CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

The species *Papilio aristophontes* 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 *Papilio nireus* and *Papilio sosia* are 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 *Papilio aristophontes*, *Papilio nireus* and *Palilio sosia* (the latter two due to look-alike problems with the first species).
- *Papilio aristophontes* is a forest species, endemic to the Comoro Islands.
- The status of *Papilio aristophontes* is considered to be endangered in the 2000 IUCN Red List.
- The distribution area of *Papilio aristophontes* has to be regarded as very restricted and fragmented.
- Habitat loss is regarded to be the most significant threat for *Papilio aristophontes*. Specimens of this species have been offered on insect trade fairs in Central Europe.
- *Papilio aristophontes* meets the Criteria A of Annex 2a of Resolution Conf. 9.
- *Papilio nireus* and *P. sosia* meet the criteria of Annex 2b of Resolution Conf.9.24 as they resemble a species proposed for Appendix II (*P. aristophantes*) such that a non-expert, with reasonable effort, is unlikely to be able to distinguish between them.

C. Supporting statement

1. Taxonomy

1.1	Class:	Insecta
1.2	Order:	Lepidoptera
1.3	Family:	Papilionidae
1.4	Species:	*Papilio aristophontes* (Oberthür, 1897)
1.5	Scientific synonyms:	*Papilio nireus aristophontes*

Papilio aristophontes was originally described as a full species but subsequently considered to be a subspecies of *P. nireus* until D'ABRERA, following CARCASSON, reinstated it to full species rank (D'ABRERA, 1980; COLLINS & MORRIS, 1985).

1.6 Common names: English:
French:
Spanish:

1.7 Code numbers:

2. Biological parameters

2.1 Distribution

Range State(s): Comoros

Papilio aristophontes is endemic to the Comoro Islands. COLLINS & MORRIS (1985) state that it is found on Grande Comore, Moheli and Anjouan with the main population occurring on Grande Comore. However, TURLIN (1994) lists only a confirmed presence on Grande Comore and a possible population on Moheli.

On Grande Comore the species is generally found between 600 and 1500m above sea level. Small numbers have also been observed at sea level and in the volcanic caldera at 2200m, however, these individuals are thought to be vagrants displaced by gusts of wind that occur on the slopes of the volcano (TURLIN, 1994).

2.2 Habitat availability

Papilio aristophontes inhabits the forests of the Comoro Islands. The islands have been heavily cultivated over the past 50 years and natural vegetation has been restricted to steep slopes and high altitudes (HARPER, LEWIS & WILSON, 1996). Natural forest vegetation occupied 124km^2 or 7.5% of the land area in 1987. A further 11% of land area was covered in mature forest underplanted with subsistence banana crops (Agrar und Hydrotechnik, cited by HARPER, LEWIS & WILSON, 1996).

On Grande Comore a small area of largely underplanted forest occurs on the plateau of La Grille in the north. The volcanic dome of Kartala in the south remains forested from 500m to 1500m in altitude although below 800m much of the forest is underplanted (HARPER, LEWIS & WILSON, 1996). On Anjouan and Moheli, where there is less high ground, the remaining natural forest cover is confined to the least accessible parts of the islands.

Papilio aristophontes was found to be more abundant in mature underplanted forest than in secondary growth forest or pioneer forest on old flows where the canopy is lower (HARPER, LEWIS & WILSON, 1996). Unfortunately no statistical comparison of abundance between mature forest with a natural and altered understorey was made due to the lack of available undisturbed forest at the study altitude. However, the abundance and richness of endemic butterflies in general was "probably comparable" to undisturbed forests at the same altitude.

HARPER, LEWIS & WILSON (1996) note that forest cover deteriorated noticeably in the period between their two field surveys in 1992 and 1994. Burning and banana-planting in previously uncultivated forests was frequently observed, as was selective logging.

