

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



Twenty-eighth meeting of the Animals Committee
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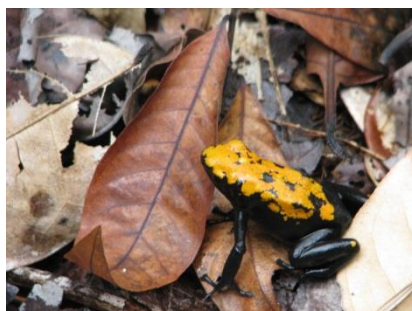
Interpretation and implementation of the Convention

Exemptions and special trade provisions

Implementation of the Convention relating to captive-bred and ranched specimens (Decision 16.65)

FACT SHEET: *ADELPHOBATES GALACTONOTUS* (AMPHIBIA: ANURA: DENDROBATIDAE)

The attached information document has been submitted by the International Union for Conservation of Nature (IUCN) in relation to agenda item 13.*



Summary:

Adelphobates galactonotus (CITES App. II) is endemic to the eastern part of the Amazon basin in Brazil south of the Rio Amazonas. The species is known for its vivid colors and the multiple color variants. Populations are uniform in color and breed true, that is orange specimens only produce orange specimens, never blue (or any other color).

Although live specimens of this species have never been exported legally from Brazil (where all wildlife is protected by law) it is a common species in captivity in Europe and the United States with all of these specimens arising from illegal exports from Brazil. The first illegal import to Germany took place in 1996 with expanded international trade beginning in 1997 according to data from the CITES Trade Database.

The smuggling of this species out of Brazil still continues, threatening local populations. Indeed, after the publication of a paper on the colorpolymorphism of this species in 2012 in which several unknown color morphs (none of which known in captivity) were described, within three months large numbers of one of these morphs (a light blue one) were already available in Germany. In 2015, another recently discovered color morph was illegally imported in Germany.

* 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.

Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA) and the Brazilian Federal Police have been advised of these continuing illegal activities (which also involve other CITES-listed species) and have been provided with the relevant data. These illegally imported specimens are easily recognizable based on their color with many illegally imported wild caught specimens entering the trade as “captive bred” *A. galactonotus*. Among breeders, keepers, and traders of *A. galactonotus* it is well known that all specimens in trade are descendants of illegally obtained stock or stem from recent illegal imports.

Taxonomy:

According to the CITES standard nomenclature that follows Frost (2014), the name of this species is *Adelphobates galactonotus* (Steindachner 1864). However, the genus *Adelphobates* is only based on molecular characteristics. On the basis of most morphological characteristics the species is closer to members of the genus *Dendrobates* than to those of other *Adelphobates*. Several authors do not recognize the genus *Adelphobates* (see summary in Frost, 2014) and several authors do not accept the placement of *galactonotus* in the genus *Adelphobates* and consider it a species of *Dendrobates* (see e.g. Hoogmoed and Avila-Pires 2012). The Brazilian government in its recent evaluation of the status of all Brazilian amphibians used the name *Adelphobates galactonotus*, as did Segalla et al (2014) in their checklist of Brazilian amphibians. Also CITES uses this name. To avoid confusion the name *Adelphobates galactonotus* is used here.

Species:

