

Mitrocereus fulviceps, story of an imbroglio

Joël Lodé (Spain)



© Christophe Assalit

MITROCEREUS (Backeberg) Backeberg

(Cactoideae-Phyllocacteeae-Echinocereinae)

Cact. Jahrb. Deutsch. Kakt.-Ges. 1941: 77 (1942)

• ETYMOLOGY

«Cereus with a mitre», because the genus has an apical pseudocephalium resembling a mitre or bishop's cap.

• DESCRIPTION

A genus of erect, massive, columnar plants, reaching more than 12 m high, branched, with a massive trunk. Epidermis greyish-green, with well marked and deep ribs, with naked areoles, except the flower-bearing ones, which are woolly. Central spines 3, the lower sturdier; approximately 12 thinner radial spines. Pseudocephalium apical, strongly woolly on the reproductive stems.

Flowers nocturnal, self-sterile, appearing in the apical woolly mass of the pseudocephalium, funnel-shaped, creamy white, with floral tube bearing imbricated scales and long bristles dark yellow, pollinated by bats (*Choeronycteris mexicana*, *Leptonycteris curasoae*, *L. nivalis*). **Fruits** globose, apically dehiscent, with a white pulp, covered with wool and with bristles. **Seeds** large, dark brown, shiny, dispersal mainly ornithophilous.

• COMMENTS

Mitrocereus fulviceps, the only species of this genus, has a long and confusing taxonomic history, and was moved from one genus to another, which demonstrates the lack of consensus existing at that time.

In 1909, Britton & Rose included it in the genus *Pachycereus* under the name *P. chrysomallus*, for the presence of bracts and trichomes covering the floral tube. In 1938, Backeberg arranged it in *Cephalocereus*, but as the subgenus *Mitrocereus*. Then in 1942, he changed his opinion and raised it to the level of a separate and monotypic genus.

In 1961, Bravo & Buxbaum proposed *Pseudomitrocereus* as a new genus name for the species.

In 1978, Gibson & Horak noted that *Pseudomitrocereus fulviceps* has common features with the genus *Neobuxbaumia*, such as the fruits with white pulp, but, according to Arias *et al.*, this characteristic also exists in *Cephalocereus*. Then Gibson (1982) suggested a possible relationship between *P. fulviceps* and *Carnegiea gigantea*, and even added that it could be the same genus. This proposition seemed to be good enough because the *International Organization for Succulent Plant Study* (Hunt & Taylor 1990), then Heath (1992) established, then validated the combination *Carnegiea fulviceps*.

Barthlott & Hunt (1993), then Anderson (2001) included *Carnegiea fulviceps* again in *Pachycereus*, but without any evidence nor explanations justifying this proposal.

Nevertheless, according to Terrazas & Loza-Cornejo (2002), these two taxa have different fruits and a vegetative anatomy which are not comparable. Indeed, in addition to fruits with white pulp, the studies of Gibson (1982) and Terrazas & Loza-Cornejo (2002) showed that the genera **Cephalocereus**, **Neobuxbaumia** and *Pachycereus fulviceps* are all characterized by the presence of crystals in their internal tissues. These morphological characteristics were confirmed by DNA analyses conducted by Arias *et al.* (2003), and consolidated the removal of *P. fulviceps* from the genus **Pachycereus**.

The molecular studies of Arias *et al.* (2003), then those of Arias & Terrazas (2009) demonstrated that *Pseudomitrocereus* must be resurrected at generic level, because its inclusion in **Pachycereus** would return this genus to paraphyly. Their phylogenetic analyses suggest that, as currently circumscribed, the genus **Pachycereus** is polyphyletic; in addition, the results show that several genera included in the latter (**Backebergia**, **Lemaireocereus**, **Lophocereus**, and *Pseudomitrocereus*), should be resurrected to accommodate this new situation. Again, according to Arias *et al.* (2003), another possibility would be to treat *P. fulviceps*, **Cephalocereus** and **Neobuxbaumia** as a single genus, an option not retained in this work, in order not to complicate a changeable and confusing enough taxonomy, since it would require not modifying just a single species, but about twenty!

Moreover, during my investigations for the realization of this work, I found that *Pseudomitrocereus* is incorrectly used. Nevertheless, Helia Bravo (1978) reported the imbroglio in a clear and unambiguous way: when Backeberg created the genus **Mitrocereus** in 1942, he based this on the subgenus that he established first in **Cephalocereus** in 1938, and wanted to typify it with a plant which Weber had named *Pilocereus fulviceps*, a native of Tehuacán, Puebla (Mexico).

