## AMENDMENTS TO APPENDICES I AND II OF THE CONVENTION

### Other Proposals

A. **PROPOSAL**

Inclusion of *Pandinus dictator, Pandinus gambiensis* and *Pandinus imperator* in Appendix II.

B. **PROPONENT**

Ghana

C. **SUPPORTING STATEMENT**

1. **Taxonomy**

| | | |
|---|---|---|
| 11. Class : | | Arachnida |
| 12. Order : | | Scorpiones |
| 13. Family : | | Scorpionidae |
| 14. Species : | | *Pandinus dictator, P.gambiensis, P. imperator* |
| 15. Common Names: | | English : Emperor Scorpion (P. imperator) French: Grand Scorpion du Senegal (P. gambiensis) |
| 16. Code Numbers: | | None (US imports are listed as "non-CITES arachnid") |

2. **Biological Data**

21. **Distribution:**

The distribution of the three species covered by this proposal is uncertain, especially at the borders of their ranges, and the literature on the subjects is confusing. They are difficult to tell apart, and the degree to which their distributions overlap is unknown though in general they replace each other geographically (Vachon, 1967). Nonetheless the following is an approximate list of range states:

*P. dictator*, Cameroon, Congo, and Equatorial Guinea (Boko) (Lamoral and Reynders, 1967); if the species

has been correctly identified from Congo it probably occurs in Gabon as well (see below under *P. imperator*). Vachon (op. cit.) that this species replaces *P. imperator* in Cameroon.

*P. gambiensis*: Gambia, Senegal (lamoral and Reynder, 1975; Vachon, 1967)

*P. imperator*, Benin, Chad, Cote d' Ivoire, Senegal, Liberia, Ghana, Guinea, Sierra Leone and Togo. However, as earlier workers considered *P. gambiensis* to be a subspecies of *P. imperator*, the records from Senegal probably refer to that species (Vachon, 1967).

A subspecies, *P.I. subtypicus*, was described from "East Africa" in 1984. Lamoral and Reynders (1975) list specimens identified as subtypicus from Eritrea, Sudan and Somalia. However, Karl Kraepelin, who described this subspecies, suggested that subtypicus, which reaches only 100 mm. in length, was probably a separate species in his 1899 review of the genus (Kraepelin, 1899). Vachon (1967) considered that *P. imperator* was confined to west Africa. D. Sissom (in litt.) therefore synonym of another east African species, is probably distinct from *imperator*.

Lamoral and Reynders (1975) also list specimens identified as *imperator* from Eritrea, Ethiopia, Gabon, Malagasy Republic, and Nigeria. Except for the last named, these records all named, these records, all from old museum specimens, probably represent either misidentifications or labelling errors (D. Simmons in. litt.). The record from Gabon (and possibly from Nigeria as well) may refer to *P. dictator*. No *Pandinus* scorpion is known to occur in the Malagasy Republic.

This proposal is therefore written on the assumption that *P. imperator* is confined to the countries listed by Vachon (1967), with the exception of Senegal where it probably does not occur, and Nigeria where it may.

Other species in the genus *Pandinus* are native to subsaharan Africa, with the exception of the extremely rare. *P. arabicus and P. percivall*, known only from the holotype, which occur in the southwestern portion of the arabian peninsula. Many species are endemic to Somalia and nearby

areas. These are, however, smaller and paler in colour then the three west African species that are the subject of this proposal.

22. **Population:**

No estimate available. *P. imperator,* the most heavily-traded species, is becoming increasingly harder to locate and is probably in decline, at least locally.

23. **Habitat:**

*Pandinus* scorpions occur in woodland, savannah and rainforest, where they live colonially in common chambers under termite mounds.

3. **Trade Data**

31. **National Utilization:**

None known.

32. **Legal International Trade:**

The West African species of *Pandinus* particularly *P, imperator,* are increasingly popular items in the live pet trade in North America and Europe: ...."literally thousands are handled annually in the pet trade. It is not uncommon for an individual to put his hand in a container with a hundred or more emperor scorpions to select a particular animal" (de vosjoli, 1991). Prices for these scorpions in the US currently run from about $6 to about $20.

*P. imperator* may be largest scorpion in the world, reaching as much as 20 cm. When adult. However, it rarely uses its sting, even in prey capture (Casper, 1985). Although *P. imperator* at least can be bred with relative ease in captivity, the bulk of the specimens in trade are exported from the wild.

Ghana requires export permits for all wildlife. table 1 lists are quantities of *Pandinus imperator* recorded as exported from Ghana between 1978 and May 1994. A total of 57, 461 specimens are known to have been exported during this period.

