

Inclusion of the genus *Agalychnis* in Appendix II

Proponent: Honduras and Mexico

Summary: *Agalychnis* is a genus of tree frogs occurring in Mexico, Central and South America. Five species are currently recognized by the CITES standard reference for Amphibians; a sixth (*Agalychnis litodryas*), generally considered synonymous with *A. spurrelli*, is sometimes recognized as a separate species. An additional species, *Cruziohyla calcarifer*, was previously included in *Agalychnis* but was moved to the genus *Cruziohyla* in 2005.

Agalychnis callidryas is the most widespread species. It occurs in Belize, Colombia, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua and Panama. Although the population is said to be decreasing, it is considered to be abundant and fairly tolerant of habitat modification and is classified as Least Concern in the *IUCN Red List of Threatened Species*. A recent study in Belize found this species present at densities of between 0.05 and 0.21 frogs per m² in mating ponds at seasonal breeding aggregations. Estimated population size for Belize was thought to be under 2000; the population in Panama is possibly up to 10 000. Population estimates are unavailable for other range States.

Agalychnis moreletii occurs in Belize, El Salvador, Guatemala, Honduras and Mexico. It was reportedly locally abundant in some locations in Chiapas State, Mexico, El Salvador and Guatemala. However, recent surveys in Guerrero, Oaxaca and Chiapas, Mexico, indicate that it has disappeared from all the sites surveyed. In Guatemala and Honduras, the population is reported to be declining due to habitat destruction. It is uncommon, but occasionally found in breeding aggregations in Honduras. A recent study in Belize found the species present at mating ponds with similar densities to *A. callidryas* (0.07–0.21 frogs/m²). However, there are far fewer ponds that support populations of *A. moreletii* and the overall population was estimated at well under 1000 individuals. The species is currently classified by IUCN as Critically Endangered.

Threats to *Agalychnis* species include deforestation and draining of areas for agricultural development, logging, human settlement, water pollution, introduction of invasive fish species, pest control, harvesting for international trade and climate change. The fungal disease, chytridiomycosis, in particular, is known to have seriously affected subpopulations of all *Agalychnis* species.

Of the other species, *Agalychnis annae*, endemic to Costa Rica, is classified by IUCN as Endangered, although is reportedly tolerant of modified habitats such as plantations and gardens, *A. spurrelli* (Colombia, Costa Rica, Ecuador and Panama) and *A. saltator* (Costa Rica, Honduras and Nicaragua) are classified as Least Concern. *Agalychnis litodryas* (Ecuador, Panama, presence uncertain in Colombia) is recognized as a separate species in the *IUCN Red List of Threatened Species* and is classified as Vulnerable.

Of the species within the genus, the Red-eyed Tree Frog, *A. callidryas*, is the most common in international trade. Nearly 19 000 individuals per year (between 2000 and 2007) have been imported into the USA according to their records, mainly from range States. Although the majority of trade is recorded as from captive sources, wild specimens (just over 20 000 in total between 2000 and 2008) have also been recorded in the USA's LEMIS trade database. This designation may not be reliable as there is no requirement to indicate source in the database for non-CITES species, and where no source is specified, wild origin is assumed. The majority of trade in *A. callidryas* originates from Nicaragua; wild export is prohibited from that country and, in theory at least, all exports should be of captive-bred specimens. The USA also reports significant imports from Panama and Guatemala.

A small number of wild *Agalychnis moreletii* has been recorded as imported by the USA from Guatemala recently (168 in 2007, 3 in 2008), and there are reports of *A. annae* available in small quantities as wild-collected individuals. Both species are also apparently available in limited numbers as captive-bred

specimens. There is no direct evidence of recent commercial trade in *A. saltator* or *A. spurrelli*, although there is a small amount of recorded trade from Ecuador of *Agalychnis* spp.. *A. spurrelli* is the only member of the genus present in Ecuador, although *Cruziohyala calcarifer*, considered at that time to be an *Agalychnis*, is also present.

The genus *Agalychnis* is proposed for inclusion in Appendix II, with *Agalychnis callidryas* and *Agalychnis moreletii* proposed in accordance with Article II paragraph 2a and the other three species of the genus proposed for look-alike reasons.

