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## Content




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**Cover picture: *Gymnocalycium gibbosum*, Carmen de Patagones, Province Buenos Aires, Argentina, 29 m. a. s. l. (photograph: H. Kallenowsky).**

## Editorial

## Dear Gymnocalycium friends

## 35th International *Gymnocalycium* Conference - 13th to 15th September 2019 in Radebeul (Germany) Topic: "*Gymnocalycium kuehhasii* and *Gymnocalycium frankianum*"

**Holger Lunau**

After the match is before the match – this wisdom from football also applies to us cactus lovers in some respect. Only five days after this year's European Conference of Cactus and Succulent Friends (ELK) in Blankenberg, Belgium, a number of ELK participants met again. This time the venue was situated more than 850 km to the east in Radebeul near Dresden (Germany). From 13th to 15th September the lovers of the cactus genus *Gymnocalycium* met in the Hotel "Goldener Anker", which has been a tradition in autumn since the year 2000. With its 35th occasion this prestigious *Gymnocalycium* conference, which has successfully combined scientific standard with entertaining agenda items, celebrated an anniversary. Thus, the over 40 prospective and experienced experts of Gymnos did not want to miss getting information about new scientific findings concerning the genus, exchange experience and report on journeys to Latin America.


Fig.1: Traditional Friday afternoon welcome in the beer garden.

After all, plant lovers from all of Germany, Italy, the Netherlands, Austria, Poland, Switzerland as well as the Czech Republic had set out for the often long distance to the picturesquely situated village on the river Elbe. The joy at meeting again was even greater for those who had not seen each other for a longer time. However, there was also a feeling of melancholy among the participants because Norbert Gerloff, a dedicated and internationally renowned *Gymnocalycium* and *Notocactus* specialist, died in 2019. His contributions during earlier *Gymnocalycium* meetings had always been received with great interest.

Fig. 2: Plants are exchanged during the breaks.

After dinner the real conference got under way. Ludwig Bercht (Eck en Wiel, Netherlands), the chairman of the conference, and Volker Schädlich (Spremberg, Germany), well-proven organizer, welcomed the participants as usually. Afterwards Ludwig Bercht presented the extensive agenda. A very informative start was given by Horst Kallenowsky (Hamburg, Germany). His travelogue “Endless dirt roads, interesting cacti and proud torch bearers” carried the audience away to Patagonia in Argentina. With impressive photographs of people, landscapes and plants, accompanied by suggestions for travelling and video recordings of penguins he aroused the desire in many of his listeners to visit this secluded as well as charming area in the south of Argentina themselves. It goes without saying that *Gymnocalycium* lovers also got their money’s worth. Even in these inhospitable regions can species with more or less large flowers from the genus be found, e.g. G. *gibbosum*, G. *gibbosum* var. *chubutense* and *G. gibbosum* var. *brachypethalum* with their multitude of forms as well as farther to the north *G. reductum.*

Although time was flying by, everyone got together for a final “obligatory” glass of beer. After all, not only had the previous day’s travel highlights to be relived, but also the experiences of own journeys evaluated over again in detail …

Fig. 3: Michael Melojer, Volker Schädlich, Reiner Sperling and Gert Neuhuber (left to right) in lively discussion.

The next day the conference started at nine o'clock prompt, as usual. An early appearance ensured the best seats. It has become common practise for Wolfgang Papsch (Karlsdorf, Austria) to introduce the conference topic "*G. kuehhasii* and *G. frankianum"* with extensive literature reference and a well-founded analysis. In conclusion, *G. kuehhasii* Neuhuber & Sperling 2008 with the type locality San Miguel in the northern part of Province Córdoba is doubtlessly a good species.

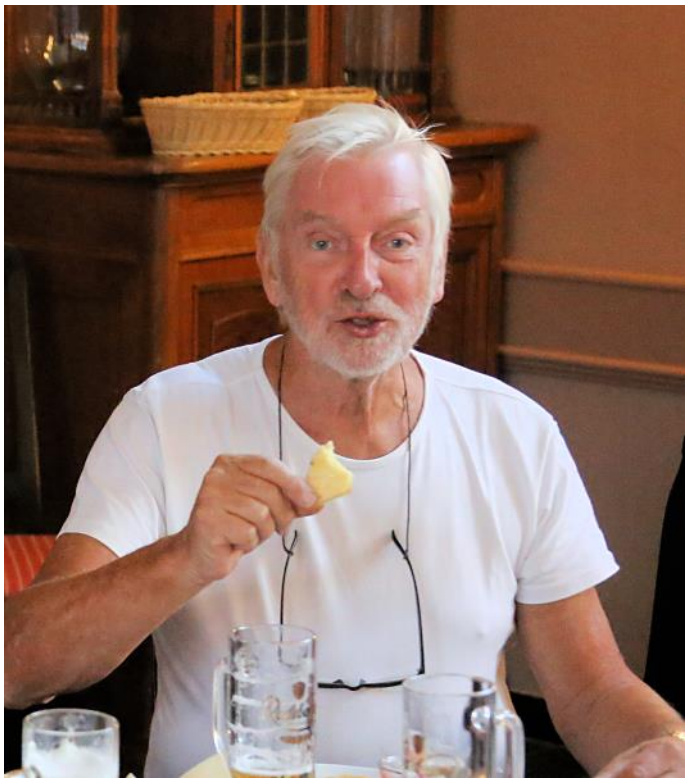

Fig. 4: Conference chairman Ludwig Bercht takes care that body and soul are kept together.

This was also the result of extensive ploidy level investigation of these two species as well as of other *Gymnocalycium* species of the subgenus *Gymnocalycium* from the respective area in northern Córdoba and Santiago del Estero. This research was funded by private financial resources of the Initiative Group *Gymnocalycium*. Members of this group are Ludwig Bercht, Christian Hefti (Grindel, Switzerland), Tomas Kulhánek (Moravský Krumlov, Czech Republic), Holger Lunau (Berlin, Germany), Volker Schädlich, Mario Wick (Fichtenwalde, Germany), Reiner Sperling (Salzkotten, Germany) and Thomas Strub (Binningen, Switzerland).

It was Mario Wick who vividly and understandably explained to the conference members the meaning of ploidy levels, why plants form different chromosome sets and what this means for genetics and differentiation of species. Investigation of ploidy levels yielded the result that *G. frankianum* from the Sierra de Guasayan as well as *G. frankianum* aff. from the Sierra de Sumampa, situated far more to the south, have tetraploid chromosome sets just like *G. affine*, *G. campestre* and *G. robustum*, which grow even farther south. In contrast, *G. kuehhasii* is a diploid plant, which makes an assignment to the species *G. robustum*, *G. affine* and *G. campestre* just as impossible as to *G. frankianum*. Its closest relative could be *G. erinaceum,* which is also diploid and can be found farther to the south.

Thomas Strub and Reiner Sperling corroborated these findings about ploidy levels of *G. frankianum* and *G. kuehhasii* with numerous pictures of habitats, plants in cultivation, flower sections and photos of seeds as well as charts on flowering times. In doing so they also included their only recently described (see Schütziana 10(2019)2) new subspecies of *G. kuehhasii*, namely *G. kuehhasii* subsp. *corneuspinum* and *G. kuehhasii* subsp. *incurvatispinum*.

Fig 5: Integral part of the agenda are the common meals.

However, habitat pictures of many plants taken by Thomas Strub and Reiner Sperling as well as by Gert Neuhuber (Austria) and Wolfgang Papsch revealed that in southern Santiago del Estero and in the northern border area of Province Córdoba there are a multitude of *Gymnocalycium* localities of which the plants cannot be assigned unambiguously and spontaneously to one of the species known to occur there. In this respect a lot of research in the field, greenhouses and in laboratories remains to be done.

After lunch Thomas Strub shed light on various aspects of *G. meregallii* Bercht 2012. By means of excellent habitat pictures, photos of cultivated plants and various charts on flowering time and locality he gave the participants an understanding of the plants. An interesting fact about

*G. meregallii* is that there is reasonable suspicion of this species being of hybridogenic origin. Further investigation and field research have to be awaited.

