REHABILITATION AND SYNONYMY OF *WIGGINSIA CORYNODES* (CACTACEAE)

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Abstract: The original description of *Echinocactus corynodes* corresponds to a plant from Uruguay, mostly known, irrespective of the genus where it was included, under the specific epithet *arechavaletai* or *neoarechavaletai*. The name corynodes has been considered in the literature as a synonym of *Cactus erinaceus*, a closely related but very different plant with bigger stems and spination of a different shape and arrangement. The goal of this paper is the rehabilitation of the name *Echinocactus corynodes*. Additionally, the complicated nomenclatural history of the epithets *arechavaletai* and *neoarechavaletai* are explained in detail.

Resumen: La descripción original de *Echinocactus corynodes* corresponde a una planta de Uruguay, mayormente conocida (bajo diferentes nombres genéricos) con el epíteto *arechavaletai* o *neoarechavaletai*. Sin embargo, en la literatura se lo ha citado como sinónimo de *Cactus erinaceus*, una planta afín pero bastante diferente, con tallos mayores y espinas de distinta disposición y forma El objetivo principal de este trabajo es rehabilitar el nombre *Echinocactus corynodes*. Adicionalmente, se detalla la complicada historia nomenclatural de los epítetos *arechavaletai* y *neoarechavaletai*

While performing the taxonomic revision of the genus *Wigginsia* (Albesiano and Kiesling, in prep), we observed that the name *Echinocactus corynodes* (now *Wigginsia corynodes*) had been used for another species, *Wigginsia erinacea*, which morphologically differs from the original description of *E. corynodes*. In addition, the epithet *arechavaletai* (used for the species which we consider under the name *Wigginsia corynodes*) has a very confused history. This note therefore attempts to 1) to clarify the identity of *E. corynodes*, and 2) explain the complicated nomenclatural history of *E. arechavaletai*, its synonyms and homonyms, in detail.

Wigginsia is a genus of Cactaceae with relatively few species (eight), which occurs in Uruguay and nearby regions from other neighboring countries and, strangely, with one disjunct species in Colombia. Until the early twentieth century, *Wigginsia* species were included in the genus *Echinocactus*, which had contained all the globose cacti except *Melocactus*. In the middle nineteenth century Salm-Dyck (1850) erected the genus *Malacocarpus* for these globose cacti, but that name was a posterior homonym, and therefore was illegitimate (Art 53, McNeill and others 2006). This generic epithet had previously been published: *Malacocarpus* Fisch.& CA Meyer, 1843, Zygophyllaceae. Porter (1964) replaced *Malacocarpus* with *Wigginsia* and made the appropriate combinations. More recently, several authors (Hunt 1967, Leuenberger 1976) found *Wigginsia* to be closely related to *Notocactus* based upon the similarity of its flowers and vegetative characters, and for their partially overlapping geographic distributions. Finally, several authors (Hunt and Taylor 1986, Glaetzle and Prestlé 1986, Barthlott and Hunt 1993, Eggli and Nyffeler 1998, Hunt 1999, Anderson 2005, Hunt and others 2006) merged *Notocactus* (including *Wigginsia*) with *Parodia* based on a wider concept of this genus, previously considered an endemic of the Andes.

While we agree that *Parodia* should include *Notocactus*, we assert that *Wigginsia* species have sufficiently consistent morphological, phenological and molecular characters to be maintained in their own distinct genus, albeit derived from *Parodia*. *Wigginsia* ribs are normally very prominent, narrow and acute, whereas *Parodia* ribs are lower, broader and more obtuse. *Wigginsia* species have apical hairy are-

Table 1. Differences between *Cactus erinaceus* (Haworth 1819) and *Echinocactus corynodes* (Pfeiffer 1837) according to the original descriptions.

