

The Cactus Explorer

The first free on-line Journal for Cactus and Succulent Enthusiasts



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April 2017

1 *Melocactus matanzanus*

2 *Discocactus petr-halferi*

3 *Loxanthocereus xylorhizus*

4 *Echinofossulocactus*

5 *Gymnocalycium* sp. nov.

IN THIS EDITION

Regular Features	Articles
Introduction	3 Discocactus zehntneri ssp. petr-halferi 17
News and Events	4 Travel with the Cactus Expert (17) 21
In the Glasshouse	8 Habitat of Melocactus matanzanus 27
Journal Roundup	10 Opuntia gilvoscens - A forgotten Taxon 38
On-line Journals	11 Historical records of Opuntia fragilis 41
The Love of Books	14 Taxing Taxonomy - Hunt and Lodé 42
Succulents on a Plate	15 Gymnocalycium ponomarevae sp. nov. 44
Society Pages	75 Elko County, Nevada throughout the year 54
Plants and Seeds for Sale	80 Field Observations on Echinofossulocactus
Books for Sale	87 sulphureus 61
	Resources in the CSSA Archives 79

Cover Picture: Melocactus matanzanus in habitat in Cuba. Photograph by Jose Miguel Acuña Guerra. See page 27.

The No.1 source for on-line information about cacti and succulents is <http://www.cactus-mall.com>

The best on-line library of succulent literature can be found at:

<https://www.cactuspro.com/biblio/en:accueil>

Invitation to Contributors

Please consider the Cactus Explorer as the place to publish your articles. We welcome contributions for any of the regular features or a longer article with pictures on any aspect of cacti and succulents. The editorial team is happy to help you with preparing your work. Please send your submissions as plain text in a 'Word' document together with jpeg or tiff images with the maximum resolution available.

A major advantage of this on-line format is the possibility of publishing contributions quickly and any issue is never full! We aim to publish your article quickly and the copy deadline is just a few days before the publication date. There will usually be three issues per year, published when sufficient material is available. Please note that **advertising and links are free** and provided for the benefit of readers. Adverts are placed at the discretion of the editorial team, based on their relevance to the readership.

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18th April 2017

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INTRODUCTION

The Year Ahead

While preparing the short article about *Loxanthocereus xylorhizus*, I found myself pondering the meaning of rarity. Some plants are rare in the wild, usually because they have a very restricted distribution or are adversely affected by human activity. Rarity in cultivation can be because the plant is not suitable for glasshouse culture, difficulties in growing it or simply unpopularity.

I am always interested in unpopular plants because there is often so much more to learn about them. Some popular genera have been studied so much that enthusiasts end up looking for tiny differences between plants resulting in superfluous new names being created.

My interest in books about succulents has expanded my interest in the plants even further. An increasing number of books and journals are available online which appears to have reduced the price of buying the originals. I still think there is something special about consulting the actual volume, rather than just an image on a computer screen, so I am pleased that reducing prices make some rarer books more affordable.

Even so, some books, especially those with fine illustrations, are unaffordable. Sometimes, there are only a few illustrations concerning succulents in a volume so an alternative is to buy single plates. These can be framed and make attractive decoration. I am starting a new feature 'Succulents on a Plate' in this issue featuring examples of antique succulent illustrations.

I am very pleased that David Hunt has agreed to allow the **Cactus Explorer** to distribute his online newsletter *Huitzilopochtli*. For *Mammillaria* fans, this is a great read and now you can download all the issues free from http://www.cactusexplorers.org.uk/Huitzilopochtli_home.htm

If you have not already told me and would like to be advised when the next issue of the **Cactus Explorer** is available for download, please send [me](#) your E-mail address to be added to the distribution list.

The German Cactus Society, the DKG, is to be congratulated on making scans of Friedrich Ritter's diaries available on the web. He was, for me, the greatest cactus explorer and these diaries will reveal valuable information. You can download them from http://www.dkg.eu/cs/index.pl?navid=Ritter_Tag_ebuecher_1322&sid=c

There is a good assortment of topics in this edition including the description of a new *Gymnocalycium* name. As you know, I prefer a wide concept of species so I doubt if this taxon will be accepted as distinct. However, I feel that authors should have the opportunity to present their case for a plant they consider warrants a new name so I am grateful to Victor for offering his article to the **Cactus Explorer**.

