

HYACINTHACEAE

THE GENERIC DELIMITATION WITHIN HYACINTHACEAE, A COMMENT ON WORKS BY F. SPETA

INTRODUCTION

The definition of genera and the assignment of species to genera within the family Hyacinthaceae, or subfamily Scilleae of the family Liliaceae, have troubled taxonomists since Linnaeus. The group is poor in quali-

tative characters, which has made it difficult to maintain stable genera based on good diagnostic characters. Species have often been moved from genus to genus either due to different opinions on generic delimitation or to misinterpretation of characters. Recently two works by Speta (1998a, b) have appeared that have addressed

generic delimitation within Hyacinthaceae. The first is a paper called 'Systematische Analyse der Gattung *Scilla* L. s.l. (Hyacinthaceae)' (Speta 1998a), the second is the treatment of Hyacinthaceae for 'The families and genera of flowering plants' (Speta 1998b). In these works the author has published a new generic delimitation within the family. As I have worked on sub-Saharan genera of Hyacinthaceae for several years (Stedje 1987, 1988, 1996, 1997, 1998, 2000; Stedje & Thulin 1995, and references therein), both as a biosystematist, and a molecular and floristic taxonomist contributing to new floras, I feel the need to comment on Speta's (1998a, b) new generic delimitations. A review of different taxonomists' opinions on the generic delimitation of Hyacinthaceae is given in Stedje (2001).

GENERAL COMMENTS ON THE WORKS OF SPETA (1998a, b)

In Speta (1998a) the family Hyacinthaceae is split into five subfamilies of which four are new: Chlorogaloideae Speta, Oziroëideae Speta, Urgineoideae Speta and Ornithogaloideae Speta. Of these, Oziroëideae, Urgineoideae and Hyacinthoideae are treated further with descriptions and species lists of selected genera. Later DNA analysis excludes Chlorogaloideae from Hyacinthaceae (Pfosser & Speta 1999). Oziroëideae is confined to South America, and I will not deal with it further here. Several of the genera in Speta (1998a) are described as new to science. There is extensive splitting of the 'traditional' genera *Urginea* Steinh. (or *Drimia* Jacq. if a wider generic circumscription is used), *Ornithogalum* L. and *Scilla* L. into newly described genera or reinstated ones. These new genera and generic reinstatements are presented practically without any discussion or justification. The groupings are said to have support in DNA sequence data, but no cladograms or reference to publication of these data are included. Later, in 1999, a paper including a phylogenetic analysis of Hyacinthaceae based on chloroplast DNA sequences appeared (Pfosser & Speta 1999). Unfortunately only a few sub-Saharan species are included here, and for most genera occurring in Africa south of the Sahara, only one species, if any, is analysed. When two or more species are analysed, the genera are, with one exception (*Drimiopsis*), para- or polyphyletic. Furthermore no diagnostic key is provided. A key is given in Speta (1998b), but in that work several of the genera of Speta (1998a) are not included (see below for further comments on this issue). The definition of the genera of Speta's (1998a) new treatment of the family Hyacinthaceae is in other words very unclear. Unfortunately, throughout this work virtually no discussion is given prior to his conclusions, making a meaningful discussion between taxonomists difficult. Furthermore, insufficient details are given of the material studied: no indication of the type of material seen, whether herbarium specimens or living plants, or how many specimens were studied for which species.

COMMENTS ON THE SUBFAMILY URGINEOIDEAE

The treatment of this subfamily is rather confusing. Altogether 12 genera are listed as belonging to the subfamily Urgineoideae in the introductory part of Speta (1998a: 53). Two of these genera (*Bowiea* Hook f. and

Schizobasis Baker) are not treated further in the part containing generic descriptions, while three genera are described here under subfamily Urgineoideae, but not listed on p. 53: the reinstated genus *Fusifilum* Raf., and the new genera *Igidia* Speta and *Urginavia* Speta. In Speta (1998b) four of the genera of Speta (1998a) are not included. These are *Fusifilum*, *Urginavia*, *Charybdis* Speta and *Ebertia* Speta. They may be included under what in the diagnostic key of Speta (1998b) is referred to as *Urginea* s.l. If the manuscript of Speta (1998b) was completed before the manuscript of Speta (1998a), one would expect to find a key to these critical genera included in the latter. This would help to clarify the distinctions between these genera.

Drimia sensu lato as a 'Monstergattung'

Botanists have in recent years advocated either a wide (Jessop 1977; Stearn 1978; Stedje 1987, 2000) or a narrow (Stirton 1976; Obermeyer 1980, 1981; Hilliard & Burt 1982) circumscription of the genus *Drimia*. I have discussed this issue in detail elsewhere (Stedje 1987, 2000), and will not repeat that discussion here. Speta (1998a) calls *Drimia sensu lato* a 'Monstergattung'. He does not define this expression, but his intention is clearly uncomplimentary. *Drimia sensu lato* consists of up to 100 species, a number quite modest when compared with some other Angiosperm genera. There is of course variability within the genus, but not to the extent that it forms a 'rag-bag' taxon with highly heterogeneous elements. The genus is well defined by its winged seeds, an autapomorphy for *Drimia* s.l., and the spurred bracts, a synapomorphy of *Drimia*, *Bowiea* and *Schizobasis*.

Where have all the *Drimia* species gone?

