Schütziana

The Gymnocalycium Online Journal

Volume 5, Issue 2, 2014
ISSN 2191-3099

This document was made available as a pdf file: July 30th 2014

Content

Published: 31th July 2014

Publisher: WORKING GROUP SCHÜTZIANA, Fichtenweg 43, 14547 Fichtenwalde, Germany
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SCHÜTZIANA is the journal of the WORKING GROUP SCHÜTZIANA.
Source of supply: SCHÜTZIANA is available only as a pdf–file via World Wide Web and can be downloaded from: www.schuetziana.org/download.php.

ISSN 2191–3099

Cover picture: *Gymnocalycium bodenbenderianum*, WP 00-330/716, Argentina, Prov. La Rioja, south of Vichigasta **(photo: Wolfgang Papsch)**

Editorial

Dear Gymnocalycium enthusiast!

The subject of debate chosen for the International Gymnocalycium Symposium in Eugendorf (Austria) between 1st and 3rd April 2014 was *Gymnocalycium bodenbenderianum*. The controversial discussion, as had taken place before, had been predictable because, to begin with, the participants hold basically differing views as to what has to be considered as *G. bodenbenderianum*. Especially Hans Till's research and the validation of the name *G. riojense* by Frič led to the question if *G. bodenbenderianum* and *G. riojense* represent two separate species or only one after all. A majority of the participants was of the opinion that the first option was the correct one. Especially colour of spines and distribution area were the issues of debate.

At the beginning of the discussion the Trichomosemineum populations south of Sierra de Malanzan and from the surroundings of Sierra de Ulapes were referred to as *G. bodenbenderianum*, following Hans Till's view. Only by investigating C. C. Hosseus's publications and biography and Frič's existing notes could this opinion be refuted.

Thus it was possible that the discussion could be conducted in a positive and inspiring spirit.

We would like to express our special thanks to Mr. Graham Charles (United Kingdom), who supports us with the English language, to Mr. Takashi Shimada (Japan), who translates SCHÜTZIANA into Japanese and to Mr. Daniel Schweich (France), who has mirrored our publication under: http://www.cactuspro.com/biblio/.

Comments on *Gymnocalycium bodenbenderianum* and *Gymnocalycium riojense*

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ABSTRACT

Not only in the German–speaking area in particular, but also beyond it, does the opinion persist among the association of Gymnocalycium friends, that *Gymnocalycium bodenbenderianum* and *G. riojense* are two separate species. Again and again differences in spination as well as a separate distribution area are quoted as reasons. Much space is dedicated to this theory in various, partly extensive, papers (Till et Till 1991, Amerhauser 2009). It is suggested here that *G. riojense* populates the areas north of the line San Agustin de Valle Fertil (Province San Juan), Chamical (Province La Rioja) and Casa de Piedra (Province Catamarca), whereas *G. bodenbenderianum* can be found at the southern edge of Sierra de Malanzan (Sierra de Argañaraz, Sierra de Abajo) and around Sierra de Ulapes.

Keywords: Gymnocalycium, *Gymnocalycium bodenbenderianum*, *Gymnocalycium riojense*, Nomenclature

DISCUSSION:

When Alwin Berger, retired Hofgarten director and former curator of La Mortola Botanical Gardens (Italy), described an *Echinocactus bodenbenderianus* Hosseus in 1929, he had access to plants from the garden centre Friedrich Adolph Haage jr. in Erfurt (Berger 1929). In the previous year Haage had already offered this new *Echinocactus* in his cactus price list of 1928. Making a concession to his customers abroad, he contrasted the nomenclatures according to Karl Schumann with those according to Britton and Rose and called it *E. Bodenbenderianus* Hoss. sp. nov. as well as

Gymnocalycium bodenbenderianum Hoss. He added *"novelty, related to G. Hossei, free flowering."* (Haage 1928). As to nomenclature, Haage's names remained nomen nudum.

Haage indicates by the author citation "Hoss." that the plants had come from Carl Curt Hosseus. This nomenclature honours Wilhelm Bodenbender PhD, a German geologist who came to Argentina in 1917. In the beginning he organised several research expeditions to northwestern Patagonia together with Friedrich Kurtz, later also with Hosseus, exploring, among other areas, the pampine Sierras.

Fig. 1 PhD Wilhelm Bodenbender
(http://insugeo.org.ar/libros/cg_19/01.htm)

Fig. 2 Carl Curt Hosseus
(Copy from A.E.Cocucci (2003))

Berger describes an extremely flat, almost disk-shaped brownish grey-green plant of about 8 cm in diameter. The apex is void of spines, studded with numerous juvenile pointed, cone-shaped tubercles. The 11 to 14 ribs are low-rise, wide and round and, between the dirty-grey felt like areoles, divided into trapezoid tubercles by sharp-edged grooves at right angle. The areoles are studded with 3 to 5 solid, 10 mm long spines, which are directed backwards in a crescent-shaped way and which are black-brown in the beginning, later grey-brown. Presumably, Berger did not see the flowers himself, as he describes them merely following Haage's statements as of medium size, tinged a washed-out whitish pink with brownish middle strips and originating from juvenile areoles. Although Haage as well as Berger describe *G. bodenbenderianum* as free flowering, no contemporary picture of a flowering plant exists. The blue colour mentioned in the description may originate from Haage's remark that *G. bodenbenderianum* is similar to *G. hossei.* Furthermore, he notes that the plants were introduced by Haage, that they were closely related to *E. quehlianus* and that these species had to be assigned to the genus *Gymnocalycium* in Britton's and Rose's system.