In addition to exports from Ghana, *Pandinus* scorpions are exported from Togo, Benin, Liberia

and possibly other west African countries. Most US imports come from Ghana or Togo (de Vosjoli. op. cit.).

As no *Pandinus* species is listed on any CITES Appendix, there is little recorded information on imports. There are no computer codes for these species. US imports are usually recorded as "non-CITES Arachnid". Some manually-entered records for *Pandinus spp.* are available for 1985-1989 (SOURCE TRAFFIC-USA). These are listed in Table 2.

33. **Potential Threats:**

341. **Live Specimens:**

There is very little information available on the biology of *Pandinus* scorpions. What is known, however, suggests strongly that these species are highly, vulnerable to over - collecting for the live animal trade. In particular, they are highly social animals with small brood sizes, lengthy gestation periods and periods of dependence by offspring on parents, and generally low reproductive output.

*P. imperator*, and probable other species as well, lives in small colonies in common chamber under termite mounds. This makes colonies of these animals relatively easy to locate. Members of a colony hunt co-operatively, feeding on lizards, centipedes and other animals taking shelter in the mounds.

Reproductive patterns in *Pandinus* are those of K-selected species, and are reminiscent of many vertebrates. In the wild, *P. imperator*, may take some three years to reach sexual maturity. *P. gambiensis* may take from 39 to 833 months (polls, 1990; Vachon et al, 1970). Gestation periods in the family Scorpionidae, which includes *Pandinus*, range from ten to eighteen months. A captive *P. imperator*, pregnant when caught, gave birth some seven months later (Larrouy et al, 1973). The brood size is comparatively small. Some 10-20 may be usual in the wild, though in captivity broods of 20-30 have been recorded (de Vosjoli in litt.) Broods of 17 have been recorded for *P. gambiensis* (Vachon et al., 1970) and of 32

for *P. imperator* (Larrouy at al. 1973). The young are dependant on the adults for some time. Even after leaving their mother's back, they are fed with bits of crushed crickets and other prey. The association between mother and offspring can last for months or years in the wild (de Vosjoli, 1991).

The life history pattern of these scorpions renders them particularly vulnerable to over exploitation (see attached letter from Dr. David Sissom). Given the high volume of trade and the extremely limited information available about these animals, an Appendix II listing is a necessary step to ensuring that their exploitation is being carried out on a sustainable basis.

342. **Part and Derivatives:**

No trade in parts or derivatives is known.

4. **Protection Status:**

41. **National:**

None known,

42. **International:**

None known

43. **Additional Protection Needs:**

The increasing volume of trade in *P. imperator* and related species requires monitoring and study in order to clarify the impact it is having on populations.

*Pandinus* scorpions are relatively easy to rear and breed in captivity, and a sustainable supply could probably be produced by captive breeding operations in the countries of origin, A CITES Appendix II listing may assist in encouraging trade in these species to shift away form the wild populations towards reliance on captive-bred stock.

5. **Information on Similar Species:**

The only similar large, blackish scorpions likely to be seen in trade are members of the Asian genus *Heteromtrus*, which may have similar life histories.

There are 24, described species in the *genus Pandinus*, However, *P. dictator P. gambiensis and P. imperator* are the only ones native to west Africa, and when mature are considerably larger than other members of the genus (175cm. as opposed to 105cm. or less for other *Pandinus* spp.)

6. **Comments from Countries of Origin:**

All range states will be consulted.

7. **Additional Remarks:**

The bulk, if not all, of the trade in members of this genus originates from west Africa, with almost all shipments labelled as *P. imperator* though specimens labelled as *P. gambiensis* have been imported to the United States at least. The three species that are the subjects of the present proposal can only be distinguished with certainly by their patterns of tarsal spines and trichobothrial hairs on their pincers or chelae.

As the species limits are unclear and identification to species impractical for enforcement purpose, it is necessary to include all three of the large west African species in the genus in Appendix II *P. grambiensis* and P. dictator are proposed under the terms of Article II.2 (b).

It is by no means certain, however that only these species are involved. Distinguishing species or this genus at the species level is extraordinarily difficult even for an expert, and may not even be possible for many species (D. Sissom in litt). There has been no taxonimic review of this genus since the original species descriptions published between 1890 and 1905, although the genus has been revised to the subgeneric level (Vachon, 1973). In all probability new species remain to be described.