The FAO (2001) reports a decline in forest cover for the Comoros from 12,000 hectares in 1990 to 8000 hectares in 2000, which represents a decline of 33% in the past decade.

2.3 Population status

The IUCN Red List of Threatened Animals (HILTON-TAYLOR, 2000) lists *Papilio aristophontes* as endangered due to its limited extent of occurrence in conjunction with a severely fragmented distribution and a continuing decline in the extent or quality of habitat (EN B1 + 2c). The species

was not reassessed in 2000, the listing being carried over from the 1996 assessment. Surveys in 1992 and 1994 (HARPER, LEWIS & WILSON, 1996) found the species to be "fairly common in open forest on Grande Comore", observing a total of 50 specimens during 23km of transect in 1994. The 1994 survey was carried out in the warm-wet season when abundance peaks; fewer specimens were encountered during the 1992 cool-dry season survey.

Given the lack of a large-scale population assessment and its very small range 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.

2.5 Geographic trends

Papilio aristophontes has never been found to occur in any location other than the three Comoro islands that represent its current range.

2.6 Role of the species in its ecosystem

The role of *Papilio aristophontes* in its ecosystem has not been studied. The caterpillar's food plant is a wild Rutaceae, *Toddalia arabica* (TURLIN, 1994); they have also been reported on wild-growing trees of the domesticated lemon (Collins and MORRIS, 1985). Adult butterflies have been reported feeding regularly at *Rubus rosifolius* flowers (TURLIN, 1994) and may therefore play a role in its reproductive biology.

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.

Population density in the Comoros reached almost 300 people per km^2 in 1990 making it the most densely populated country in Africa (HARPER, LEWIS & WILSON, 1996; Anon, 1998). Agricultural development is extensive in lowland areas of Grande Comore and on most of Anjouan and Moheli where there is much less high ground. At mid-altitude between 500m and 1200m on Grande Comore and all but the steepest slopes of Anjouan and Moheli the remaining forest has been largely underplanted with banana, guavas, vanilla and ylang ylang (COLLINS & MORRIS, 1985; HARPER, LEWIS & WILSON, 1996).

While *Papilio aristophontes* appears to do well in underplanted forest (HARPER, LEWIS & WILSON, 1996) there remains only a small area of forest even including this modified habitat. Further population growth may also lead to pressure for conversion of this underplanted forest to agricultural land less suitable for butterflies despite the relatively poor soil at mid-altitude on Grande Comore and topographic difficulties on Anjouan and Moheli.

3. Utilization and trade

3.1 National utilization

There is no evidence of a substantial national market for live or dead specimens.

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 *Papilio aristophontes*.

CITES trade data (CITES/UNEP-WCMC, 2001[1]) for birdwing butterflies over the last five years, 1996 to 2000, indicate that Europe (35%), Japan (17%[22]) 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%[2]). Within Europe, importers in Germany (42%), France (30%) and the Czech Republic (7%) dominate the reported trade in deadstock[3].

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 15 male and two female *Papilio aristophontes* 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; however, this detailed data was not collected as part of the study. 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).

BOLLINO (*in litt.*, 2002) confirmed that small numbers (2-3 pairs) of this species were available at the Frankfurt trade fair in 1999 and 2000. He noted that a colleague had purchased 21 males and 3 females from a local dealer in Mayotte during a visit in the 1980s but that specimens for sale in Europe had become much rarer in the 1990s, probably due to the dealer moving from Mayotte to Tanzania.

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

---

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

2 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.

3 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 *Papilio aristophontes* on offer in 1997 (SCHÜTZ, 2001)

Exhibition[a]	Date	Number	Price[b]
Munich – Nockherberg	November 1997	1 male	UDS 113
Lyon	March 1997	7 males, 1 female	USD 104, ?
Prague	October 1997	5 males, 1 female	USD 90, ?
Nuremberg	October 1997	2 males	USD 122

[a] The dealers offering specimens for sale were different at each exhibition.