	Cactus erinaceus	*Echinocactus corynodes*
Spines	Slightly curved, 21 mm long. Dark-yellow. Gradually pointed-dark.	Completely straight, 12–14 mm. Red when young, later dark-red (radials whitish at young plants).
Central spines	0	1–6
Stem form	Globular with melon aspect	Globular-depressed, base attenuate.
Rib form	Obtuse	Acute

oles forming a pseudocephalium[1] and an almost unique fruit phenology and morphology. In our opinion, the similarity of the flowers in the area of sympatry of *Parodia* (*Notocactus*) and *Wigginsia* may be an adaptation to similar pollinators. The sequences of *rpl16* and *trnL-F* (Albesiano and others, in prep.), show that *Wigginsia* species form a monophyletic clade that is included within the *Parodia* group.

Consequently, we are excluding *Wigginsia* from *Parodia*, albeit leaving *Parodia* paraphyletic. *Parodia* appears to be a complicated mosaic of species, but some groups (for instance, *Eriocactus* Backeb.) should probably also be separated as genera based on molecular data.

According to Brummitt (1997, 2006), Applequist and Wallace (2000) and Takhtajan (2009), the Linnaean classification must accept paraphyletic taxa, as happens, for instance, in the family Portulacaceae, when Basellaceae, Cactaceae and Didiereaceae are segregated.

Differences between *Cactus erinaceus* and *Echinocactus corynodes* according to the original descriptions

Although some authors consider *Echinocactus corynodes* a synonym of *Cactus erinaceus* (Britton and Rose 1920, Castellanos and Lelong 1943, Hunt and others 2006), after comparing the original descriptions, we conclude that these names represent different species. Their published characteristics are shown in Table 1.

Nomenclature of *Wigginsia erinacea*

Wigginsia erinacea (Haw.) D.M.Porter, *Taxon* 13: 210. 1964.

Cactus erinaceus Haw., *Suppl Pl Succ* 4: 74. 1819. Neotype, designated here, Uruguay, Department Lavalleja, 19 Dec 2005, S. Albesiano 1739 & M. Bonifacino (MVFA).

The mention of a neotype for *Cactus erinaceus* made by Urs Eggli in Anderson, *Das Grosse Kakteen-Lexikon*: 499. 2005 (Uruguay, Rocha, Horst & Uebelman HU 1250, deposited in FRP), it is not an explicit designation. It is not clear if it is intended as a designation (in which case it is not valid according to Art. 7.11 of the International Code of Botanical Nomenclature; McNeill and others 2006, which stipulates that it is mandatory to include the phrase "here designated," or equivalent). If the designation has been made correctly in some other publication, then our designation here becomes superfluous.

***Echinocactus erinaceus* Lem., *Cact Aliq Nov Desc* 16. 1838. Neotype, designated here; plate 53 in Rümpler, *Handb Cacteenk*: 455. 1885.**

Lemaire described *Echinocactus erinaceus*, but with no reference to Haworth's *Cactus erinaceus*; Lemaire's description has some small differences with Haworth's, such as number of ribs: 18 (vs 14 or less), shorter spines: 1.2–1.8 cm (vs 2.1 cm) and the presence of one central spine (vs 0). Lemaire gave the plant's origin as Montevideo (Uruguay), and the identity of both names and origin had not been discussed by any author. Lemaire also described the flower and the "false cephalium," corresponding with our current concept of *Wigginsia*.

Echinocactus acuatus var *arechavaletai* versus *E. corynodes*

Comparing the original descriptions of *Echinocactus acuatus* var *arechavaletai* Speg. and *E. corynodes* Pfeiff., there is evidence of several matching vegetative and reproductive characters (Table 2), suggesting that *E. acuatus* var *arechavaletai* is a synonym of *E. corynodes*. Also some small differences were found, for example in (i) shape of ribs, though

[1] Pseudocephalium: An area where the flowers are born from lanuginous areoles; later these areoles produce normal spines and the zone around them grows and continues the vegetative function, as a normal part of the stem. A true cephalium is a special stem which, after flowering, will not develop a normal vegetative stem (as in, for instance, *Melocactus*, *Espostoa*; Buxbaum 1964a; 1964b, Vázquez and others 2005). Pseudocephalia putatively protect buds, flowers and fruits. In our concept of *Parodia*, no species have a pseudocephalium, although some have hairy areoles at the stem apex when growing, but without obvious protective function.