8. **References:**

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Table 1. Exports of *Pandinus imperator* from Ghana, 1978-1994.

| YEAR | QUANITY EXPORTED |
|---|---|
| 1978 | 122 |
| 1979 | 417 |
| 1980 | 0 |
| 1981 | 150 |
| 1982 | 300 |
| 1983 | 900 |
| 1984 | 560 |
| 1985 | 3,400 |
| 1986 | 911 |
| 1987 | 4,520 |
| 1988 | 8,790 |
| 1989 | 3,775 |
| 1990 | 8,100 |
| 1991 | 7,247 |
| 1992 | 9,535 |
| 1993 | 3,040 |
| 1994(Jan.-May) | 5,690 |
| TOTAL | 57,451 |

Table 2. Recorded Imports of *Pandinus scorpions* into the United States, 1985-1989

| SPECIES | DATE | QUANTITY | ORIGIN |
|---|---|---|---|
| P. imperator | 9/24/1985 | 120 | Togo |
| P. imperator | 4/10/1986 | 130 | Togo |
| P. imperator | 9/3/1985 | 120 | Togo |
| P. imperator | 5/28/1985 | 120 | Togo |
| P. imperator | 12/4/1985 | 120 | Togo |
| P. imperator | 2/12/1986 | 120 | Togo |
| scorpions sp. | 12/15/1986 | 400 | Ghana |
| P. imperator | 3/10/1988 | 100 | Ghana |
| P "emporius" | 7/4/1989 | 200 | Ghana |
| P. imperator | 6/13/1989 | 120 | Togo |
| TOTALS | | 1550 | |

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28 May 1994

TO WHOM IT MAY CONCERN:

This letter is written in support of the proposal to include the large emperor scorpions, *Pandinus* spp. (Scorpiones, Scorpionidae), in CITES Appendix II. I am a scorpion biologist who has been active in the fields of taxonomy and ecology since 1978, and I have accumulated approximately 35 publications on these arachnids in that time (including several chapters in The Biology of Scorpions, edited by Dr. Gary A. Polis). *Pandinus imperator* and probably other species in this genus are now very commonly encountered in pet stores throughout the United States, even in smaller towns. The frequency with which this occurs coupled with the life history characteristics of the species suggest great potential for over-exploitation of wild populations.

The genus *Pandinus*, with 24 recognized species, has not been taxonomically revised since 1899 (K. Kraepelin, Das Tierreich), although almost two-thirds of the species were described after that monograph appeared. However, only one species has been described since 1919, which is probably due to the fact that no scorpiologists have seriously worked on the fauna of central Africa in over five decades. It is uncertain if all of these forms are indeed good species, but it is highly likely that new species remain to be discovered. Almost all species in the genus are known only from a handful of specimens from a few localities -- several are apparently known only from the holotypes. Finally, some existing records of *Pandinus* spp. are probably based on misidentifications, rendering what distributional information that is available sketchy at best.

Ecological information about these species is even more meager. Although ecological and behavioral studies by German workers are now progessing in the field, at this date there are no published studies on population structure of any species of *Pandinus* or on their role in ecological communities. Unpublished data indicates that *P. imperator* frequently lives in extended family groups under giant termite mounds in the savannahs and forests of western Africa, although they probably occur in other habitats as well. Given their large size, they might well be among the most important predators in their communities.

Some life history information is available for *P. imperator* and *P. gambiensis*, but this derives solely from laboratory work. These species, like other Scorpionidae, have K-selected features. Litter size ranges from 10-32 (mostly under 20), and the young are born alive after a lengthy gestation (7-15 months across the family). The long gestation period probably ensures that a female would only have several litters in her lifetime. Age to maturity is also lengthy: *P. gambiensis* matures in 39-83 months, with survivorship in the field unknown. Longevity ranges up to 8 years in captivity.

*Pandinus imperator* is quite easy to rear in the laboratory, based on personal observations and those of my colleagues. Rearing litters of these scorpions in group situations ensures a high degree of success, with the vast majority of the offspring reaching maturity and living for at least 4-5 years if well fed and watered. A relatively constant temperature (about 27 deg. C), as

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well as high moisture and humidity are essential. Inexpensive live prey, such as crickets and mealworms, make a good laboratory diet. Despite the ease of maintenance, pet store owners and customers are generally ill-informed, and many commercial specimens die after a short time in captivity. Captive rearing programs accompanied by client education would certainly relieve considerable pressure on wild populations of these animals.

In conclusion, what little information exists depicts *Pandinus* scorpions as species susceptible to over-exploitation by the pet trade. Given the ease with which they can be captive-bred, exploitation of wild populations could be kept to a minimum. It would be highly unfortunate if populations of these animals declined to exceptionally low levels (if they have not done so already).

Sincerely,

W. David Sissom, Ph. D.
Assistant Professor of Biology