Gayana Bot. 56(2): 109-113, 1999 ISSN 0016-5301

TYPIFICATION OF *CEREUS NIGRIPILIS* PHIL. (CACTACEAE) FROM CHILE

TIPIFICACION DE CEREUS NIGRIPILIS *PHIL. (CACTACEAE) DE CHILE*

Beat Ernst Leuenberger* & Urs Eggli**

ABSTRACT

The confusing taxonomic history of *Cereus nigripilis* Phil. (better known as *Trichocereus nigripilis* or *Echinopsis nigripilis*) is briefly discussed. It is shown that the type specimen sheet at SGO is composed of heterogeneous elements. The sheet contains a flower belonging to *Echinopsis* (*Trichocereus*) and vegetative material of *Eulychnia* sp. (probably *E. breviflora*). A specimen at HAL is composed of stem and flower fragments all belonging to the taxon intended in the description. A further specimen at W is discussed. Lectotypification of the name *Cereus nigripilis* is provided. The currently accepted name of this taxon is *Echinopsis nigripilis* (Phil.) Friedrich & G. D. Rowley.

KEYWORDS: Cactaceae, *Cereus*, Chile.

RESUMEN

Se discute la confusa historia taxonómica de *Cereus nigripilis* Phil., taxon actualmente conocido como *Trichocereus nigripilis* o *Echinopsis nigripilis*. Se muestra la heterogénea composición del espécimen tipo en el herbario SGO, compuesto por una flor de *Echinopsis* (*Trichocereus*) y material vegetativo de *Eulychnia* sp. (probablemente *E. breviflora*). Otro espécimen en el herbario HAL consiste de fragmentos de tallo y flor que concuerdan con la descripción dada en el protólogo. Se menciona un espécimen del herbario W. Se hace la lectotipificación del nombre *Cereus nigripilis*. El nombre actualmente aceptado es *Echinopsis nigripilis* (Phil.) Friedrich & G. D. Rowley.

PALABRAS CLAVES: Cactaceae, *Cereus*, Chile.

INTRODUCTION

Cactaceae are notorious for their often fragmentary or totally lacking herbarium specimens. Mixtures of material have caused confusions in the application of names of Chilean cacti, e.g., in cases discussed by Leuenberger & Eggli (1996, 2000). A similar, even more complicated case is *Cereus nigripilis* Phil., a plant described by Philippi (1860: 23) from Chile with the range indicated as "Coquimbo to Paposo" in the Atacama desert.

* Botanischer Garten & Botanisches Museum Berlin-Dahlem, Freie Universitaet Berlin, Koenigin-Luisestr. 6-8, D-14191 Berlin, Germany. E-mail: Leu@zedat.fu-berlin.de
** Sukkulenten-Sammlung Zuerich, Mythenquai 88, CH-8002 Zuerich, Switzerland. E-mail: urs.eggli@bluewin.ch

The name *Cereus nigripilis* has been interpreted controversially: Britton & Rose (1920) placed it in the synonymy of *Trichocereus coquimbanus* (Molina) Britton & Rose, by itself a serious problem of interpretation because Molina's Cactus coquimbanus cannot be the same as the plant described by Britton & Rose, as already discussed by Ritter (1980).

Ritter (1965, 1980) placed *Cereus nigripilis* in the synonymy of a different yet also highly controversial older name based on a seedling plant with unknown flower characters, *Cereus spinibarbis* Otto ex Pfeiff. (1837). Ritter treated it as *Trichocereus spinibarbis* (Otto ex Pfeiff.) F. Ritter. It should be noted that Britton & Rose (1920) had placed *Cereus spinibarbis* in a different genus, as *Eulychnia spinibarbis* (Otto ex Pfeiff.) Britton & Rose. Both are considered by Hunt (1992) as misapplied names and

were listed as synonyms of *Eulychnia breviflora* Phil. (1860), while *Cereus nigripilis* is not listed, and *Trichocereus nigripilis* is referred to *Echinopsis* sp. Hoffmann (1989) mentioned *Cereus nigripilis* as an ambiguous name. Hunt (1999) provisionally accepts *Echinopsis spinibarbis* and refers *Cereus nigripilis* to *Echinopsis* sp.

Ritter's comment (Ritter, 1980, p. 1111, 1112, under *T. coquimbanus*) suggests that he saw the herbarium material of Philippi's *Cereus nigripilis* at SGO, but he appears to have been unaware of the generic problem involved with this particular herbarium sheet. At least he did not mention the genus *Eulychnia* in his discussion of *Cereus nigripilis* and only concluded that Philippi, included in *Cereus nigripilis* five different low growing *Trichocereus* species from an area between Los Vilos in the South and El Cobre in the north. These would be, although not explicitely listed by Ritter (1980) *T. litoralis* (Johow) Looser, *T. serenanus* F. Ritter (=*T. coquimbanus* sensu Britton & Rose), *T. spinibarbis* (Otto ex Pfeiff.) F. Ritter, *T. fulvilanus* F. Ritter, and *T. deserticola* (Werderm.) Backeb.