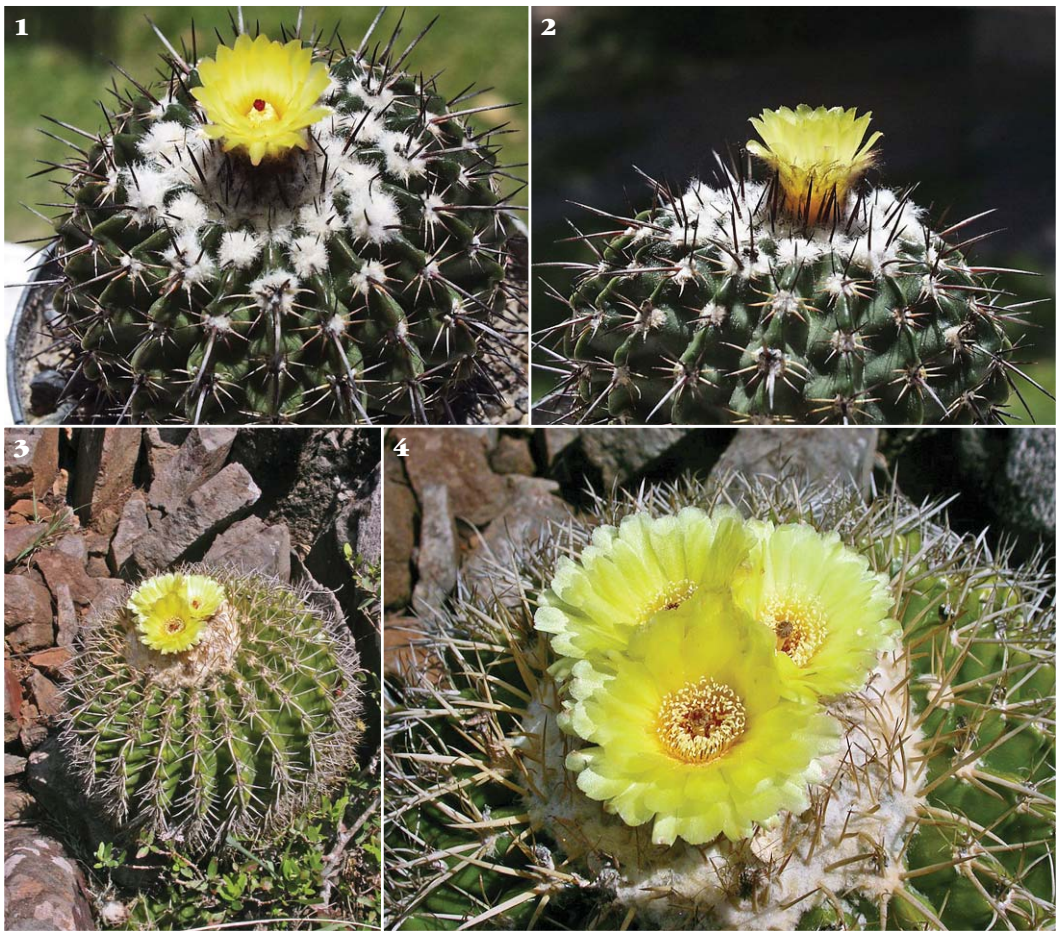

Figure 1. *Wigginsia corynode*s, general aspect. Uruguay, Department Maldonado, Punta Ballenas. **Figure 2**. *W. corynode*s, lateral view showing the flower form and profile. Uruguay, Department Maldonado, Punta Ballenas. **Figure 3**. *W. erinacea*, aspect of the globose shape of the stems. Uruguay, Department Lavalleja. Photo M Bonifacino. **Figure 4**. *W. erinacea*, detail of the spination and bud. Uruguay, Department Lavalleja. Photo

that depends on how hydrated the plant is, (ii) shape of tepals, (iii) color of filaments, and (iv) color of fruits, which are normally pink. White coloration is very rare and can be due to the specimens growing under deficient light.