Another highlight on the agenda was Holger Lunau's contribution. He carried the conference members away to Bolivia and presented the local Gymnos and other cacti. The listeners were captivated by spectacular landscapes such as the Paicho Valley – home to *G. armatum* -, high plateaus with thousands of *Oreocereus trollii*, the worldwide largest salt lake Salar de Uyuni or mountain passes at an altitude of 4,000 metres with *Lobivia ferox* and *Weingartia spec.* retreated into crevices. Last but not least, numerous *G. pflanzii* and *G. zegarrae*, Parodias and Cleistocacti completed the picture. Before the common dinner it was reserved for Wolfgang Papsch to present parts of Argentina with numerous cacti, other succulents and plants in a travelogue, combined with snapshots taken of the country and its people, videos and music creating a captivating atmosphere.

After dinner it was Konrad Müller's turn (Leipzig, Germany) to finish the day's program with an impressive travelogue "Impressions of northern Peru – my 2018 journey". The conference participants were enthusiastic about amazing mountain landscapes, prehistoric archaeological excavations, pictures of cacti far away from Gymnos as well as a lot of interesting travel information. Of course, they continued to talk about their special fields of interest over a glass of beer.

Sunday was totally reserved for Ludwig Bercht, who showed pictures of a journey to Bolivia starring Weingartias and Parodias. This earned him just as much applause as his excellent acting as the chairman of the meeting. The only agenda item to remain was to fix the date of the next *Gymnocalycium* conference, which will take place from 2nd to 4th October 2020 in Radebeul, as every year.

Enjoy yourselves reading!

We would like to express our warmest thanks to Mrs Iris Blanz (Fernitz, Austria), to Mr Brian Bates (Bolivia) and to Mr Graham Charles (United Kingdom), who support us with the translation into English, to Mrs Larisa Zaitseva for the translation into Russian (Tscheljabinsk, Russia), to Mr Takashi Shimada (Japan) for the translation into Japanese and to Mr Daniel Schweich (France), who has mirrored our publications under http://www.cactuspro.com/biblio/.

# On Jaroslav Procházka's 75th birthday and the 24th anniversary of the discovery of *G. prochazkianum* Šorma

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**KEYWORDS: *Cactaceae*, *Gymnocalycium*, *prochazkianum*, Jaroslav Procházka.**

The Czech cactus collector and famous *Gymnocalycium* enthusiast Jaroslav Procházka from Brno celebrated his 75th birthday. He reached this wonderful anniversary in the best of health on 6th August 2019. I would like to mention a few important milestones occurring in his cactus life so far.

Fig. 1: Jaroslav Procházka at type locality of *G. prochazkianum*.

The first milestone was his falling in love with his charming wife Zdeňka, whom he met before his compulsory military service in the 60s. In the house where she lived Jaroslav met a cactus enthusiast who cultivated cacti on the top floor. When Jaroslav returned from his military service in 1965, he met him again and one day he took Jaroslav to a meeting of the Cactus Club "*Astrophytum*" in Brno. Jaroslav fell in love a second time, but this time with cacti. He learned how to sow seed and multiply plants and got totally captivated by this hobby.

Fig. 2: *G. prochazkianum* at type locality.

Until 1980 he was mainly interested in small Mexican plants, especially the genus *Turbinicarpus*, later in the 80s also in the genera *Gymnocalycium, Thelocactus, Mediolobivia, Chamaecereus*, which are being cultivated in his collection even now.

Fig. 3: *G. prochazkianum* flowering in culture.

As early as in the 80s he built a still existing greenhouse (5.5 x 2 m) with floor beds. They were later replaced by elevated ones, where he grows his beloved *Gymnocalyciums*. He has regularly attended Brno meetings and has met with well-known cactus collectors and enthusiasts since that time.

His next milestone was the 2nd International Gymnocalycium Meeting held in Düren, Germany (Jörg Piltz) in 1986. Jaroslav participated with his good friend Vít Kopecký for the first time and he spent one week at Klaus Billet's place. On this occasion they visited Jörg Piltz, Willi Wessner and Mr

Andreae (son of the well-known Dieter Andreae). At that time Jaroslav got seedlings from Mr Andreae of the original imports of *G. deeszianum*, which he then distributed to Czech and Slovakian collectors.

Fig. 4: Habitat of *G. prochazkianum*.

At these collectors' places he met H. Till, F. Strigl, L. Bercht, W. Papsch and many other Gymno enthusiasts for the first time. He then regularly attended the Spring Gymno Meeting in Eugendorf (Austria) until 2016, the last time he was there, and in autumn he was present at the Gymno Meeting in Radebeul (Germany). There he met many other gymnophiles like W. Rausch, G. Hold, F. Kühhas, H. Amerhauser, V. Schädlich, T. Strub, R. Sperling, K. Müller and many more. After the meeting in Düren visits to Jaroslav's collection started, his first visitors were Gerfried Hold and Wolfgang Papsch, Ludwig Bercht followed.

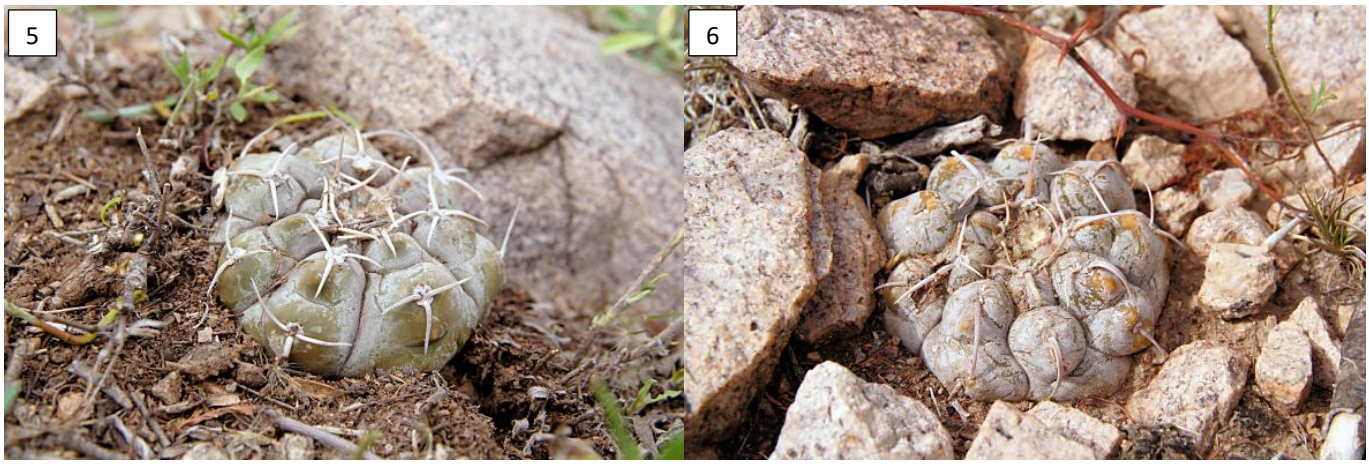


Fig. 5-6: *G. prochazkianum* at type locality.

At that time, he did not speak German, but Vít Kopecký spoke it very well. After the Velvet Revolution, he began working in Austria at Krames Company, Wolkersdorf in 1990. There he learned German and so could be in contact with Austrian cactus enthusiasts.

Fig. 7: *G. prochazkianum* at type locality.

The next big milestone was his first trip to the natural habitats of his beloved plants. Together with W. Papsch he went to places in Argentina in 1992 for the first time after those places had been visited by A. V. Frič**.** To name one of these well-known places, the habitat of *G. gibbosum* near Carmen de Patagones, can be mentioned, at that time still a very mysterious plant, can be mentioned. It was not his last visit to Argentina and the next trip followed soon, again together with Wolfgang in 1995. He could also observe *Gymnocalycium uruguayense* in natural habitats together with H. Amerhauser in 1999.

Fig. 8: *G. prochazkianum* at type locality.

Jaroslav is not just attached to *Gymnocalycium*. As already mentioned, *Turbinicarpus* and *Thelocactus* remained also a part of his hobby, he is very happy that he could visit many beautiful habitats together with Helmut Nagl and Jaroslav Záhora in Mexico in 2005. To my great pleasure we could make three wonderful trips to Argentina together in

2007, 2009 and 2015. Jaroslav is always an excellent companion, not only on trips but also in daily life.

