

## The snake-like climber *Anodendron paniculatum* (Apocynaceae), a “new” invasive liana in the rainforests of Tahiti (Pacific Ocean)

*Anodendron paniculatum* A. DC. (syn. *A. manubriatum* Merr., *Echites paniculata* Roxb. Apocynaceae) is a large climbing and twining liana, native to India, Bangladesh, Burma, Sri Lanka, Southeast Asia (Thailand, Cambodia, Vietnam, Laos, Philippines) and Malesia (Indonesia, Malaysia). The species is characterized by terminal or axillary panicles up to 15cm long, each bearing small white or yellowish tubular flowers; and by large fruits (paired follicles or “pods” up to 16cm long, 3cm wide, black when ripe) containing small flattened seeds (1-2cm long, 0.6-0.8mm wide), each attached to a long white silky coma (or “tuft”) 5-9cm long. In its native range, this huge twiner is often more than 20m tall and is found in evergreen or secondary forests up to 1700m elevation.

Known as a medicinal plant in India and used for making fishing nets in Sri Lanka, *Anodendron paniculatum* was introduced to the botanical garden of Tahiti located on the south-east coast, at sea level in 1934 by its founder, Harrison W. Smith, from the Peradenya Botanical Garden in Sri Lanka. The “liane parachute” as it is locally called in Tahiti, was first seen naturalized outside the garden around 1968 (M. Guérin, former director of the garden, now called Harrison Smith Botanical Garden, pers. comm.). During our 2005-2006 plant surveys, we found *A. paniculatum* locally naturalized in the secondary and primary rainforests of Tahiti from 50-600m elevation in the center of the island (Lake Vaihiria and Mataiea Valley to the south, Papenoo Valley to the north, more than 12km from the garden), on roadsides, riverbanks, steep slopes and small plateaus, smothering the canopy of non-native and native trees. The liana was in flower in February 2006 and in ripe fruit in September 2006. Its ability to disperse long distances is easily explained by its wind-dispersed seeds. The species was seen aggressively creeping and twining on the rare, endangered endemic *Lepinia taitensis* (Apocynaceae), a legally protected species in French Polynesia, in Papenoo Valley. This is the first time *Anodendron paniculatum* has been documented as an invasive species anywhere in the world.

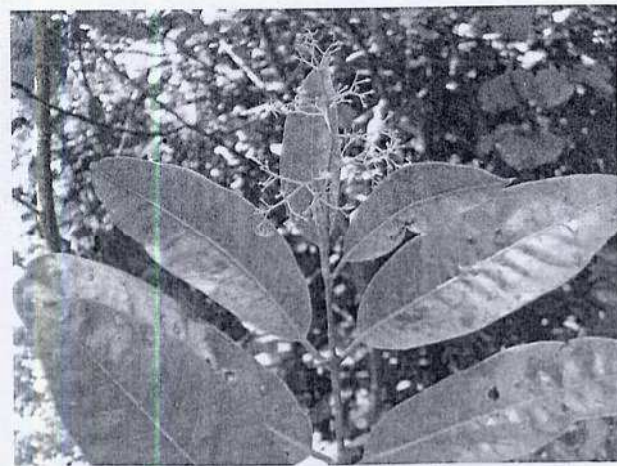


*A.paniculatum* seed Photo: Jean-Yves Meyer

The occurrence of this “new” plant invader illustrates the role of botanical gardens as a significant source of invasive plants. Historically, H.W. Smith also introduced to Tahiti some of what have since become some of Tahiti’s worst invasive species, such as *Cecropia peltata* in 1926, *Schinus terebinthifolius* in 1927, *Rhodomyrtus tomentosa* in 1928, *Spathodea campanulata* in 1932, *Miconia calvescens* in 1937, and *Ardisia elliptica* in 1939. According to herbarium specimens, the species was cultivated in Hilo in the Big Island of Hawaii (USA) back in 1958 (C. Imada, Bishop Museum, Honolulu, pers. comm), and has been grown in the past in botanical gardens in the Mascarene Islands (Leeuwenberg & Rudjiman, 2005).

Once again, French Polynesia appears to be living up to its reputation as a “paradise for invasive species” (see Aliens N°6 and N°21). Some alien plant species, e.g. the tree *Waterhousea floribunda* (Myrtaceae) or the palm *Licuala grandis*, have been reported as invasive only in these islands and nowhere else in the world. *Anodendron paniculatum* should be considered a potential invader (a “sleeper weed”) for other tropical islands and its transport, sale and cultivation should be restricted, if not banned.

