From the Mysterious Plant to the Most Common Mammillaria: the Story of Mammillaria luethyi

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From the mysterious plant to the most common mammillaria: the story of *Mammillaria luethyi*

Everybody knows *Mammillaria luethyi*. The tiny brownish balls dotted with snow-white clusters of minuscule spines and decorated during most of the summer with large flowers of astounding color combination — rich magenta petals with a white throat, intensive yellow to orange anthers and greenish stigma (Figs. 1 & 2). It is so floriferous that often the bunch of flowers completely covers the plant body (Fig. 3). Not only when grafted, which is the usual way it is kept, but also when plants are growing on their own roots they can readily produce a spectacular show.

Almost everybody grows *Mammillaria luethyi*. Even those who are in no way specialized in the genus *Mammillaria* possess this special cactus. It is no exaggeration to say that nowadays, *M. luethyi* is on a display in almost every cactus collection worldwide, and may be actually one of the most commonly cultivated mammillarias of all. But not everybody who owns this pretty cactus is familiar with the exciting and mysterious history of its discovery which is worth recapitulating it here.

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1. In cultivation, *Mammillaria luethyi* on its own roots needs a mineral substrate and good ventilation.

The fascinating story begins somewhere in northern Coahuila, Mexico, in early 1950s. A native mining prospector found the tiny plants (we will probably never know where and when exactly) and brought a few of them to Ciudad Acuña, a border town located just across the Rio Grande from Del Rio, Texas. He gave them to a lady operating the Crosby Hotel where she kept them in a coffee can on a hotel window-sill. Later, Norman H. Boke (1913–1996), a histologist who specialized in the morphology of the *Cactaceae*, shot several Kodachrome pictures of these plants and sent them for identification to his friend Ladislaus Cutak of the Missouri Botanical Gardens in St. Louis. Cutak (1908–1973, born in Moravia, Europe) was a self-educated botanist, horticulturist and author of numerous popular articles on cacti. He became captivated by the image of the strange-looking diminutive

2. To observe seedlings of *Mammillaria luethyi* in full flower is a really rewarding experience for the cactus lover.

cactus and he managed, after a brief correspondence with the hotel owner, to obtain two of the precious plants. One of them died shortly after arrival, while the other was grafted and survived. Thus, Cutak was the first cactus enthusiast to grow, observe, and study this unusual cactus. Moreover, he was the earliest to provide a formal description of it (Cutak 1952).

To illustrate the mysteriousness of this cactus, let me quote here an extract from his column "Spine Chats" that was published in this *Journal* 65 years ago (Cutak 1952): "Superficially, our enigmatic cactus resembles *Pelecyphora* (*Thelocactus*) *valdeziana* but does not tally with the accompanying description of it. Our plant is neither a *Pelecyphora* nor a *Thelocactus*; in fact, it cannot be placed in any known genus to my knowledge." The description continued by highlighting the absolutely unique spination and pinkish, bell-shaped and relatively large flowers. Then he ended: "In all respects it is one of the tiniest and daintiest cacti in existence." Unfortunately, no picture was appended to the Cutak's column.

As far as I am aware, first pictures of this species, one of a single unpotted plant and another of a flowering specimen, appeared for the first time in 1959 in Backeberg's British journal article (Backeberg 1959). There the author hypothesised that the plants perhaps belonged to *Neogomesia* and that "these strange plants were collected from Tamaulipas State" (which was erroneous). Two years later in the fifth volume of his monumental opus *Die Cactaceae* (Backeberg 1961), Backeberg referred to the plants as "*Neogomesia* sp. ?" and used again the pictures obtained from Cutak, one picture with two bare-root plants and another of the same flowering plant. When looking at those photos today, it has become clear that the unpotted plants shown on the top picture (Backeberg 1961, p. 2688, Abb. 2561) had apparently been grown in unsuitable conditions for some period of time and had thus become somewhat etiolated. This atypical growth certainly added to the difficulty of assigning it to the correct genus.