Fig. 9: *G. prochazkianum* at type locality.

That is also why he was elected chairman of Gymnofil in 1999. He has been active giving lectures and still presents pictures and shares knowledge gained from his trips, not only at meetings and symposiums of Czech and Slovak cactus clubs but also in Poland. Jaroslav is honorary member of the Poland Cactus Club as well as of the Cactus Club of Ostrava and Frýdek Místek. Jaroslav has also been nominated for the Golden Alberto Award in the year 2021.

**24 years after the discovery of *Gymnocalycium prochazkianum***

On his second trip to Argentina in November 1995, in search of a plant that had been described at that time as *G. robustum* (known as *G. quehlianum* sensu H. Till), Jaroslav discovered a different plant and brought it home. It was 4 km south of the settlement of Quilino in the Province Córdoba, not so far from the border of the Salinas Grandes. After his return he passed the information on to the Czech group of gymnophiles, who later rediscovered the habitat, found and imported some more plants. After obtaining the seeds in culture, the plant could be classified as belonging to the subgenus *Microsemineum* (now *Scabrosemineum*), which was something of a sensation.

As it is sometimes the case, someone else than the discoverer wanted to make the first description, so the magnificent plant was described by V. Šorma in 1999 as *G. prochazkianum* (Gymnofil 28 (1-2): 2 (-6) (1999). Since it is considered bad taste to describe a plant after yourself. Thus, 24 years have passed since Jaroslav's discovery of this beautiful plant, and 20 years ago the epithet *G. prochazkianum* was described.

I was really happy to find the type locality in 2006. It was a special experience for me that we could visit the type locality together in 2007 during our common journey. So, twelve years later Jaroslav could see further plants and their variability in their natural habitat. It was a nice, sunny day and we had the feeling of being totally alive. It was only twice that I saw Jaroslav showing such humility and modesty, here and later in Quebrada del Toro in the Salta Province, where he stood in front of *G. spegazzinii* for the first time. During all those years and until today many field investigations of different populations belonging to *G. prochazkianum* or related species have been made, but the first locality will never be forgotten.

Dear Jaroslav, thank you very much for all those years of friendship and I wish you and your plants all the best for the future.

Fig. 10: *G. prochazkianum* at type location.

# Endless dirt roads, interesting cacti and proud torch bearers

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**ABSTRACT**

**In his travelogue Horst Kallenowsky describes the beauty of cacti localities and nature in the southern part of the genus *Gymnocalycium's* distribution area. Apart from elephant seals, penguins and impressive vegetation growing along with *Gymnocalycium* other plants like *G. gibbosum* and related taxa as well as *G. reductum* and *G. striglianum* could be studied in their localities.**

**KEYWORDS**

***Cactaceae*, *Gymnocalycium*, *gibbosum*, *gibbosum* var. *chubutense*, *gibbosum* var. *brachypetalum*, *gibbosum* subsp. *ferox*, *platense*, *striglianum*, *reductum*.**

## INTRODUCTION

In 2018 I had the opportunity to travel to Argentina together with Thomas Strub and Volker Schädlich. The route prepared by Thomas Strub took us through the provinces Buenos Aires, La Pampa, Río Negro, Chubut and Mendoza. The southernmost destination of the journey was Bahia Bustamente in the Province Chubut. As we could cover the distance more quickly than expected, the provinces San Luis and Córdoba were also visited afterwards.

## *Gymnocalycium platense* (Province Buenos Aires)

Our first aim was to find *Gymnocalycium platense* in the surroundings of Olavarria (Province Buenos Aires). At first the weather was really bad, it was raining all day long and temperatures were around 10°C with fresh gales. Driving on the dirt roads was like driving on soft soap and it was therefore necessary to drive carefully so as not to end up in the roadside ditch. Regrettably, the search of *G. platense* was unsuccessful. We found only *Wigginsia tephracantha* and *Notocactus submammulosus* in the Sierra Chica near Olavarria. Obviously, stress caused by civilisation on the habitats is so great that *G. platense* only occurs scattered in ecological niches and thus is difficult to find (see Papsch, 2017).

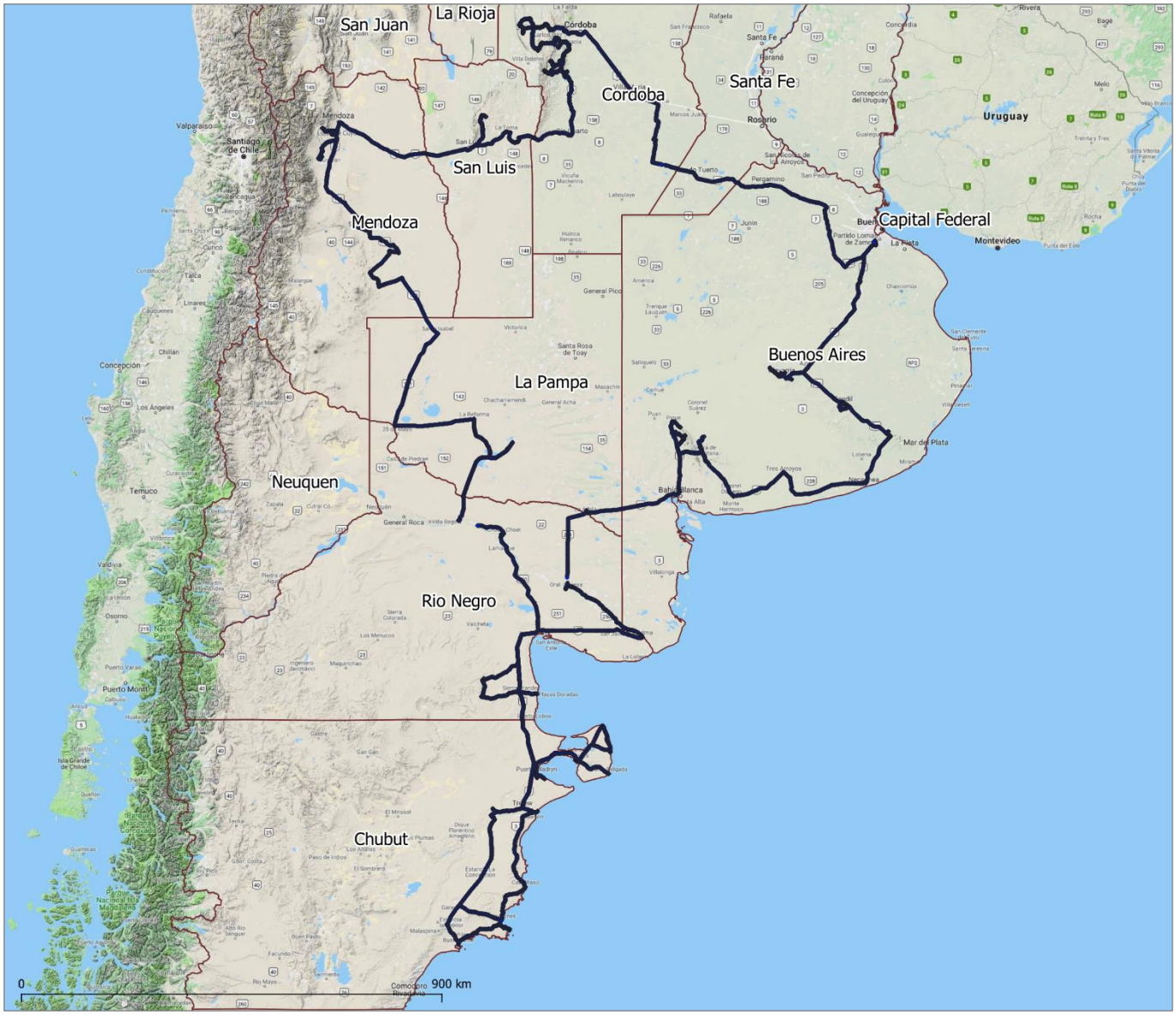


Fig. 1: Route of the five weeks' journey (map: M. Wick).