A sleeper weed in Tahiti is the rubber vine *Cryptostegia grandiflora* R. Br. (Asclepiadaceae). This woody liana or shrub native to Madagascar is well-known as an invasive species in dry and riparian forests in New Caledonia and northeastern Australia. Introduced into Tahiti in 1936 by none other than H. W. Smith, the rubber vine is now widely planted as a garden ornamental and produces fruits and wind-dispersed seeds, yet, perhaps surprisingly, has not become naturalized. Is this seeming anomaly related to a lack of suitable habitats for its spread, or is it just a question of time before it becomes naturalized? The lag phase period for the invasion of *Anodendron paniculatum* in Tahiti was about 75 years. Further studies



are better able to predict the invasiveness of introduced species and the invisibility of fragile island biota.

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#### References

- Huber, H. 1983. Apocynaceae. Pp. 25-72 in Dassanayake M.D. (ed.), *A Revised Handbook to the Flora of Ceylon*, vol. 4. Amerind Publishing Co. Pvt. Ltd., New Delhi.
- Leeuwenberg, A. J. M. & Rudjiman. 2005. Apocynacées. Pp 5-31 in Autrey, J.-C., Bossier, J., Ferguson, I. K. & Guého, J. (eds), *Flore des Mascareignes : La Réunion, Maurice, Rodrigues*. 121. Apocynacées à 126. Boraginacées. IRD Éditions, Paris, Mauritius Sugar Industry Research Institute, Ile Maurice & The Royal Botanic Gardens, Kew.
- MacMillan, H. F. 1946. *Tropical Planting and Gardening. Fifth Edition.* MacMillan and Co., Ltd, London.
- Middleton, D. J. 1996. A revision of *Anodendron* A. DC. (Apocynaceae). *Blumea* 41: 37-68.
- Middleton, D.J. 1999. Apocynaceae. Pp. 1-153 in Santisuk, T. & Larsen, K. (eds.), *Flora of Thailand*, vol. 7. The Forest Herbarium, Royal Forest Department, Bangkok.



*A. paniculatum* covering native trees Photo: Jean-Yves Meyer

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# ALIENS

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## AN ASSESSMENT OF EXOTIC SPECIES IN THE TONLE SAP BIOSPHERE RESERVE, CAMBODIA - AND ASSOCIATED THREATS TO BIODIVERSITY

From June to December 2006 an assessment was made of exotic species occurring in the Tonle Sap Biosphere Reserve (TSBR) located in the north-west of Cambodia (see map). The TSBR contains the largest continuous areas of natural wetland habitats remaining in the Mekong basin and the largest permanent freshwater body in South-East Asia, the Tonle Sap Lake. In the dry season water flows from the Tonle Sap Lake to the Mekong River, but each year during the wet season (June-September) the level of the Mekong waters rise and the flow of the Tonle Sap River which connects the lake with the Mekong is eventually reversed so that water is pushed into the lake. As a result the area of the lake increases dramatically, between 3-6 times, from 2,700 km<sup>2</sup> to 9,000-16,000 km<sup>2</sup> and water level is raised from around 1 m to 7-9 meters (van Zalinge *et al.*, 2003). The TSBR, due to the size of the annual inundation area, forms the most important of the flooded areas for fish production in the Mekong river system, and the catch from the Tonle Sap area represents around 60% of Cambodia's inland fishery production (Hap Navy *et al.*, 2006). Besides the importance of the floodplain habitat for fish, it also supports the largest colonies of endangered waterbirds in South-East Asia and currently yields what is probably the world's largest snake harvest (Goes, 2005).

There are many pressures currently impacting on the lake and floodplain ecosystem, which are only likely to increase further in the short term, including habitat degradation, population growth, fishing pressure and potential hydrological changes. In the past, invasive alien species have often been underestimated as a threat to biodiversity. Managers also lacked the knowledge on how to control invasive alien species and a lack of prioritization meant that there was very little funding available for any eradication efforts. It is now recognized that invasive alien species are one of the leading threats to biodiversity worldwide, second only to habitat destruction (Williams, 2002), and their presence and impact also imposes enormous costs on agriculture, forestry, fisheries, and other human enterprises, as well as human health (Wittenberg and Cock, 2001).

Therefore it was felt that a study should be conducted that would assess which exotic species are (potentially) present in the TSBR and identify priority issues for their control. The study first reviewed all the available literature from recent biological surveys (1996 to present) to get an initial list of exotic species recorded from not only the TSBR, but also other wetlands in the Mekong Basin and then cross-checked this information with experts currently working in the TSBR, villagers living on the Tonle Sap Lake and additional surveys in several of the more sparsely populated areas, in order to get a list of confirmed species occurring in the TSBR. In order to make an assessment

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