Taxonomic history of *Echinocactus arechavaletai* K. Schum., *Echinocactus arechavaletai* Speg., *Echinocactus acuatus* var *arechavaletai* Speg., *Echinocactus arechavaletai* Arechav. and related names

In 1903, the well-known cactus collector Alberto Frič arrived in Uruguay, collected his first plants there, and sent them to the nursery of Mr F de Laet in Belgium. Among them were some specimens labeled *Echinocactus arechavaletai*. Soon thereafter de Laet sent specimens to Karl Schumann at the Botanical Gardens of Berlin (Gürke 1905, Fleischer and Schütz 1975).

The plants sent by de Laet to Schumann were shown at the Deutschen Kakteen Gesellschaft at the November meeting that year (*Monatsschr Kakteenk* 12: 191. 1903). According to Fleischer and Schütz (1975), Schumann mentioned that this species would be described by de Laet. Subsequently, several authors erroneously referred to "*Echinocactus arechavaletai* Schumann", but in fact this is a *nomen nudum*, and therefore invalid per Art. 20 of the International Code of Botanical Nomenclature (McNeill and others 2006).

Two years later, Carlos Spegazzini (1905: 494, January) published "*Echinocactus acuatus* Link et Otto var *arechavaletai* (K.Schum.)", with a description of the stem, but not of flower nor fruit. This name should be considered new rather than a combination based on

Schumann's *nomen nudum*. In this same work Spegazzini described another species of *Echinocactus* under the same epithet *arechavaletai*, but at specific level: *Echinocactus arechavaletai* Speg.(1905: 496), for a species of *Parodia*, which is now unanimously considered synonymous with *P. ottonis* (= *Notocactus ottonis*). Both names with the epithet *arechavaletai* are correct, because they are used at different ranks.

In April that year, the Uruguayan botanist José Arechavaleta (1905: 242) described at specific rank Schumann's *nomen nudum* "*Echinocactus arechavaletai* K.Schum.", within the subgenus *Malacocarpus*, giving a detailed description of this plant, with information on the flowers and fruits based on a living plant found in "Piriápolis by the young naturalist A. Frič, from Prague", and he included a photograph with credit to de Laet.

Although Arechavaleta did not mention *E. acuatus* var *arechavaletai* Speg., we must assume he is referring to the same species, based on coincidences in the descriptions (Table 2), and the mention of Frič as the discoverer of the plant.

All of these three authors—Schumann, Spegazzini, Arechavaleta—proposed the epithet "arechavaleta**i**." The International Code of Botanical Nomenclature has recommended (McNeill and others, 2006, Art. 60C) that such endings be changed to 'e' ("arechavaleta**e**").

On the other hand, Arechavaleta had not noticed that the same name had been already published by Spegazzini for another species (Spegazzini 1905: 496), although it is mentioned in his same work, and both names are in the index—with page numbers mistakenly interchanged—("*E. arechavaletai* Speg.," Arechavaleta 1905: 208). Therefore, the name is illegitimate and must be changed (Art. 53.1). But the description is valid if it is considered as a new species (Art. 32.1). A quarter century later, Herter (1930) correctly changed the name to *Echinocactus maldonadensis* Herter, and later transferred it to *Notocactus maldonadensis* Herter (1943).

Spegazzini's paper became known in Europe very early in 1905, as evidenced by annotated translations by Berger in different issues of the German cactus journal, starting with the April issue (15(4): 51–54. 1905). In the June 1905 issue of the same journal, *Echinocactus acuatus* var *arechavaletai* was also mentioned.

In July of 1905, Max Gürke published a note entitled "*Echinocactus Arechavaletai* K.Schum.," where he described again the same plant sent by Frič, *Echinocactus arechavaletai*, and showed a photograph sent by de Laet (the same photo published by Arechavaleta). In addition, Gürke commented on Spegazzini's and Arechavaleta's works, and on Berger's translation. Gürke's in-

Figure 5. Original plate published by Arechavaleta of *Echinocactus arechavaletai* K.Schum. The same plate had been published again by Gürke. **Figure 6**. Original photo of Spegazzini of *Echinocactus arechavaletai*, designated as lectotype. The inscription on the top is a modern transcription of the Spegazzini's script on the photographic plate.