## *Gymnocalycium reductum* (Province Buenos Aires)

Fig. 2: *G. reductum*, 4 km east of Villa Ventana, Prov. Buenos Aires (HH 1005, TS 1802, VoS 18-2623).

In the end we stopped looking for *G. platense* and drove on so as to search for *Gymnocalycium reductum* in the area around Balcarce where we were disappointed as well because we could not find any plants. Finally, after a quest of four days of unsuccessful searching, we found our first *G. reductum* in the Sierra de la Ventana. The weather had also improved by then. It was sunny, day temperatures were around 20°C and the air was filled with the enchanting scent of flowering gorse, which covered large areas.

Fig. 3: *G. reductum*, 23 km north of Sierra de la Ventana, Prov. Buenos Aires (HH 1003, TS 1801, VoS 18-2621).

Fig. 4: Habitat of *G. reductum*, Sierra de la Ventana, Prov. Buenos Aires.

The mountain range Sierra de Ventana stretches over 195 km from the northwest to the southeast with a width of around 40 km. Its highest elevation amounts to 2,239 metres. According to Köppen and Geiger's classification of climate Sierra de Ventana is to be classified as belonging to category Cfa. In this classification "C" means moderately warm climate, "f" refers to constantly humid without any dry periods and the subcategory "a" relates to hot summers with temperatures above 22°C. In the Sierra de la Ventana the average temperatures fluctuate between 7°C in the Argentine winter and 22°C in the Argentine summer. The lowest temperatures do not drop below 2°C. Monthly precipitations are between 20 and 50 mm in winter and between 50 and 100 mm in summer. (See Clima Sierra de la Ventana' under https://es.climate-data.org/america-del-sur/argentina/buenos-aires/sierra-de-la-ventana-1022328/, accessed on 12th April, 2019).

The Sierra de Ventana consists of white quartzitic Devonian sandstones with folded layers of clay above them. The quartzites are identical to the Table Mountain sandstone of the Cape System in South Africa (see Maack, 1969). The Sierra de la Ventana is the westernmost part of the South African Cape System's fold belt/orogenic belt. In the course of continental drift after the breaking apart of the supercontinent Gondwana it has drifted to its present position.

About 20 km south of Pigüé, on a mountain ridge of the Sierra de Cura Malal, very large, up to 40 cm high plants of *G. reductum* could be found.

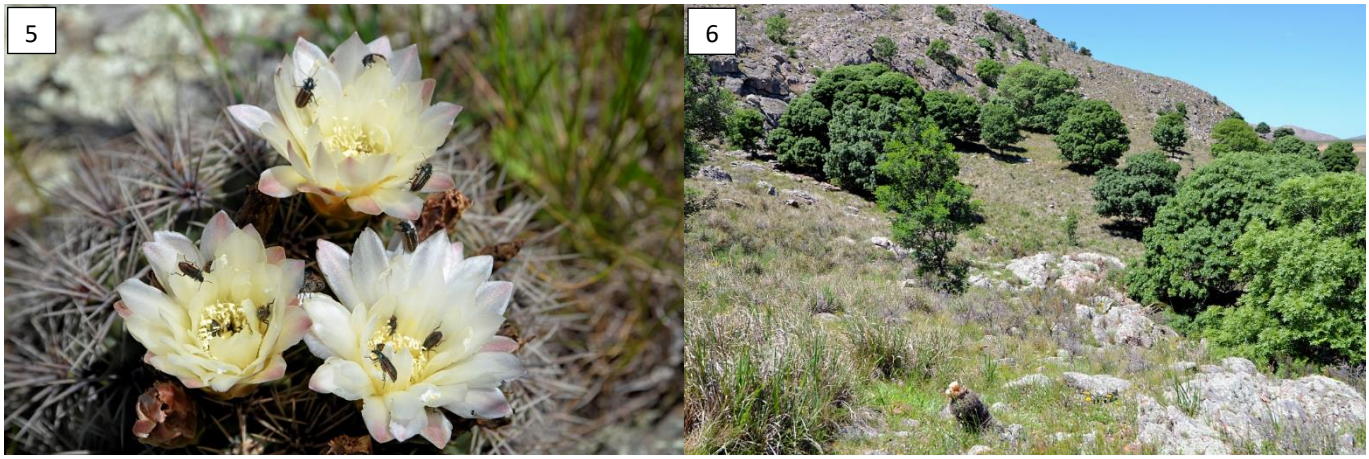


Fig. 5: *G. reductum*, Sierra de Cura Malal, Prov. Buenos Aires (HH 1007, TS 1804, VoS 18-2626)
Fig. 6: Habitat.

## *Gymnocalycium gibbosum* (Subspecies and varieties)

In search of *Gymnocalycium gibbosum* and the varieties *brachypetalum, chubutense* and the subspecies *ferox* we were taken to the provinces Buenos Aires, La Pampa, Río Negro and Chubut. *G. gibbosum* and *G. gibbosum* var. *brachypetalum* grow on alluvial sandy soil and soil of crushed rock along coastlines, lake and river banks. *G. gibbosum* var. *chubutense* can be found partly close to the coast on sandy soil, respectively further upcountry in hilly landscapes on volcanic rock (see Charles 2008, S. 93).

## *Gymnocalycium gibbosum* (Province Buenos Aires)

18 km northwest of Carmen de Patagones along the River Río Negro, which forms the border between the provinces Buenos Aires and Río Negro, there were many flowering *Gymnocalycium gibbosum* together with *Echinopsis leucantha*, *Pterocactus tuberosus* and *Cereus aethiops* in a meadow interspersed with shrubs.

Fig. 7: *G. gibbosum* near Carmen de Patagones, Prov. Buenos Aires (HH 1017, TS 1812, VoS 18-2636).

Fig. 8: *Pterocactus tuberosus* (HH 1017a)

*Pterocactus tuberosus* grows either as plants with solitary branches or in plants with multiple branches which originate directly above the soil from the upper part of the root. The sprouts are up to 10 cm long with a diameter of about 0.5 to 1.0 cm. They come off easily at the point where they are attached at the root. Flowers appear only once on new sprouts. The colour of the flower varies between yellow and orange red. The long roots develop tubers.

## *Gymnocalycium gibbosum* var. *brachypetalum* (Provinces Buenos Aires, La Pampa and Río Negro)

As can be seen from the map below *G. gibbosum* var. *brachypetalum* can be found in the provinces Buenos Aires, La Pampa and Río Negro along the course of the Río Negro between the towns Guardia Mitre and Chelforó and in addition, north of the latter locality as far as Puelches as well as near the Atlantic coast north of San Antonio Oeste.