Analysis: *Agalychnis moreletii* is subject to a range of identified threats and appears to have undergone dramatic population declines that would already qualify it for listing in Appendix I. The species has been recorded in trade in limited numbers, it is offered for sale on the internet, often as captive-bred, but the total level of trade is unknown. However, it is possible that any uncontrolled collection of wild specimens will increase pressure on an already highly threatened species, so that regulation of trade may be 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 (Criterion in Annex 2 (a) B in *Resolution Conf. 9.24 (Rev. CoP 14)*).

The Red-eyed Tree Frog *Agalychnis callidryas* is by far the most abundant species of *Agalychnis* in international trade. Around 20 000 per year are imported to the USA and it is apparently popular as a pet in Europe and Asia. The majority of trade into the USA has been from Nicaragua, although it is unclear whether this is met through captive-breeding or wild harvest. Trade from other range States has also been recorded into the USA for both wild and captive-bred specimens, although the level of trade and its impact on this widespread and apparently locally abundant species is unclear. It is not evident, in this case, that regulation of trade is required to ensure that the species does not qualify for inclusion in Appendix I in the near future (Criterion in Annex 2 (a) A in *Resolution Conf. 9.24 (Rev. CoP 14)*), or that it 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 (Criterion in Annex 2 (a) B in *Resolution Conf. 9.24 (Rev. CoP 14)*).

Agalychnis annae appears to be in trade as wild specimens in very limited numbers, if at all, and it seems unlikely that regulation of trade is required to ensure that it does not become eligible for inclusion in Appendix I, or to ensure that harvest is not reducing the wild population to a level at which its survival might become threatened.

Agalychnis species are generally similar in appearance to each other. It is possible to distinguish between them on the basis of a combination of iris and flank colour, although there is intraspecific variation in the latter. Of the three species currently known to be in trade (two, *A. annae* and *A. moreletii*, apparently only in small quantities), each has a different iris colour and could be relatively easy for a non-specialist to distinguish. *A. callidryas*, *A. saltator* and *A. spurrelli* all have red irises, although there are differences between them in flank colour. Of these only *A. callidryas* is known to be in trade at present. Young frogs may be more difficult to distinguish, but there is agreement that these are rarely in trade as wild-collected animals.

Supporting Statement (SS)	Additional information
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Taxonomy

Under Frost (2004) the genus includes the species; *Agalychnis callidryas* (Cope, 1862), *Agalychnis moreletii* (Duméril, 1853), *Agalychnis annae* (Duellmann, 1963), *Agalychnis saltator* (Taylor, 1955), *Agalychnis spurrelli* (Boulenger, 1913).

Cruziohyala calcarifer was previously within the genus *Agalychnis* but has recently been moved to the new genus *Cruziohyala* (Faivovich, et al., 2005, Colma et al., 2008).

Supporting Statement (SS)	Additional information
<p><i>A. litodryas</i>, considered by some as a separate species, is treated as a synonym of <i>A. spurrelli</i>.</p>	
<p>Range</p> <p><i>Agalychnis annae</i>; Costa Rica <i>Agalychnis callidryas</i>; Belize, Colombia, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua and Panama <i>Agalychnis moreletii</i>; Belize, El Salvador, Guatemala, Honduras and Mexico <i>Agalychnis saltator</i>; Costa Rica, Honduras and Nicaragua <i>Agalychnis spurrelli</i>; Colombia, Costa Rica, Ecuador and Panama</p>	<p><i>A. callidryas</i>—there is also an isolated record from the Cartagena Botanic Garden in northern Colombia (Solis et al., 2008).</p>
<p>IUCN Global Category</p> <p><i>A. annae</i> Endangered <i>A. callidryas</i> Least Concern <i>A. moreletii</i> Critically Endangered <i>A. saltator</i> Least Concern <i>A. spurrelli</i> Least Concern</p>	<p>All species assessed 2008 (categories and criteria ver. 3.1)</p> <p><i>Agalychnis litodryas</i> Vulnerable B1ab(iii) Assessed 2004 (categories and criteria ver. 3.1)</p>