I recently attended the new-look AGM of the BCSS at Leicester. It was a very enjoyable event with two interesting talks. Diane Ortolani told us about the Jardin Exotique at Monaco, including the latest news of the exciting development of a botanical centre near to the gardens. Following the shortened AGM business, Paul Rees described his trip to South Africa. The BCSS did well to develop this event into one with a wider appeal and I hope that it will continue to attract a good attendance.

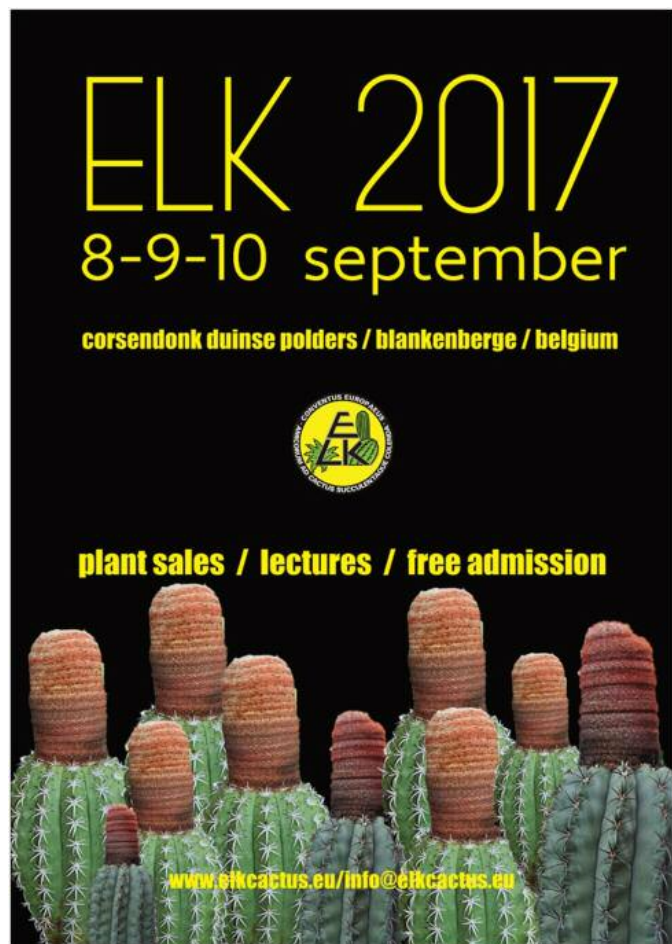
I am sad to have to report the deaths of some well-known cactophiles. Here, in the UK, we mourn the passing of Daphne Pritchard and John Cox, whilst far away in Chile, I was shocked to hear that Ricardo Keim had been killed on a road near his home.

Another sad event was the fire that badly damaged Alston Hall, near Preston, a Victorian building with fond memories of attending the Northern Area Weekend.


As the season gets underway, there are lots of events to entertain us. You can find information on the following pages and the first two I look forward to are the Spalding Cactus Mart on Saturday 22nd April and the *Mammillaria* Society meeting at Wisley the day after.

Graham Charles

NEWS AND EVENTS



ELK 2017
8-9-10 september
 corsendonk duinse polders / blankenberge / belgium



plant sales / lectures / free admission

www.elkcactus.eu/info@elkcactus.eu



Kaktus 2017
 presented

7. Exhibition & Sale

Cacti from around the world

Sa. 27. May - So. 28 May

daily open from 9 o'clock
 Sport Center Eugendorf
 near Salzburg -Austria
 Hammermühlstraße 7, 5301 Eugendorf

A. Castellanos & H. Lelong

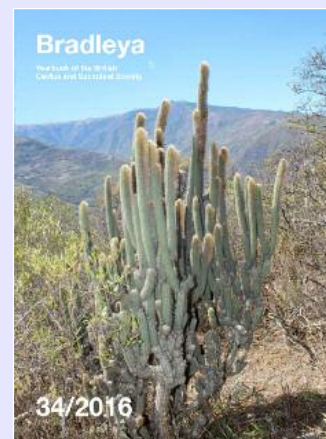
Publications devoted to cacti

This, the second e-book (416 pages) published by Au Cactus Francophone is devoted to articles by Castellanos and Lelong. The introduction presents the life of both authors who were husband and wife. After the series of articles, some original pictures by Castellanos are reproduced.