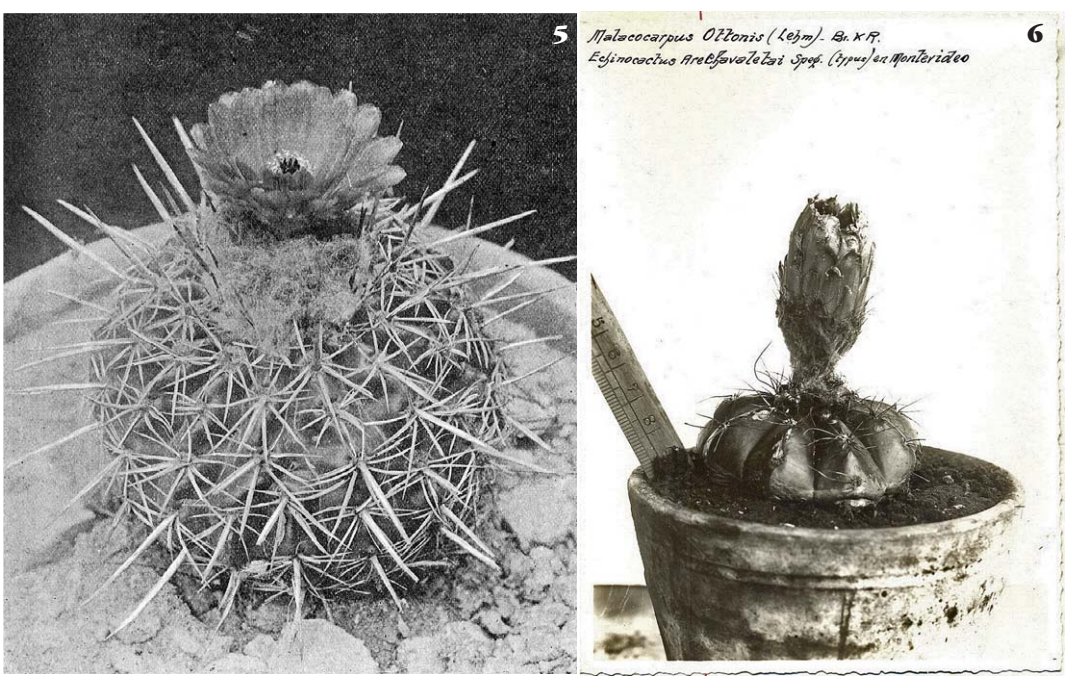

Table 2. Morphological characters according to the original authors: *Echinocactus corynodes* (Pfeiffer 1837) and *E. acuatus* var *arechavaletai* (Spegazzini 1905). In addition *E. arechavaletai* (Arechavaleta 1905) is included in order to complete the comparison of characters of *E. acuatus* var *arechavaletai*. The three columns show the great similarity of the respective descriptions. The main differences are in bold font.

	E. corynodes	***E. acuatus* var *arechavaletai* SPEG.**	***E. arechavaletai* ARECH.**
Stem shape	Subglobose, attenuate in direction to base	Subglobose	Globose
Stem color	Dark green	Dark green, bright	Dark green
Shape of apex	Submerged	Moderately umbilicated	Little compressed
Stem diameter	7.5–10 cm	3–10 cm	A little more than 5–6 cm
Stem height	5–7.5 cm	3–10 cm	5–6 cm
Number of ribs	**16**	**13–21**	16–18
Rib shape	Narrow, acute, crenate	Nearly obtuse	Tuberculate, low
Areoles	Impressed. Young ones with abundant white hairs, later deciduous; spines rigid	Not mentioned	Covered with brown tomentum, with hard spines
Areole separation	**1.38–1.84 cm**	Not mentioned	**1 cm**
Radial spine number	10 in young plants and 9 in adult plants	5–9	9
Radial spine color	**Base red, the rest dark**	**Whitish**	**Whitish** due to fine dust-like little scales covering them; reddish at its base, black at the tip.
Radial spine length	1.15–1.38 cm long	1–1.5 cm	1 cm
Radial spine shape	Straight	Straight	Straight, adpressed
Central spine number	Young plant: 4–6 Adult plant: 1	1	Mostly 1, but also 2–3
Central spine shape	Erect	Straight and erect	Straight and erect
Central spine color	Brown, dark	Gray, with brown tips	Not mentioned
Central spine size	Larger than radials	1.5–2 cm	2 cm
Flower diameter	5 cm	Not mentioned	5 cm
Perigonial tube	Sparsely covered with wool	Not mentioned	Covered with lanceolate bract, villous, and with one or more very long reddish bristles.
Tepal shape	**Linear, with denticulate tip**	Not mentioned	**Spatulate shape, superior edge sometimes denticulate with mucronate tip**
Tepal color	Yellow	Not mentioned	Yellow
Stamen filaments	**Red**	Not mentioned	**Yellow**
Stigma color	Bright-red	Not mentioned	Carmine
Style color	Yellow	Not mentioned	Yellow
Stigma number	10	Not mentioned	8
Shape and type of fruit	Berry, oblong	Not mentioned	Berry, oblong
Fruit cover	Initially covered with wool and then glabrous	Not mentioned	With whitish hairs
Fruit color	**Pale red**	Not mentioned	**White**