This is a medium-sized frog with a snout vent length of 3-4 cm. It is a colorful species with large color variation: black with large orange, red, yellow, light blue, white or brown areas on the back and limbs and some species are nearly uniformly colored, with the black restricted to small areas on belly and limbs. Some populations show a sprinkling of greenish to light blue spots on a black back and one population is yellow with vermiculate black spots on back and limbs. Specimens within each population have the same color pattern. No populations with several color patterns or populations transitional between two different color morphs are known. In captivity the different morphs breed true, meaning their offspring have the same color pattern, although there may be slight variations in intensity and extent of the colored area. Overkamp (2009) noted that there is an ontogenetic change of color from red at metamorphosis to reddish brown in older specimens and also that black spots on the back in juveniles tend to disappear in adults. Hoogmoed and Avila-Pires (2013) provided a detailed description of the color polymorphism of this endemic Brazilian species, a map showing the distribution of the color morphs, and provided color pictures of most of the color variations known to exist. Overkamp (2009) and Lötters et al. (2007) dealt with the species in captivity and described a limited number of color morphs. Recent genetic research showed that different haplotypes may have the same color. The mechanism responsible for the astonishing within-species color variation is not yet completely clear, but the most likely explanation is simple mutations causing the loss of carotenoids (responsible for yellow, orange and red colors) from the skin, giving rise to blue morphs and spread of new characters through the populations following Mendelian laws, followed by fixation of colors in separate populations.

Distribution:

This species is endemic to a part of Brazil from the Tapajos and Teles Pires rivers in the west to the Atlantic coast (São Luis, state of Maranhão) in the east and from the southern bank of the Amazon river and the Bay of Marajó to extreme northern Mato Grosso and northern Tocantins. Most of its distribution falls within the state of Pará (see map in Hoogmoed & Avila-Pires 2013). No pattern can be discovered in the distribution of the different color morphs throughout the species range, although in general orange colored populations seem to be mostly present in the north and east of the distribution area, with most variation in color of populations in the western part of the range. The species does not seem to be continuously distributed throughout its range. Apparently occurrence is patchy and populations are isolated, but there is no indication which environmental factors could be responsible for the isolation.

Habitat:

A. galactonotus is an inhabitant of tropical lowland forest (terra firme forest), where it is present on the forest floor among leaf litter. It seems to have a preference for areas with stands of Brazil nut trees (*Bertholletia excelsa*), where it may deposit its larvae in empty Brazil nut pods. However, it also has been found in secondary forest surrounded by pasture, in the transition zone between Amazonian forest and Cerrado vegetation, in recently cleared and burnt areas under Brazil nut trees, and even in a cassava plantation. The species seems to be tolerant to a certain level of disturbance, but it is not known whether it can endure adverse conditions for extended periods (Hoogmoed and Avila-Pires 2013). Pfaffe and Pieper (1997) report that specimens are more numerous near tree falls.

As in *Dendrobates tinctorius*, the extreme inter-populational phenotypic variation could be related to the apparent patchy distribution of suitable habitat for *A. galactonotus* throughout its range (cf. Noonan and Gaucher 2006).

Natural history:

Pieper and Pieper (1997), who reported the first illegal import of *A. galactonotus* in Germany, report litters of 3-13 eggs. According to Overkamp (2009), in captivity the species lays 4-10 eggs in the leaf litter. When the larvae hatch after 14-18 days (Pieper and Pieper, 2000) the male carries them one (mostly) or two at the time, on his back to small water bodies including water filled Brazil nut pods, for further development. Metamorphosis takes place after about two months. Overkamp (2009) indicates that the number of eggs laid by wild caught specimens in the 1990s sometimes reached 20 suggesting that fertility in captivity is lower.

Conservation status:

The IUCN Red List considers this species of Least Concern. During the recent (regional) evaluation of all Brazilian amphibians by a group of Brazilian herpetologists under the auspices of the Brazilian Government (Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio)/ O Centro Nacional de Pesquisa e Conservação de Répteis e Anfíbios (RAN)) this species also was considered of Least Concern because of its large distribution area. However, during this evaluation the situation of different color morphs of this species with restricted distributions was not taken into account, as the Red List only considers species.

Trade:

Theile (2000) pointed out the goals of CITES and how it works, and provided data on (official) trade in all Dendrobatids (37 species) in the period 1994-1999. That analysis revealed that the majority of specimens (of a total of 69,498) went to the United States (67%), European Union (18%), Japan (7%), Canada (3%) other countries (5%). In the EU 3,959 specimens went to the Netherlands, 3,179 to Germany and 2,249 to Belgium. Theile also pointed out that the trade in the period 1994-1999 had increased considerably (seven times) as compared to the period 1989-1993, when “only” 10,000 specimens were officially traded.