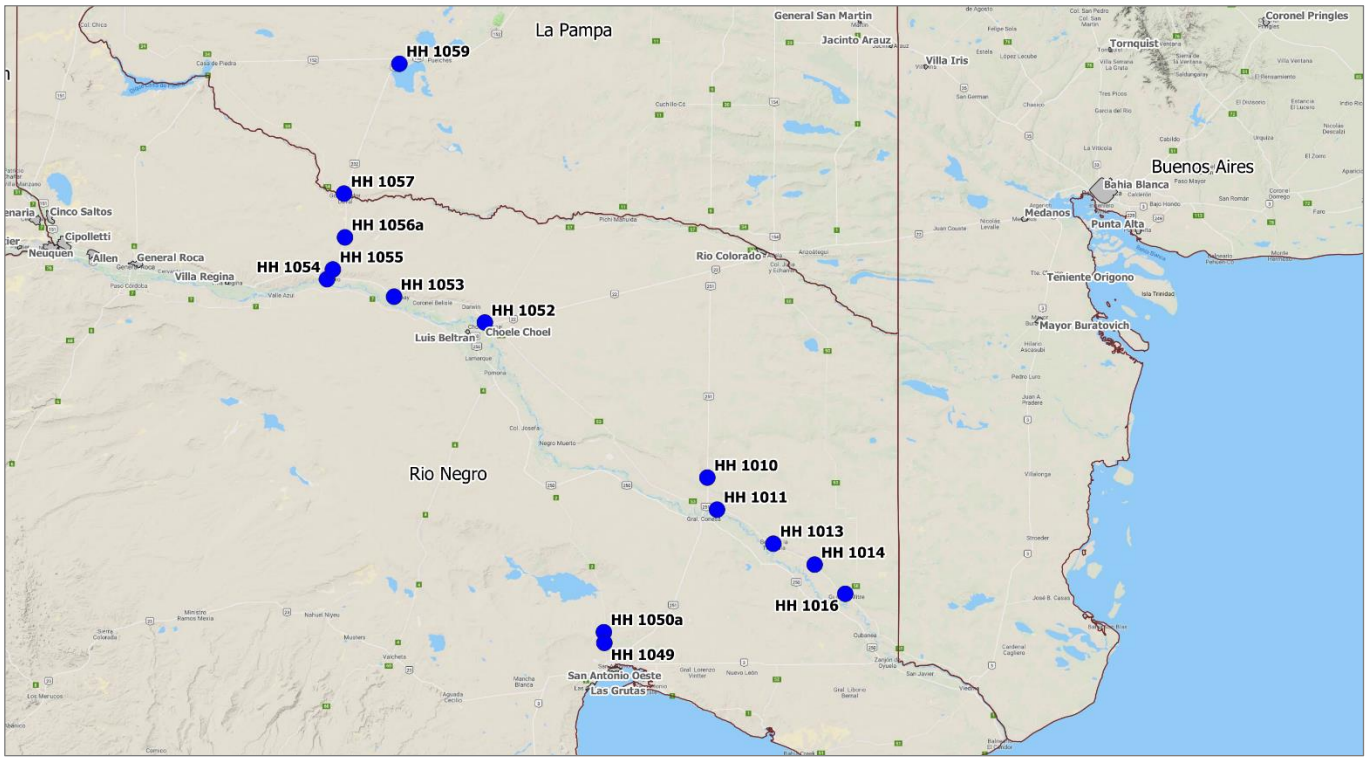


Fig. 9: Localities of *G. gibbosum* var. *brachypetalum* (map: M. Wick).

Fig. 10: Cristate of *G. gibbosum* var. *brachypetalum*, Guardia Mitre.

At the outskirts of the town Guardia Mitre in the Province Río Negro, situated directly on the Río Negro, we found a beautiful habitat with *Gymnocalycium gibbosum* var. *brachypetalum*. Many plants were in full bloom.

Fig 11: *G. gibbosum* var. *brachypetalum*, east of Guardia Mitre, Prov. Río Negro (HH 1016, TS 1811, VoS 18-2635).

Fig. 12: *G. gibbosum* var. *brachypetalum*, Choele Choel, Prov. Río Negro (HH 1052, TS 1843, VoS 18-2691).

Another locality worth mentioning is situated at the northern end of Choele Choel on the RN22 only 300 metres away from a petrol station. There we found a large number of plants in full bloom. There were also many *Echinopsis leucantha*. The question also arises here whether the habitat in close vicinity to the town will be preserved in the foreseeable future or whether it will have to make room for the construction of new houses.

## *Gymnocalycium gibbosum* var. *chubutense* (Provinces Río Negro, Chubut)

The localities of *Gymnocalycium gibbosum* var. *chubutense* found by us are situated in the Provinces Río Negro and Chubut and extend south from Playas Doradas as far as Bahia Bustamente. The localities are partly within a very short distance to the coast and they range up to 100 km upcountry. Specimens can also be found on the Península Valdés.

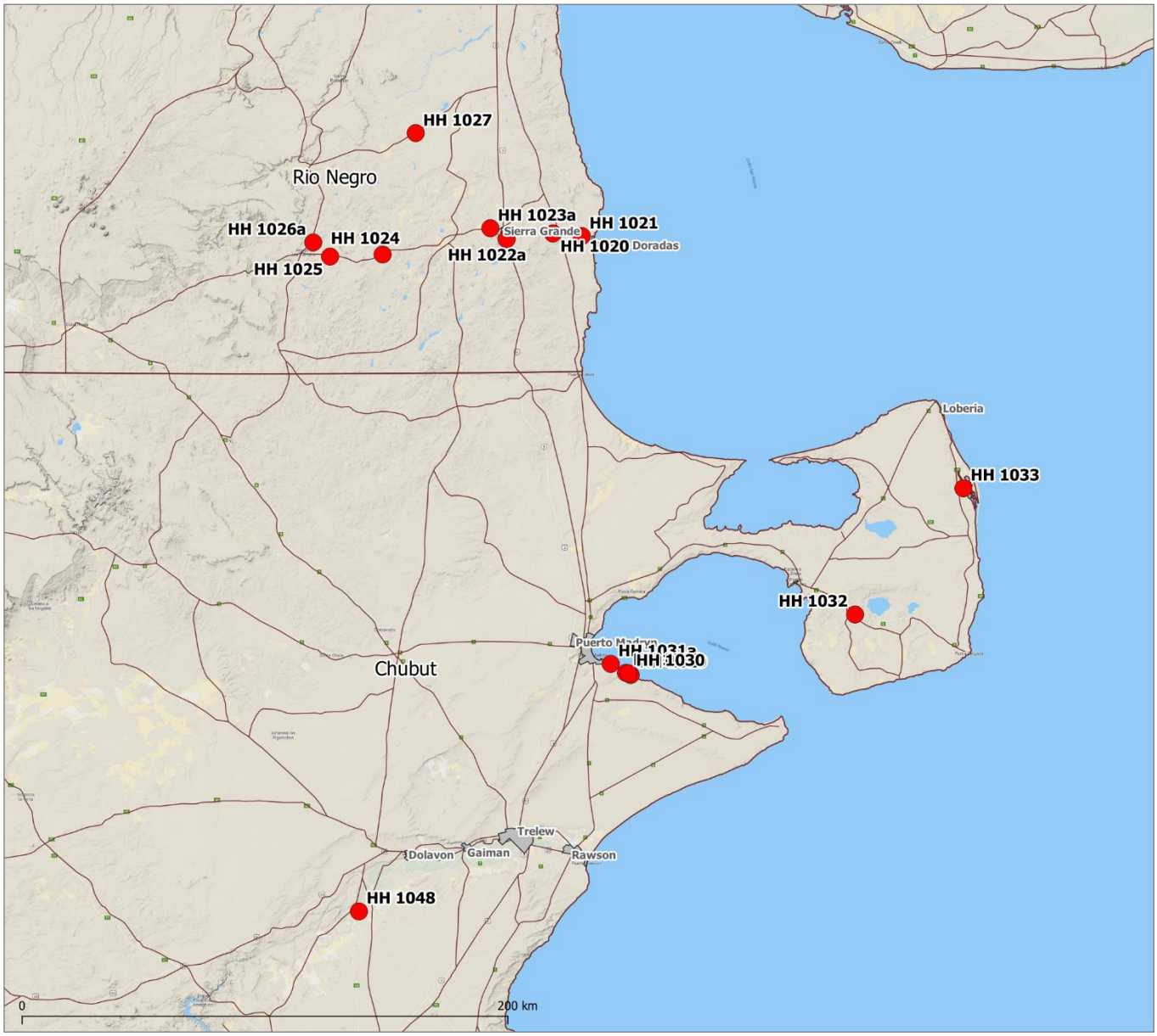


Fig. 13: Locality of *G. gibbosum* var. *chubutense* in the Provinces Río Negro and Chubut (map: M. Wick).

Fig. 14: *G. gibbosum* var. *chubutense*, near Playas Doradas, Prov. Río Negro (HH 1021, TS 1815, VoS 18-2642).

Fig. 15: *G. gibbosum* var. *chubutense*, near Arroyo de La Ventana, Prov. Río Negro (HH 1025, TS 1819, VoS 18-2649).

The plants show differences in strength of spination. Fig. 15 presents a specimen with slight spination and a wonderfully symmetrical plant body.

Fig. 16: Habitat of *G. gibbosum* var. *chubutense*, near Arroyo de La Ventana, Prov. Río Negro.