The latter issue in particular leads to controversial opinions concerning the right citation of authors. In the New Cactus Lexicon and subsequently by Graham Charles as well, A. W. Hill is listed as the person having transferred the species to the genus Gymnocalycium and therefore the species is cited as *Gymnocalycium bodenbenderianum* (Berger) Hill (Hill 1933, Hunt et al. 2006, Charles 2009). On the other hand, this species is listed as *Gymnocalycium bodenbenderianum* A. Berger in the International Plant Names Index (IPNI). It is added as an explanation, *"Berger (pp. 221, 337, 339) treated Echinocactus bodenbenderianus as an accepted name; on pp. 337, 341 (index), he mentioned that the*

*new names were assigned * signs and listed G. bodenbenderianum with an * sign and referred to p. 221. It is construed here that Berger published E. bodenbenderianus and G. bodenbenderianum as alternative names".*

Berger adds to his description a good picture, which presents the features described. Neither Haage nor Berger quote an exact locality. Córdoba as the locality mentioned is merely Berger's assumption. Thus it seems adequate to have a closer look at Hosseus. Carl Curt Hosseus was born in Stromberg im Thale (Germany) in 1878. He studied Botany and attained his doctor's degree in 1903. Study tours took him to Thailand, Sri Lanka, Singapore and Malaysia. He emigrated to Argentina in 1913, where he was employed as a professor of Botany at Cordoba University in 1916 after some study tours.

Abb. 3 Alwin Berger (Source: Wikipedia)

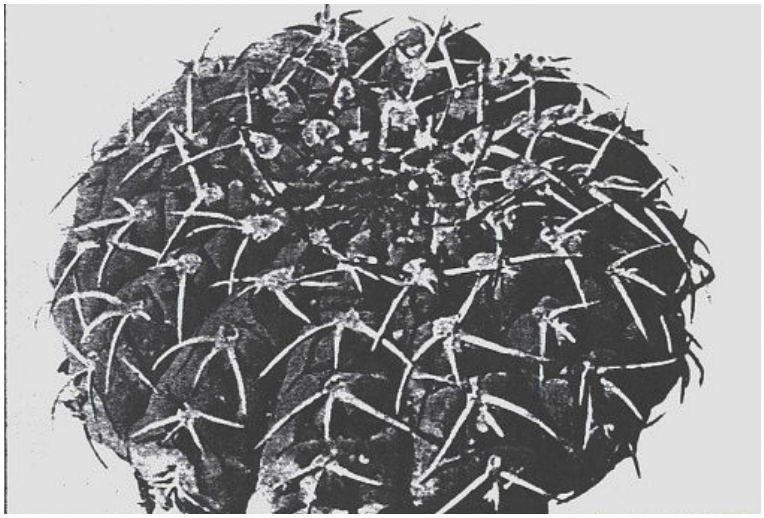

Abb. 4 G. bodenbenderianum (Copy from Berger 1929)

Between 1915 and 1925 he travelled large parts of northern Argentina, putting a study focus on cactuses. In doing so he visited the provinces La Rioja and San Juan in 1915, along the line Chilecito – Cuesta de Miranda – Villa Union – Guandacol – Río Blanco – Carrisalito – Majadita – Río Cura – Jagüel – La Troya – Vinchina – Cerro La Famatina.

In July 1917 La Rioja was once more his destination, Jujuy (for instance La Quiaca) and Bolivia were added later on. Between 1917 and 1919 several stays in Capilla del Monte followed. In February 1921 he visited the provinces San Juan and Mendoza and did botanical and geological research along the line Cerro Pillar – Cerro Challao – Barcale – Valle de las Cuevas – Cacheuta – Marayes – Las Chacritas.

He travelled around the provinces San Luis and Mendoza in June 1925, when his route took him via Villa Mercedes, Rio Cuarto, Laguna Bebedero, Achiras to Cerro Morro. In September 1925 his journey's destination was the province Tucumán with Parque Aconqija, La Fronterita and Tafí Viejo. In August 1925 he set out again in a southern direction to the province Chubut. In doing so he visited Puerto Madryn, Trelew, Cabo Raso, Camarones and San Antonio Oeste. At the end of 1925 he finally travelled in the province Catamarca (Mazan – Poman – Andalgalá – Belen – Londres).

In 1926 Hosseus published his opus "Apuntes sobra las Cactáceas", in which *G. bodenbenderianum* is not listed. He merely refers to *G. stellatum* for Córdoba, La Rioja und Catamarca (according to Spegazzini), as well as *G. quehlianum* for Córdoba. As quoted above Haage offers G. *bodenbenderianum* for the first time in 1928. Presumably Hosseus collected the plants after 1925 and before 1928. He had this possibility during his cactus studies in the province La Rioja in April

1927. His main research area was then around Chilecito and parts of the Sierra de Famatina. The plants he sent to Haage must thus originate from this journey.