Among the 37 species traded in the period 1994-1999, Theile (2000) mentioned *Dendrobates (Adelphobates) galactonotus*, a species endemic to Brazil. As with all wild animals in Brazil, *A. galactonotus* is protected by law and any (commercial) trade is unlawful. Like all other colorful Dendrobatids, *Adelphobates galactonotus* is listed in CITES Appendix II, which means the species could be traded with proper export documents. However, Brazil only provides such export documents for specimens for scientific study and not for commercial (pet trade) purposes. Consequently wild collected specimens of this species have been rarely exported. In the period 1993-1996 a total of 27 wild collected specimens have been legally exported (CITES Trade Database) to the Netherlands (18) and to Austria (9) for scientific studies. All these were bodies/specimens, meaning they were not live specimens, but preserved specimens. In 1998 one export of 13 live, wild caught specimens was recorded as being exported from Canada to the USA for commercial (T) purposes. Only the importer (USA) recorded this transaction. There is no record of these individuals having been legally exported from Brazil. Most other trade recorded in specimens of this species concerned trade in “captive bred” (C or F) specimens between non-range states. There is not a single record of the export of live specimens from Brazil to any country for any purpose except for a transaction concerning 115 “captive bred” specimens from Brazil to the USA for scientific purposes. As there are no breeding operations are known in Brazil, the origin of these “captive-bred” specimens is unknown. Total reported exports in the period 1993-2013 were 1,988 with total reported imports of 1,695 during the same period.

It must be noted that all trade after 1997 is of specimens bred in captivity from breeding stock that was originally illegally exported from Brazil. The date of the illegal export of the breeding stock to Europe (most likely Germany) is not exactly known, but probably occurred in 1996 (see below under Illegal Trade).

Table 1. Trade data *Adelphobates galactonotus* for 1993-2013 (from CITES Trade Database). Years and numbers in **bold** indicate transactions concerning legal export of wild-caught specimens/bodies from Brazil to the Netherlands and Austria for scientific purposes.

Year	Export	Import	Year	Export	Import
1993	12	12	2004	61	161
1994	5	0	2005	117	197
1995	1	7	2006	36	28

Year	Export	Import	Year	Export	Import
1996	9	0	2007	14	2
1997	116	116	2008	28	12
1998	129	91	2009	45	169
1999	491	247	2010	48	129
2000	343	181	2011	76	40
2001	55	84	2012	142	46
2002	60	60	2013	43	27
2003	157	86	Total	1988	1695

Illegal trade:

Between 1987 and 1993 there was no reported trade in this species and neither was it present in terrariums of European hobbyists (Gorzula 1996).

All trade in this species reported in the official CITES Trade Database since 1997 is illegal, because no breeding stock (live specimens) of *A. galactonotus* has ever been exported legally from Brazil. According to CITES rules, all descendants of illegal breeding stock are also illegal.

Pistoni and Toledo (2010) report a 1999 confiscation at São Paulo's Guarulhos international airport of 281 *Dendrobates tinctorius* and 279 *D. cf. galactonotus*, both species said to originate from the "Alto Trombetas in Pará, Brazil". *D. tinctorius* does occur in that region, but *D. cf. galactonotus* does not as it is limited to eastern Brazil south of the Amazon River (Hoogmoed and Avila-Pires 2012). The destination of these specimens was Germany. This confiscation is not mentioned in the CITES Trade Database. The CITES Trade Database only reports one confiscation by the USA in 1999 of 11 specimens from Germany.

Thus, there is evidence of attempts to illegally trade in this species and live specimens apparently had already reached Germany before 1999, despite export controls in Brazil. Indeed, Pieper and Pieper (1997) reported the import (it is assumed to Germany) of 12 adult live specimens in 1996. No such import is documented in the CITES Trade Database. It is likely that these 12 illegally imported specimens form the illegal breeding stock that gave rise to most *A. galactonotus* in captivity.