Under each of the genera provided with descriptions in Speta (1998a), a list of species is given. The species list of the genus *Ledebouria* Roth is said to be incomplete, but this is not said of any of the other genera. One may therefore interpret those other species lists as intended to be complete. For Africa south of the Sahara this leaves us with 15 species of *Drimia* (*sensu lato*) recognized by either Jessop (1977) or Stedje & Thulin (1995), which have not been taken into account by Speta (1998a). Does this mean that the 15 species are not regarded as belonging to Hyacinthaceae any more, or are they simply forgotten? If so, how can 15 species be neglected and why are names that Jessop (1977) regarded as synonyms of some of these species included? How can one possibly fit these forgotten species into genera when, as mentioned above, the circumscription of the genera is unclear and no key is given?

One species or three genera?

In the case of the genus *Avonsera*, discussed later, two apparently discordant species were combined in a single genus. There are also, in Speta's work (Speta 1998a), cases where apparently closely related species are segregated into different genera. Four synonyms of *Drimia modesta* (Baker) Jessop (*sensu* Jessop 1977) have been placed in three different genera, *Urgineopsis* Compton, *Thuranthos* C.H.Wright and *Fusifilum*. The

species are *U. salteri* Compton, *T. revoluta* (Duthie) Speta, *F. dregei* (Baker) Speta and *F. gracilis* (Duthie) Speta. As already mentioned, different botanists must be allowed to have different opinions as long as appropriate documentation is presented. This is, however, not done here.

COMMENTS ON THE SUBFAMILY ORNITHOGALOIDEAE

Several of the genera recognized in this subfamily have previously been included in the genus *Ornithogalum* L. The sub-Saharan *Ornithogalum* is, for example, split into the genera *Stellarioides* Medicus, *Coilonox* Raf., *Eliokarmos* Raf. and *Zahariadia* Speta, a new genus which is possibly monotypic. The first three genera appear to coincide in part with Obermeyer's (1978) subgenera even if it seems that only a part of Obermeyer's subgenus *Urophyllon* is accommodated by the genus *Stellarioides*. Where the rest of the subgenus *Urophyllon* is to be placed, is unclear. The subfamily Ornithogaloideae is split into the tribes Dipcadiaceae and Ornithogaleae. These tribes are based on seed characters, which are mainly quantitative, and they key out at lead 13 in Speta (1998b). The alternatives of this lead are not very clear and it should be possible to simplify them. The same applies to lead 12 which also refers to seed characters and is even less clear. The two alternatives of lead 13 are, for example: 1) Seeds flattened, orbiculate, D-shaped, or elongate; tepals green, brown or yellow, or whitish, with a green streak, versus 2) Seeds minute, comma-shaped, glabrous or shortly pilose, rarely edged, or large, elongate, with irregular edges, or globose to ellipsoid; tepals white, with or without a green stripe, or yellow or orange. Within this subfamily both tribes and genera are defined largely on the basis of quantitative characters of the seeds. For me it is difficult to understand the necessity of this excessive splitting. Take, for example, three species, the sub-Saharan *O. tenuifolium* F. Delaroché, the Moroccan *O. sessiliflorum* Desf. and the Mediterranean *O. narbonense* L. These three species are very similar in all characters, except possibly for some differences in quantitative morphological characters between the two Mediterranean species, and in the Mediterranean species having more turgid seeds than *O. tenuifolium*. I am not absolutely sure in which genera to put these species as Speta does not treat them specifically. *O. sessiliflorum* in particular, does not quite fit in anywhere. As I interpret Speta's new system, however, these three species are put into two different tribes, Dipcadiaceae and Ornithogaloideae, and three different genera *Stellarioides*, *Cathissa* Salisbury and *Lonocomelos* Raf. respectively.

COMMENTS ON THE SUBFAMILY HYACINTHOIDEAE

For this subfamily the treatment is far less confusing than for subfamily Urigineoideae, but there are some points to be commented on. Altogether 38 genera are listed as belonging to the subfamily Hyacinthoideae. Of these, just 21 are treated with full descriptions in the following text, and there is no obvious reason for omitting the 17 others. One of these 17 genera, *Namophila* U. & D. Müller-Doblies, is not mentioned at all in Speta (1998b).

The genus *Avonsera* Speta

The new genus *Avonsera* Speta is based on two species, *A. convallarioides* (Perrier) Speta and *A. lachenalioides* (Baker) Speta (Speta 1998a). *A. convallarioides* is a species endemic to Madagascar, originally described in the genus *Ornithogalum*. Obermeyer (1978), in endorsing the placement of the species in *Ornithogalum*, writes: 'the characters of the flowers, capsules and seeds agree with *Ornithogalum*'. *A. lachenalioides* is confined to KwaZulu-Natal and Eastern Cape and was placed in *Drimiopsis* by Jessop (1972). It appears strange to base a genus on two species with a rather disjunct distribution that have recently been placed in two distantly related genera by two competent South African botanists. There may of course be good reasons for doing so, but one would expect a short discussion of the issue. I have not seen such in either Speta (1998a) or Speta (1998b).

CONCLUSION

Speta's (1998a, b) treatment of Hyacinthaceae is an unfortunate case of excessive splitting of the family which will create more confusion than clarity. Many of the genera, especially the new ones are monotypic. His conclusions have no clear proven basis, neither in cladistic analyses, nor in more classical criteria for generic delimitation such as giving emphasis to qualitative morphological characters and using minor characters only to preserve genera already recognized. A full review on this issue is given by Stuessy (1990, and references herein). Speta's generic delimitation might fit the Mediterranean and European species of the family, but I see substantial difficulties when applied to sub-Saharan species.

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