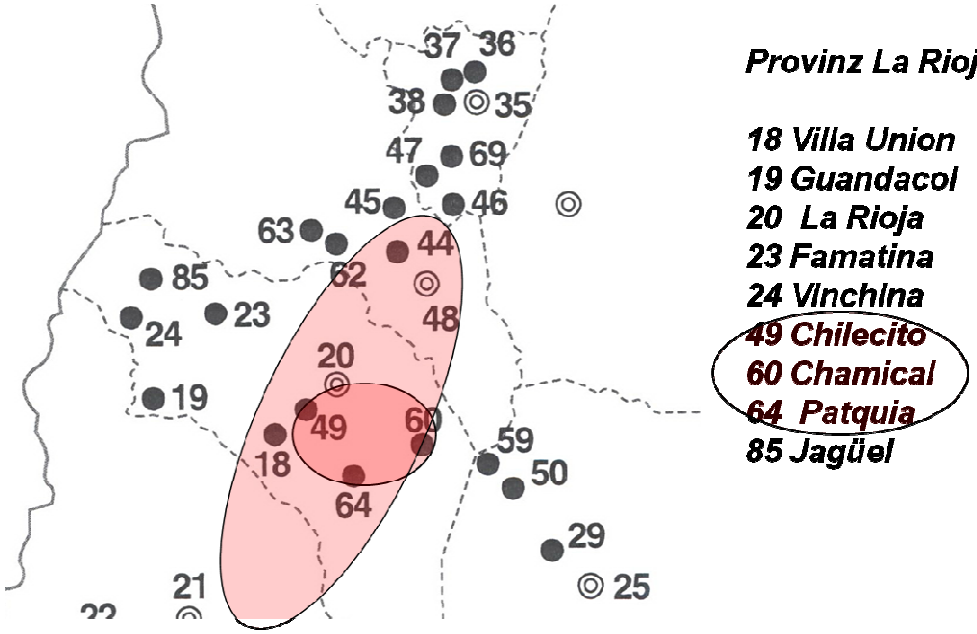

Fig. 5 Documented places of Hosseus's travels in the province La Rioja. The points 49, 60 and 64 indicate the assumed locality of *G. bodenbenderianum.* In the area marked off light red further taxa of *G. bodenbenderianum* can be found. (Copy from A. E. Cocucci (2003) adapted).

In June 1928 he set out to the north to the provinces Chaco, Tucumán and Salta and at the end of that year to Serrezuela, Milagro, Tello and Chepes in order to have the chance to see the mountains around Chepes. (Cocucci 2003). This journey, however, is chronologically after the publishing of Haage's catalogue. Thus the plants cannot originate from this journey but may have been recollected.

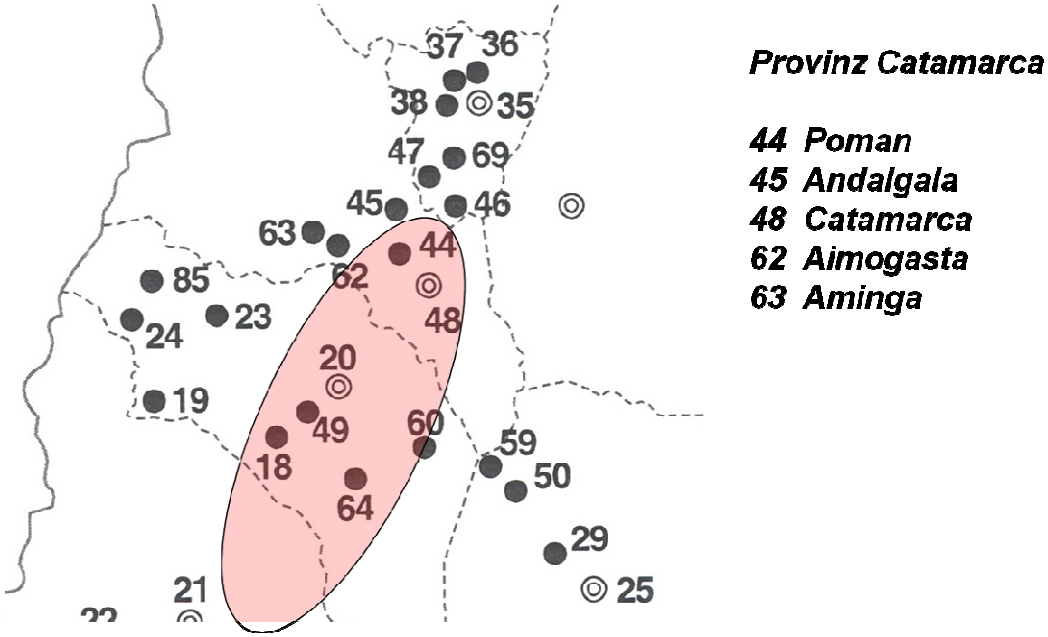

Fig. 6 Documented places of Hosseus's travels in the province Catamarca. In the area set off in light red further taxa of *G. bodenbenderianum* can be found (Copy from A. E. Cocucci (2003) adapted).

Another hint concerning the locality of *G. bodenbenderianum* is given by Hosseus in 1939 in his final cactus opus "Notas sobre Cactaceas Argentinas". To quote him literally:

Las especies *Gymnocalycium Hossei* (F. Haage Jr.) y *G. Bodenbenderiana* se encuentra casi siempre en forma asociada en la Prov. de La Rioja, en una zona pedregosa, pequeña y de poca altura, mientras que la variedad muy espinosa de *G. Hossei*, crece en casi 2000 m. s. n. m. en la misma provincia, sobre areniscas coloradas de la formación de Paganza, con raíces relativamente profundas. Una fotografía muy ilustrativa con el nombre de *Echino-*

"The species Gymnocalycium hossei and G. bodenbenderiana (sic.!) can almost always be found together in the province La Rioja, on small, low altitude terrain in stony areas, while the extremely spiny variety of G. hossei (= G. rhodantherum, author's comment*) still grows, relatively deeply rooted at an altitude of almost 2000 m in the same province on coloured sandstone of the Paganza formation."*

The information published by Hosseus in 1939 was gathered during the excursions of 1927 and 1933. He was looking for cactuses between Patquia – Chamical and Guanchin – Chilecito not before February 1933. Thus the locality of *G. bodenbenderianum* can be restricted to the area between Chilecito in the north and Patquia in the south. The type described by Berger can be found in numerous places in this area. South of this area there are no places documented by Hosseus where this type of plant can be found (see fig. 5).

