New Combinations in Cactaceae

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As part of my forthcoming project "Taxonomy of Cactaceae, Species Description, Volumes 3 & 4, after studying each taxon and its characteristics, and although these modifications may be minimal or crucial, it is sometimes necessary to modify the classification for a better approach of genera and taxa which compose them.

Gymnocalycium hossei subsp. ***ferrarii**** (Rausch) Lodé **comb. nov**.
Basionym: *Gymnocalycium ferrarii* Rausch, Kakteen Sukk. 32(1): 7, illustr. (1981).
Type: Argentina, Catamarca, Santa Teresa, *Rausch* 718 (ZSS).
Synonyms: *Gymnocalycium ferrarii, G. ferrarii* subsp. *evae, G. glaucum* subsp. *ferrarii.*
Notes: one more time, seeds told me that subsp. ***ferrarii*** was closer to ***G hossei*** than ***G. glaucum***; there is no aril in ***G. glaucum***, however, it is present in all the forms of ***G. hossei***. Moreover, the molecular study of Demaio *et al.* (2011) confirmed this position, showing that ***G. glaucum*** was in fact closer to ***G. rhodantherum***, both distant from the other two. Finally, the geographical distribution give more clues, *G. ferrarii* being within the range of ***G. hossei*** complex.

Gymnocalycium hyptiacanthum subsp. ***leeanum**** (Hooker) Lodé **comb. nov**.
Basionym: *Echinocactus leeanus* Hook., Bot. Mag. illustr. 4184 (1845).
Type: Argentina, Buenos Aires, 1840, *Tweedie*, cult. 1845, hort. Kew, not pres. Lectotype: Curtis Botanical Magazin illustr. 4184 (1845), the illustration cited.
Synonyms: *Echinocactus leeanus, Gymnocalycium leeanum* var. *brevispinum, G. reductum* subsp. *leeanum, G. reductum* var. *leeanum, G. schatzlianum.*
Notes: following the molecular studies of Demaio *et al.* (2010, 2011), we can see that the subspecies ***leeanum*** is not related to ***G. reductum*** but instead to ***G. hyptiacanthum***, situated between subsp. ***netrelianum*** and subsp. ***uruguayense***. Moreover, seeds of the subspecies ***leeanum*** are from the "Macrosemineum" group, while those of ***G. reductum*** are classified within the "Gymnocalycium" group. Although it sounds wrong, without any more evidences, I placed it there accordingly.
Also, in my opinion, there could be a confusion between *G. shatzlianum* ("Gymnocalycium" group) and "*G. leeanum"* ("Macrosemineum" group): all seeds I have received from different sources, unless all are misapplied, confirm this difference. It is probably because they are not the same taxon, as illustrated on the net (Llifle.com), compared with the plants in Charles (2009), pp. 110 and 112.
Previous listed as *Gymnocalycium reductum* subsp. *leeanum* in Tax. of Cact., vol. 1 (2015).

Gymnocalycium oenanthemum subsp. ***ambatoense*** Lodé **comb. nov**.
Basionym: *Gymnocalycium ambatoense* Piltz, Kakteen Sukk. 31: 13, illustr. (1980).
Type: Argentina, Catamarca, Sierra Ambato, 900-1100 m, *Piltz* 22/5 (KOELN).

Gymnocalycium hossei subsp***. ferrarii*** coll. Falk, ex Haage. © JL

Gymnocalycium hyptiacanthum subsp***. leeanum***, in Curtis (1845).

Gymnocalycium oenanthemum subsp. ***ambatoense***, Sierra Ambato, Catamarca, Argentina.

Notes: this subspecies is found at lower altitudes and southern part of the ***G. oenanthemum***'s distribution. Seed is quite different from the type, without aril and could be, according to Charles (2009), intermediate with ***G. hossei***.

JASMINOCEREUS Britton & Rose 1920

A single species is usually recognised, with 3 varieties: var. *thouarsii*, var. *delicatus*, and var. *sclerocarpus* (Anderson, 2001); however, Guiggi (2020) proposed a new subspecies to englobe the var. *delicatus: J. thouarsii* subsp. *howellii*, and synonymised the var. *sclerocarpus* within the type species.
I have examined, stems, ribs, spines, flowers and fruits from plants on six of the main islands through a hundred of pictures and close-ups. What I have observed first is an extreme variability of the plants throughout their range, with specimens that can reach up to 7 m on all the islands; however, the distinct seeds examined for the three varieties showed that it was necessary to combine them as subspecies.