Apart from *G. gibbosum* var. c*hubutense, Pterocactus tuberosus*, *Austrocactus bertinii*, *Maihueniopsis darwinii* and *Maihuenia patagonica* also grow in the locality near Arroyo de La Ventana.

Fig. 17: *Austrocactus bertinii* near Arroyo de La Ventana, Prov. Río Negro (photograph: V. Schädlich).

Fig. 18: *Austrocactus bertinii* near Arroyo de La Ventana, Prov. Río Negro (photograph: V. Schädlich).

Fig. 19: *G. gibbosum* var. *chubutense*, south of Puerto Madryn, Prov. Chubut (HH 1028, TS 1822, VoS 18-2654).

In south eastern direction of Puerto Madryn, only 500 metres away from the coastline, many *Gymnocalycium gibbosum* var. *chubutense* can be found growing in the sand under shrubs. Apart from normally spined plants there was also one unusually strongly spined specimen. A further one with similarly strong spination could not be discovered.

Fig. 20: *G. gibbosum* var. *chubutense* with unusually strong spination, south of Puerto Madryn, Prov. Chubut (HH 1028, TS 1822, VoS 18-2654).

Fig. 21: *Maihueniopsis darwinii*, south of Puerto Madryn, Prov. Chubut (photograph: V. Schädlich).

*Maihueniopsis darwinii* grew as well in the surrounding area. Its gleaming orange flowers could be seen from afar.

Another large population of *G. gibbosum* var. *chubutense* could be found close to the Río Chubut, approximately 75 km away from the coastline.

Fig. 22: *G. gibbosum* var. *chubutense*, at RP10 on the Río Chubut, Prov. Chubut (HH 1048, TS 1840, VoS 18-2685).

Fig. 23: A lizard sheds its skin.

Not only the plants were interesting during our journey. Animals also fascinated us, as can be seen in Fig. 23 and in the next chapter on the Península Valdés.

## Península Valdés

The Península Valdés is a unique nature reserve, which was nominated world natural heritage by the UNESCO. The landscape is covered in low shrubs and on the Península there are some salt lakes which are partly located below sea level. The climate is moderate and dry. The average low temperature is around 1.2°C and the average highest temperature is around 12.0°C from June to July. From January to December the average lowest and highest temperatures reach 12.5°C respectively 28.5°C. Precipitations are evenly spread across the year and amount to around 185 mm per year (see http://www.meteovista.de/Sudamerika/Argentinien/Schiereiland-Península-Valdes/4955626, accessed 22.04.2019).

The search for *Gymnocalycium gibbosum* var. *chubutense* on the Península was not very successful. Remarkable, however, is a location on RP47 because of its altitude. This is about 5 m below sea level. Unfortunately, the plants were not numerous at this location either. We only found three plants.

The Península Valdés possesses a diverse and interesting fauna. We could watch, for instance, flamingos, crested caracaras, rheas, guanacos and of course the large marine mammals sea elephants and sea lions. We were particularly impressed by the colonies of magellanic penguins (*Spheniscus magellanicus*). It is possible to approach them to an arm length's distance without them showing any defence or flight reaction. Scientists cannot explain why magellanic penguins do not shy away from humans.

In the course of a year the penguins go ashore only twice, to breed and to moult. They dig small, half-open caves to lay their eggs and raise the chicken. The animals recognize their partner and offspring within the large number of colony members from their individual voices. Penguins have the densest plumage of all birds and it is not the fat layer that protects the animals from hypothermia in cold water but the plumage alone. The fat layer serves as energy reserve, for example during moulting. Like almost all sea birds and mammals penguins have a dark back and a light coloured belly. This colouring protects them from predators. Seen from above, the animal in the water can hardly be made out against the dark background and from below it cannot easily be distinguished from the bright water surface respectively the sky. This is a perfect camouflage.

According to categories of endangering of IUCN, the magellanic penguins are "potentially endangered (NT, Near Threatened)". Their migration route along the coasts of South America correlates with the waterways of ships which pollute the ocean and thus also the animals with oil. Further problems are plastic waste in the sea, gillnets of fishermen where the animals drown painfully as well we the rivalry with humans about fish as food (see Pütz, 2018).

The emotional story of an oil-covered magellanic penguin, which was saved by a Brazilian on the beach near Rio de Janeiro and then coddled up, became generally known. The animal is especially devoted. Every year after hatching time – presumably in the south on the Argentine or Chilean coast - it returns to its rescuer over a distance of thousands of kilometres to spend about eight months with him.

Fig. 24: Magellanic penguin (*Spheniscus magellanicus*).

Fig. 25: Magellanic penguin (photograph: V. Schädlich).

Fig. 26: A southern sea elephant (*Mirounga leonine*).

Fig. 27: Guanacos (*Lama guanaco*) belong to the camel family.

Fig. 28: The crested caracara (*Caracara plancus*) belongs to the subfamily of birds of prey subfamily Falconiae and feeds mainly on carrion.


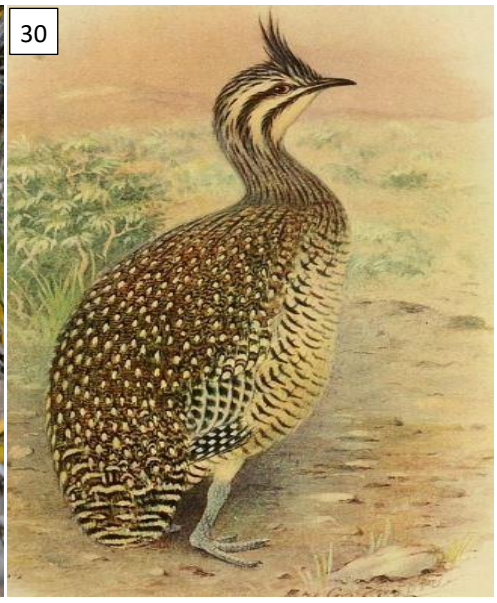


Fig. 29-30: Clutch of eggs of an elegant crested tinamou (*Eudromia* Syn. *Calodromas elegans*). Graphics: © Birds of La Plata, by W. H. Hudson, with twenty-two coloured illustrations by H. Gronvold. Martineta Tinamu - Calodromas elegans (d'Orb. & Geoff.).

## *Gymnocalycium gibbosum* subsp. *ferox* (Province Chubut)

Searching for *Gymnocalycium gibbosum* subsp. *ferox* we travelled further south from the Península Valdés to Camarones and onwards to Bahía Bustamente. As can be seen from the map below the localities of *G. gibbosum* subsp. *ferox* are located along the coastline between Rawson and Bahía Bustamente on the RP1.