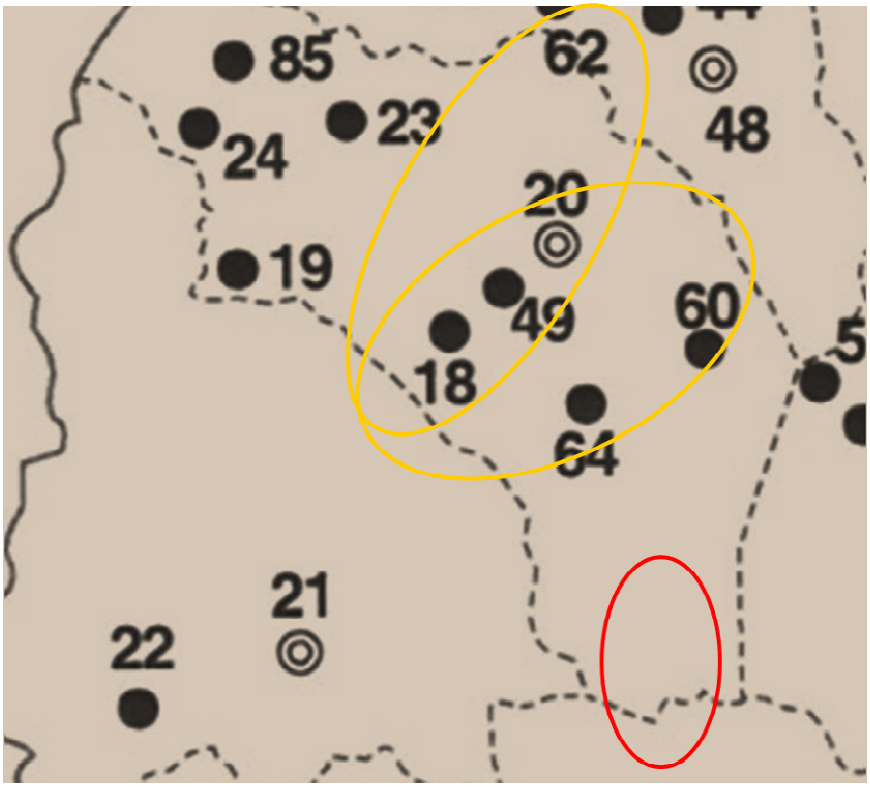

Fig. 6 Documented places of Hosseus' travels in the province La Rioja. Localities of *G. bodenbenderianum* are marked off yellow. The red area indicates the surroundings of Sierra de Ulapes, on which no information is given by Hosseus before 1928 (Copy from A. E. Cocucci (2003) adapted).

Alberto Vojtěch Frič, botanist and cactus merchant in Prague (Czech Republic), lists "*G. Riojense*, Frič sp. n." without any further specification as item no. 67 in his range of plants (Frič 1929). This plant does not appear anymore in his further offers. K. Kreuzinger ranks this plant, together with

G. nidulans, *G. occultum*, *G. platense*, *G. quehlianum*, among the subgenus Trichomoseminae (sic.!) established by Frič (Kreuzinger 1935).

All in all, Frič made 7 journeys to South America as well as one journey to Mexico between 1901 and 1929. The period of time in which he found his *G. riojense* can be roughly limited to between January 1927 and March 1929.

15.5.1901 - 5.8.1902 Latin America – Brazil
11.8.1903 - 17.9.1905 Latin America – Uruguay
21.8.1906 - 8.1908 Latin America – Brazil, Argentina, Paraguay
1909 - 1912 Latin America – Paraguay, Argentina
25.5.1919 - 11.6.1920 Latin America – Uruguay, Argentina
1923 - 1924 Mexico
1.1927 - 6.1927 Latin America – Brazil, Uruguay, Argentina, Paraguay
25.10.1928 - 29.3.1929 Latin America – Uruguay, Argentina

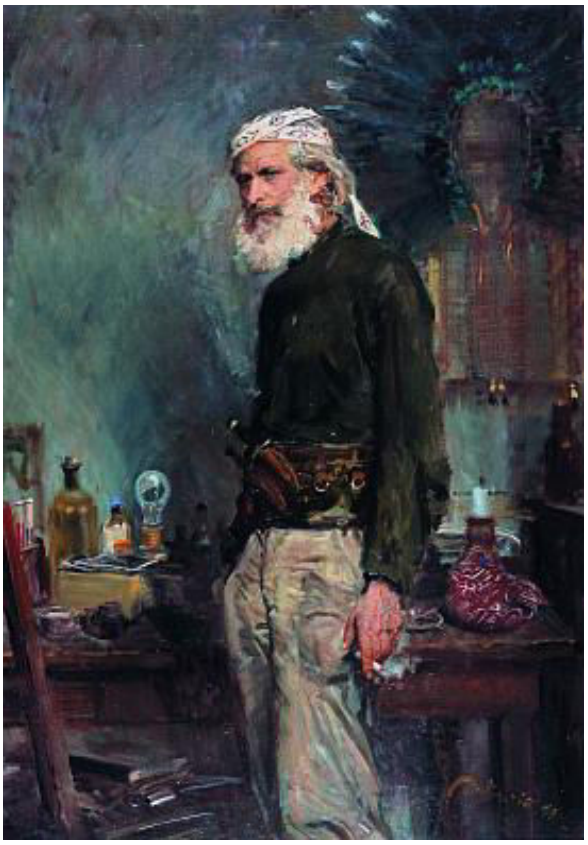

Fig. 7 A. V. Frič

Fig. 8 Front page of the Catalogue "Cactus Hunter 1929"

There are letters to Ivana Frič from the two journeys of that time, there is, for example, a report from Patagonia dated 15th February, 1927. Especially interesting are the letters of 23rd December 1928 from Catamarca, of 25th December 1928 from La Rioja and of 8th January 1929 from Tucuman. In the latter in particular there are hints to his *G. riojense.* Among other things he writes:

„Vzhledové podobna gymnocalycia jsem pozdeji sbiral v La Rioja, ale s mnohem delsimi ostny, a jeste pozdeji v Nonogasta s velmi dlouhymi a propletenymi ostny, pouze v nekolika exemplarich. Obe odrudy vsak maji

rozdilna semena. Take jediny exemplar gymnocalycia, ktery jsem nalezl ve vyse 1700 m v Guanchin, patri k mym zdejsim zajimavym nalezum. Tyto druhy oznacuji Gymnocalycium lariojense sp.n., Gymnocalycium nidulans sp.n. a Gymnocalycium guanchinense sp.n. Na rovine v Nonogasta jsem nalezl jeden trihlavy a jeden jednoduchy exemplar, ktery vzhledove i semeny je totozny s Gymnocalycium occultum, takze jsem presvedcen, ze tento druh je velmi rozsiren.“