Biological and trade criteria for inclusion in Appendix II (Resolution Conf. 9.24 (Rev. CoP14) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

A. moreletii—drastic decline in population, estimated at more than 80% in the last ten years.

A. moreletii was formerly locally abundant in some locations in Chiapas State, Mexico, El Salvador, Guatemala. Recent surveys in Guerrero, Oaxaca and Chiapas, Mexico, indicate that it has disappeared from all the sites surveyed. It is uncommon, but occasionally found in breeding aggregations in Belize and Honduras. In Guatemala and Honduras, the population is declining due to habitat destruction (Santos-Barrera, 2004). In Belize it was formerly locally abundant but now found in very few breeding aggregations and the population is declining due to habitat destruction (Briggs, 2009).

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

Agalychnis annae tolerates disturbed habitats and can live in plantations and gardens. It has disappeared from most parts of its range, surviving mainly around San José only. It is estimated that the population has declined by over 50% in the last 10 years and continues to decline. Some recovery has been seen since declines in

A. annae is offered for sale on some websites.

Reijingoud (2009) found both *A. moreletii* and *A. callidryas* offered for sale on the internet at around EUR35 apiece, sometimes as captive-bred specimens.

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<p>the mid-eighties in Costa Rica's Central Valley.</p> <p><i>A. annae</i> is offered for sale in the international pet trade. Costa Rica's letter of support states that there is illegal extraction and trade in this endemic species. No permits have been issued for wild harvest for trade or captive breeding.</p> <p><i>Agalychnis callidryas</i> considered to be a species with a wide distribution and presumed large population; abundant in some areas. In Honduras, the status of the species is controversial and ranges from scarce to locally common, even in deforested areas. It can live in secondary, but not highly degraded forests and adapts well where there has been selective logging. Populations in Colombia and Costa Rica appear to be stable. Population declines in Belize are attributed to change in land use. No information for Guatemala.</p> <p><i>A. callidryas</i> is one of the most popular and highly sought after in the international pet trade. Nicaragua, Guatemala, Panama, and Honduras, are the principal exporting countries, followed by Mexico and Costa Rica.</p> <p>In the last 10 years at least 20 000 specimens were imported into the USA annually. According to US import records, specimens originated from all range States except Belize and Colombia. Export of specimens from Costa Rica is only permitted for scientific purposes. Nicaragua has exported considerable numbers of captive-bred specimens to USA, Canada, France, Germany and the Netherlands (approximately 26 000 per year from 2006–2008). Nicaragua's letter of support states that it only exports captive bred specimens of <i>A. callidryas</i> although trade data show almost 25 000 wild-caught specimens imported into the USA between 1999 and 2008 (see # in additional information)</p>	<p><i>A. callidryas</i> tolerates a degree of habitat modification (Solís et al., 2008). Common and stable in at least one rainforest locality in Honduras (Wilson and Townsend, 2006).</p> <p>Briggs (2008) found <i>A. callidryas</i> densities at mating ponds in Belize of between 0.05 and 0.21 frogs/ m² at a single field site. <i>A. moreletii</i> specimens were also present in similar densities but for a shorter time period. In attempting to estimate population sizes of <i>A. callidryas</i> using field site densities as a reference and verbal accounts of others numbers, Briggs estimated fewer than 2000 frogs for the country. For Panama, the population sizes are larger and the longer rainy season allows for prolonged breeding; estimated population to be nearer 10 000 for the country (Briggs, 2009).</p> <p>No population information is available for this species in Nicaragua.</p> <table border="1" data-bbox="1120 766 2083 1181"> <thead> <tr> <th>Origin</th> <th>Source</th> <th>2000</th> <th>2001</th> <th>2002</th> <th>2003</th> <th>2004</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> <th>Total</th> <th>Ave. per year</th> </tr> </thead> <tbody> <tr> <td>NI</td> <td>C</td> <td>5280</td> <td>9087</td> <td>11534</td> <td>1723</td> <td>16805</td> <td>10870</td> <td>21447</td> <td>20625</td> <td>24726</td> <td>122097</td> <td>13566</td> </tr> <tr> <td>NI</td> <td>W</td> <td>2521</td> <td>7278</td> <td>5958</td> <td>1415</td> <td>300</td> <td></td> <td>700</td> <td>1230</td> <td>1700</td> <td>21102</td> <td>2345</td> </tr> <tr> <td>NI</td> <td>R</td> <td></td> <td>150</td> <td>50</td> <td></td> <td>250</td> <td>199</td> <td></td> <td></td> <td></td> <td>649</td> <td>72</td> </tr> <tr> <td>CR*</td> <td>W</td> <td></td> <td></td> <td>12</td> <td>34</td> <td>28</td> <td></td> <td>20</td> <td>2</td> <td></td> <td>96</td> <td>11</td> </tr> <tr> <td>GT</td> <td>W</td> <td>2265</td> <td>2195</td> <td>1166</td> <td></td> <td></td> <td>689</td> <td>720</td> <td>737</td> <td></td> <td>7772</td> <td>864</td> </tr> <tr> <td>PA</td> <td>W</td> <td></td> <td>2300</td> <td></td> <td>1100</td> <td></td> <td>200</td> <td>750</td> <td>100</td> <td>100</td> <td>4550</td> <td>506</td> </tr> <tr> <td>PA</td> <td>C</td> <td></td> <td>600</td> <td>500</td> <td>1350</td> <td>1700</td> <td>1000</td> <td>800</td> <td>767</td> <td>600</td> <td>7317</td> <td>813</td> </tr> <tr> <td>HN</td> <td>W</td> <td>110</td> <td>656</td> <td>1418</td> <td>1209</td> <td>1083</td> <td>430</td> <td>164</td> <td></td> <td></td> <td>5070</td> <td>563</td> </tr> <tr> <td>SV</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td>272</td> <td>50</td> <td>200</td> <td></td> <td></td> <td>522</td> <td>58</td> </tr> <tr> <td>MX</td> <td>W</td> <td>186</td> <td>950</td> <td>150</td> <td>79</td> <td>30</td> <td></td> <td></td> <td></td> <td></td> <td>1395</td> <td>155</td> </tr> </tbody> </table> <p>Table: Imports of <i>A. callidryas</i> into the USA. Source: FWS Lemis database. *Costa Rica for scientific purposes only.