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The validity of *Ochetophila* POEPP. ex ENDL. (Rhamnaceae: Colletieae)

Summary

It is shown that doubts raised recently (Feddes Rep. 119: 622–624, 2008) about the validity of *Ochetophila* POEPP. ex ENDL. as distinct from *Discaria* HOOK. are based on unsound arguments. The distinctness of *Ochetophila* rests upon a solid cladistic analysis of the tribe Colletieae (Rhamnaceae) and adequately reflects the current knowledge of this group.

The tribe Colletieae REISSEK ex ENDL. comprises 20 species from the Americas, Australia and New Zealand (MEDAN & SCHIRAREND 2004). We performed a cladistic analysis of 19 species, based on a dataset of 54 morphological and anatomical informative characters, combined with sequences over 800 bp long from the chloroplast genome (*trnL*_{UAA} intron and *trnL-F* spacer), which produced a phylogeny generally consistent with the previous assignment of species into genera (AAGESEN et al. 2005). However, the genus *Discaria* HOOK. was shown to be polyphyletic, with two species located in a clade different from the one including the type species. The species in this smaller clade had been previously placed in a separate genus *Ochetophila* POEPP. ex ENDL., which we then reinstated (KELLERMANN et al. 2005) to put the classification of the tribe Colletieae in line with current knowledge.

Recently, TORTOSA (2008) raised doubts about the validity of the resurrected *Ochetophila* on the basis of two arguments. Firstly, he claimed that some morphological traits were overlooked or improperly considered in our analysis, i.e. the petals of *D. pubescens*

(BRONGN.) DRUCE and the leaf margin of *D. nitida* TORTOSA and *D. toumatou* RAOUL. Secondly, TORTOSA stated that the existence of individuals morphologically intermediate between a species of *Discaria* s.s., *D. chacaye* (G. DON) TORTOSA, and each of the two *Ochetophila* species, *O. trinervis* (GILLIES ex HOOK. & ARN.) POEPP. ex MIERS and *O. nana* (CLOS) KELLERMANN, MEDAN & AAGESEN, were not given adequate importance.

Contrary to TORTOSA's (2008) assertion, in our analysis, petals were correctly coded as present in *D. pubescens*, and leaf margins were properly coded as polymorphic in *D. nitida* and *D. toumatou* (AAGESEN 1999, Appendix 2; AAGESEN et al. 2005). This is consistent with the description of the flowers and leaves of these species by TORTOSA (1983a).

Putative hybrids between *Discaria* and *Ochetophila* were not overlooked in our analysis, but explicitly left out (see AAGESEN 1999 for a detailed justification of this decision). The really important point here is whether or not the existence of hybrids between species of different genera should cast doubts about the distinctness of the parental taxa. We believe the answer is no. The botanical literature abounds with reports of naturally occurring intergeneric hybrids, e.g. in the families Apiaceae (WEBB & DRUCE 1984), Asteraceae (TARA 1972; CLARKSON 1988), Brassicaceae (APEL et al. 1984), Cyperaceae (FERNALD 1918), Cupressaceae (FARJON et al. 2002), Liliaceae s.l. (ROWLEY 1982), Myoporaceae (CHINNOCK 2007), Orchidaceae (ADAMS & ANDERSON 1958), Poaceae (STACE & COTTON 1974) and

Solanaceae (EL IMAM et al. 1991). The discovery of these hybrids has apparently never led to loss of generic entities. Within the Colletieae, TORTOSA (1992) himself reported three individuals with characters intermediate between *Retanilla trinervia* (GILLIES & HOOK.) HOOK. & ARN. and *Trevoa quinquenervia* GILLIES & HOOK., which he assumed to be possible intergeneric hybrids. Their existence, however, was no impediment for TORTOSA's (1992) acceptance of *Retanilla* (DC.) BRONGN. and *Trevoa* MIERS ex HOOK. as distinct genera. Why should the existence of intermediate individuals between *Discaria* and *Ochetophila* be interpreted otherwise, as now advocated by TORTOSA (2008)?

While hybridization has no mandatory taxonomic consequences, it still seems reasonable that frequent hybridization be considered a hint of taxonomic closeness. Is this the case of *Discaria* and *Ochetophila*? Again, we think it is not. Intermediate individuals between *D. chacaye* and the two *Ochetophila* spp. are very rare; moreover, it is still unsettled if they are true hybrids or rather represent part of the variation of the extremely polymorph *D. chacaye* (see ARBETMAN et al. 2007 for work in progress on this topic). Only two intermediate individuals between *D. chacaye* and *O. nana* have been reported, and only three between *D. chacaye* and *O. trinervis* (TORTOSA 1983b). Such low numbers are unexpected under the hypothesis of easy hybridization, because no obvious geographical or phenological barriers exist in either case. The altitudinal ranges of *D. chacaye* and *O. nana* are in contact at ca. 2000 m a.s.l. over several degrees of latitude along the South American Andes (TORTOSA 1999) and both species' flowering periods overlap in December (MEDAN 1993; MEDAN unpublished). On the other hand, populations of *D. chacaye* and *O. trinervis* coexist at close proximity and can even be mixed, their flowering periods overlap briefly at some sites and years, both species share several taxa of floral visitors, and *O. trinervis* disperses part of its pollen by wind (MEDAN & DEVOTO 2005; MEDAN unpublished). Thus the scarcity of intermediate individuals clearly suggests that the reproductive barriers between *Discaria* and *Ochetophila* are not weak, but stronger than expected between closely related taxa.

In conclusion, TORTOSA's (2008) arguments are unsound. The distinction of *Ochetophila* as a genus different from *Discaria* is based on a solid cladistic analysis and adequately reflects the available knowledge on Colletieae. Thus, *Ochetophila* deserves wide acceptance by the scientific community.

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