

## CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

The species *Atrophaneura jophon* is proposed for listing in Appendix II in accordance with Article II (2) a) of the Convention meeting the criterium A given in Annex 2a of Resolution Conf. 9.24. The species *Atrophaneura pandiyana* is additionally proposed for listing in Appendix II in accordance with Article II (2) b) of the Convention and Annex 2b A of Resolution Conf. 9.24.

B. Proponent

The Federal Republic of Germany (on behalf of the Member States of the European Community).

**Executive Summary**

- An Appendix II listing is proposed for *Atrophaneura jophon* and *Atrophaneura pandiyana* (the latter due to look-alike problems with the former species)
- *Atrophaneura jophon* is endemic to Sri Lanka and confined to tropical evergreen rain forests at medium elevations (615-1230 m) in the south-west of this country.
- The status of *Atrophaneura jophon* is considered to be **critically endangered** in the 2000 IUCN Red List.
- The distribution area of *Atrophaneura jophon* has to be regarded as very restricted and fragmented.
- Habitat loss is regarded to be the most significant threat for *Atrophaneura jophon*. In addition specimens of *A. jophon* and the look-alike species *A. pandiyana* have been offered on insect trade fairs in Central Europe.
- *Atrophaneura jophon* meets the criterium A of Annex 2a of Resolution Conf. 9.24.
- *Atrophaneura pandiyana* meets the criteria of Annex 2b of Resolution Conf.9.24 as it resembles a species proposed for Appendix II (*A. jophon*) such that a non-expert, with reasonable effort, is unlikely to be able to distinguish between them.
- IUCN Sri Lanka strongly supports the listing of *Atrophaneura jophon* in the CITES Appendices.

C. Supporting statement1. Taxonomy

1.1 Class: Insecta

1.2 Order: Lepidoptera

1.3 Family: Papilionidae

1.4 Species: *Atrophaneura jophon*

1.5 Scientific synonyms: *Pachliopta jophon* (Gray, 1852)  
*Atrophaneura jophon* was formerly considered to be conspecific with *Atrophaneura (Pachliopta) pandiyana* from southern India but has been recognised as a separate species by MUNROE (1961) and HANCOCK (1983) (cited in COLLINS & MORRIS, 1985).

1.6 Common names: English: Sri Lankan Rose, Ceylon Ros  
French:  
Spanish:

1.7 Code numbers:

## 2. Biological parameters

### 2.1 Distribution

Range State(s): Sri Lanka

*Atrophaneura jophon* is endemic to Sri Lanka and is confined to the rain forests in the south-west of this country (COLLINS & MORRIS, 1985).

### 2.2 Habitat availability

*Atrophaneura jophon* is found at medium elevations (615-1230m) in tropical evergreen rainforest that is restricted to the south-west in Sri Lanka.

The area of closed broad-leaved forest in Sri Lanka fell from 2.9 million hectares in 1956 to about 1.6 million in 1981, of which only 0.43 million hectares was unexploited (FAO/UNEP, 1981 cited in COLLINS & MORRIS, 1985). The Sri Lankan Forest Department (1986) estimated the forest cover of the lowland-wet-zone to be 110,000 hectares and to constitute 6% of total forest cover. The FAO (2001) charts a continued decline in forest cover, including plantations, for the whole of Sri Lanka from 2.28 million hectares in 1990 to 1.94 million in 2000, a decline of 15% over the last decade. This rate of decline may be an underestimate for lowland-wet-zone forest since it is poorly represented in the extensive protected area network (see 4.1.1).

The principal remaining area of suitable habitat is the 11,187 hectare Sinharaja Forest Reserve. The species has also been observed in nearby localities including lowland areas of the Peakwilderness Sanctuary and the Kanneliya, Dediya, Nakiyadeniya forest complex (BAMBARADENIYA, *in litt.*, 2001).