</p> <p>Although the majority of trade in <i>A. callidryas</i> was reported as captive-bred from Nicaragua, significant numbers of wild-caught specimens were also recorded as exported by Nicaragua, despite the law apparently prohibiting wild exports. #However, for importation of non-CITES listed species into the USA it is not a requirement to specify source and where source is unspecified specimens are often</p>	Origin	Source	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total	Ave. per year	NI	C	5280	9087	11534	1723	16805	10870	21447	20625	24726	122097	13566	NI	W	2521	7278	5958	1415	300		700	1230	1700	21102	2345	NI	R		150	50		250	199				649	72	CR*	W			12	34	28		20	2		96	11	GT	W	2265	2195	1166			689	720	737		7772	864	PA	W		2300		1100		200	750	100	100	4550	506	PA	C		600	500	1350	1700	1000	800	767	600	7317	813	HN	W	110	656	1418	1209	1083	430	164			5070	563	SV	C					272	50	200			522	58	MX	W	186	950	150	79	30					1395	155
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<p>European Union Member States imported 16 077 <i>A. callidryas</i> from the USA between 1999 and 2008; the main importers were Germany, the UK, Italy, and the Netherlands. Although the species is very abundant in trade in Europe, there are no detailed import data available. The species is available from pet shops and dealers regularly or seasonally.</p> <p>El Salvador's letter of support (annex 5) states that it does not have any knowledge of captive breeding of the species or commercial wild harvest of the species. However, US import data show some trade in captive-bred specimens for <i>A. callidryas</i>.</p> <p><i>Agalychnis moreletii</i> globally Critically Endangered and in Guatemala and Belize also considered Critically Endangered. In Belize populations are small and scattered; spawning aggregations are mostly fewer than 50 but have been observed with more than 100. In the <i>Endangered Species List of Honduras</i>, <i>A. moreletii</i> is classified as rare and it has disappeared from two of its historic sites, although just recently, two new populations have been described. Leenders notes that it was never common in Honduras. El Salvador's population is estimated at 212 individuals in 20 populations; some populations are already known to be infected with the fungus <i>Batrachochytrium dendrobatidis</i>, another population may have been impacted by a volcanic eruption in 2005. This species is found in both intact and disturbed habitats, including coffee plantations.</p> <p>Drastic declines in populations are estimated at more than 80% in the last ten years and populations continue to decline. In El Salvador, the population is currently listed as stable. The letter annexed to the SS from Twan Leenders notes the disappearance of <i>A. moreletii</i> from several localities previously known to have viable populations in the 1970s in Mexico.</p> <p><i>A. moreletii</i> used to be common in the pet trade. Between 1999 and 2008, the United States recorded the import of 168 wild-caught specimens of <i>A. moreletii</i>, all from Guatemala, as well as 15 captive-bred individuals from Germany; 1610 <i>Agalychnis</i> specimens not identified to species level were imported from the range States of Guatemala and Honduras. The United States exported 52 specimens of <i>A. moreletii</i> to Canada, Japan, Sweden, and the Republic of Korea during that period</p> <p>According to Guatemalan authorities there have been no legal exports of <i>A. moreletii</i> and <i>A. callidryas</i> in recent years. Exports from Guatemala were probably illegal. Leenders in Annex 6 notes that 275 specimens were imported into the USA from Guatemala (which are not recorded in the US trade data) and that wild specimens have been offered for sale on the internet. However, he considers that no information exists to assess whether the harvest of wild frogs poses a threat to the continued survival of the species but considering the overall decline of the species warrants CITES protection.</p>	<p>recorded as wild (Henry, 2009) and therefore all statistics for wild imports are unreliable#. Nicaragua maintains that it only exports captive-bred specimens (Castellon, 2009). Significant imports to the USA have also been recorded from Panama, Guatemala and Honduras.</p> <p>Large numbers (6281 in 2007, 6321 in 2008) reported as both wild and captive-bred specimens have also been re-exported from the USA to Europe, Canada, Taiwan POC, and Japan (see above on reporting of wild sourced specimens).</p> <p><i>A. moreletii</i> is infrequent in Honduras (Wilson and Townsend, 2006). A recent study in a single field site in Belize found densities at mating ponds of <i>A. moreletii</i> between 0.07 and 0.21 frogs/m², with an estimated population in Belize of far fewer than 1000 individuals (Briggs, 2009).</p> <p>Greenbaum and Komar (2005) considered the species to be endangered in El Salvador, where its area of occupancy was approximately 90km² and found in nine localities.</p> <p>US trade data (LEMIS) showed that 168 live wild specimens of <i>A. moreletii</i> were imported into the USA in 2007 and three live wild specimens in 2008, all from Guatemala. No other records of imports of this species were recorded in the US trade data. Some of these were re-exported to Brazil, Canada, Sweden, Japan and the Republic of Korea.</p> <p>Anon. (2009a) observed that a small amount of people are captive breeding <i>A. moreletii</i> although some hobbyists suspected that wild specimens were also being offered for sale as captive.</p> <p>In addition to species specific imports recorded in the LEMIS database into the USA imports of <i>Agalychnis</i> species have been reported, which number over 5000 (wild and captive) with many originating in Nicaragua recorded as of both captive (~2000) and wild (950) (see above) and wild specimens from Guatemala and Panama and to a lesser extent Costa Rica, Ecuador, Honduras and Peru. An import of 620 live wild specimens was recorded in 2000 from Ghana. This is almost certainly in error</p>