Jasminocereus thouarsii subsp. ***delicatus*** (Dawson) Lodé **comb. nov**.
Basionym: *Jasminocereus howellii* Dawson, Cact. Succ. J. (Los Angeles) 34(3): 71, fig. 42, 44E-F, 45A-C (1962).
Type: Ecuador, Galápagos Islands, Indefatigable Island (Isla Santa Cruz), on lava beds along the north shore of Academy Bay, 15 Feb 1962, *E. Yale & C. Maxine Dawson* 21952, Feb. 15, 1962 (Herb. A. Hancock Foundation).
Synonyms: *Jasminocereus howellii, J. howellii* var. *delicatus, J. thouarsii* subsp. *howellii*
Distribution: **Ecuador, Galápagos Islands** (Bartolomé, Santiago, Santa Cruz).
Notes: if the differences between the subspecies and and the type species are rather weak, flowers and seeds allow to separate them.

Jasminocereus thouarsii subsp. ***sclerocarpus*** (K.Schumann *ex* B.L.Rob.) Lodé **comb. nov**.
Basionym: *Cereus sclerocarpus* K.Schumann *ex* B.L.Robins., Proc. Amer. Acad. Arts 38: 197 (1902).
Type: Ecuador, Galápagos Islands, Albemarle Island (Isabela), Pt. Christopher, *Snodgrass & Heller* 933 (B). ?Syntypes: *Snodgrass & Heller* 934, Pt. Christopher, Albemarle Island, and Snodgrass & Heller 935, Black Bight, Albemarle Island (= Isabela).
Synonyms: *Cereus sclerocarpus, Jasminocereus sclerocarpus, J. thouarsii* var. *sclerocarpus*.
Distribution: **Ecuador, Galápagos Islands** (Fernandina, Isabela).
Notes: although they are not the original descriptors, Wiggins & Porter are those who gave a more detailed description of the varieties of ***J. thouarsii***, including the seeds, which are distinct. After some help, I had great administrative difficulties and restrictions with the direction of the Fundación Charles Darwin to access material, so, I was no able to finish the work properly.

Jasminocereus thouarsii subsp. ***delicatus***, Santa Cruz Island.
© M.-T. Piolat

Jasminocereus thouarsii subsp. ***sclerocarpus***, Isabela island.
© M.M. Trigo Pérez

Jasminocereus thouarsii subsp. ***delicatus***
Santa Cruz Island. © Fondación Charles Darwin

Jasminocereus thouarsii subsp. ***sclerocarpus***
Isabela Island. © Fondación Charles Darwin

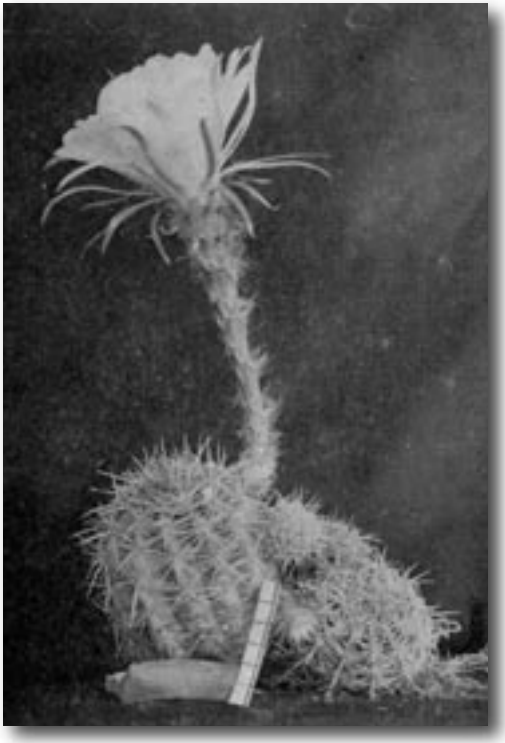
Jasminocereus thouarsii
Distribution

subsp. ***thouarsii***

subsp. ***delicatus***

subsp. ***sclerocarpus***

Lobivia pereziensis, as *Echinopsis in* Cactus Paris 78 (1963). © Cárdenas



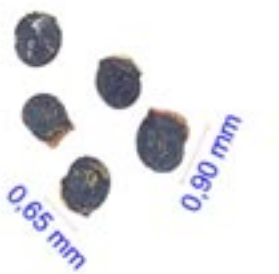
Lobivia sucrensis, as *Echinopsis in* Cact. & Succ. J. (US). (1963). © Cárdenas

Lobivia pereziensis (Cárdenas) Lodé **comb. nov**.
Basionym: *Echinopsis pereziensis* Cárdenas, Cactus (Paris) 78: 88-90 (1963).
Type: Bolivia, Santa Cruz, Florida, environs of Angosto de Pérez, 1900 m, Jul 1962, *Cárdenas* 5563 (LIL, not found).
Notes: This doubtful taxon was synonymised with *E. comarapana*, itself included in the complex *E. bridgesii* subsp. *vallegrandensis*, now versed within ***Lobivia***. In the molecular study of Schlumpberger & Renner (2012), we found it in the "bridgesii" clade.