### 2.3 Population status

The IUCN Red List of Threatened Animals (HILTON-TAYLOR, 2000) lists *Atrophaneura jophon* as critically endangered due to its extremely limited extent of occurrence (less than 100km<sup>2</sup>) in conjunction with known existence at only one location or a severely fragmented distribution and a continuing decline in the extent or quality of habitat (CR B1 + 2ac). The species was not reassessed in 2000, the listing being carried over from the 1996 assessment.

However, an assessment carried out during preparation of the 1999 list of threatened species of fauna and flora in Sri Lanka estimated the extent of occurrence at 10,000km<sup>2</sup> and occupancy at 2000km<sup>2</sup> (BAMBARADENIYA, *in litt.*, 2001). While clearly more optimistic than the global assessment this analysis nevertheless qualifies the species for listing as Nationally threatened (IUCN Sri Lanka, 2000) and would qualify the species for a global listing as Vulnerable.

This most recent assessment is unlikely, in consideration of the decline in habitat availability (see 2.2), to represent a recovery in the population or expansion in range but is more likely to be due the implementation of a more extensive assessment. The species meets the criteria for a restricted and fragmented area of distribution in Annex 5 of Resolution Conf. 9.24 under both assessments. Furthermore, given the lack of population estimates and its rarity in even suitable undisturbed habitat (see 2.4) the species should be considered to have a small wild population under the precautionary principle.

## 2.4 Population trends

There are insufficient data to establish reliable population trends other than those that can be inferred from changes in habitat availability. No studies of population status have been carried out (BAMBARADENIYA, *in litt.*, 2001).

Talbot (1939 cited in COLLINS & MORRIS, 1985) stated that although rare and local, where it does occur the species may be fairly numerous. However, D'ABRERA (1982) provides some evidence that as long ago as 1975 human disruption of the Sinharaja Forest Reserve was having a negative impact on the population in even the best remaining habitat. He observed that on a short visit he saw only one specimen in an area where it had been previously well-established. BOLLINO (*in litt.*, 2002) commented that an experienced local collector he met in 1992 had described *Atrophaneura jophon* as extremely rare even in Sinharaja forest; a colleague also informed BOLLINO that in two weeks collecting in the area he had observed only one specimen flying high in the canopy.

## 2.5 Geographic trends

*Atrophaneura jophon* is only known from south-western Sri Lanka.

## 2.6 Role of the species in its ecosystem

The role of *Atrophaneura jophon* in its ecosystem has not been studied. The eggs are believed to be laid on the underside of young leaves of Aristolochiaceae (TALBOT, 1939 cited in COLLINS & MORRIS, 1985). Adult butterflies drink nectar and may therefore play a role in the reproductive biology of the host plants.

## 2.7 Threats

NEW & COLLINS (1991) recognised four serious threats to swallowtail (papilionid) butterflies: deforestation; agricultural conversion and intensification; alteration of pastures; and urbanisation and industrialisation, all of these are linked to human population growth.

The combined impact of timber extraction and agriculture following rapid population growth has hugely reduced the area of forest cover in Sri Lanka. In addition much of the remaining forest falls outside the required altitudinal and meteorological zones (see 2.2). Members of the subgenus to which *Atrophaneura jophon* belongs all fly in dense forests and there is no evidence that they can survive in significantly disturbed or modified habitat (COLLINS & MORRIS, 1985).

# 3. Utilization and trade

## 3.1 National utilization

There is no evidence of a substantial commercial market for live or dead specimens in Sri Lanka, although some specimens may be taken for scientific collections.

No attempts have been made to breed this species in captivity in Sri Lanka (BAMBARADENIYA, *in litt.* 2001). Such a scheme would potentially provide benefits to both butterfly conservation and local communities and they have been very successful for many birdwing species in Papua New Guinea (PARSONS, 1992). However, its development would require considerable initial investment in population monitoring, market analysis and breeding experiments and wild-collected specimens may in any case be more attractive to collectors due to their rarity value.