Supporting Statement (SS)	Additional information
<p><i>Agalychnis annae</i> is endemic to Cost Rica and classified as Endangered. It tolerates disturbed habitats and can live in plantations and gardens. It has disappeared from most parts of its range, surviving mainly around San José only. It is estimated that the population has declined by over 50% in the last 10 years and continues to decline. Some recovery has been seen since declines in the mid-eighties in Costa Rica's Central Valley.</p> <p><i>A. annae</i> is offered for sale in the international pet trade. Costa Rica's letter of support states that there is illegal extraction and trade in this endemic species. No permits have been issued for wild harvest for trade or captive breeding.</p> <p>The USA recorded the importation of 953 specimens of <i>Agalychnis</i> spp. spp. from <i>spurrelli</i> (although these are also <i>A. callidryas</i> range States. 1610 <i>Agalychnis</i> specimens that were not identified to species level were imported from Guatemala and Honduras.</p> <p>Specimens from non-range States such as Ghana (3610) have also been recorded.</p>	<p>One web forum entry notes that <i>A. annae</i> is also still being imported on a small level from an import seller known to the author (Anon., 2009b). Specimens offered for sale as captive-bred are advertised at a much higher price than <i>A. callidryas</i> and <i>A. moreletii</i> (see section on captive-breeding).</p>