tention was to rehabilitate Schumann's authorship of the name *Echinocactus arechavaletai* K.SCHUM. (1903), but, according to the International Code of Botanical Nomenclature (Art. 53.1), Gürke published an illegitimate homonym of Spegazzini's *Echinocactus arechavaletai* from 1905. We also consider it to be illegitimate insofar as we consider it a synonym of *Echinocactus arechavaletai* ARECH, because it is based on the same type, that is, the same de Laet photo.

In the last paragraph of his note Gürke intended to give the name "*Echinocactus spegazzinii* Gürke" to the aforementioned "*Echinocactus arechavaletai* Speg." (1905, the plant we know now as *Parodia ottonis*), making up a superfluous name (again illegitimate per Art. 52.1). Additionally, *Echinocactus spegazzinii* already existed as F. A. C. Weber's *nomen nudum* (Spegazzini: 7. 1903, commenting on a letter by Weber).

Alwin Berger in his book of 1929 (: 207) includs the phrase "*Echinocactus arechavaletai* K.Sch. (1905)." This phrase contains two mistakes: 1) Schumann never formally described the species, and 2) there is no publication in that year concerning this species. It is quite likely that Berger had at hand the publication of Arechavaleta or the Gürke publication of that year, because Berger's description is coincident with both of them. At the same time, Berger created "*Malacocarpus arechavaletai* (K.Schum.) Berger" (p 342, at the index). Although his intention was to make a new combination, we must consider it as a new species (Art. 33.2), which must be cited as *Malacocarpus arechavaletai* K.Schum. ex Berger. As both Arechavaleta and Gürke had published the same plate, we consider the appropriate neotype to be the Arechavaleta plate, due to it predating Güerke's. We can also argue that it is a lectotype of Berger's *Malacocarpus arechavaletai*, because Berger indeed knew about the previous papers.

Two alternative names (pp 339 and 342, *Echinocactus arechavaletai* and *Malacocarpus arechavaletai*) appear in the Berger's index. They are considered valid by virtue of being published before the year 1953 (Art. 34.2).

Guillermo Herter (1930) noticed the existence of these two homonyms (*E. arechavaletai* Speg. and *E. arechavaletai* K.Schum. ex Arech.), and proposed *Echinocactus maldonadensis* as new name instead of the illegitimate *E. arechavaletai* K.Schum. ex Arech.This is the first name that correctly replaces *Echinocactus arechavaletai* K.Schum. ex Arech., but it has been ignored by later authors.

In 1943 Herter made the combination *Notocactus arechavaletai* (Speg.) Hert. for the plant that we consider to be *Parodia ottonis*. In the same publication he combined *Notocactus maldonadensis* with his *Echinocactus maldonadensis* Hert.

In 1957 Yoshi Itô, ignoring the change in name made by Herter (1930), proposed another new name: *Malacocarpus callispinus*, mentioning it as synonym for Schumann's nomen nudum (*Echinocactus arechavaletai*) and for Arechavaleta's illegitimate name (*Echinocactus arechavaletai*). Again, we have another illegitimate name because it is superfluous (Art. 52.1).