Later I found optically similar Gymnocalyciums (some lines before he writes about finding *Gymnocalycium mostii* and *G. occultum* in Catamarca, author's comment) *in La Rioja, but with many more spines, and still later in Nonogasta only a very small number of specimens with very long and intertwined spines. However, both have different types of seeds. I took a few specimens of Gymnocalycium, which I found at an altitude of 1.700 m above Guanchin, one of my local interesting findings. These species are Gymnocalycium lariojense sp.n., Gymnocalycium nidulans sp.n. and Gymnocalycium guanchinense sp.n. In the plain, in Nonogasta, I found a simple plant and one with three heads, both of which are visually and according to their seeds identical with Gymnocalycium occultum, so I am convinced that this species is very common.*

According to his report he found first *G. lariojanum* near Guanchin (prov. La Rioja). This must have been different from the plant found near Nonogasta (prov. La Rioja), which he considered to be *G. occultum*. He does not mention this name anywhere later on. Neither does he mention *G. nidulans* again, which grows at the same locality and which was later assigned to the subgenus Trichomosemineum by Kreuzinger.

At another position of his letter he continues to report from Nonogasta:

„Jen velmi zridka lze nalezt pohori skladajici se z pevneho kamene. Jednu takovou horu jsem v Nonogasta nalezl. Dlouho jsem hledal marne. nezvykle vedro a ridky vzduch velmi brzy cloveka unavi. Clovek je malatny a bez jakekoliv nadeje neco nalezt putuje cele dlouhe dny mezi stejnou vegetaci, ztrati chut hledat a ostrost pohledu.
Tak se stalo, ze teprve pri zpatecni ceste jsem zpozoroval, kolik jsem prehledl pod keri rostlin Gymnocalycium occultum, ktere nam byly zname z Catamarcy a La Rioja…….
Avsak druhy a dalsi dva exemplare me presvedcily poupaty a plody, ze se jedna o Gymnocalycium. Druh variruje jako vsechna gymnocalycia, ale nektere exemplare maji tak zprehazene a huste ostny, ze jsem tuto rostlinu pojmenoval Gymnocalycium nidus Fric sp.n.“

“Only rarely can mountains consisting of solid rock be found. I found such a mountain near Nonogasta. I had been looking for it in vain for a long time. The unusually hot and thin air causes premature fatigue in humans. People get feeble, lose their appetite and the hope to find something, they search with hazy eyes among the uniform vegetation all day long. So I noticed on my way back how many Gymnocalycium occultum, which I already knew from Catamarca and La Rioja, I had missed under the bushes. ...

Buds and fruits of the second and the two other samples convinced me that it was a Gymnocalycium. Typically variable like all Gymnocalyciae, but some parts of these plants are with confused, dense spination. I called it Gymnocalycium nidus Frič sp.n.“