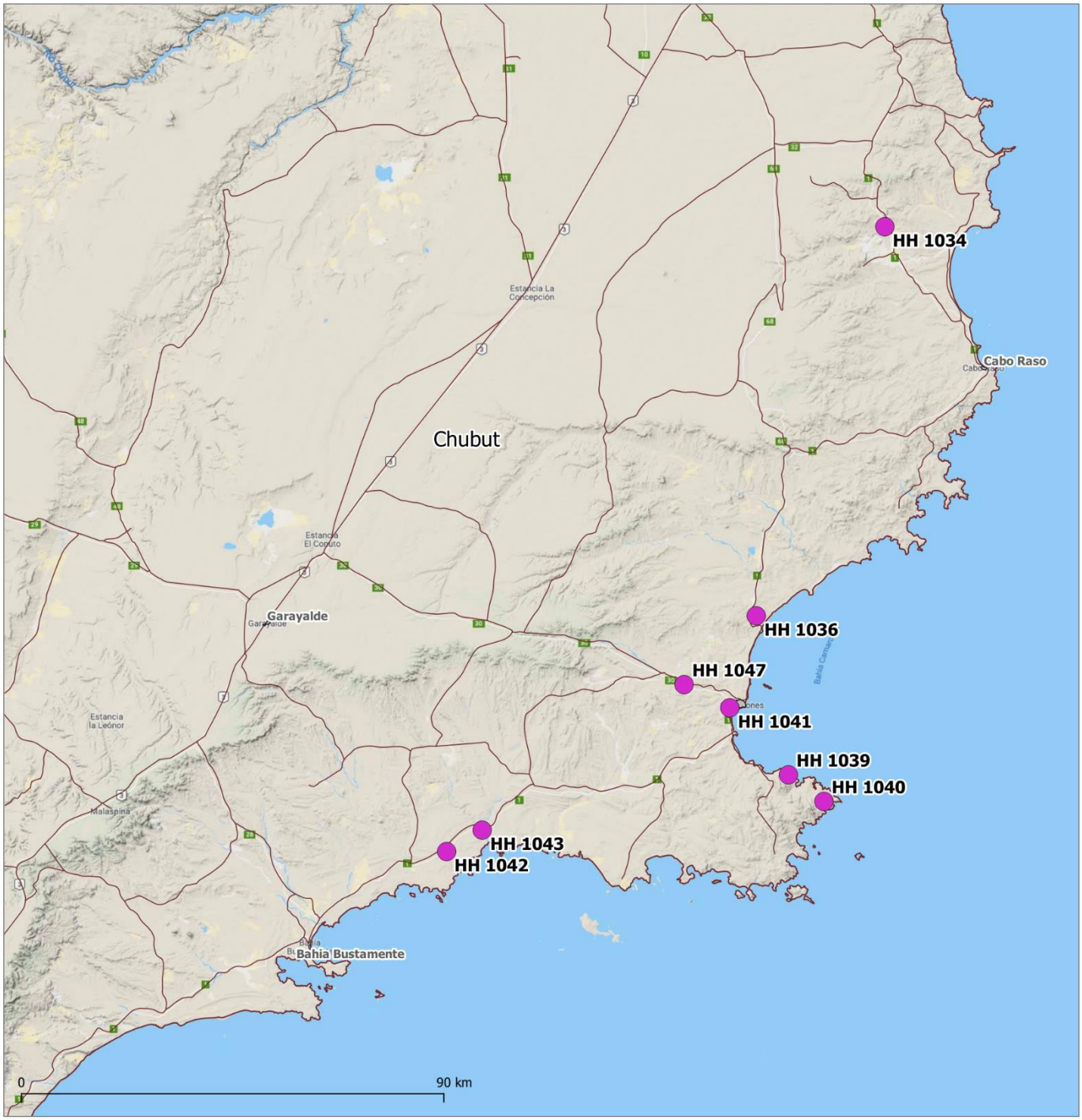


Fig. 31: Localities of *G. gibbosum* subsp. *ferox* (map: M. Wick).

Fig. 32: Coast near Camarones (photograph: T. Strub).

In the vicinity of Cabo Raso on the RP1 we found a flowering *Pterocactus australis* on a small rock platform. The plants are merely 2-3 cm high and possess beautiful brownish orange flowers. Without their flowers the small plants would certainly remain undiscovered. Even when flowering these plants were found by a lucky accident because the colour of the flower almost totally matches the reddish rocks of the habitat.

Fig. 33: *Pterocactus australis*, near Cabo Raso, Prov. Chubut (HH 1035).

We found a large number of *G. gibbosum* subsp. *ferox* at a steep brim of about 5 meters' height only 2 km southwest of Camarones on the RP1. There the plants grow on bare rock right next to the dirt road. The habitat is only sparsely covered with grass and waist-high shrubs. On the dirt road directly beside the habitat road construction were carried out and we can only hope that the habitat with the wonderful plants will not be sacrificed to the roadworks.

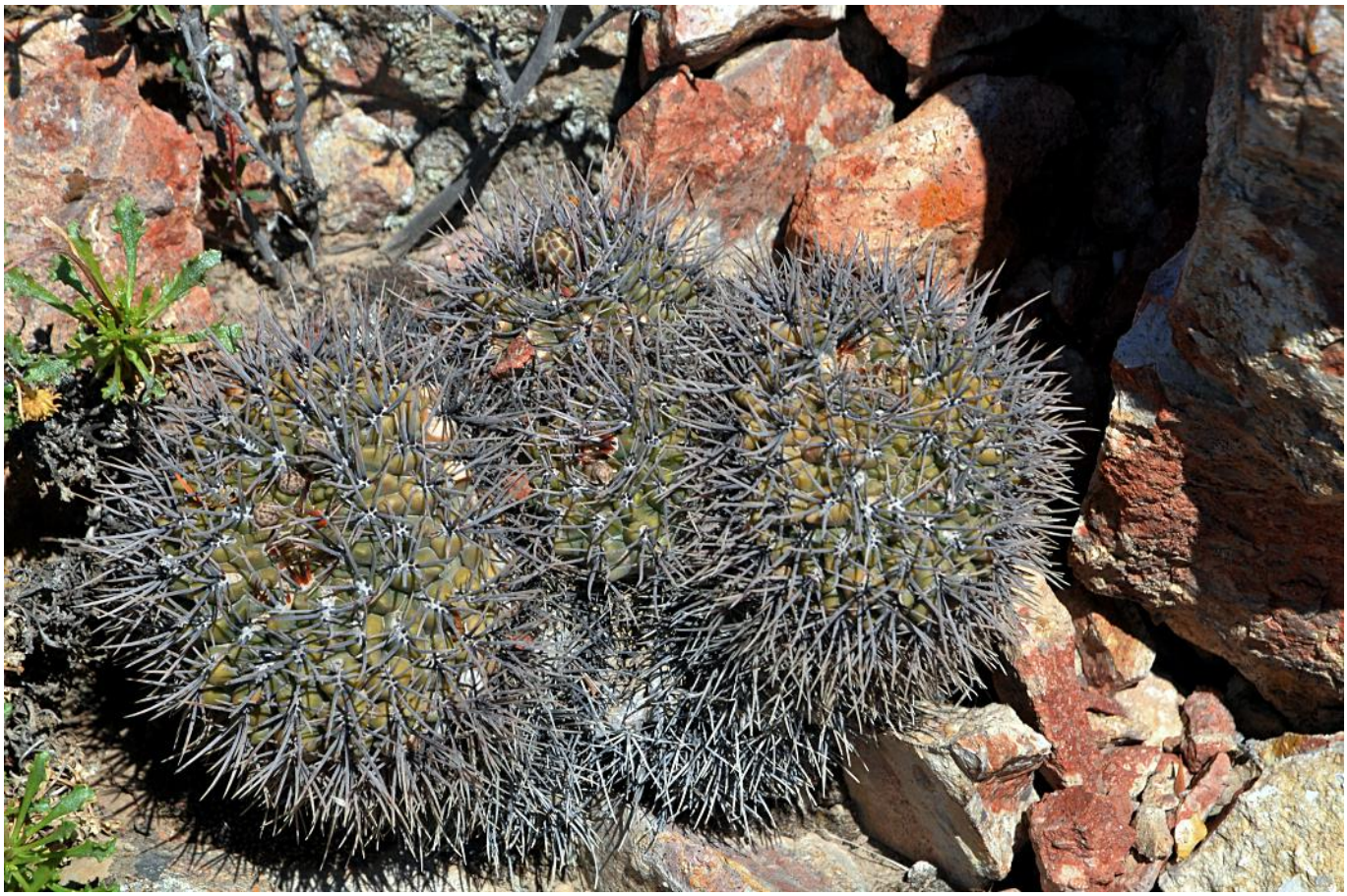

Fig. 34: *G. gibbosum* subsp. *ferox*, 2 km southwest of Camarones, Prov. Chubut (HH 1041, TS 1833, VoS 18-2673).

We found two more localities of *G. gibbosum* subsp. *ferox* in hilly terrain on the RP1 between Camarones and Bahía Bustamente, not far away from the coast. As can easily be seen from the two pictures below spination varies considerably in length. As a rule, plants growing under shrubs show less strong spination than plants that grow unprotected in open terrain.


Fig. 35-36: *G. gibbosum* subsp. *ferox*, between Camarones and Bahía Bustamente, Prov. Chubut (HH 1043, TS 1834, VoS 18-2676).