The next to comment on this cryptic plant were the famous cactus hunters Charles Glass and Robert Foster. They speculated correctly that the plant may be a mammillaria belonging to the *saboae-theresae-goldii* group (Glass C, Foster R. 1978). They also received a photo of flowering plants from Edward F. Anderson (1932–2001), a famous American botanist with a special interest in the cactus family, together with the additional interesting information that "the plant was found in the fluorite country of Coahuila". But especially interesting is the picture itself (Glass C, Foster R. 1978, p. 60, Fig. 2). Anderson got it probably directly from Boke, with whom he used to publish together. It is clearly a photo of the same flowering plants whose photos were released earlier by Backeberg (Backeberg 1959; Backeberg 1961), only taken from slightly different angle and the picture is flipped over. Moreover, from this picture it is evident that the plants were growing in a can. Thus, this was also an

3. In this breathtaking display *Mammillaria luethyi* flowers completely obscure four flowering specimens.

original Kodachrome by Boke from the Crosby Hotel in Ciudad Acuña. It is evident that Boke took all the pictures of the flowering plants (although Cutak had been erroneously listed as the author of the photos in Backeberg 1961) while the pictures of the unpotted plants (Backeberg 1959; Backeberg 1961) were taken by Cutak upon their arrival in St. Louis.

The picture of the flowering plants was also later reproduced in the second volume of *Las Cactáceas de México* (Bravo-Hollis, H. & Sánchez-Mejorada, H. 1991, Fig. 242) where they treated it as *Normanbokea valdeziana* (H. Moeller) Kladiwa & Buxb. Coincidently, the genus *Normanbokea* was named after the above-mentioned Norman H. Boke, so there persists a connection between him and the mysterious plant. Quite interesting is the fact that in two cases (Backeberg 1959; Bravo-Hollis, H. & Sánchez-Mejorada, H. 1991), but not in the third one (Backeberg 1961), the photo of the flowering plants had been rotated through 90° so that it might look as if the plant flowered from the top (apical flower) and not from the side of the body (lateral flower), which would probably justify the suggested treatment of the plants as *Normanbokea* (*Turbinicarpus*).

Since the publications of Cutak's and Boke's pictures, only speculation had prevailed among cactophiles. The mystery of what the plant could really be and where it could probably grow lingered on.

The answer waited until 1996 when George Hinton and Jonas Lüthy finally rediscovered the plant (Hinton 1996). The mysterious plant finally got its scientific name, *Mammillaria luethyi* G. S. Hinton, for its co-discoverer Jonas Lüthy, a Swiss botanist with a special interest in mammillarias. As the description of *M. luethyi* was published in *Phytologia*, a scientific journal available mostly to professional botanists, not many cacti enthusiasts even noticed it. Furthermore, in order to protect the population of the rediscovered jewel, no precise locality data was disclosed in the original description. The statement "northern Coahuila" does not really say much, as Coahuila is the third-largest Mexican state.

Two years after the *M. luethyi* description, Hinton and Lüthy finally decided to share the joy of their discovery with the broader "cactophilic" public (Lüthy & Hinton 1998). They, of course, did not disclose the habitat data and stated that "this species is not currently available to collectors". Another article was published in the same year by the Fitz Maurices (Fitz Maurice & Fitz Maurice 1998), which was accompanied by excellent SEM photographs of *M. luethyi* spines and by Lüthy's nice habitat photos. The authors reviewed the history of the plant and claimed "a new species has been described and an old mystery solved". But actually, in my opinion, they made the whole matter even more puzzling. Quite interestingly, whether on purpose or unknowingly, they misled potential cactus hunters by suggesting the vast Sierra Paila (Coahuila) as the place where *M. luethyi* grows.

Only eight plants were collected during the type collection in 1996 and these were used for propagation in the Cante Botanical Gardens in San Miguel de Allende under the supervision of Charles Edward Glass (1934–1998), an American horticulturalist who was the co-editor of this, the *Cactus and Succulent Journal* (U.S.), for 26 years. Nevertheless, there seemed to be no attempt to ease the tension among the cactus collectors anytime soon and no plants were still made available for sale. The 1997/1998 winter was very cold even in Central Mexico and the plant collections in the Cante Botanical Gardens were seriously damaged by frosts and resources were urgently needed for the garden recovery. At that time, an offer came from two cactus aficionados, one Czech

4 a & b. Tiny white heads of *Mammillaria luethyi* growing among chippings of hardened limestone mineral called caliche. Taking pictures of *M. luethyi* in the field requires good photographic equipment and some experience since the cactus bodies are really tiny and well hidden in the gravel.

and one Slovak, of USD 2,000 that would be donated to the garden in "exchange" for *Mammillaria luethyi*. The deal was agreed and two specimens of *M. luethyi* from the Cante Botanical Gardens landed at the Ruzyně International Airport in Prague in June 1998. One plant was grafted on *Myrtillocactus geometrizans* and the second was left on its own roots. Importantly, there were two clones. That was a great beginning. The plants could finally be started to be propagated by highly skillful Czech growers, mostly by grafting, but also first seeds were slowly produced.

