

BEAT ERNST LEUENBERGER & URS EGGLI

A note on a mixed type collection: *Cereus deserticola* Werderm. (*Cactaceae*)

Abstract

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The type of the name *Cereus deserticola*, published in 1929 for a species from Chile currently placed in *Trichocereus* or *Echinopsis*, is composed of material representing two different genera. The flowers belong to the taxon for which the name was intended and has subsequently been used, the vegetative material clearly belongs to an *Eulychnia* species. Lectotypification of the name is provided.

Introduction

Cactaceae are notorious for their often fragmentary herbarium specimens. Even worse, mixtures of material caused by inadequate handling, transport, mounting, or some other accidents are not rare, though normally detected by monographers. Plants with superficially similar vegetative characters but well distinguished flowers appear to be a particular problem. Small pieces can easily fall off the plant press or a pile of material and there certainly is particular risk for such accidents, as the authors can tell from personal experience in the field and in the herbarium.

During field work in Chile, in 1991, the authors became interested in anatomical features of *Eulychnia*. While preparing cross-sections of the stem for herbarium specimens, the second author observed the conspicuous, thick, green, palisadelike parenchyma, and the tough, almost dry, not juicy but coarsely "granular-spongy" tissue of the cortex and interior of the stem. It is very different from the smooth, fleshy mucilaginous tissues of *Trichocereus*. This was found to be a good and possibly unique character for recognizing vegetative material of *Eulychnia* in comparison with the superficially similar species of *Trichocereus* occurring sympatrically, a similarity particularly deceiving in juvenile plants. This distinctive anatomical feature was subsequently checked by the authors in herbarium material at B, SGO, and ZSS and proved to be reliable. In a preliminary test, the toughness of the tissue was found to be due to lignification of the cell walls of large, bladderlike cells. It will be discussed in some more detail in a separate note on *Eulychnia*.

***Cereus deserticola* Werderm.**

During the revision of herbarium material, further discoveries were made, which demonstrate that the similarity of some species of *Trichocereus* and *Eulychnia* have probably deceived more than one botanist working with cacti. A particularly intriguing case concerns a collection represented in several herbaria: Werdermann 869, the type of the name *Cereus deserticola* Werderm. in Notizbl. Bot. Gart. Berlin-Dahlem 10: 764. 1929.

An isotype of the name *Cereus deserticola* still exists in the herbarium of the Botanic Garden and Botanical Museum Berlin-Dahlem (B). This specimen was not listed by Leuenberger (1978, 1979) as this list contained only the saved material of the spirit collection. The holotype was lost in 1943 and the specimen now extant must have been taken from a set of undistributed duplicates at that time kept separate from the general herbarium. A handwritten list of these saved Werdermann collections at B compiled by Werdermann himself still exists. According to a note in the herbarium files, this list was checked in 1968 and in 1987 and shows that 989 of the original 4905 Chilean collections of Werdermann are still extant at B (Hiepko 1987). A note in Werdermann's handwriting on this list, dated February 1944, states that duplicates of the collection numbers 837 to 875 were heavily damaged by water and should be replaced, if possible, by material from other duplicate sets. The specimen of *Cereus deserticola*, Werdermann 869, is among these. Further duplicates of this and other Werdermann collections of *Cactaceae* exist in other herbaria as already noted by Kiesling (1986, and pers. comm.). The duplicates of Werdermann 869 examined by the authors are all composed of flowers of a *Trichocereus* species and stem fragments clearly showing anatomical features of *Eulychnia*.

The case is particularly intriguing because Werdermann (1937) commented on allusions by Backeberg (1936) that *Cereus deserticola* was an *Eulychnia* because he (Backeberg) had not seen any *Trichocereus* around Taltal, Chile. Werdermann, who was well aware of the difference in flower characters between *Trichocereus* and *Eulychnia* defended his view with a photograph of a flowering plant (clearly a *Trichocereus*) in habitat, illustrations of herbarium material of flowers of species of both genera, and with a photograph of the holotype of *Cereus deserticola* at B, which also clearly shows the *Trichocereus* flowers. Werdermann was apparently not aware of the anatomical difference of the stem in *Trichocereus* and *Eulychnia* and did not comment on this, but neither did Backeberg. It can be assumed that Werdermann knew about the presence of

Eulychnia in the Taltal area, where he spent some time in October/November 1925 (Werdermann 1927). In his article on *Cereus deserticola* (Werdermann 1937), he illustrated herbarium material of a flower of *Eulychnia iquiquensis* from Taltal, unfortunately without indicating the collector. This material was apparently lost in 1943. Werdermann also illustrated the habitat of *Cereus spinibarbis* (= *Eulychnia spinibarbis* sensu Britton & Rose) and *Echinocactus cinereus* (= *Copiapoa cinerea*) near Taltal (Werdermann 1931: Fig. 31a).