During studies in the herbarium of the National Museum of Natural History at Santiago de Chile (SGO) in 1993 the authors became aware of the mixed type material of *Cereus nigripilis* Phil. and annotated the specimen (SGO 052682) as "flower of *Trichocereus* sp., stem parts of *Eulychnia* sp.". In 1995 the first author located an authentic specimen of *Cereus nigripilis* Phil. in the herbarium of the Martin Luther University at Halle, Germany (HAL), consisting of a flower fragment and two areoles, all belonging to *Echinopsis* (*Trichocereus*). Another, more doubtful specimen consisting of one flower only, is extant at the Natural History Museum in Vienna (W). This rather confusing situation, as well as the difficulties of segregation of taxa of Chilean *Trichocereus* and *Eulychnia* in the herbarium and in the field, called for a careful analysis of the protologue and of the type material of *Cereus nigripilis*. Because *Cereus nigripilis* will have priority over many later names, the effects of the lectotypification of this name must be taken into account: *Eulychnia* was established as a new genus concurrently with the description of *Cereus nigripilis*, with the single species *E. breviflora*. All other species of *Eulychnia* have been described later and would therefore potentially be threatened by the prioritable *C. nigripilis*, should this name become lectotypified with the vegetative material of the specimen at SGO.

THE ORIGINAL DESCRIPTION OF *CEREUS NIGRIPILIS*

The description of *Cereus nigripilis* Phil. (Fl. Atacam.: 23. 1860) appears to be only partly based on herbarium material and includes observed characters, like the size of the plant (3-4 feet tall), the branch diameter (3 inches), the rib number (12-13), the rather dry and insipid fruit, and the small black seeds of .5 lin. length. Vegetative characters include: very short, brown areole wool turning gray, spine number to 20, unequal, the shorter setiform to 10 lin. (2,1 cm) long, the longest to 28 lin. (5.8 cm) long. The flower is described as white, 12 cm long, with a tube, the base densely covered with black hairs. Philippi distinguishes the species from *C. quisco* (now considered to be a synonym of *Echinopsis chiloensis*) from the central provinces and gives the distribution of *Cereus nigripilis* as "a Coquimbo usque ad Paposo forte magis ad boream crescit" (from Coquimbo to Paposo and perhaps growing much more to the north).

The protologue excludes the possibility of *Cereus nigripilis* becoming confused with or even becoming a synonym of *Eulychnia breviflora* due to the maximum spine length of 5.8 cm, the large flower size and shape, the black hairs, dry fruit, and the black seeds.

THE TYPE AND OTHER MATERIAL OF *CEREUS NIGRIPILIS* PHIL.

In the R.A. Philippi collection at SGO there is a specimen (SGO 052682) without collector's name or number but labelled in R. A. Philippi's handwriting as "*Cereus nigripilis* Ph." from "Coquimbo Nov. 1853". This sheet was annotated by Muñoz Pizarro in Dec. 1945 as "Typus" (see also Muñoz Pizarro, 1960). The locality and date coincide with R.A. Philippi's itinerary of his trip to Coquimbo and further north from November 1853 to November 1854 (Taylor & Muñoz Schick, 1994). The label can certainly be attributed to R.A. Philippi (Fig. 1). A closer look at the specimen, however, revealed that only the flower definitely belongs to *Echinopsis* (*Trichocereus*). The lower rib fragment has to be identified as *Eulychnia* sp. due to the presence of a layer of palisade-like sclereids and of globular sclereids in the cortex (Leuenberger & Eggli, 1996; Nyffeler, Eggli & Leuenberger, 1997; Leuenberger & Eggli, in press). The upper rib fragment looks like *Eulychnia* as well

but the scarce amount of tissue with only the epidermis left leaves some doubt. Microscopic investigation will eventually make it possible to identify this fragment beyond any doubt as well, as current studies on epidermal characters of the group suggest (Nyffeler & Eggli, submitted).

The specimen at HAL is labelled "*Cereus nigripilis* Ph., Coquimbo" in R.A. Philippi's handwriting and stamped "R.A. Philippi: Chile". It contains a fragment of a flower and two areoles (Fig. 2). The flower fragments are from the delicate throat of a large *Echinopsis* (*Trichocereus*) flower. The two areoles with small pieces of epidermis and cortex still attached, can be easily identified as belonging to the same genus based on the anatomical characters discussed above. There are no palisade-like sclereids. The thick epidermis is clearly colliculate with sunken stomata, just like that of recent herbarium specimens of *Echinopsis* (*Trichocereus*) spp. from this area (Nyffeler & Eggli, submitted).