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Resolution Conf. 9.24 (Rev. CoP14) Annex 2 a or listed in Appendix I

A. annae, *A. saltator* and *A. spurrelli* are proposed for inclusion in App. II in accordance with Article II, Annex 2 (b) paragraph A. Non-experts have difficulty distinguishing between *Agalychnis* species and the situation is exacerbated by each species displaying variations in colour patterns depending on its location, age or even the time of day. *A. saltator* and *A. spurrelli* can also be confused with *Duellmanohyla uranochroa*, and *A. spurrelli* with *Cruziohyla calcarifer* (formerly *Agalychnis calcarifer*), however there are obvious markings specific to each that would enable identification for enforcement purposes.

A. saltator is presumed to have a large (but uneven) distribution and large population. Locally in Costa Rica it has been determined that this species is abundant. Populations are stable. There are no trade data for *A. saltator*.

The Splendid Leaf Frog *Cruziohyla calcarifer* is sometimes referred to by hobbyists as *Agalychnis calcarifer* on web fora (see *caudata.com*); *Cruziohyla calcarifer* was previously within the genus *Agalychnis* but has recently been moved to the new genus *Cruziohyla* (Faivovich, et al., 2005, Colma et al., 2008). This species occurs in Colombia, Costa Rica, Ecuador, Honduras, Nicaragua and Panama.

A. saltator is not especially common, but is regularly seen in mating aggregations at many sites. This species lives in tree canopies. It is an explosive breeder descending to temporary pools to reproduce (Bolaños et al., 2008). In Honduras *A. saltator* is considered common and stable in at least one rainforest locality (Wilson and Townsend, 2006) and despite habitat loss at two of the known localities in Honduras, much suitable habitat remains and it does not appear to be under threat (Bolaños et al., 2008). In Costa Rica, recent studies indicate that, although it has a patchy distribution, there is no ongoing habitat loss at the known localities.

Supporting Statement (SS)	Additional information
<p>A. spurrelli has a wide distribution and a presumably large population. In Colombia, the species is described as abundant but data collection indicates that they might be rare. Considered to be declining but difficult to determine because of the species' arboreal nature. <i>A. spurrelli</i> is occasionally sold in international trade and information is scarce. In the past 10 years, the USA has officially imported 21 wild-caught specimens from Costa Rica for scientific purposes.</p> <p>There is potential confusion of the Critically Endangered <i>Agalychnis moreletii</i> with the more abundant <i>Agalychnis callidryas</i> (Leender Annex 6). Young <i>Agalychnis callidryas</i> can change from green to brown during the day to purplish at night. The young frogs have yellow eyes instead of red, and have coloured flanks which are dimmer and without bars.</p>	<p>A. spurrelli is a medium-large sized frog. In Ecuador <i>A. spurrelli</i> may have a high local population size, even in disturbed areas (Duellman, 2001, Ortega-Andrade, 2008).</p> <p>In addition to the 21 <i>A. spurrelli</i> imported from Costa Rica to the USA, 150 specimens of wild <i>Agalychnis</i> species were imported from Ecuador in 2003, which could have been of <i>A. spurrelli</i>, the only species that occurs there, although <i>Cruziohyala calcarifer</i>, considered at that time to be <i>A. calcarifer</i>, is also present in Ecuador.</p> <p><i>Agalychnis spurrelli</i> is distinguished from other species of the genus <i>Agalychnis</i> by having the flanks and limbs uniformly yellow, orange, pale rose or pale purple, without dark stripes. The dorsum is green, usually with black-bordered pustular white warts (Ortega-Andrade, 2008). <i>A. annae</i> has a yellow iris whereas the other species have either a red or dark red iris (Faivovich et al., 2005).</p> <p><i>Agalychnis</i> species are generally similar in appearance to each other. It is possible to distinguish between them on the basis of a combination of iris and flank colour, although there is intraspecific variation in the latter. Of the three species currently known to be in trade (two, <i>A. annae</i> and <i>A. moreletii</i>, apparently only in small quantities), each has a different iris colour and could be relatively easy for a non-specialist to distinguish. <i>A. callidryas</i>, <i>A. saltator</i> and <i>A. spurrelli</i> all have red irises, although there are differences between them in flank colour. Tadpoles of <i>A. moreletii</i> are purplish brown, whereas those of <i>A. callidryas</i> are almost white and readily visible in muddy water (Stuart, 1948). There is no indication that tadpoles are in trade. Young frogs are unlikely to be traded as wild-collected specimens because of their fragility (Allen, 2010).</p>
<p><u>B) Compelling other reasons to ensure that effective control of trade in currently listed species is achieved</u></p>	

