

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



Tenth meeting of the Plants Committee
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Checklists and nomenclature

TAXUS WALLICHIANA

This document has been prepared by the Scientific Authority of the United States of America.

1. Himalayan yew *Taxus wallichiana* Zuccarini (*T. baccata* subspecies *wallichiana* Pilger) was listed in Appendix II of CITES on February 16, 1995. Prior to listing, the Secretariat expressed concern regarding taxonomic difficulties within the genus (Doc. 9.47, Annex 3, 1994). The IUCN Species Survival Commission also voiced reservations regarding the ability of the Parties to enforce CITES provisions for this species (IUCN-WCU 1994). The similarity of taxa within this genus from distant geographic regions has created obstacles to effective regulation of trade in *Taxus wallichiana*. Examples of the complexity of the nomenclature within the genus are cited in the *Chinese Flora*, which lists two additional synonyms of *T. wallichiana*, variety *yunnanensis* (W.C. Cheng and L.K. Fu) C.T. Kuan, and *T. mairei* (Lemee and H. Lev.) L. K. Fu and Nan Li. The World Conservation Monitoring Center (WCMC) reports that *Taxus yunnanensis* material is being exported from Myanmar, and two companies in China are utilizing *T. yunnanensis* to manufacture anticancer drugs.
2. The United States recommends that the Plants Committee and Nomenclature Committee review the taxonomy and the status in trade of plant material from *Taxus* spp. found throughout Eurasia. We encourage range and consuming countries to monitor the status of these species and international trade in material derived from them until this matter can be resolved.
3. The nomenclature of the genus *Taxus* is largely based on the geographic range of individual taxa and leaf characteristics. Phytogeographical analysis of leaf character has shown that *Taxus* is least variable in North America and the northwestern Himalayas and most diverse in southwestern China (Spjut 2000). However, taxonomic problems exist throughout the genus. Researchers debate the nomenclature of most recognized species of Taxaceae in the Eastern hemisphere, which include *Taxus baccata* L. the European yew, *Taxus celebica* Li (Warburg) the Indonesian yew, *Taxus chinensis* Rehd. the Chinese yew, and *Taxus cuspidata* Sieb. (Zucc.) the Japanese and Northeast (China) yew.
4. It is difficult to distinguish Himalayan yew products in trade from those of other species of *Taxus* such as the European yew (*T. baccata*) and *T. chinensis* of western China (IUCN-WCU 1994). *Taxus wallichiana* and *T. chinensis* both occur in China and have similar morphological characteristics. In the *Chinese Flora* the taxon *Taxus mairei* (Lemee and Leveille) S. Y. Hu ex Liu is treated as a variety of *T. chinensis*. Additionally, three other names have been proposed for *T. mairei*: *T. speciosa* Florin, *T. celebica* (Warburg) Li and *T. sumatrana* (Miquel) de Laubenfels (Rushforth 1987). Other specimens

from east Asia have shown a relationship to *T. mairei* or *T. celebica*. Van Rozendaal *et al.* (1999) report the taxon *T. cuspidata* to have a closer chemotaxonomical relationship to *T. celebica* than to *T. baccata*.

5. The inconsistencies that exist in the nomenclature of Taxaceae, especially in southwest Asia are well documented. Cheng de Chu lists a *Taxus chinensis* var. *mairei* (Lemee et Levl.), while Chao Chi-son lists the yew as *Taxus mairei* (Lemee et Levl.). *Taxus yunnanensis* is listed by Chao Chi-son, but not by Cheng de Chu. Cheng de Chu reports that the yew of Yunnan, China is *T. wallichiana*. Several sources report *Taxus wallichiana* in India, however other sources report the yew as *T. baccata*. Additional nomenclature differences exist in the Philippines where *T. chinensis* is reported by one authority, and as *T. sumatrana* by another; and similar differences exist in Taiwan for *T. celebica* and *T. sumatrana*, depending on the researcher.
6. Worldwide there are over 55 species recognized in the genus *Taxus*, many of which are sympatric or allopatric in distribution, with numerous hybrids and varietal forms.¹ Some researchers prefer to list individuals as subspecies or varieties, while others continue to recognize the same individuals as distinct species. There is also noted plasticity and integration within the genus, and taxa have adapted to wide environmental gradients. Research using DNA analysis of molecular phylogenetic relationships of eight taxonomic groups within the genus indicates genetic distance typical of species differentiation with the exception of *T. baccata* and *T. cuspidata* which showed a genetic distance characteristic of infraspecies differentiation (Vance *et al.* 1993).
7. International trade in yew biomass is significant throughout the range of the genus in the eastern hemisphere due to demand for the chemical compound paclitaxel, which has been isolated from yew. Paclitaxel has become one of most important lead compounds to emerge from screening of natural products in recent years (Kingston 1992). However, one of the major problems in delaying paclitaxel development as an anticancer drug has been the short supply of the material (Roja and Rao 2000). To meet the growing international demand for paclitaxel, yew biomass is being collected throughout Eurasia from numerous species, including but not limited to, *Taxus wallichiana*.
8. If the Plants and Nomenclature Committees are unable to satisfactorily resolve the taxonomy and status in trade of *Taxus* species occurring in Eurasia, the Parties might consider adding the unlisted *Taxus* species native to Eurasia to Appendix II based on nomenclature difficulties for the genus, the morphological similarity of species and natural hybridization among them, and the volume of trade in yew biomass necessary to meet the needs of the pharmaceutical industry, until the demand for paclitaxel and other derivatives obtained from *Taxus* can be met using plant tissue culture, field cultivated yew, or synthesized compounds.

9. References

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¹ The International Plant Names Index lists 57 species - see <http://www.ipni.org/>