### 3.2 Legal international trade

NEW & COLLINS (1991) divide the international trade in swallowtail butterflies into three categories based on the volume of trade and the value of individual butterflies: low volume, high value deadstock; high volume, low value deadstock; and low-medium value livestock.

The first category involves high quality specimens of rare specimens collected by museums, students and collectors in Europe, Japan and North America. Dealers in these three import areas produce catalogues of specimens and the date and place of capture are often stated. At the top end of this trade are birdwing butterflies, many from ranching operations in Papua New Guinea and Indonesia (COLLINS & MORRIS, 1985).

The birdwings (*Ornithoptera* spp., *Trogonoptera* spp. and *Troides* spp.) have been listed in CITES Appendix II since 1979. The pattern of demand for these genera is likely to be a good indicator for other species falling into the low volume, high value category such as *Atrophaneura jophon*.

CITES trade data (CITES/UNEP-WCMC, 2001<sup>1</sup>) for birdwing butterflies over the last five years, 1996 to 2000, indicate that Europe (35%), Japan (17%<sup>2</sup>) and North America (40%) remain the principal markets for deadstock. The total volume of reported international imports was 13-14,000 in 1996, 1997 and 2000 with peaks of 19,000 in 1999 and 25,000 in 1996. There are also some imports of livestock; trade volume is roughly a tenth of that in deadstock and here Europe is the principal importer with 45% of the market, followed by North America (36%) and Japan (15%<sup>2</sup>). Within Europe, importers in Germany (42%), France (30%) and the Czech Republic (7%) dominate the reported trade in deadstock<sup>3</sup>.

COLLINS & MORRIS (1985) found no evidence of trade in *Atrophaneura jophon* in a review of trade literature.

The European trade in butterflies is the subject of a recent TRAFFIC Europe report (SCHÜTZ, 2000). SCHÜTZ visited a total of 12 insect trade fairs in Germany, France, Switzerland and the Czech Republic between September 1996 and November 1997. In total he found 35 male and three female *Atrophaneura jophon* offered for sale (see Table 1). It should be noted, however, that dealers generally visit several insect fairs each year and that butterflies exhibited at separate fairs may in fact be the same specimens (BOLLINO, *in litt.*, 2002). In general the labelling accompanying specimens was good and included the date and site of capture. The rarity and higher price of females combined with signs of slight damage on all the specimens is clear confirmation of collection from the wild (SCHÜTZ, 2001). Females are generally less attractive but more difficult to capture (COLLINS & MORRIS, 1985) and prices therefore only fall when they can be bred on a large scale (SCHÜTZ, 2001).

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<sup>1</sup> This trade data is based on the annual reports submitted by CITES Parties to the CITES Secretariat.

<sup>2</sup> No report is available for Japanese imports in 1999 or 2000; the percentage of imports for Japan is therefore likely to be an underestimate. Taking figures for 1996 to 1998 only, Japanese imports account for 27% of world deadstock imports and 22% of livestock.

<sup>3</sup> Reported exports indicate that the Russian Federation is an importer of roughly equal significance to the Czech Republic, however the Russian Federation has not reported any imports.

**Table 1.** Specimens of *Atrophaneura jophon* on offer in 1997 (SCHÜTZ, 2001)

Exhibition <sup>a</sup>	Date	Number	Price <sup>b</sup>
Frankfurt	November 1997	8 males	USD 122
Munich – Nockherberg	November 1997	2 males	USD 111
Munich – Kolpinghaus	April 1997	1 male, 1 female	USD 113, USD 203
Prague	March 1997	9 males, 1 female	USD 104, USD 194
Prague	October 1997	15 males, 1 female	USD 108, USD 194

<sup>a</sup> The dealers offering specimens for sale were different at each exhibition except for the two exhibitions in Prague. It is not known how many of the specimens on offer at the second Prague were the same as those at the first and how many were newly acquired.

