003, 2007 and 2008, however, this figure then shows values for 2007 and 2008. According to the figure in Annex 5, Brazilian exports (of <i>P. motoro</i> only, according to the title of the figure) in 2003, 2004 and 2005 were approximately 7500, 7500 and 3000, respectively, totalling 18 000 specimens.</i></p> <p><i>The Estrella Fluvial de Inírida region in the Orinoco is the most important region for catching <i>P. motoro</i>. In 2009, 2793 specimens of <i>P. motoro</i> were reportedly harvested from there. Landings of <i>P. schroederi</i> in the Orinoco between 2007 and 2010 were 3113 (2007), 288 (2008), 1886 (2009) and 940 (2010). A large proportion of the reported <i>P. schroederi</i> landings in the Inírida region are believed to have come across the border illegally from Venezuela (Lasso and Sanchez-Duarte, 2012).</i></p> <p><i><i>P. motoro</i> products were imported in to the USA between 2000 and 2012 (LEMIS Database, 2012). Live specimens dominated the trade data: 1175 were imported, reportedly for purposes as follows—1142 (commercial), 25 (zoos) and eight (personal). No imports have been recorded by the USA for <i>P. schroederi</i>.</i></p> <p><i>In Argentina, the international trade of freshwater stingrays for aquaria, targeting mainly <i>P. brachyura</i> and <i>P. falkneri</i>, has been unregulated and unreported, but little has occurred since the late 2000s (dos Reis in litt., 2012).</i></p> <p><i>Furthermore, one exporter indicated that he had stopped exporting freshwater stingrays because of the logistical issues and cost of transporting them internationally.</i></p> <p><i>At the South American Freshwater Stingray Workshop held in Geneva in April 2009 (AC24 Doc 14.2), participants concluded that uncontrolled cross-border trade was widespread within the South American region and that this was a serious issue in some areas and for some species of freshwater stingray.</i></p>

Supporting Statement (SS)	Additional information
Inclusion in Appendix II to improve control of other listed species	
<u>B) Compelling other reasons to ensure that effective control of trade in currently listed species is achieved</u>	
	<p><i>P. brachyura and P. falkneri were involved in trade several years ago (dos Reis in litt., 2012). It has been suggested that a strict export control of P. motoro must exist to avoid mis-identification of this species with the endemic P. leopoldi and P. henlei (Araújo et al., 2004a). None of these species are listed in the CITES Appendices (CITES, 2009).</i></p>
Other information	
<u>Threats</u>	
<p>The main threats to <i>P. motoro</i> and <i>P. schroederi</i> are commercial and artisanal fisheries for the ornamental fish trade, particularly juveniles. However, habitat destruction is also a threat to the species, in particular that resulting from the building of hydropower plants and ports and agricultural and mining activities. In Ecuador, principle river systems such as the Napo, which are known habitats for these species are now degraded and fragmented.</p> <p><i>P. motoro</i> is caught for human consumption in Brazil and the liver and its oil has traditional medicinal uses in Colombia. The spines of Potamotrygonidae species are used to make ornaments, small arrows and spears in Brazil and Ecuador.</p>	<p><i>All species of river stingray in the Parano-plata Basin have delicious meat and are harpooned by fishermen when seen in shallow water (Driolo and Chiaramonte, 2005). However, it is not a common activity (do Reis in litt., 2012).</i></p> <p><i>In Argentina, collection for domestic consumption has never been very important, and only some fishermen eat these fishes (dos Reis in litt., 2012). Furthermore, the live trade has been the only trade of stingrays in the country, and export for meat has not been detected.</i></p>
<u>Conservation, management and legislation</u>	
<p>Of the range countries for these species, only Brazil has specific regulation in place to control exports of aquatic species for ornamental purposes. Brazil has regulated the capture and exports of Potamotrygonidae species since 1990. Initially exports of freshwater stingrays for ornamental purposes were completely prohibited, but taking into consideration the negative effect this was having on local communities, quotas were agreed for certain species, including <i>P. motoro</i> and <i>P. schroederi</i>. Companies caught exporting larger specimens than permitted or specimens of prohibited species are penalised by having their quota cancelled. Airport controls are strict and all boxes of ornamental fish must include a specific marker for identification.</p> <p>In Colombia, harvesting of both <i>P. motoro</i> and <i>P. schroederi</i> can only be carried out</p>	<p><i>Details of current Brazilian export quotas were not provided in the proposal. In 2004, these were set at 5000 and 1500 units per year for P. motoro and P. schroederi, respectively (Araújo et al., 2004b).</i></p> <p><i>Since 2010, the National Environment Secretariat in Argentina has implemented Resolution 226/2010 (Access Regime to genetic resources) and is working in conjunction with Customs to monitor the output of non-declared organisms (dos Reis in litt., 2012).</i></p>

Supporting Statement (SS)	Additional information
<p>with the necessary permits and authorisation from the National Fisheries Authority. This authority also determines closed seasons, when capture, transport, storage and marketing are prohibited. The Ministry of Agriculture and Rural Development sets annual fishing and export quotas for certain species used for ornamental purposes (Resolution 0301, 2011). A proposal to enforce minimum sizes for capture is currently under review.</p>	
<u>Captive breeding/Artificial propagation</u>	
<p>Captive-breeding of these species is reportedly in an experimental phase in Colombia and Peru, and both species are being bred in captivity in Southeast Asia and naturalised populations have been reported in Singapore.</p>	<p><i>The report of the South American Freshwater Stingray Workshop (2009) (see AC24 Doc. 14.2) notes that “any popular ornamental species can now be captive-bred. This is undertaken on a large scale in Asian countries, both for domestic markets and for export to other parts of the world. International transport costs are lower from major Asian centres than from remote areas of South America, and captive breeding is now providing a wider range of colour patterns from hybrids. Freshwater stingray breeding operations were underway in Asia before the adoption of a moratorium on export of stingrays from Brazil, and have continued to expand significantly”.</i></p> <p><i>Wingerter (2012) also notes that “commercial river stingray breeding facilities are currently operating in the United States, Germany and Southeast Asia. Fortunately, the use of PIT tagging in the trade is slowly regaining the confidence of consumers who are again relying on breeders, rather than collectors, to supply “pure stock.” In fact, as breeders continue to increase production, they could potentially flood the market with captive-bred product and all but neutralize the export of river stingrays from their native lands altogether. At the very least, relieving pressure on wild populations in this way could help to ensure that the existing legal harvest quotas will not be reduced, thereby keeping supply lines for wild genetics open”.</i></p>

Reviewers: G.E. Chiaramonte, R.E. dos Reis, G. Sant.

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