Duncan Porter (1964) published *Wigginsia* as new name for the genus *Malacocarpus* of Salm-Dyck, making 13 new combinations, among them *Wigginsia arechavaletae* (K.Schum. ex Speg.) D.M.Porter. The reason for this new generic name is that *Malacocarpus* Salm-Dyck (1850) was an illegitimate homonym (Art. 52.3); the same name was used by Fischer and Meyer (1843) for a genus in the Zygophyllaceae. Porter's work took the species mentioned by Backeberg (1959: 1613–1625), but he seemed not to do any critical work on the taxonomy, only correcting the illegitimacy of *Malacocarpus*.

Even though Hans Krainz (1966) knew Herter's work (1943), he transferred and made a change in rank from *E. acuatus* var *arechavaletai* to: "*Notocactus arechavaletai* (K.Schum. ex Speg.) Krainz (non *Notocactus arechavaletai* (Speg.) Hert.)," generating a junior homonym. This name had already proposed by Herter for *E. arechavaletai* Speg., which is currently referred to as *Parodia ottonis*).

In 1977, Jiri Elsner attempted a new combination with "*Notocactus neoarechavaletai* (subgenus *Wigginsia*) (K.Schum. ex Speg.) Elsner, combinatio nova." What Elsner did, though, was to produce a new name rather than a new combination. His combination is invalid because he forgot to mention the place of publication of the basionym. Elsner's change in the specific epithet (*neoarechavaletai* instead of *arechavaletai*) was due to the existence of *Notocactus arechavaletae* (Speg.) Herter (for *P. ottonis*), mentioned above.

Radim Havliček (1988, published 1989) repeated Jiri Elsner's 1977 error and produced "*Notocactus neoarechavaletai* Havliček," a new name for *E. acuatus* var *arechavaletai* K.Schum. ex Speg., Havliček designated Ruoff's specimen 107 (FRP), Uruguay, Maldonado, as the neotype.

Amazingly, the previous combination was made again by Norbert Gerloff (1991).

According to the new (broad) concept of *Parodia*, David Hunt (1997) transferred *Notocactus neoarechavaletae* to *Parodia neoarechavaletae* (Havliček) D.Hunt. According to Art. 58.1, this name is illegitimate because there is already an available name at the same rank: *Echinocactus maldonadensis* Herter, as the basionym for the combination under *Parodia*.

Taxonomic conclusions of *Wigginsia corynodes*

Wigginsia corynodes (Otto ex Pfeiff.) D. M. Porter, *Taxon* 13: 211. 1964.

Echinocactus corynodes Otto ex Pfeiff., *Enum Cact*: 55. 1837. Neotype, designated here; plate 24 in Arechavaleta, *Anales Mus Nac Montevideo* 5: 243. 1905. *Echinocactus corynodes* Otto, *Allg Gartenzeitung* 1(46): 364. 1833, *nomen nudum*. *Notocactus corynodes* (Otto ex Pfeiff.) Krainz, *Kakt Sukk* 17: 195. 1966.

Echinocactus acuatus var *arechavaletai* K.Schum. ex Speg., *Anales Mus Nac Buenos Aires* 11: 494. 1905. Neotype: Ruoff 107 (FRP). (Havliček 1989). Not *Echinocactus arechavaletai* Speg.= *Parodia ottonis* (Lem.) N.P.Taylor.

Wigginsia arechavaletae (K.Schum. ex Speg.) D.M.Porter, *Taxon* 13: 211. 1964.

Notocactus arechavaletai (K.Schum. ex Speg.) Krainz, *Kakt Sukk* 17: 195. 1966 (comb. nov., illeg., for *E. acuatus* var *arechavaletai* K.Schum. ex Speg., in *Cact. Tent* 494. Jan 1905, not *Notocactus arechavaletai* (Speg.) Herter, based on *E. arechavaletai* Speg.= *Parodia otonis*).

Notocactus neoarechavaletai (K. Schum. ex Speg.) Elsner, invalid name (Art. 33.3), *Succulenta* (Netherlands) 56(6): 143–145. 1977.

