

# Cremastra By Stig Dalström, Ngawang Gyeltshen and Thomas Höjjer

Little Known and Confusing, Hence a Botanist's Delight

THE GENUS *CREMASTRA* WAS ESTABLISHED by J. Lindley (1833) based on a plant collected by N. Wallich from Nepal. This plant had previously been described by D. Don (1825) as *Cymbidium appendiculatum*. Lindley apparently did not agree with the



Stig Dalström



Ngawang Gyeltshen



Thomas Höjjer

placement of this orchid in the genus *Cymbidium* and renamed the species as *Cremastra wallichiana*. The nomenclatural rules in those days, which allowed Lindley to do this, but today the correct name is *Cremastra appendiculata* (D. Don) Makino. The history of this genus is eloquently covered by Seidenfaden (1988), but is nevertheless rather confusing. There exist some conflicting opinions regarding where to place this genus, how many species exist and how to define them from each other. Having limited experience

with *Cremastra* throughout its impressive geographical distribution from Nepal in the west to Japan in the east, the authors will try to refrain from adding more controversy to the debate. Some points will be made, however, based on observations recently made in Bhutan that may help straighten out some of the question marks.

*Cremastra appendiculata* is a rather attractive orchid with a cluster of pale pinkish to yellowish flowers. The general appearance places *Cremastra* close to *Eulophia*, although Lindley (1833) placed the genus in his Vandeeae, between *Acropera* (today *Gongora*) and *Grammatophyllum*. There are several morphological oddities, however, that make *Cremastra* an intriguing genus. The vegetative parts seem to be rather variable, particularly the length and shape of the pseudobulbs. During a trip to Bhutan in May 2009, plants were found in two different locations, aside from a



1 STIG DALSTRÖM

few plants without collection information already in cultivation at the botanical garden at Serbithang, near Thimphu. Most plants produce a round, walnut-shaped (or *Stanhopea*-like) pseudobulb, carrying a single, occasionally two, plicate and rather broad leaves, but at least one field-collected plant had an elongate stemlike pseudobulb. The flowers were similar to other specimens, though, and appeared inseparable after a brief examination. It is unclear whether the “stem” was just the immature shape of the forming pseudobulb, or whether it represented the fully mature shape. It is important to note that if the former case is true, then this particular plant had a different growth pattern, flowering on immature growths.

The flower shape in general is unique and different from any other species in Bhutan. The elongate and narrow column, parallel with the equally narrow and slightly U-shaped lip gives flowers a rather “primitive” look where the “pistil” is clearly visible inside the column in a certain light.

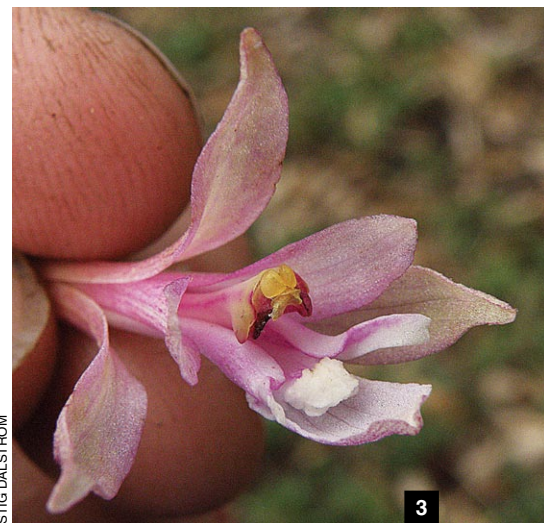
[1] *Cremastra appendiculata* growing in humus-rich sandy soil under shady conditions.

The plants collected in Bhutan all had flowers with a column that displayed short but broad apical lobelike “wings.” These wings are visible in a fresh state, particularly from a ventral view, but become difficult to distinguish on dried flowers. The wings can, therefore, easily be considered absent by mistake, or by a differing definition of what a column “wing” really is. The illustration of this species in *The Orchids of Bhutan* (Pearce and Cribb 2002) shows a ventral view of the column lacking any signs of wings.

The peculiar callus structure near the base of the front lobe of the lip of this orchid can also cause some confusion. On most flowers examined by us, this callus consists of a raised flap that is strongly verrucose (warty) on the apical side. On at least one flower from one of the inflorescences

examined, however, the verrucosity was absent and instead the flap was rather smooth and simple on both sides. Pearce and Cribb (2002) describe the callus on the lip as “a large warty process,” although the accompanying illustration show what looks like a smooth callus. This “discrepancy” may be caused by the illustrator using an immature or poorly developed, or poorly rehydrated, flower. A similar scenario could also explain the callus described as “glabrous” for *Cre. appendiculata* var. *variabilis* by Lund (Seidenfaden 1988). This could be a result of viewing the callus from above (dorsal view) on a dried and pressed flower where the “callus-flap” is pressed against the lip and the verrucosity is hidden underneath the flap. This is also what the illustration of the only specimen reported from Thailand shows (Seidenfaden 1988). The only part of the callus visible on the drawing is seen from a dorsal view. This plant is determined as *Cre. appendiculata* var. *variabilis*, and which is reported mainly from China, but also from Japan and Thailand.

