**Section Esmerelda** Rchb.f.

DISCUSSION: Doritis has alternatively been accepted as a genus separate from Phalaenopsis or as part of a broadly defined Phalaenopsis. The principal characters that have been used to separate Doritis are the long column foot, the long rostellum (and corresponding long stipe of the polli-narium), the presence of linear "appendages" toward the base of the lip, four pollinia, and the terrestrial habit. While the column foot of species in this section is long, forming a saccate-like structure with the clawed base of the lip, it is completely homologous to other species of Phalaenopsis (P lobbii, for example). The rostellum, although long in this group in absolute terms, occupies the same relative position over the stigmatic cavity found in other species (i.e., the stigmatic cavity of species in section Esmeralda is longer). Earlier authors noted erect linear "appendages" toward the base of the lip in this group of species, an example of inaccurate descriptive morphology. The midlobes of species in this section are three-lobulate, with the resulting lateral lobules in P buyssoniana and P pulcherrima large and pronounced. This three-lobulate structure has been misinterpreted as a three-lobed lip homologous to other species of Phalaenopsis. The linear "appendages" noted by Holttum and others are actually homologous to the lateral lobes found in other species of Phalaenopsis. This has been proven time and again through character inheritance in intersectional hybrids. The absolute separating character of four pollinia in Doritis versus two pollinia in Phalaenopsis has been proven false. In the circumscription of the genus used here, only two of the five subgenera bear two pollinia (subgenus Polychilos and part of subgenus Phalaenopsis). We are back to the old argument discussed previously that if one wants to accept Doritis on the absolute character of pollinia number, then Phalaenopsis must be split, according to the precepts of modern phylogenetic theory, into at least seven genera to have the end products represent holophyletic groups (monophyletic groups that include all derivatives). Such a solution needlessly emphasizes differences, is not required by scientific considerations, and is unacceptable in such an important genus as Phalaenopsis, where stability of names must be a pragmatic consideration. Finally, preliminary molecular data using the matK gene ( Jarrell unpubl.) reveals a phylogenetic pattern where Doritis falls in the mid-dle of Phalaenopsis, between subgenera Aphyllae and Polychilos on the one hand and members of section Phalaenopsis on the other. Again, if Doritis is maintained as a separate genus, at the very least Grafia and Polychilos must also be maintained as distinct genera (otherwise Phalaenopsis would be paraphyletic). Such a classification would require about half the registered Phalaenopsis hybrids be renamed under a new hybrid combination between Phalaenopsis and Polychilos—similar to what would happen if Vanda sanderiana Rchb.f. were treated as Euanthe sanderiana (Rchb.f.) Schltr.: most hybrid Vanda plants would have to be renamed as x Vandanthe plants (Euanthe x Vanda). This type of nomenclatural instability, not to say mayhem, is unacceptable. 2

DESCRIPTION: The callus of section Esmeralda is uniseriate. In P regnieriana the callus is bifid, similar to those found in sections Deliciosae and Polychilos; in the other two species the callus is simple, a character I take to be secondarily derived. When all this is taken into account, I see no reason to separate Dori-tis from Phalaenopsis, outside of historic precedent. The "sinking" of Doritis, following the earlier positions of Holttum and J. J. Smith, does cause problems with the registration of hybrids, however. The hybrid genus xDoritaenopsis (Doritis x Phalaenopsis) effectively disappears. But now that hybrid registration has been transferred to computers, this should not cause too much consternation away from the greenhouse potting bench. The duplication of names between hybrids registered as xDoritaenopsis versus Phalaenopsis appears to be minimal. One significant benefit of eliminating xDoritaenopsis is that it would eliminate many modern "doritaenopsis" that never actually had any species of section Esmeralda in their ancestry. When the three species of section Esmeralda are used in combination with those of other subgenera, the characters of section Esmeralda, especially the erect inflorescences, flower shape, and flower color, are quite dominant. Since the 1960s and on through modern bloodlines, a number of "doritaenopsis" were produced that bore large round flowers, either white or white with red lip, on arching sprays unlike most xDoritaenopsis. The chro-mosomes of species in section Esmeralda are longer than those of other members in the subgenus and can be differentiated in a karyotype (an analysis of an individual's chromosome complement). Recent work in Japan and Taiwan has shown that these aberrant "doritaenopsis" have no Doritis length chromosomes and probably resulted from mislabeled flasks of standard Phalaenopsis hybrids (Christenson 1999b). Lindley originally described P pulcherrima as an epiphyte. That and similar reports over the years are in error. The three species of section Esmeralda are terrestrial (or lithophytic among humus and moss on rocks), and most characters that define this section are uniquely de-rived characters (autapomorphies) associated with the terrestrial habit. In particular, the stiffly erect inflorescences are an adaptation to a ter-restrial habit. Also, unlike most Phalaenopsis species, which produce roots periodically throughout the growing season, plants of this sec-tion produce a principal flush of roots in a root collar all around the plant. This is presumably an adaptation to rooting in and rising above a fresh layer of leaf litter in nature. Preliminary investigation of flavonoid co-pigments (Griesbach un-publ.) shows a complex pattern in P pulcherrima that is similar to that found in P equestris. Curiously, anecdotal information from hybridizers also shows an affinity between these two species. They cross easily with each other and with their secondary hybrids. Reichenbach placed both P antennifera and P esmeralda in his section Esmeralda. The name-giving species is selected as the lectotype.2

References

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