

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

Other proposals

A: Proposal

Inclusion of the *Mantella viridis*, *Mantella bernhardi*, *Mantella cowani* and *Mantella haraldmeieri* in Appendix II of CITES in accordance with Article II, 2(a) and Resolution Conf. 9.24.

B: Proponent

the Netherlands

C: Supporting Statement1. Taxonomy

1.1 Class	Amphibia
1.2 Order	Anura
1.3 Family	Ranidae
Sub-family	Mantellinae
1.4 Genus and species	<i>Mantella viridis</i> Pintak and Böhme 1988
	<i>Mantella cowani</i> Boulanger 1882
	<i>Mantella haraldmeieri</i> Busse 1981
	<i>Mantella bernhardi</i> Vences et al 1994

2. Biological Parameters

2.1 Distribution

a) *Mantella viridis*: in four areas in the extreme northern part of Madagascar
 - Montagne des Français;
 - Anketrahe-Antongombato;
 - in the Ambra forests, especially at altitudes below 300 metres; and
 - in the Ankarana.

b) *Mantella cowani*: limited to Antoetra, east of Ambositra.

c) *Mantella haraldmeieri*: in extreme southeastern Madagascar in the forest reserve of Tsitongabarika (Manantantely and Manangotry), in the Marosohy near Ranomafana-Sud and in the Réserve naturelle intégrale d'Andohahela (Lot number 1).

d) *Mantella bernhardi*: in one area at Ambohimana (Tolongoina).

2.2 Population status

The only information available on these populations is that collected by the BIODEV team. Studies reveal considerable seasonal variation in species density. During the reproductive period, populations are found in abundance.

a) *Mantella viridis*: Density varies greatly from one site to another. In the Montagne des Français, the ecological density was 138 specimens per hectare in 1996. At Anketrahe-Antongombato, density reached 1692 specimens per hectare during the month of August 1994. A total of 214 specimens per hectare was counted after exploitation during March 1996.

It seems that the population is not regenerated in a short period.

After the complete formation of the tadpoles during April, densities of 1300 specimens have been observed on sample areas of 28 square metres.

b) *Mantella cowani*: During the reproduction period (the month of December), we counted 598 specimens per hectare in several existing ecological areas. At the end of reproduction period at the site studied, the number of specimens had dropped to 48 per hectare after heavy capture. It appears that the population around Antoetra is not stable.

c) *Mantella haraldmeieri*: During January 1996, this species was found at Manantantely in low valleys near a stream at a density of 760 specimens per hectare. At higher altitudes, numbers dropped to 50 individuals per hectare on the slopes and to zero at the summit.

In the nature reserve at Andohahela where the population is well protected, an average ecological density of 1450 specimens per hectare was found during this same period. At the present time, this population appears to be stable, but deforestation is beginning to cause negative effects. Its range is rather restricted.

d) *Mantella bernhardi*: At Ambobimanana, the only known site where this species is found, the population was estimated to be 123 specimens per hectare.

Because there has been no extensive study prior to that carried out recently by BIODÉV, no reliable estimate can presently be made on the evolution of the populations. Recent field studies have, however, made it apparent that gathering constitutes a serious threat because this region is readily accessible.

Obvious variations have been observed after gathering and cause legitimate concerns although the species's range may easily be larger, and some populations of each species have surely still not been found.

2.3 Habitat

The *Mantella viridis* prefers dry forests and their immediate environment. During the winter, it gathers in small areas, especially in dried canals, of about 30 square metres,

The *Mantella cowani* favours open or degraded areas after the destruction of its natural habitat (primary forest). It prefers the following habitats:

- fields and secondary growth;
- ground litter and fallen tree trunks;
- near grass clumps in associations of grasses;
- in eucalyptus forests, either on litter or under tree trunks.

The *Mantella haraldmeieri* hides in litter or under fallen trees near streams or in crevasses along larger streams.

The *Mantella bernhardi* lives near swamps on secondary growth slopes.

3. Utilization and Trade

3.1 National utilization

All of the *Mantella* gathered in Madagascar are gathered for international trade. In general, there is a network of "primary" gatherers, intermediaries and final exporters.