A Philippi specimen at Vienna (W) with the sheet number 1889-126799 from the Reichenbach collection is labeled "*Cereus nigripilis* Ph., Illapel prope Coquimbo", and (printed) "Chili leg. Philippi". It consists of a flower, cut in two halves, which is only 8.5 cm long and only sparsely short hairy. It does not match the protologue in flower size, indument and geographic origin and cannot be considered for the lectotypification of the name.

The mixed nature of the material at SGO (SGO 052682) and the presence of a fragmentary but homogeneous and more trustworthy duplicate at HAL call for a careful lectotypification of the name *Cereus nigripilis*. 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".

Comparison of the material SGO 052682 with the original publication (Philippi, 1860) results in complete harmony only as far as the flower characters are concerned, i.e., Philippi has exactly described the flower. The description contains no vegetative characters allowing to distinguish between the two genera. However, the maximum spine length on the lower rib fragment of the specimen at SGO (8 cm) considerably exceeds the maximum indicated by Philippi (5.8 cm), adding another argument to demonstrate the mixture.

The description of the flower in the protologue leaves no doubt that *Eulychnia* spp. can be excluded from Philippi's concept of *Cereus nigripilis*. The only two taxa of *Eulychnia* occurring in the Coquimbo region are *Eulychnia acida* and *E. breviflora*, and both have flowers which are maximum 5-6 cm long. In the case of *E. acida* they are scaly with little pronounced axillary hairs along the whole length of the pericarpel, while *E. breviflora* has flowers which are completely enveloped with conspicuous long but not black hairs. Accordingly, *Cereus nigripilis* must be based primarily on the floral material of the type specimens and remains definitely a member of *Echinopsis* (*Trichocereus*). Here we have at least two elements older than 1860: *Cactus coquimbanus* Molina (1782), and *Cactus chiloensis* Colla (1826). Since both of these names present presently unresolved difficulties to ascertain their correct application, we are yet unable to say which status *C. nigripilis* will have when the whole complex has been sufficiently studied. Pending the taxonomic revision of the group, which needs to consider also the more northern taxa *T. fulvilanus* F. Ritter, and *T. deserticola* (Werdermann) Backeberg, no details on the geographical distribution of the species north and south of Coquimbo can be provided for the time being.

LECTOTYPIFICATION, CURRENTLY ACCEPTED NAME, AND SYNONYMS

In selecting the flower material at SGO as lectotype for *Cereus nigripilis* and the material at HAL as isotype, we follow Schumann's usage of the name (Monatsschr. Kakteenk. 11: 26-29, cum fig., 1901; ill. repeated in Gesamtbeschr. Kakt., Nachtraege, p. 21, 1903) by placing it in sequence with *C. chiloensis* in his Gesamtbeschreibung. This choice is also suggested by the epithet, which evidently points to the black hairs on the flower tube described in the protologue.

Echinopsis nigripilis (Phil.) Friedrich & G. D. Rowley, I.O.S. Bull., 3(3): 96. 1974. o *Cereus nigripilis* Phil., Fl. Atac. 23. 1860. TYPE: Chile: "Coquimbo, Nov. 1853" [R. A. Philippi s.n.] (SGO 052682 pro parte, lectotype, here designated, flower only, excluding the stem parts; HAL, isotype, without date, including flower fragments and stem fragments) (Fig. 2 and 3). o *Trichocereus nigripilis* (Phil.) Backeb., Cactaceae, Handb. Kakteenk. 2: 1145. 1959. o *Trichocereus coquimbanus* (Molina) Britton & Rose var. *nigripilis* (Phil.) Borg, Cacti (ed. 2): 181. 1951.

ACKNOWLEDGMENTS

The authors wish to thank Mrs. M. Muñoz Schick of the National Herbarium, Santiago de Chile, for the permission to photograph the specimen of *Cereus nigripilis* illustrated here, the curator of HAL for the prolonged loan of material, and Mrs. B. Schreiber (B) for photographic work.

REFERENCES

Borg, J. 1951. Cacti (ed. 2). London.

Britton, N.L. & J.N. Rose. 1920. The Cactaceae. Descriptions and illustrations of plants of the cactus family. Vol. 2. Publ. Carnegie Inst. Wash. 248.

Colla, A. 1826. *Cereus chiloensis*. Mem. Acad. Sci. Torino 31: 342.