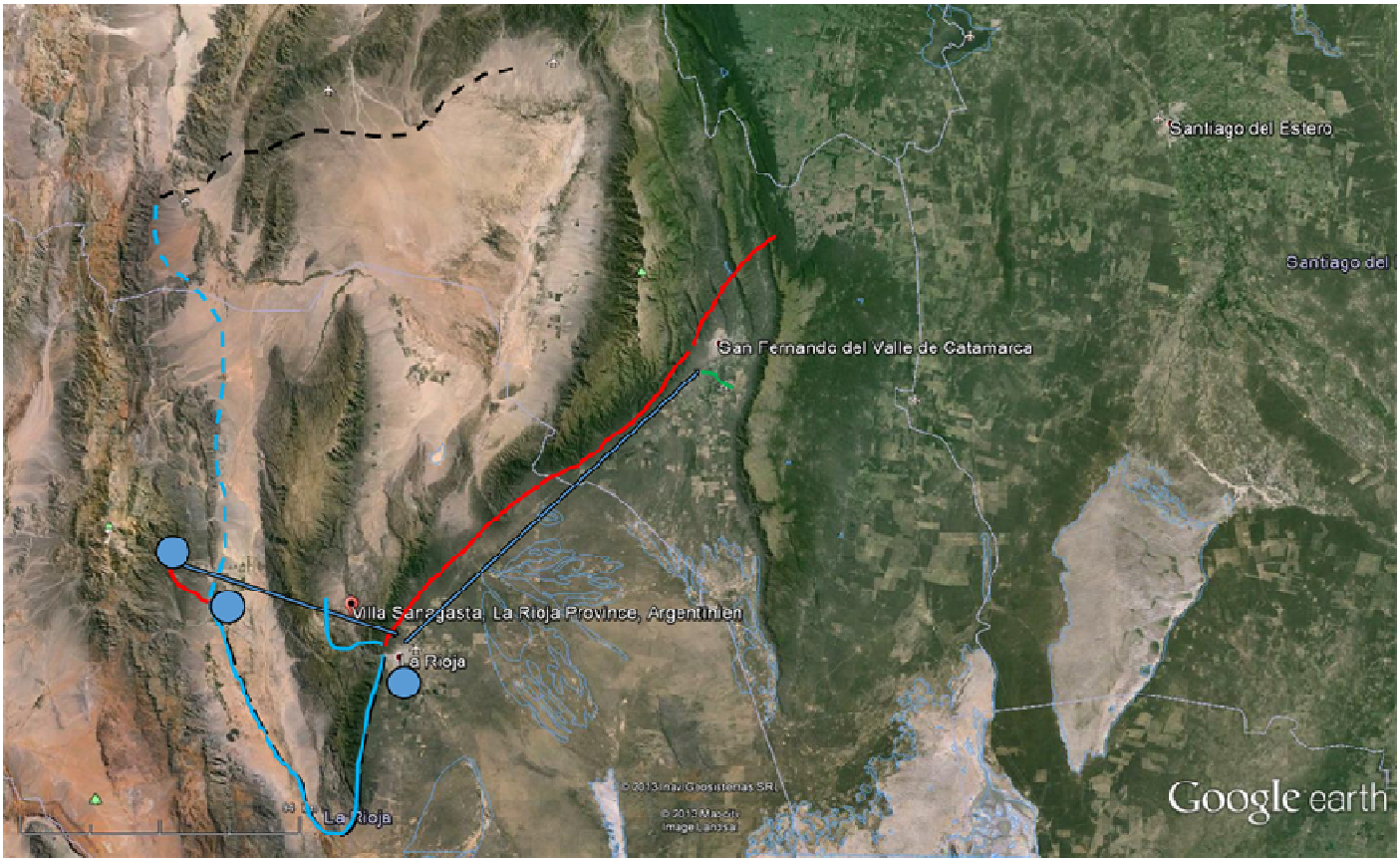

Fig. 9 Frič ‘s itinerary reconstructed from his letters

He proceeds in the same letter:

„Sami jsme pak odjeli do La Rioja, a jelikoz vlak nemel pripoj, zustali jsme tam. Prvni vylet byl smutny. Pul tuctu Gymnocalycium riojanum sp. n. jsme nalezli pod keri. To vsak neodpovidalo nakladum za automobil, nebot zde vyzadovali za cestu do hor nestydatou cenu. Proto jsem se rozhodl, ze prvni lovy provedu pesky. Cestou nas vsak zastavilo prazdne auto, ktere jelo smerem do hor a bylo nam nabidnuto za normalni cenu. Aniz bych vedel, jak se vratim zpet, prijal jsem nabidku a za hodinu jsme byli mezi nejfantastictejsimi horami, jake jsem kdy videl.“

"Then we continued to La Rioja and stayed there, as there was no train connection. The first tour was desolate. We found half a dozen Gymnocalycium riojanum sp. n. under the bushes. This was not worth the exorbitant/impudent costs for a car, which is indispensable for an excursion to the mountains. So I decided to go on foot on my first searches. But on our way we stopped an empty car which drove in the direction of the mountains, and we were given a lift at a normal price. Without any idea of how to get back I accepted the offer and an hour later we were at the most wonderful mountains I had ever seen."

In this letter Frič mentions at first only *Gymnocalycium occultum* when referring to plants with Trichomosemineum seeds near Catamarca and La Rioja. He says that it has a large distribution area and that he regarded the plants of Nonogasta as *G. occultum* because he already knows it from Catamarca and La Rioja. In contradiction, however, he tells some lines further on about collecting a *G. riojanum*, although he had before considered it to be a *G. occultum*, near the town of La Rioja. Looking at his letter objectively the question does arise whether his *G. lariojanum* from Guanchin can indeed be a synonym for his *G. riojanum* from La Rioja und later for his *G. riojense*. Thus his offer of 1929 must be treated with suspicion (Frič 1929):

„64 (2023) G. spec. Guanchin (not *G. guanchinense*, author’s comment)
65 (2024) G. nidulans sp. n. (intertwined spination, in few specimens imp.)
66 G. occultum sp. n. (Interesting form of seed, flowering every second year)
67 G. riojense sp. n.“

Chronologically, a first picture with the name *G. riojense* Frič ex Pazout (sic.!) (Pazout et al. 1960) cannot be found before 1960. The stated year of importing can thus only be a mistake. This name of Frič and Pazout remained also invalid due to lack of description.

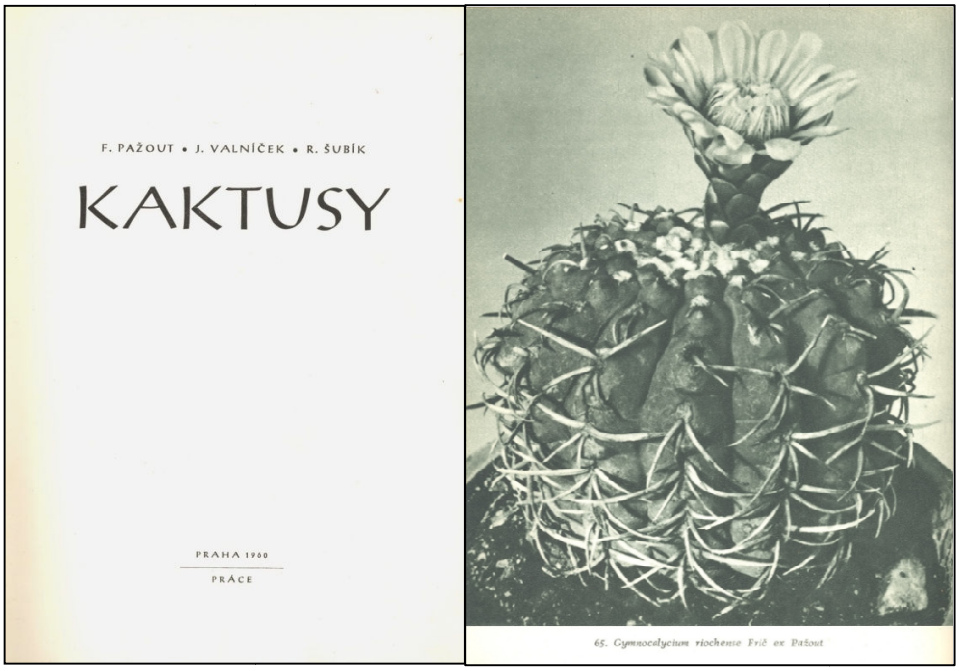

Fig. 10 Copy from Pazout et al. 1960

In 1991 Hans Till (Attersee, Austria) resorts to Frič's plant, respectively its name according to Frič, Kreuzinger and Pazout. He describes a plant from the area around Bazan and the town La Rioja (province La Rioja) valid as *G. riojense* Frič ex H. Till & W. Till and deposits a holotype labelled HT 88-122 in WU (Till et Till 1991). The distribution area of his *G. riojense* sensu stricto is referred by him to as *"the centre of the province La Rioja between Sierra Los Colorados, Sierra Velasco south of Cuesta Huaco, the southern end of Sierra de Mazan and in the south of Sierra de Argañaraz, at an altitude of 300 to 500 m."*