In a couple of years, the first *M. luethyi* plants made it to European cactus collections and it was only a question of time before additional skillful and dedicated amateur growers would make them more commonly available. In the Czech Republic the plant was quickly reproduced in the hundreds, mostly using grafting but also by tissue culture. Unfortunately, as I was told by a friend of mine, most of the plants distributed at that time probably originated from only a single clone. Anyway, grafted offsets of *M. luethyi* soon started to be available in Europe, first to specialized collections and to those willing to pay a high price. As the grafted plants made copious offsets, *M. luethyi* very quickly became widespread. Grafted specimens have since then been regularly offered at a modest price at most plant sales and public cactus and succulent exhibitions. Actually, not many visitors buy it these days. All demand seemed to be satisfied long before *M. luethyi* was finally found in the wild by cactus hunters, as we will see later.

It really is impressive what devoted and determined cactus growers can actually achieve. This story represents an excellent example how it should work in reality. To protect the natural habitats and their plant populations to maximum level and, at the same time, to satisfy the immense demand of the public.

Another exciting moment occurred when Lüthy reported the discovery of a much larger population with probably many thousands of plants some 20 km away from the original one (Lüthy 2007; Lüthy 2008). This information triggered another wave of hunting for *M. luethyi* in habitat.

Keeping the detailed habitat data of new discoveries secret has been a standard procedure for some time, but always, sooner or later, someone will find out where the botanical treasure dwells. Naturally, many cacti lovers were tempted to see this prized cactus species in its habitat, and probably many had tried to look for it. I have no idea how many cacti enthusiasts, and for how long, suffered sleepless nights before they gave up. Well, I know some who persisted and finally succeeded. A group of my friends who had been visiting Mexico every year (and at least once a year) devoted several days of each expedition to searching for this tiny jewel among cacti. Every year they were

5. A view of the habitat with *Mammillaria luethyi*. One has to get really down to the ground to observe the tiny cacti.

6. A comparison of a larger *Mammillaria luethyi* specimen with the U.S. quarter which is 25 mm (1 inch) in diameter.

7. A group of *Mammillaria luethyi* in the field.

9. It must be an unforgettable moment to find a population of *Mammillaria luethyi* in full flower. Photo Richard Kalas.

getting closer and closer. The circle was closing, and I was lucky enough to be with them on such a trip in spring 2010.

It was 12th February 2010, and this date will be forever recorded in our memories. We found the so much-desired tiny white balls modestly sitting among the limestone gravel on a smaller flat limestone slab. There were plenty of them. We did not care about each other anymore. Everybody from our team just looked up his own group of plants and started to shoot copious photos (Figs. 4–7). Even without any flowers. We forgot about time, we forgot just about anything. We immediately realized that we were probably the very first ones to see this species in habitat since its rediscovery. It had taken some 14 long years to find out where *M. luethyi* grew in nature. That day was one of the most remarkable experiences of my life as an amateur botanist. That evening we celebrated our success in nearby Melchor Múzquiz, with some Mexican beer and jumbo steaks (Fig. 8).

8. At the end of the day, when we discovered *Mammillaria luethyi* in the field, we celebrated our victory with a big slice of steak in nearby Melchor Múzquiz (Coahuila).

As far as I am aware, there have been three populations found so far. Is it possible that we encountered the original type locality of Hinton and Lüthy? Well, it is. Firstly, the place was quite close to a well-maintained dirt road. Secondly, the population seemed to be relatively small, consisting probably of few hundred specimens, which is in agreement with the published data (Lüthy 2007; Lüthy 2008). On the other hand, there might be, at least theoretically, other small populations of *M. luethyi* in the broader area around the type locality, but none have actually been discovered by Hinton even after much effort (Lüthy 2007; Lüthy 2008).