The similarity of plants belonging to two different genera and occurring in the same habitat in the vicinity of Taltal is striking, as the authors could confirm during field work in 1991 and again in 1994, when special attention was given to observations of these genera. Did Werdermann make a mixed collection or could there be another reason? Our first suspicion that a mixture could have occurred in the distribution of duplicates proved improbable since the photograph of the destroyed holotype at B (Werdermann 1937: 22) clearly shows the same mixture of *Trichocereus* flowers and *Eulychnia* stems as in the isotypes. Werdermann's unpublished list of collections still extant at B does not contain any *Eulychnia*. Therefore, it must be concluded that the mixture occurred when the material was collected, presumably by taking the vegetative parts from a similar looking plant of *Eulychnia* nearby.

Werdermann's description of the vegetative characters in the protologue of *Cereus deserticola* are based both on the field notes and on the dried material. The habit described agrees with field observations of *Trichocereus* and with the photograph later published by Werdermann (1937), the data on the colour of the spines (dirty blackish to grey) and of the tomentum of the areoles (blackish to grey) suggest that this information was taken from the herbarium material which belongs to *Eulychnia*. Hence the description is a mixture as well, the greater part referring to *Trichocereus*. This makes a formal lectotypification necessary. According to ICBN Art. 9.10 (Greuter & al. 1994), the "name must remain attached to that part which corresponds most nearly with the original description or diagnosis". In this case, the choice is not controversial and ascertains not only the correct interpretation of the name in accordance with the clear intention of Werdermann but also maintains current usage in accordance with ICBN Rec. 9A.5.

Cereus deserticola Werderm. in Notizbl.

Bot. Gart. Berlin-Dahlem 10: 764. 1929(C. "*deserticolus*"; for the correct termination of the epithet see Stearn (1992: 387) "sub-cola"). - Lectotype (here designated): "Chile, Prov. Antofagasta, Dep. Taltal, Taltal", 500 m, 10.1925, *Werdermann 869* [p.p.: flowers only, excluding the stem parts] (B; isotypes: BM, G, K, U). - Fig. 1.

Note: The duplicate specimen at G was annotated by P. C. Hutchison in 1961 as "Lectotype of *Cereus deserticolus*". Other known duplicates (E, US) could not yet be examined. The flowers of the specimens seen are 8-9 cm long, funnellform, and belong to the taxon described and intended by Werdermann, the stem parts (transverse sections and ribs with densely spaced areoles, conspicuous palisadelike parenchyma, and coarse granular-spongy tissue) undoubtedly belong to *Eulychnia*.

The current names for *Cereus deserticola* as used in recent literature on Chilean cacti are *Trichocereus deserticola* (Werderm.) Looser (used by Ritter 1980, but combination erroneously attributed to Backeberg), and *Echinopsis deserticola* (Werderm.) Friedrich & G. D. Rowley (used by Hoffmann 1989, and Hunt 1992). The species is possibly conspecific with *Trichocereus nigripilis* (Phil.) Backeb. (perhaps the oldest name for plants of this alliance) and *Trichocereus fulvilanus* F. Ritter. This cannot be ascertained without data on the areole and spine characters of *Cereus deserticola*, which are not available. *Trichocereus fulvilanus* F. Ritter is based on material from the same general region (Taltal), distinctive according to Ritter mainly by the orange-reddish tomentum of the areoles and by longer flowers. The photograph published by Werdermann (1937) resembles more Ritter's *Trichocereus fulvilanus* than Ritter's illustration of what he calls *T. deserticola* (Ritter 1980: Figs. 1073, 1074, 1076).

Plants labelled *Trichocereus deserticola* in the Botanic Garden Berlin-Dahlem grown from seeds collected by Ritter and acquired from H. Winter in 1959 have yellowish to brown spines, pale grey areole tomentum and flowers ca. 10 cm long, agreeing with Ritter's description. They may or may not be the same taxon as Werdermann's plant.

A possible identification of the vegetative material of *Werdermann 869* is *Eulychnia breviflora* Phil. var. *taltalensis* F. Ritter, based on the collecting locality and the dark tomentum of the areoles (Ritter 1980). The taxonomic status and delimitation of *Eulychnia* species described for Taltal and vicinity also need further investigation.

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