In summary, this gives us one species; *Cre. appendiculata*, with two “varieties.” “Variety” *appendiculata*, with a “wingless” column and warty callus included in *The Orchids of Bhutan* (although no warts can be seen in the illustration), and “variety” *variabilis*, with column wings and a “glabrous” (smooth) callus. If we take into consideration the natural variability of this orchid as observed by us, it seems more plausible that we are dealing with only one variable and widespread entity. The morphological features may have been misinterpreted due to incomplete rehydration of herbarium specimens or poorly developed flowers, which may explain why different authors “see” different species (which is very easily done when only limited material is at hand). This does not mean that there definitely are no other species in the genus. Photographs of plants in flower from China and Japan suggest that additional species may indeed exist. Currently the *World Checklist of Selected Plant Families* (2012) recognizes four species: *Cremastra aphylla*, *Cremastra appendiculata*, *Cremastra guizhouensis* and *Cremastra unguiculata*. Unfortunately, there are only a limited number of preserved specimens available for detailed studies, and we may have to wait and see what happens when, and if, additional material from the extensive distribution of this genus (species complex?) becomes available. An effort will also be made during upcoming field trips by the authors to learn more about the natural variation of this fascinating orchid in Bhutan.



*Cremastra appendiculata* is found growing terrestrially in seasonally very wet deciduous forests in Bhutan, at elevations of 6,560–7,220 feet (2,000–2,200 m). The plants grow in rather shady conditions where the pseudobulbs are mostly hidden in the sandy soil, which is rich in decomposed organic material. This orchid grows together with several terrestrial species of *Calanthe*, *Liparis* and *Pleione*. Epiphytic species of *Bulbophyllum*, *Coelogyne*, *Cymbidium*, *Dendrobium*, *Eria*, *Otochilus*, *Pholidota*, etc. are also common in the same habitat.

#### References

- Don, D. 1825. *Prodromus Florae Nepalensis*. R. Wilks, London.
- Lindley, J. 1833. *The Genera and Species of Orchidaceous Plants; Vandaeae*. Treuttel and Co., London.
- Pearce, N.R., and P.J. Cribb. 2002. *The Orchids of Bhutan*. Royal Botanic Garden, Edinburgh, and Royal Government of Bhutan.
- Seidenfaden, G. 1988. Orchid Genera in Thailand: Fifty-Nine Vandaoid Genera. *Opera Botanica* 95.
- World Checklist of Selected Plant Families. 2012. The Board of Trustees of the Royal Botanic Gardens, Kew. <http://apps.kew.org/wcsp>. Accessed January 2012.

#### Acknowledgments

The authors thank the Government of Bhutan, the Departments of Agriculture and Forestry, Programs Director Tashi Yangzome Dorji and the staff at the National Biodiversity Center in Serbithang for administrative and logistic support and Pep Ruddiman and the Sarasota Orchid Society for funding part of the project.

Stig Dalström is a watercolor artist, botanical illustrator and experienced orchid taxonomist, specializing in the Andean genera *Cochlioda*, *Cyrtorchilum* and *Odonotoglossum*, among others. Recently, he has extended his field of interest to Southeast Asia, with a focus on the orchids of Bhutan. He is a research associate with *Centro de Investigación en Orquídeas de los Andes “Angel Andretta”* Gualaceo, Ecuador; *Lankester Botanical Garden*, University

- [2] *Cremastra appendiculata* flower details have a “primitive” look where the “pistil” is clearly visible inside the column.
- [3] The column of *Cre. appendiculata* flowers display short but broad apical lobelike “wings.”

of Costa Rica, Cartago, Costa Rica; and National Biodiversity Centre, Serbithang, Bhutan. Dalström is also an AOS taxonomic authority. 2304 Ringling Boulevard, Apartment 119, Sarasota, Florida 34237 (email [stigdalstrom@juno.com](mailto:stigdalstrom@juno.com); website [www.wildorchidman.com](http://www.wildorchidman.com)).

Ngawang Gyeltshen is assistant biodiversity conservation officer with the National Biodiversity Centre, Serbithang, Bhutan, and the Ministry of Agriculture, Thimphu, Bhutan. He received his diploma in forestry from the College of Natural Resources, Lobesa, Punakha, Bhutan, and received his postgraduate diploma in agrobiosystems, Khon Kaen University, Thailand. In addition, he has training in plant taxonomy and herbaria with experience at the Royal Botanic Garden, Peradeniya, Sri Lanka, and the Royal Botanic Garden, Edinburgh, Scotland. Gyeltshen has a special interest in the flora of Bhutan with a recent focus on the Orchidaceae. Wildlife Conservation Division, Forest Department, Bhutan.

Thomas Höijer, COO at Sollentuna Recycling, received his training in park and market garden management. He is the former COO of the Edvard Andersson Conservatory, The Bergius Botanical Garden, Stockholm. Among Höijer’s interests are tropical plants, with a focus on orchids and aroids, and the development of sustainable and environmentally friendly waste management methods and recycling. Däckelvägen 59 A, 17758 Järfälla, Sweden.