Supporting Statement (SS)	Additional information
<p>Other information</p> <p>Some areas of the rainforest within the range of <i>Agalychnis</i> have suffered the effects of global warming, deforestation, pollution and changes in drainage of the marshes. In several range countries deforestation rates are high.</p> <p>Degradation and destruction of habitat by agriculture, logging, pollution and global warming is a threat to several species of tree frog, especially for species living in the canopy.</p> <p>In Belize, habitat modification and pollution are considered threats to <i>A. moreletii</i> and <i>A. callidryas</i> because they can limit access to breeding sites.</p> <p>In El Salvador, most specimens of <i>A. moreletii</i> are found in coffee plantations where pollution is a threat.</p> <p>In Honduras, deforestation, habitat modification, pollution and pest control are threats to the native tree frog species.</p> <p>In Honduras <i>A. callidryas</i>, <i>A. moreletii</i> and <i>A. saltator</i> correspond to a medium vulnerability, so that these species are considered moderately threatened.</p> <p><i>A. annae</i>, <i>A. callidryas</i> and <i>A. moreletii</i> are in the international pet trade.</p> <p>The fungal disease chytridiomycosis has decimated populations of <i>Agalychnis</i>, which is probably the main cause of the disappearance of <i>A. moreletii</i> in Mexico and Belize. <i>A. annae</i> has survived in polluted areas because the fungus appears to be more susceptible to pollution than the frog.</p> <p>The few remaining known populations of <i>A. annae</i> are threatened by an introduced fish (<i>Xiphophorus hellerii</i>) which eats the tadpoles.</p>	<p>Threats</p> <p><i>Chytridiomycosis</i> is most likely the main cause of the disappearance of populations of <i>A. moreletii</i> in Mexico, and the species is now probably seriously at risk from this disease. Habitat destruction due to subsistence and small holder agriculture, and for the floral trade in Belize (Briggs, 2009) is also a threat to this species, which also was formerly common in the pet trade (Santos-Barrera et al., 2004). The presence of chytridiomycosis has been confirmed in some <i>A. moreletii</i> populations in El Salvador (Felger et al., 2007).</p> <p><i>A. spurrelli</i> has been recorded from a number of protected areas, including at least three in Panama and three in Costa Rica. In Ecuador, its geographic range overlaps with Reserva Ecológica Cotacachi-Cayapas, but it is not confirmed from any protected areas in Colombia (Jungfer et al., 2008)</p>
<p>Conservation, management and legislation</p> <p>In many of the range States populations of <i>Agalychnis</i> occur within protected areas. <i>A. annae</i>, <i>A. callidryas</i>, <i>A. saltator</i> and <i>A. spurrelli</i> are all found in many protected areas in Costa Rica. In Ecuador the range of <i>A. spurrelli</i> overlaps with Ecological Reserve Cotacachi-Cayapas. <i>A. spurrelli</i> has not been confirmed to occur within any protected areas in Colombia although populations of <i>Agalychnis</i> have been registered in reserves in Colombia.</p>	<p><i>A. spurrelli</i> has been recorded from a number of protected areas, including at least three in Panama and three in Costa Rica. In Ecuador, its geographic range overlaps with Reserva Ecológica Cotacachi-Cayapas, but it is not confirmed from any protected areas in Colombia. (Jungfer et al., 2008; Ortega-Andrade, 2008).</p>