[b] Prices have been converted from Deutsche marks to US dollars using the exchange rate on 15/11/2001 (1DM = $0.451076).

PARSONS (1992) suggested that CITES-listing led to increased demand from collectors for some *Ornithoptera* species by actual or implied official recognition of rarity. *Papilio aristophontes*, 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

Anon (2001) provides no indication that the collection or sale of *Papilio aristophontes* is currently illegal in the Comoros and, in the absence of international regulation, there is therefore no illegal trade. 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 (Collins and Morris, 1985). 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 severe geographic restriction of *Papilio aristophontes* suggests that, despite is relative commonness within its range, much 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 *Papilio aristophontes*.

4. Conservation and Management

4.1 Legal status

4.1.1 National

IUCN (1993) noted that little attention had been given to environmental legislation in the Comoros, although a Secretariat of State for the Environment was created in the early 1990s. The Comoros has been a Party to CITES since 1995.

The Comoros is also a Party to the CBD and Ramsar and has developed a national strategy and conservation plan for biodiversity. However, there is currently insufficient legislation to effectively implement national and international environmental commitments (Anon, 2001).

4.1.2 International

Papilio aristophontes is not currently protected by any international or non-range State legislation.

4.2 Species management

4.2.1 Population monitoring

No programme of population monitoring is in place for *Papilio aristophontes*. The only sources of population data are the 1992 and 1994 Oxford and Leeds University butterfly surveys (HARPER, LEWIS & WILSON, 1996) - see 2.3.

4.2.2 Habitat conservation

IUCN (1993) identified a pressing need for environmental legislation and an institution to define and manage protected areas along with an urgent need for forest reserves to be established on each of the islands in the Comoros archipelago.

Mount Kartala, on the slopes of which most of the remaining forest on Grande Comore stands, has been suggested for protection as a park by both the Comorean government and IUCN (NOMAN, 1983 and IUCN, 1993). Although pressure due to population growth continues to lead to massive deforestation no such park has yet been designated, however, a first stage assessment of legislation relating to forests has been initiated and a feasibility study has been planned but without guaranteed finance (Anon, 2001).

4.2.3 Management measures

Papilio aristophontes is not the subject of any population management measures.

4.3 Control measures

4.3.1 International trade

No measures are currently in place to control or monitor the movement of *Papilio aristophontes* 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

No domestic controls are in place to monitor collection of *Papilio aristophontes*.

5. Information on Similar Species

D'ABRERA (1980) stated that *Papilio aristophontes* is quite distinct from *P. nireus* especially in the female. However, this was in the context of justifying classification as a separate species. BOLLINO (*in litt*., 2002) commented that small specimens of *P. aristophontes* could hardly be distinguished from *P. nireus* ssp. by those not well experienced in studying this group of papilionids.

Only the male of *P. aristophontes* is illustrated in D'ABRERA (1980): from the specimens illustrated it appears different in shape (hindwings smaller and with a narrower gap between the pair) and smaller than *P. nireus nireus*; distinctly larger than *P. nireus pseudonireus* and *P. wilsoni*; and most similar in size to *P. nireus lyaeus*. In this latter case there remains a difference in shape as described for *P. nireus nireus*, the form of the markings is similar but the principal (median) band of colour running front to back on the upper side is considerably wider in *P. aristophontes* and pale blue rather than green. *P. aristophontes* is also similar in appearance to *P. sosia sosia* although again the markings are pale blue rather than green. It should be noted that intra-species variability might make definitive identification difficult in practice.

Papilio aristophontes exhibits strong sexual dimorphism. The female is described as having a dull olive-green median band, together with a well-defined row of yellowish-olive submarginal spots on both wings (D'ABRERA, 1980); it bears a resemblance to females of *Papilio phorbanta* from Réunion (TURLIN, 1994). Females of *P. nireus* are similar in appearance to the males.