Greuter, W., F.R. Barrie., H.M. Burdet, W.G. Chaloner, V. Demoulin, D.L. Hawkswoorth, D.H. Nicolson, P.C. Silva, P. Trehane, & J. McNeill (eds.). 1994. International Code of Botanical Nomenclature (Tokyo Code), adopted by the Fifteenth International Botanical Congress, Yokohama, August, September 1993. Koeltz, Koenigstein/ Taunus. Regnum Veg. 131.

Hoffmann, A. E. 1989. Cactaceas en la flora silvestre de Chile. Santiago. 272, i pp.

Hunt, D. R. 1992. CITES Cactaceae checklist. Kew.

Hunt, D.R. 1999. CITES Cactaceae checklist, ed. 2. Milborne Port.

Leuenberger, B. E. & U. Eggli. 1996. A note on a mixed type collection: Cereus deserticola Werderm. (Cactaceae). De Herbario Berolinensi Notulae 30. Willdenowia 25: 686-691.

Leuenberger, B.E. & U. Eggli. (2000). The genus Eulychnia (Cactaceae) in Chile: Notes on the taxonomy, types, and other old specimens. Haseltonia 7 (in press).

Molina, I. 1782. *Cactus coquimbanus*. Saggio Stor. Nat. Chil. 170.

Muñoz, C. 1960. Las especies de plantas descritas por R. A. Philippi en el siglo XIX. Santiago. 189 pp.

Nyffeler, R., U. Eggli & B.E. Leuenberger. 1997. Noteworthy idioblastic sclereids in the stems of Eulychnia (Cactaceae). Amer. J. Bot. 84(9): 1192-1197.

Nyffeler, R. & U. Eggli. (submitted). Differences in detail: the use of comparative plant anatomy as exemplified by two columnar cacti from Chile. Botanica Helvetica.

Pfeiffer, L. 1837. Enumeratio diagnostica Cactearum hucusque cognitarum. Berlin. viii, 192 pp.

Philippi, R. A. 1860. Florula atacamensis seu enumeratio plantarum, quas in itinere per desertum atacamense observavit Dr. R. Philippi. Halle.

Ritter, F. 1965. *Trichocereus serenanus* Ritter nom. nov. Kakteen Sukk. 16:210-212.

Ritter, F. 1980. Kakteen in Suedamerika. Band 3. Chile. Spangenberg. pp. 857-1238.

Taylor, C.M. & M. Muñoz- Schick. 1994. The botanical works of Philippi, father and son, in Chile. Ann. Missouri Bot. Gard. 81: 743-748.

Fecha de publicación: 30.12.1999

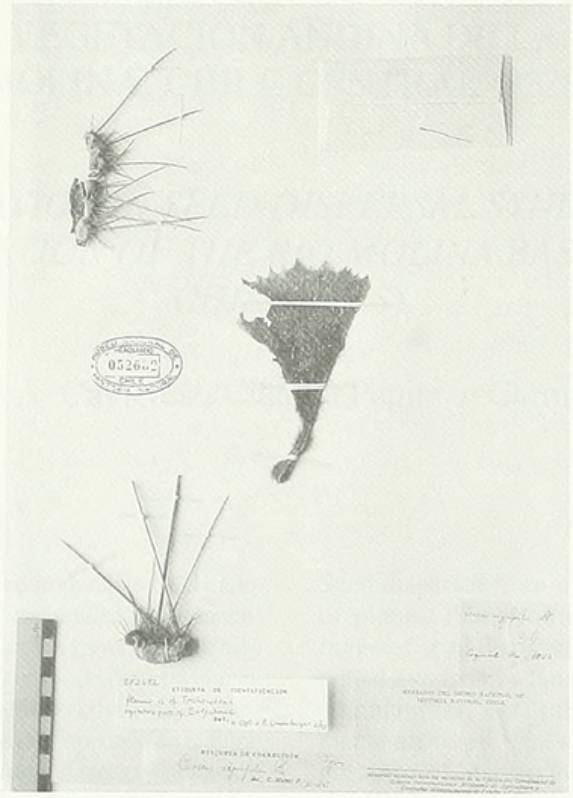

FIGURE 1. Photograph of herbarium sheet SGO 052682, of *Cereus nigripilis* Phil. at SGO (lectotype, flower only) (Photo B. Leuenberger).

FIGURA 1. Fotografía de la carpeta de herbario de SGO (052682) de *Cereus nigripilis* Phil. (lectotipo, sólo flores) (Foto de B. Leuenberger).

FIGURE 2. Photograph of herbarium sheet of *Cereus nigripilis* Phil. at HAL (isotype) (Photo B. Schreiber).

FIGURA 2. Fotografía de la carpeta de herbario de *Cereus nigripilis* Phil. depositada en HAL (isotipo) (Foto de B. Schreiber).