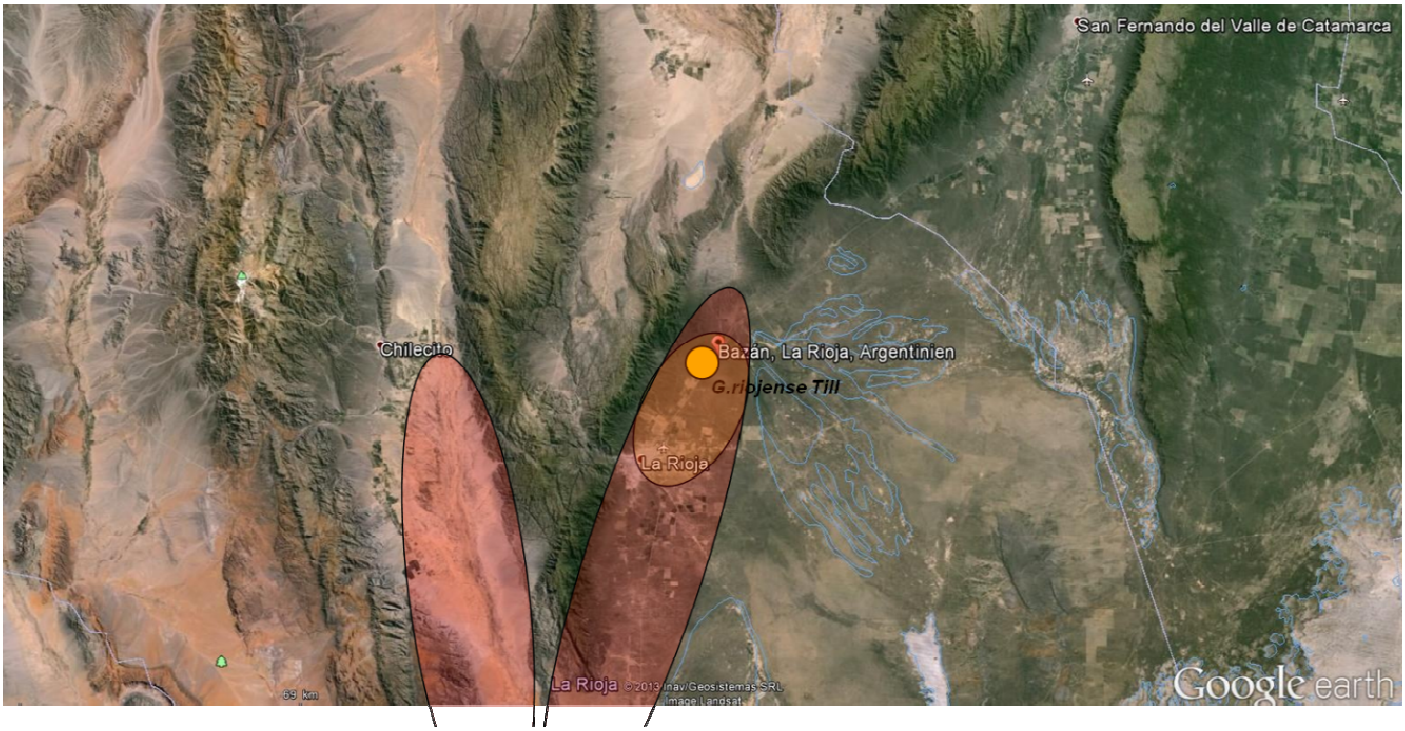

Fig. 11 Distribution area of G. riojense according to Till 1991

In this paper H. Till neither mentions the first/original description of *G. bodenbenderianum* by Berger, nor does he refer to Hosseus' publications. Quoting Frič as co-author is problematic, as it is more than doubtful for reasons listed above what Frič collected and imported under this name. The habitat of *G. riojense* described by H. Till matches well the one Frič mentions in his letters. At the same time it also includes the area where Hosseus found his *G. bodenbenderianum.* So it must be concluded that *G. riojense* H. Till & W. Till is a more recent synonym for *G. bodenbenderianum* A. Berger. For similar populations in the west as well as in the north resp. northeast of the area Till and other authors subsequently describe several subspecies of *G. riojense* (ssp. *guasayanense* (Strigl) H. Till; ssp. *kozelskyanum* H. Till & W. Till; ssp. *piltziorum* H. Till & W. Till; ssp. *paucispinum* H. Till & W. Till; ssp. *vertongenii* Amerhauser), all of which have to be assigned accordingly/hence now to *G. bodenbenderianum*. With a somewhat broad interpretation of the term species and from lack of a geographical borderline/demarcation of the habitat almost all subspecies and varieties described as *G. riojense* can be regarded as synonyms of *G. bodenbenderianum.* H. Till is mistaken when he considers populations from separate habitats at the southern side of Sierra de Argañaraz resp. those around Sierra de Ulapes as *G. bodenbenderianum.*