## *Gymnocalycium reductum* subsp. *sibalii* (La Pampa)

Setting out from Bahía Bustamente, the southernmost point of our journey, we drove to the northwest aiming for Mendoza. On our way we headed for the Sierra Lihuel Calel, which is situated in the centre of the Province La Pampa. There we wanted to look for *Gymnocalycium reductum* subsp. *sibalii*. The mountain range reaches an altitude of up to 600 m. The term Lihuel Calel originates from indigenous language of the Mapuche and means “mountain range of life”. This name refers to a rich animal wildlife, even the cougar roams the pampa here. We visited the Parque National Lihuel Calel with its impressive rock formations. The park ranger gave us a short introduction to the park and warned us insistently of poisonous snakes which occur in large numbers. The climate is moderate and dry with around 280 mm of precipitation yearly. May to August are the months with the lowest precipitation (under 15 mm). The average temperatures in the winter months April to September are between 1°C and 22°C. Night temperatures can drop to about -5°C. From October to March the average temperatures are between 8°C and 27°C. In summer the highest temperatures can reach approximately 38°C. (see:https://www.meteoblue.com/de/wetter/vorhersage/modelclimate/lihuel-calel_argentinien_3846897, accessed on May 5th, 2019).

*G. reductum* subsp. *sibalii* can be found in Parque Lihuel Calel as well as outside the national park on flat hills along the RN 152 which are sparsely covered with low shrubs and grass. The plants remain distinctly smaller than *G. reductum* subsp. *reductum.* Accompanying plants from the cactus flora are *Notocactus submammulosus*, *Wigginsia tephracantha* and *Pterocactus tuberosus*.

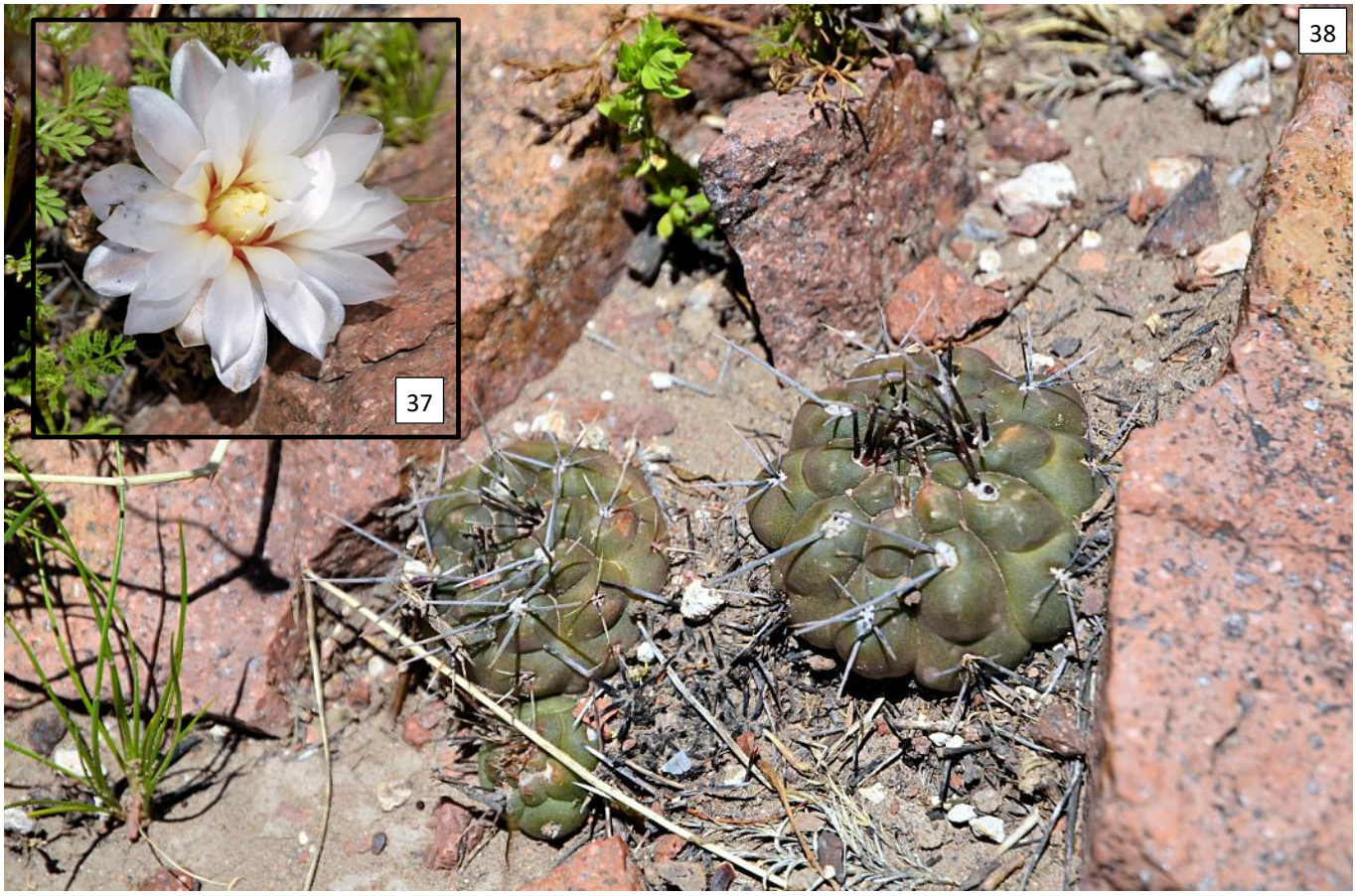


Fig. 37-38: *G. reductum* subsp. *sibalii*, Sierra Lihuel Calel, Prov. La Pampa (HH 1064).

Fig. 39: Habitat of *G. reductum* subsp. *sibalii*, Sierra Lihuel Calel, Prov. La Pampa (HH 1064).

## *Gymnocalycium striglianum* (Mendoza)

Starting at Lihuel Calel we headed for General Alvear in the Province Mendoza. The monotonous ride took us 670 km across the pampa. The term pampa originates from the indigenous language Quechua and means “plain”. Our intention was to search for *Gymnocalycium striglianum* in Province Mendoza. This plant is also not very common, due to demands of civilisation, especially intensive winegrowing. Several habitats known to us had been sacrificed to winegrowing. Another location near Luján de Cuyo with relatively numerous specimens was already virtually surrounded by industrial plants. Certainly, this habitat, too, will also not exist for very long. The plants grow among dense shrubs which are hard to penetrate, mostly right under the bushes.

The climate in Mendoza is, according to Köppen and Geiger, classified as BWk, which means that it is arid with long-time average low precipitation that is lower than possible evaporation. The average yearly temperature is around 16.4°C, yearly precipitations amount to about 213 mm.

(See https://de.climate-data.org/suedamerika/argentinien/mendoza/mendoza-1893/, accessed on June 6th, 2019).

Fig. 40: *G. striglianum*, 5 km northeast of Zapata, Prov. Mendoza (HH 1071, TS 1860, VoS 18-2717) (photograph T. Strub).

Fig. 41: *G. striglianum*, south of Luján de Cuyo, Prov. Mendoza (HH 1080, TS 1863, VoS 18-2725) (photograph: V. Schädlich).

Fig. 42: *G. striglianum*, south of Luján de Cuyo, Prov. Mendoza (HH 1080, TS 1863, VoS 18-2725) (photograph: V. Schädlich).

Apart from *G. striglianum* we found on our tours of the Province Mendoza further cacti, among others *Denmoza rhodacantha, Echinopsis leucantha, Pyrrhocactus strausianus* and *Trichocereus candicans*.

I want to conclude this travelogue with a picture of the impressive Andes mountain range. It shows a view of the highest mountain in the Andes, Mount Aconcagua, which is 6,961 metres high and is situated on the Chilean border.

Fig. 43: Mountain range in the Andes with Mount Aconcagua.


Fig 44: Journey participants Horst Kallenowsky, Volker Schädlich and Thomas Strub (left to right).

**List of acronyms**
HH = Horst Kallenowsky
TS = Thomas Strub
VoS = Volker Schädlich

**Photographs** of the author if not stated otherwise.

**ACKNOWLEDGEMENT**

I want to express my heartfelt gratitude to my travel companions Volker Schädlich and Thomas Strub for the successful voyage, its labour-intensive preparations and the critical reviewing of the manuscript.

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