Notocactus neoarechavaletae Havliček, *Kakt Vilag* 18(4): 79. "1988" (1989). New name for *Echinocactus acuatus* var *arechavaletai* K.Schum ex Speg. (nom. illeg., Art. 52.1).

Notocactus neoarechavaletae N.Gerloff, *Internoto* 12(4): 108. 1991. New superfluous name, nom. illeg. (Art. 52.1).

Parodia neoarechavaletae (Havliček) D. Hunt, *Cactaceae Cons Initiat* 4: 6. 1997. (nom. illeg., Art. 58.1).

Echinocactus arechavaletai K.Schum. ex Arech., *Fl Uruguaya* 2: 242. 1905. (nom. illeg., Art. 53.1). Obligated lectotype, designated here: plate 24 of the original description (not *Echinocactus arechavaletai* Speg. *Anales Mus Nac Buenos Aires* 11: 496. 1905).

Echinocactus arechavaletai K.Schum. ex Gürke, *Monatsschr Kakteenk* 15(7): 106. 1905 (July), nom. illeg. (Art. 53.1, non *Echinocactus arechavaletai* Speg. 1905, January).

Malacocarpus arechavaletai K.Schum. ex Berger, *Kakteen*: 207. 1929 (intended as new combination). Neotype, here designated: Plate 24 in Arechavaleta, *Fl Uruguaya* 2: 242. 1905.

Echinocactus maldonadensis Hert., *Fl Urug Pl Vasc* 4:90. 1930 (as a new name for *Echinocactus arechavaletai* K.Schum. ex Arech., 1905).

Notocactus maldonadensis (Hert.) Hert., *Revista Sudamer Bot* 7: 216. 1943.

Malacocarpus callispinus Y.Ito, *Expl Diagr Austroechinocact* 258. 1957 (new name, illeg., for *Echinocactus arechavaletai* K.Schum. ex Arech. 2: 242. 1905, not *Echinocactus arechavaletai* Speg. 11: 496. 1905 = *Parodia ottonis*).

Wigginsia horstii F.Ritter, *Kakteen Südamerika* 1: 199. 1979. Holotype: Brazil, Rio Grande do Sul, Mine Camaqua, F. Ritter and others FR 1402a (U).

Root napiform. Stem globose, dark green, 3–8 cm high and diam. Pseudocephalium ca. 3.5 cm diam. Ribs 13–26, crenate, straight, obtuse, smaller than 1 cm deep. Areoles separated by 2–8 mm; young areoles with white hairs, nearly 5 areoles on each rib. Spines straight, gray with red base, black tipped, 8–24 radials, 3–10 mm long; central spines 1–3, notably thicker, 1–2 cm long. Flowers 2.5–3 cm high, 5 cm diam., stigma ca. 8–9 lobed. Fruits 1.5–2 cm long, 5 mm diam.

Distribution: Brazil, Río Grande do Sul, Caçapava, Mine Camaqua. Uruguay, Maldonado, stony hills near Piriápolis. Observed near the Fuerte de Santa Teresa, on the Atlantic coast (Department Rocha).

Studied material: **Uruguay**, Department Maldonado, Punta Ballenas, O. Ferrari s.n. Living material.

The epithet "arechavaletai" as synonym of *Parodia ottonis*

Parodia ottonis (Lehm.) N.P.Taylor, Bradleya 5: 93. 1987. *Cactus ottonis* Lehm., *Index Sem Hamburg*: 16. 1827.

Echinocactus arechavaletai Speg, *Anales Mus Nac Buenos Aires* 11: 496. 1905. Lectotype, here designated: "*Echinocactus arechavaletai* 35, 10-I-99," LP 23045. This type had been mentioned by Kiesling (1984: 220) along with the photo reproduced there and by Britton and Rose (1920, fig 210). Isotypes also exist (see Kiesling, l.c).

Echinocactus spegazzinii Gürke, *Monatsschr Kakteenk* 15(7): 110. 1905, nom. superfluos (Art. 52.1).

Notocactus arechavaletai (Speg.) Hert. *Revista Sudamer Bot* 7: 216. 1943.

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