But Britton and Rose believed that this taxon was just a synonym for a plant already described by Lemaire under the name of *Pilocereus chrysomallus*, and added the latter into the genus **Pachycereus** under the name of *Pachycereus chrysomallus*.

Ignoring the mistake by Britton & Rose, Backeberg took their name and used it to typify its genus: *Mitrocereus chrysomallus*.

In 1953, Helia Bravo found Lemaire's true *Pilocereus chrysomallus* in Colima, Michoacán and Guerrero, and gave it the name of **Backebergia**, leaving the name **Mitrocereus** to the plant native of Puebla, **Mitrocereus fulviceps**.

The matter was still complicated with Buxbaum, who upon seeing that *Mitrocereus chrysomallus* applied to plants of Colima, Michoacán and Guerrero, and put the genus **Backebergia** in synonymy; it only remained for Buxbaum (with Helia Bravo) to change the name of the Tehuacán plant, and attributing a new genus: *Pseudomitrocereus*, "false **Mitrocereus**"!

Later, Helia Bravo considered that this new name was superfluous, because if there was confusion between taxa at a specific level, this should not affect the typification of the genus at all: *Mitrocereus chrysomallus* becomes ***Backebergia militaris*** and the plant which had been the first one that Backeberg wanted to typify, *Pilocereus fulviceps*, the plant from Puebla, becomes ***Mitrocereus fulviceps*** again.

→ currently only one recognised species:

☐ ***Mitrocereus fulviceps**** (Weber ex Schumann) Backeberg ex Bravo 1954

• HABITAT

The monotypic genus ***Mitrocereus*** grows in a restricted area, but in abundance, in barrancas, on the slopes of limestone hills, between 1700 m and 2130 m in altitude, sympatric with ***Neobuxbaumia tetetzo***, in deciduous tropical forests, where its size surpasses the rest of the vegetation. It also grows together with ***Coryphantha***, ***Echinocactus***, ***Ferocactus*** and ***Mammillaria***.

• DISTRIBUTION

Mexico (Puebla, also reported by Bravo in Oaxaca, and actually found south of the Valley of Tehuacán-Cuicatlán, in the northwest of this state).

Text: JL, photo: Christophe Assalit

BIBLIOGRAPHICAL REFERENCES:

- Anderson Edward F. 2001. *The Cactus Family*. Timber Press, Portland, Oregon, USA.
- Arias Salvador, Terrazas Teresa, & Cameron Kenneth 2003. Phylogenetic analysis of *Pachycereus* (Cactaceae, Pachycereeae) based on chloroplast and nuclear DNA sequences, *Systematic Botany* 28(3): 547-557.
- Arias Salvador & Terrazas Teresa. 2009. Taxonomic Revision of *Pachycereus* (Cactaceae). *Systematic Botany* 34 (1): 68-83.
- Backeberg C. 1942. *Mitrocereus fulviceps*, *Cact. Jahrb. Deutsch. Kakt.-Ges.* 1941: 77.
- Bárceñas Rolando T., Yesson Chris, & Hawkins Julie A. 2011. *Molecular systematics of the Cactaceae*. *Cladistics* 27:470–489.
- Bravo Hollis Helia & Buxbaum Franz 1961. *Pseudomitrocereus*, *Botanische Studien* 12: 49, 53.
- Hernández-Hernández Tania, Hernández Héctor M., De-Nova J. Arturo, Puente Raúl, Eguiarte Luis E., Magallón Susana. 2011. *Phylogenetic relationships and evolution of growth form in Cactaceae (Caryophyllales, Eudicotyledoneae)*. *Am J Bot.* (1):44-61.
- Hunt David. R. 2006. *The New Cactus Lexicon*. DH Books, Milborne Port.
- Lodé Joël, 2015. *Taxonomie des Cactaceae*, vol.2, pp. 52-53.
- Loza-Cornejo S. & Terrazas T., 2003. Epidermal and hypodermal characteristics in North American Cactoideae (Cactaceae), *Journal of Plant Research* 116 (1), 27-35.
- Nyffeler Reto & Egli Urs. 2010. *A farewell to dated ideas and concepts: molecular phylogenetics and a revised suprageneric classification of the family Cactaceae*. *Schumannia* 6:109-149.
- Vázquez-Sánchez Monserrat, Terrazas Teresa, Arias Salvador. & Ochoterena Helga. 2013. *Molecular phylogeny, origin and taxonomic implications of the tribe Cacteeae (Cactaceae)*. *Systematics and Biodiversity*, 11:1, 103-116.