The next person to see this beautiful species in the field was probably Paul Hoxey, an enthusiastic cactus explorer from the U.K., who discovered one of the larger populations of *Mammillaria luethyi* on 21st October 2010 (Hoxey 2012). And later more travelers gradually followed. Despite the fact that the number of cacti enthusiasts visiting *M. luethyi* habitat is steadily increasing nowadays, the species should not be considered endangered for the time being. First, it

10. Getting closer leaves no doubt that the flowers really belong to *Mammillaria luethyi*. Photo Richard Kalas.

is well established in cultivation and its propagation is fairly easy. Secondly, I can imagine that, although it was illegal, more clones have been brought into collections since 2010 and this should substantially increase the genetic variation of the cultivated material. Thirdly, all populations are apparently in good shape with the number of seedlings being particularly high. The species is evidently reproducing very well. Furthermore, there do not seem to be any direct threats to the habitat of *M. luethyi* as the whole area is remote from large cities, sparsely populated and not suitable for farming. The only possible threats to the plants could be quarrying or over-collecting, which is not very likely due to the remoteness of the habitat from botanically more popular destinations.

The last civilized place on the expedition to see *Mammillaria luethyi* has been already mentioned: Melchor Múzquiz, a traditional mining city located some 130 km North of Monclova in the State of Coahuila. The city, originally founded as the mission Santa Rosa, was named in memory of the interim president of Mexico (in 1832) and native of this area, General Melchor de Eca y Múzquiz (1790–1844). So it is strongly recommended to get a good supply of food and water (and beer if you prefer) and to fill the tank up with gas at this city. Later on, travelers will be on their own and cannot by any means rely on help from the local people. The area is indeed remote, it is sparsely populated, roads are often in quite a poor

11. A detail of a flowering specimen of *Mammillaria luethyi* in the field. Photo Richard Kalas.

12. Attractive *Mammillaria luethyi* 'Aurea' the yellow variegated form, is very popular among cactus collectors. Photo Rudy Krajča.

shape and are getting worse the farther you get into the wild. It can take hours before another car (or horse) passes by in case you are stuck somewhere.

When found, *Mammillaria luethyi* grows in a shallow layer of substrate on flat limestone slabs among coarse caliche limestone gravel. Caliche (a Spanish word, originally from Latin *calx*, meaning lime) refers to a secondary hardened crust of calcium carbonate within or on top of stony soil, that often accompanies various cacti, for example plants of the popular genus *Turbinicarpus*. The flat slabs with *M. luethyi* are lacking any taller vegetation and from cacti only *Epithelantha micromeris* and *Neolloydia conoidea* can be often seen growing side by side with *M. luethyi*. The limestone slabs themselves, however, are surrounded by relatively rich Chihuahuan desert vegetation. Thus, other species found near the *M. luethyi* habitat are *Coryphantha echinus*, *Echinocereus dasyacanthus*, *Echinocactus horizonthalonius*, *Epithelantha micromeris*, *Escobaria tuberculosa*, *Ferocactus hamatacanthus*, *Glandulicactus uncinatus*, *Neolloydia conoidea*, and *Opuntia engelmannii*, as well as *Agave lechuguilla*, *Dasylirion* sp., *Fouquieria splendens*, and *Yucca elata*.

Mammillaria luethyi is a very uniform species with minimal morphological variability. Only slight variation of the flower color tones has been observed. Interestingly, Pavel Pavlíček, a great cactus grower from Chrudim (Czech Republic), has reported pure white flowers of *M. luethyi* rarely observed in cultivation (Pavlíček 2012). This spring I obtained pictures from my friend Richard Kalas of Albuquerque, New Mexico. He visited with a couple of friends one of the larger populations of *M. luethyi* at the perfect time when the plants were in full flower. They saw hundreds, maybe thousands of flowers there (Figs. 9–11). I have eagerly asked him about white flowers on *M. luethyi* but he reported that they did not see any. Not a single white flower. So it seems that white flowering *M. luethyi* are extremely rare.

Cultivars of various cactus species are often highly prized by succulent plant collectors and *Mammillaria luethyi* is no exception. Quite popular is either the crested form or the bright yellow cultivar which has been called *Mammillaria luethyi* 'Aurea' (Fig. 12), also sometimes seen labeled as *Mammillaria luethyi* f. *aurata*. The colorful forms lacking chlorophyll have to be, in general, propagated by grafting on green stocks and need to be protected from direct sunlight.

Mammillaria luethyi clearly stands out from all other mammillarias for its attractive and unusual appearance. The contrast of the tiny white bodies and large multicolored flowers, as well as its unique spines whose beauty can be appreciated especially with the aid of a magnifying glass or a microscope, makes it a special treasure among all Mexican cacti. Therefore, it should be treated as a real treasure both in its habitat and in cultivation.

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Photography by author, unless otherwise stated.

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