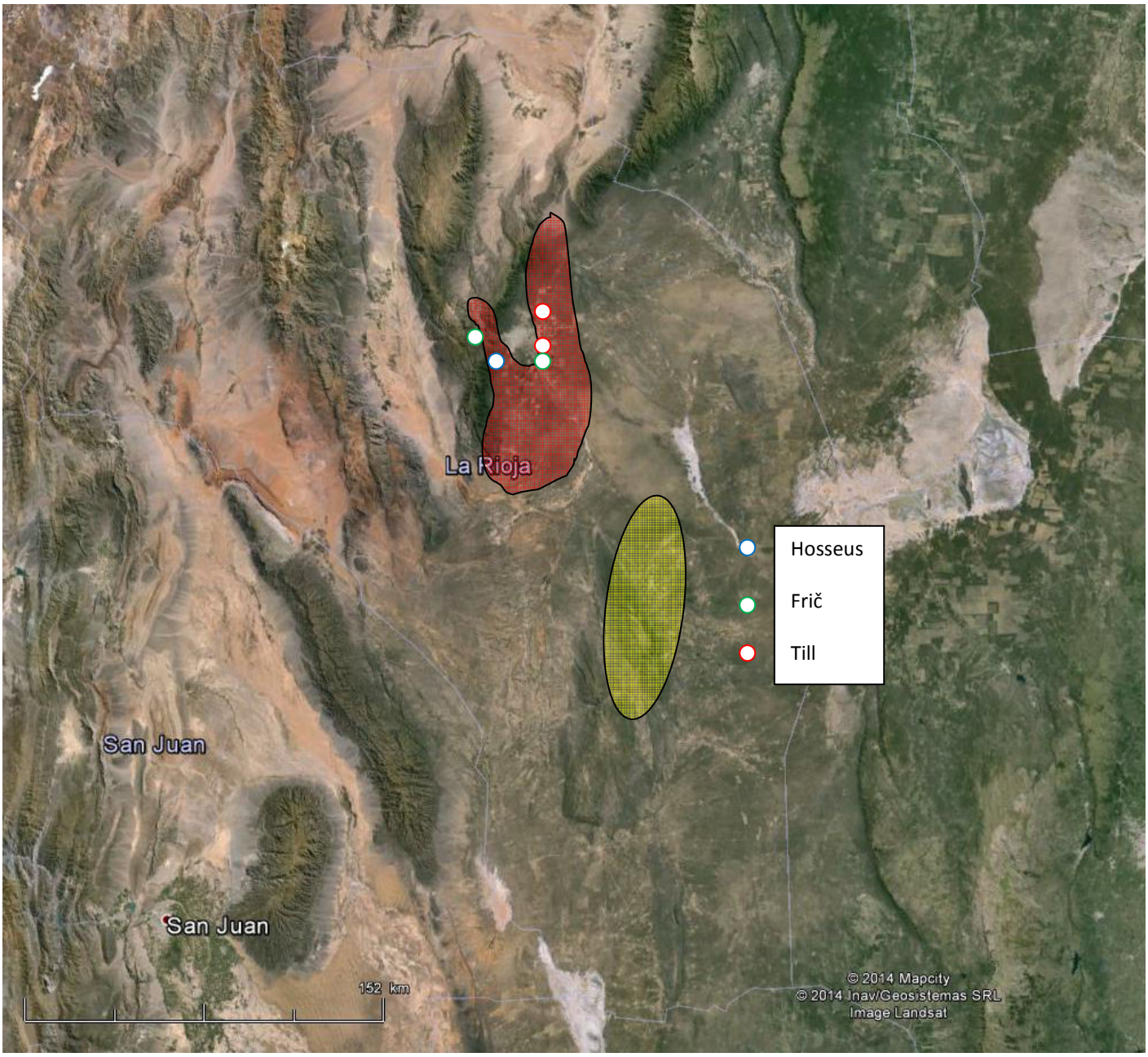

Fig. 12 Matching of Hosseus', Frič's und Till's localities

SUMMARY:

- Hosseus did not visit southern Sierra de Malanzan and Sierra de Ulapes before 1928.
- Data of Hosseus' study trips refute the opinion that *G. bodenbenderianum* originates from southern La Rioja, that is from the southern edge of Sierra de Argañaraz as well as Sierra de Ulapes.
- Hosseus reports his *G. bodenbenderianum* as from the Paganza formation amongst others.
- In all likelihood Hosseus' *G. bodenbenderianum* sent to Haage was a form from the surroundings of Chilecito.
- This locality is part of his *G. riojense's* distribution area, specified by Till.
- It must therefore be assumed that *G. riojense* and *G. bodenbenderianum* are synonymous and that *G. bodenbenderianum* has priority.
- As Frič regarded the plants from Nonogasta as *G. occultum*, his *G. lariojense* from Guanchin must be different from them. It is thus highly questionable whether the species collected was a Trichomosemineum.
- Frič regards the plants from La Rioja as *G. occultum,* on the other hand he writes at the same time about collecting a *G. riojanum* species.
- Thus *G. bodenbenderianum* is the oldest valid name for the Trichomosemineum populations which are also known as *G. riojense* in La Rioja (and Catamarca).
- Jörg Piltz already considered *Gymnocalycium riojense* Frič ex H. Till & W. Till to be a more recent synonym of *G. bodenbenderianum.*
- The same view is held by D. Hunt and G. Charles.

The following further approach is suggested:

- It must be investigated in how far the populations from the southern side of Sierra de Argañaraz resp. those from Sierra de Ulapes differ from *G. bodenbenderianum* s. str.
- Taxonomic evaluation of the differences found/asserted.
- Take possibly necessary taxonomic steps.

ACKNOWLEDGEMENTS:

I would like to thank the participants of the International Gymnocalycium Congress 2014 in Eugendorf (Austria) for the lively and helpful discussions about this topic. I am also grateful to Mrs Iris Blanz (Fernitz, Austria) for translating this paper into English and to Mr Brian Bates for the revision of the English text.

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Fig. 13 *G. bodenbenderianum* WP 403/813 prov. La Rioja, Sierra Brava