Beginning in 1997 there was a regular trade from Germany to other countries in captive bred specimens (CITES Trade Database). Saurian Enterprises Inc., a commercial enterprise specializing in the breeding of dart frogs, clearly states on its website that all specimens in captivity are descendants of specimens illegally exported to Europe and then laundered (with legal European CITES documents) to the USA at the end of the 1990s. This is well known among Dendrobatid keepers, as is clear from several posts (referred to as A, B, C, D, and E) to the Dendroboard, an online website providing information and discussion forum about dart frogs, that deal specifically with the light blue morph of *A. galactonotus* that was recently (2013) smuggled from the Caxiuanã area in Brazil to Germany. Some participants (primarily from the USA) in this discussion forum are clearly concerned about the illegal exports. Others apparently are not concerned as they may believe that trade in specimens of *A. galactonotus* has been legalized. Under the USA's Lacey Act, however, specimens of this species in captivity remain illegal independent of their distance from the original, smuggled breeding stock.

Numbers of captive bred *A. galactonotus* in terrariums in Germany and the Netherlands (and elsewhere in the world) over the past 18 years have increased significantly and specimens were sold and exchanged freely (only with unofficial private declarations that the specimens came from captive breeding operations) between terrarium keepers. Despite knowledge that all captive bred specimens in their countries were descendants of illegally imported specimens (Overkamp 2009), after a short period of confiscations, enforcement agencies in these countries have refrained from taking legal action because specimens had become so widespread among terrarium keepers that any legal action would be a very large and costly operation. The EU does not have a regulation comparable to the USA's Lacey Act that would have prevented the ongoing illegal trade in captive bred *A. galactonotus* that originated from illegally sourced breeding stock.

As a result of this illegal trade, wild caught specimens that are illegally exported from Brazil can and do enter international trade as "captive bred" and, consequently, can be laundered to become "legal."

There is considerable demand for this species. For example, within a few months of the publication of Hoogmoed and Avila-Pires (2012) reporting a new light blue color morph from a small area (Caxiuanã) in northern Pará, the authors were informed by a European source that specimens of this new color morph had been located using information in their paper, collected, and smuggled out of Brazil for sale in Germany for 350-700€ per specimen. As proof, the authors received a picture of specimens at a trader's establishment in which

at least 40 blue and one orange specimen can be discerned. On this same website pictures of the smuggled light blue morph from a Hungarian source are also posted.

On April 30, 2013 IBAMA, the Brazilian institution responsible for enforcement of environmental law, was informed of this illegal act and provided with all information available about the smuggling process and the persons involved. An investigation was initiated but ended after one year with no action taken and the investigator reassigned to other duties.

Information was received from local residents that in 2014 “someone” from outside the area of Caxiuanã tried to purchase more specimens of *A. galactonotus* from the local inhabitants of the Caxiuanã area, offering prices of 100 Brazilian Reals (about Euro 30) per specimen. This is roughly equivalent to three days salary in the region. In August 2014, a new complaint concerning illegal collecting and export of Brazilian wildlife, including *A. galactonotus*, was lodged with the Federal Police.

On April 21, 2015 information was received from a Dutch CITES enforcement officer of an import of a new *A. galactonotus* color morph (orange with brown back) into Europe (probably Germany). This color morph had been discovered in 2013 during licensed fieldwork by a doctoral student, but the discovery had not been published. Consequently, it is believed that illegal collectors stumbled on this new population by accident when trying to obtain more blue morphs, and then commercialized it by illegally exporting live specimens to Europe. It is not known how many specimens of this color morph were traded, but on one photograph received, seven specimens are visible. This latest import may signal the continued interest of unscrupulous collectors and traders in locating and exporting these new color morphs and exporting in violation of Brazilian laws.

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