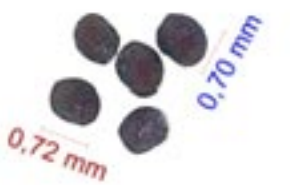
Lobivia sucrensis* (Cárdenas) Lodé **comb. nov**.
Basionym: *Echinopsis sucrensis* Cárdenas, Cact. Succ. J. (Los Angeles) 35: 200, illustr. (1963).
Type: Bolivia, Chuquisaca, Oropeza, near Sucre, 2750 m, *Cárdenas* 5548 (LIL 531558 holo., US, iso.).
Synonyms: *Echinopsis sucrensis.*
Notes: In the molecular study of Schlumpberger & Renner (2012), we found it in the "bridgesii" clade which is included within ***Lobivia***. This taxon could be considered at least a subspecies of ***L. bridgesii*** and not a synonym, because their respectives seeds are somewhat different.

Gymnocalycium hossei subsp ***ferrarii***, Argentina ex coll. Falk

Gymnocalycium hyptiacanthum subsp ***leeanum*** CS 695.2 Zapican-Piraraja, 192 m, Uruguay.



Gymnocalycium oenanthemum subsp***. oenanthemum*** JL ex coll. Falk



Gymnocalycium oenanthemum subsp. ***ambatoense*** JL ex PS.jpg

Lobivia bridgesii subsp. ***vallegrandensis*** ***'cotacajesii'*** WR 604, Ayopaya, Bolivia.

Lobivia bridgesii subsp. ***vallegrandensis*** MN790 Aiquile, Cochab. Bolivia.

Lobivia bridgesii subsp. ***yungasensis*** FR331 ex Köhres, HW.

Lobivia sucrensis KK962 Bercht1884.

Mammillaria blossfeldiana subsp***. rectispina**** (E.Y.Dawson) Lodé **comb. nov**.
Basionym: *Mammillaria goodridgei* var. *rectispina* E.Y.Dawson in Cact. Succ. J. (Los Angeles) 24: 80, fig. 46. 1952 (as "*goodrichii*").
Type: Mexico, Baja California, Cedros Island, ridges and steep hillslopes directly overlooking the Punta Norte lighthouse, 180-240 m, 21 Apr 1951, *E.Y.Dawson* 10631 (AHFH, RSA).
Synonyms: *Cochemiea blossfeldiana subsp. rectispina, M. goodridgei* var. *rectispina*.
Notes: Hunt's (2005) diagnosis of *M. goodridgei* var. *rectispina* as closely related to ***M. blossfeldiana*** was confirmed in the molecular study of Breslin *et al.* (2021). Nevertheless, they put the taxon within ***Cochemiea***, according to their choice of extending the genus to make it monophyletic in a large sense. For more confusion, in 2006, this time, Hunt refers *M. rectispina* to ***M. dioica***.

Mammillaria columbiana subsp. ***hennisii*** (Boed.) Lodé **comb. nov**.
Basionym: *Mammillaria hennisii* Boed., Monatsschr. Deutsch. Kakteen-Ges. 4: 7, illustr. (1932).
Type: Venezuela, N.W. part, 500 m, on limestone, 1931, *Hennis* jun., not pres. Lectotype: the illustr. cited.
Synonyms: , *Mammillaria columbiana* subsp. *tamayonis, M. hennisii, M. tamayonis.*
= *Mammillaria tamayonis* Killip ex Schnee, Bol. Acad. Cienc. Fis. Mat. y Nat. Venez. 12(38): 62 (1949).
Type: Venezuela, Edo. Falcón, cardonales, espinares y bosque seco, 37 km S. of Coro, alt. 850 m, 25 Jan 1966, *Steyermark & Braun* 94719 (UC). Now considered a synonym of ***M. columbiana*** subsp. ***hennisii***. Closely related to ***M. columbiana.***

Mammillaria columbiana subsp. ***hennisii***, as *Mammillaria hennisii*, *in* Monatsschr. Deutsch. Kakt.-Ges. 4: 7(1932). © Bödeker

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Cárdenas M. 1963. *Echinopsis sucrensis* sp. nov., Cact. Succ. J. (Los Angeles) 35: 200
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Wiggins, I. & Porter, D. 1971. *Flora of the Galápagos Islands*, Stanford Univ. Press. Calif.