Supporting Statement (SS)	Additional information
<p><i>Agalychnis callidryas</i> and <i>A. moreletii</i> are found in the Mayan Mountains in the Chiquibul Forest Reserve in Belize. In Panama, populations of <i>A. spurrelli</i> are known in various protected sites and <i>A. callidryas</i> is also found in the Darién National Park. In El Salvador, most of the distribution of <i>A. moreletii</i> is outside protected areas in shade-coffee plantations.</p> <p>In Costa Rica, <i>A. annae</i>, <i>A. saltator</i> and <i>A. spurrelli</i> are protected by the <i>Wildlife Conservation Law No. 7317</i>, <i>The Environmental Law No. 7554</i> and <i>Decree No. 32 633</i> of the regulation to the <i>Law of Conservation</i>. No commercial export of any <i>Agalychnis</i> species is permitted from Costa Rica. <i>A. annae</i> is one of four Costa Rican amphibians that have been chosen for an <i>ex situ</i> conservation breeding programme for management.</p> <p>In Guatemala, <i>A. callidryas</i> and <i>A. moreletii</i> are protected by the Constitution of the Republic of Guatemala, Articles 64 and 97, and the <i>Protected Areas Law (Decree 4-89)</i>, by which exporters must be registered and receive permits. In Guatemala, between 2005 and 2006, two companies have been registered for breeding and export; one for <i>A. moreletii</i> and one for <i>A. callidryas</i>. It has allowed the collection of a very limited number of specimens in specific sites with high populations of frogs for these companies to establish as a breeding group. Export permits are only given for copies of second generation (F2); so far, neither company has applied for export permits. Permits and certificates of origin will be required for export.</p> <p>In El Salvador, <i>A. moreletii</i>, is considered an endangered species. In El Salvador no requests have been made for harvesting from the wild.</p> <p>In Colombia <i>A. callidryas</i> and <i>A. spurrelli</i> are protected.</p> <p>In Belize, the trade in <i>A. callidryas</i> and <i>A. moreletii</i> are not permitted, and although there is specific protection for amphibians in the country, it is through legislation that protects the habitat and environment.</p> <p>In Mexico, neither <i>A. moreletii</i> nor <i>A. callidryas</i> are on the list of species at risk. Permits for collecting and export licences are required for export of all wild species.</p> <p>Honduras has a system of export quotas in place for <i>A. callidryas</i> and <i>A. moreletii</i> (3040 and 176, respectively, for 2003).</p>	

Captive breeding/artificial propagation

Supporting Statement (SS)	Additional information
<p>In El Salvador there are no captive breeding facilities legally established.</p> <p>For several species captive breeding is limited. Recently, German, Swiss and Austrian breeders selected <i>A. moreletii</i> as one of the 11 species of frogs as a priority for captive breeding and promoting <i>ex situ</i> conservation.</p> <p>Captive breeding operations are only known to exist in Nicaragua.</p>	<p><i>Captive-bred Red-eyed Tree Frogs Agalychnis callidryas are generally healthier, less stressed, and easier to care for initially. One website was found advertising them for sale at USD30. Captive-bred specimens were found for sale, including: Agalychnis callidryas froglets for USD20 each, Agalychnis moreletii froglets for USD30 each and Agalychnis annae juveniles for USD80 (noted as rare).</i></p> <p><i>Anon. (2009a) notes that there are issues of legality with captive-bred specimens if the parent animals aren't legally imported.</i></p> <p><i>Briggs (2009) notes that A. callidryas eggs are easily reared and successful captive breeding can reduce and hopefully eliminate the wild-caught specimens used in the pet trade. For A. moreletii, eggs are similarly reared, but at this stage she strongly recommends their not being encouraged in the pet trade.</i></p>
<p><u>Other comments</u></p>	

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