<sup>b</sup> Prices have been converted from Deutsche marks to US dollars using the exchange rate on 15/11/2001 (1DM = USD 0.451076).

BOLLINO (*in litt.*, 2002) noted that he had purchased an old collection at Frankfurt in 1996 that included two pairs of *Atrophaneura jophon* collected in the early 20<sup>th</sup> century. He also observed two *A. pandiyana* collected in southern India for sale at roughly \$180 each in 1997, the same specimens were also on sale in Frankfurt in 1998 and 1999. He considered the presence of recently collected *A. jophon* on the market extremely improbable, while considering *A. pandiyana* more likely to be available due to its relative abundance in the right biotope.

PARSONS (1992) suggested that CITES-listing led to increased demand from collectors for some *Ornithoptera* species by actual or implied official recognition of rarity. *Atrophaneura jophon*, however, is in any case listed on the IUCN Red List and will therefore already suffer from any enhanced desirability and demand.

### 3.3 Illegal trade

The collection for sale of *Atrophaneura jophon* is prohibited in Sri Lanka (see 4.1.1.) and, as there is no evidence of captive-breeding outside the country (see 3.5), all exports for commercial purposes are therefore illegal. Once exported, however, the sale of specimens on international markets is not controlled. It should be noted that trade in butterflies is extremely difficult to monitor because of the ease with which specimens can be stored and transported in envelopes (NEW & COLLINS, 1991).

### 3.4 Actual or potential trade impacts

While small-scale collection is not normally harmful to butterfly populations, for those already threatened by habitat loss even small amounts of collecting by individuals may cause harm and commercial collecting greater harm still; species that are demonstrably rare tend to command high prices (NEW & COLLINS, 1991).

Furthermore, the impact of male population depletion on overall population viability in butterflies is not clear. Butterfly populations may also be particularly susceptible to stochastic effects such that a seemingly common species might suddenly plummet into rarity or even extinction when conditions are bad (COLLINS & MORRIS, 1985).

NEW (*in litt.*, 2001) considered that collection was unlikely to pose a threat in the context of the far greater risk from habitat loss. However, the geographic restriction of *Atrophanura jophon* and its apparent rarity within its range suggest that improved population monitoring must be established for any commercial trade to be sustainable, thus the existing small scale trade is possibly unsustainable.

### 3.5 Captive breeding for commercial purposes (outside country of origin)

SCHÜTZ (2001) found no report of captive breeding or ranching of *Atrophanura jophon*. No captive-breeding has been attempted in Sri Lanka (BAMBARADENIYA, *in litt.*, 2001).

## 4. Conservation and Management

### 4.1 Legal status

#### 4.1.1 National

Sri Lanka has an extensive network of protected areas comprising 9700km<sup>2</sup> of land under various designations; however, wet [zone] forest is poorly represented. In general the protected areas currently provide inadequate protection due to pressure from human and domestic animal population growth, the need for legislative and institutional reform, and the lack of resources, technical capacity and co-operation between government agencies (Anon, 2001). The majority of protected areas are administered by the Department of Wildlife Conservation; however, the Forest Department runs Sinharaja Forest Reserve.

Sinharaja Forest Reserve was declared a National Heritage Wilderness Area in 1988 under the Act of the same name. Any excision to such an area requires the permission of both parliament and the President. The site is also partially protected under the provisions of the Forest Ordinance. Most of the area was originally declared a forest reserve in 1875, while the rest was notified as a proposed reserve in the early 20th Century (WCMC, 1990).

Sri Lanka has been a Party to CITES since 1979. Under the provisions of the Fauna and Flora Protection Ordinance of 1992 the capture of wild animals for commercial purposes in Sri Lanka cannot be undertaken without a permit. No permits have been issued except for some species of ornamental fish, where collection is strictly monitored. In addition, collection of specimens for any purpose in Sinharaja is strictly prohibited and a punishable offence (BAMBARADENIYA, *in litt.*, 2001).