Papilio nireus nireus is found from Western Uganda to the Democratic Republic of Congo, Angola, Sierra Leone and Senegal; *P. nireus lyaeus* from Kenya and Uganda to Tanzania, Zambia, Malawi, Mozambique, Zimbabwe and South Africa; *P. nireus pseudonireus* in the extreme north of Kenya and Uganda to Ethiopia; *P. nireus wilsoni* in southern Sudan; and *P. sosia sosia* from Cameroon to Sierra Leone (D'ABRERA, 1980). *P. nireus* and *P. sosia* are not listed on the 2000 Red List (HILTON-TAYLOR, 2000).

6. Other Comments

The CITES Authorites of the Comores as well as the range states for *P. nireus* and *P. sosia* have been contacted. No comments have been received at the present time.

7. Additional Remarks

Papilio nireus and *Papilio sosia* are proposed for listing in Appendix II in accordance with Annex 2b A of Resolution Conf. 9.24. due to their resemblance to male specimens of the species initially proposed here, *Papilio aristophontes*.

8. References

Anon. 1998. Rapport intérimaire sur l'élaboration d'une stratégie nationale et d'un Plan d'action en matière de diversité biologique en République Fédérale islamique des Comores. Ministère de la Production Agricole des Ressources Marines et de l'Environnement, Comoros and PNUD. 33pp.

Anon. 2001. Second National Report to the Convention on Biological Diversity. Ministère de la Production Agricole des Ressources Marines et de l'Environnement, Comoros.

BOLLINO, M., 2002. Lepidoptera collector and researcher in litt. with Jonathan Harwood (UNEP-WCMC).

CITES/UNEP-WCMC. 2001. CITES/UNEP-WCMC Trade Database. UNEP - World Conservation Monitoring Centre, Cambridge, UK. Data supplied 9 November 2001.

COLLINS, N.M. & MORRIS M.G. 1985. Threatened Swallowtail butterflies of the World. The IUCN Red Data Book. IUCN, Gland and Cambridge, UK. 410pp.

D'ABRERA, B. 1980. Butterflies of the Afrotropical region. Landsdowne Editions, Australia, in association with E.W. Classey, UK. 593pp.

FAO, 2001. State of the World's Forests 2001. http://www.fao.org/docrep/003/y0900e/ 0900e00.htm. FAO, Rome, Italy.

HARPER, M.C., LEWIS, O.T. & WILSON, R.J. 1996. Comoro Islands butterfly survey 1994. Final report. Unpublished report, University of Leeds.

HILTON-TAYLOR, C. (compiler) 2000. 2000 IUCN Red List of Threatened Species. IUCN, Gland, Switzerland and Cambridge, UK. xviii + 61pp. Downloaded 21 November 2001.

IUCN. 1993. Comoros – Environmental synopsis. IUCN and the Commission of the European Communities, Gland and Cambridge, UK. 31pp.

NEW, T.R., 2001. IUCN Lepidoptera Specialist Group (former) in litt. with Jonathan Harwood (UNEP-WCMC).

NEW, T.R. and COLLINS, N.M. 1991. Swallowtail butterflies. An action plan for their conservation. IUCN/SSC Lepidoptera Specialist Group. IUCN, Gland and Cambridge, UK. 36pp.

PARSONS, M.J. 1992. Butterfly farming and conservation in the Indo-Australian region and its role in tropical forest conservation. Tropical Lepdioptera. vol 3, supp. 1. pp 1-31.

SCHÜTZ, P., 2000. Flügel hiter glas: Der Insektenhandel in Deutschland unter besonderer Berücksichtigung der Schmetterlinge (Lepidoptera). TRAFFIC – Europe/Umweltstiftung WWF – Deutschland, Frankfurt-am-Main, Germany.

SCHÜTZ, P., 2001. In litt. with Roland Melisch (TRAFFIC).

TURLIN, B., 1994. Faune leidopterogique de l'Archipel des Comores. 2. Lambillionea, XCIV: pp. 81-94.