3.2 Legal international trade

Behra (1991) reported that during the first half of 1990, 1470 specimens of *Mantella viridis* were legally exported from Madagascar. The number of specimens exported appears to have increased to more than 3000 specimens during the first six months of 1991 (BIODÉV, unpublished). In 1995, 2055 specimens

were apparently exported according to the numbers of permits issued by the Malagasy CITES Management Authority (BIODEV, internal document).

Available information shows that during the first six months of 1990, 3090 specimens of *Mantella cowani* and 2004 specimens during the last three months of that year were exported from Madagascar. During the first six months of 1991, Madagascar exported 3045 specimens of *Mantella cowani* (Martin Jenkins, ANGAP report). In 1995, 3732 specimens of *Mantella cowani* were reportedly exported as well as 290 specimens of *Mantella bernhardi* (study of DEF permits, BIODEV internal document).

Data on the number of specimens exported during the following years is not yet available. Exports may have increased because of accrued interest in several Western countries for *Mantella* from Madagascar.

Although demand in the United States has increased and Japan has entered the market, the main importing countries of *Mantella* from Madagascar are Germany and the Netherlands (IUCN, 1993). Gorzula (1996) studied *Mantella* in captivity and their reproduction.

There is, however, no data on *Mantella haraldmeieri* probably because of the confusion of this species with *Mantella cowani*.

It is presently difficult to determine accurately the overall importance of gatherings in relation to exports owing to insufficient information on the mortality of the frogs between gathering and exportation. Mortality may vary between 20 and 70 percent.

3.3 Illegal trade

Given the existence of unlimited legal exportation and the relatively low price of each specimen, illegal trade of these frogs is apparently of minor importance. Accurate data, however, is not available.

3.4 Actual or potential trade impacts

Gathering takes place mainly during the reproductive season. All ages and genders of *Mantella* are captured, even pregnant females.

It is likely that gathering is too intensive at the most frequent collection sites. Gathering may threaten some of the *Mantella* populations in the centre of Madagascar.

Gatherers report that in previous years it was possible to find easily 2000 specimens of *Mantella cowani* in one day, whereas today, 100 to 150 specimens are considered to be a good day's harvest.

During field studies, lower population densities were found at sites where recent gatherings had been made. For example, 94 specimens per hectare of *Mantella viridis* were counted at Antamotamo and 110-204 specimens per hectare at Analamananandro compared to between 396 and 553 specimens per hectare at Analamanga where there was no gathering because of the nearness of the village and the presence of a game warden (Agent Protecteur de la Nature).

While this is true, it is clear that, in general, the areas used for gathering and the more isolated areas do not suffer the same pressures.

4. Status of Protection

There is no legislation protecting the *Mantella* in Madagascar (except for the legal protection given all species in protected reserves). Gathering for trade begins after a specific commercial hunting license has been granted to the exporter by the Direction des Eaux et Forêts. Copies of this authorization are given to the gatherers in the field.

In theory, the gathering season is limited to the hunting season between 1 May and the first Sunday in October.

5. Other Comments

Human pressure on *Mantella* populations and their habitat may be divided into two general groups by zones:

- The Southeast: Until now the principal threat to these species has been the destruction of their habitat. Woodlands that were used as shelter against the strong sunshine during the hot season are being cut for wood used for construction and for making charcoal. The *Mantella* have no tolerance for the sun. They die after an exposure of several minutes to the sun.

This was confirmed at Nahampoana where the typical habitat site at Manantantely has been totally destroyed. The Réserve d'Andohahela fortunately offers a relatively efficient protection.

- The high plateaux: The situation is quite different, and the forest does not seem essential for the *Mantella* because the climate is not so hot. More specimens were found in the grasslands than in the bamboo forests at Antoaatra (190 specimens per hectare compared to 20 specimens per hectare).

As for the *Mantella viridis*, this species lives in a forest environment of poorly decomposed floor litter. Only complete deforestation would lead to the extinction of this species. During field studies, it was observed that deforestation is very slow in the areas where there is the presence of the APN such as at Anketraabo-Antongombato. At Montagne des Français, however, deforestation is more widespread throughout the area.

Given the range of these species and the pressure on their habitats, it is clear that the management of the populations of these species would be in the long run the best choice for ensuring their survival.

6. References