#### 4.1.2 International

Sinharaja Forest Reserve, including both the existing and proposed national forest reserves was declared a biosphere reserve in 1978 and inscribed on the World Heritage List in 1988.

*Atrophanura jophon* is not currently protected by any international or non-range State legislation.

### 4.2 Species management

#### 4.2.1 Population monitoring

No population data is available for *Atrophanura jophon*.

#### 4.2.2 Habitat conservation

As discussed in 2.2 the principal remaining area of habitat suitable for *Atrophanura jophon* is Sinharaja Forest Reserve. The legal status of this reserve is discussed in 4.1.1.

The principal constraints on protection of Sinharaja are socio-economic, although it also suffered from a complex administrative framework and insufficient resources (Forest Dept., 1986). Encroachment for cultivation along the southern edge of the reserve, illicit logging and gem mining were all considered significant problems prior to 1985 (WCMC, 1990). The Forest Department has given a high priority to protecting the reserve since 1977 and a conservation plan was approved in 1986, to be carried out under a cooperative agreement between IUCN and the Sri Lankan government, with additional funding from the Norwegian government.

BARATHIE & WIDANAPATHIRANA (1993) surveyed the human population surrounding Sinharaja and found 30 villages on the southern, north-eastern, northern and south-western borders of the forest. Estates and other natural forests surround the remaining sections. The estimated population was 5000; the population along the northern boundary was estimated to have increased sevenfold from 52 to 380 families over the previous six years. The dependence of the local people on Sinharaja forest, however, was observed to be declining since the advent of tea cultivation, a practice adopted in the area during the 1980s. Local awareness of the forest's protected status was good.

Non-resident visitors were mostly naturalists and were low in number; a permit from the Forest Department was required for entry (WCMC, 1990).

#### 4.2.3 Management measures

*Atrophaneura jophon* is not the subject of any population management measures other than those in place to protect its habitat.

### 4.3 Control measures

#### 4.3.1 International trade

No measures are currently in place to control or monitor the movement of *Atrophaneura jophon* specimens in trade across international borders. Some surveys of insect trade are carried out in Germany by enforcement authorities and insect fair hosts but these are sporadic and inefficient (SCHÜTZ, 2000).

#### 4.3.2 Domestic measures

A permit is required to collect this native species of fauna for commercial sale; none have been issued for *Atrophaneura jophon*. Collection of specimens for any purpose is strictly prohibited in the Sinharaja Forest Reserve. Non-resident visitors require a permit from the Forest Department in Colombo to enter the Sinharaja Forest Reserve (WCMC, 1990).

## 5. Information on Similar Species

*Atrophaneura pandiyana* replaces *A. jophon* on the Indian subcontinent and is very similar in behaviour (D'ABRERA, 1982). Specimens of both male and female for both species are illustrated in this reference. BOLLINO (*in litt.*, 2002) considered it unlikely that a non-specialist could separate these species from each other.

The specimens illustrated in D'ABRERA (1982) have highly similar markings although the male is larger in *A. jophon* and has a darker coloration; the females are of similar size and marking but different shape, *A. jophon* having narrower forewings (9.5cm) and wider hindwings (10cm) than *A. pandiyana* (12cm; 7cm). It should be noted that intra-species variability might make definitive identification difficult in practice.

*A. pandiyana* is not listed on the 2000 red list (HILTON-TAYLOR, 2000).

## 6. Other Comments

IUCN Sri Lanka strongly supports listing of *Atrophaneura jophon* in the CITES Appendices (BAMBARADENIYA, *in litt.*, 2001).

The CITES Authorities of Sri Lanka and India have been contacted. No comments have been received at the present time.

## 7. Additional Remarks

*Atrophaneura pandiyana* is proposed for listing in Appendix II in accordance with Annex 2b A of Resolution Conf. 9.24. due to its resemblance to the species initially proposed here, *Atrophaneura jophon*

## 8. References

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