This very useful reference for Argentinian cacti can be downloaded (76Mbyte) from https://www.cactuspro.com/biblio_fichiers/pdf/KieslingRoberto/CastellanosLelong.pdf

Bradleya Index

An index to *Bradleya* 1-34 has been compiled by Roy Mottram and can be downloaded as a searchable PDF file



www.cactusexplorers.org.uk/Explorer17/BradleyaIndex1to34.pdf

Thank you Roy!

Cactáceas y Suculentas Mexicanas

The Mexican journal has been published since 1955 with the aim of sharing knowledge about succulent plant families, especially the Cactaceae, and to promote interest and research on different aspects of these amazing plants.

The journal is available on line and free at: web.ecologia.unam.mx/cactsucmex/
 Any comments please contact: Dra. Mariana Rojas-Aréchiga (mrojas@ecologia.unam.mx)

**COME AND SEE THE
AMAZING**

Bristol Cactus Societies
Incorporating The Bristol Cactus Society (53rd Annual Show)
and The Bristol Branch of The British Cactus and Succulent Society

**Show and Exhibition
of
CACTI &
SUCCULENTS**

**Saturday 27th May 2017
10:30 am – 5:00 pm**

AT
**FILTON COMMUNITY CENTRE
ELM PARK, FILTON, BRISTOL, BS34 7PS**
Admission: £1

**PLANT SALES
REFRESHMENTS
EXPERT ADVICE ON HAND**

FFI: CALL 0117 950 3604

BCSS Spalding Branch Cactus & Succulent Plant Sale



Saturday 22nd April 2017
10.00am to 3.00pm

Holbeach Community Centre,
Fishpond Lane,
Holbeach, Lincs, PE12 7DE U.K.

An impressive list of growers
will be selling their produce, some
we rarely see at sales like this:

Ralph Northcott, Cactus Shop
Bryan & Linda Goodey, Southfield Nurseries,
Shaun Biggadyke
Rob Stevenson
Lily Cartier & Philip Greswell
Derek Bowdery, Eau Brink Cacti,
Stuart Riley, Plantlife Nursery
Richard & Wendy Edginton, Seedling Cacti
Doug Sizmur, Kent Cacti
Gordon & Joan Foster, Oak Dene Nurseries
Keith Larkin, Keith's Cactus Books
David Neville
Tony Irons
Graham Charles
Cliff Thompson

Free admission Ample free parking
Refreshments available all day

For full details visit
www.spalding.bcsc.org.uk

South East England CACTUS MART

Saturday April 29th 2017
Swalecliffe Community Centre
19 St Johns Road
Whitstable CT5 2QU
Open from 10am until 3pm
Admission £1, Children free.
Refreshments all day
Contact: Dave Appleton
[at davejappleton@hotmail.com](mailto:davejappleton@hotmail.com)

Friedrich Ritter's Diaries

The German Cactus Society, the DKG, has scanned Ritter's diaries and made them available for download from:
http://www.dkg.eu/cs/index.pl?navid=Ritter_Tagebuecher_1322&sid=c

They are full of fascinating information but reading his hand writing in German is a challenge so the DKG hopes to eventually publish transcripts.



The Naturalist's Travel Page

<https://thetravelingnaturalist.org>

Our website has free-to-use online talks for your succulent society's meetings - from many locations around the world. We also have illustrated trip reports and summaries of South African succulent-rich guest farms. Also, a short course on field photography. We are available to help in natural history travel and tour planning.

Cactus and Succulent Society of America 37th Biennial Convention

26-30th July 2017

Celebrating the Beauty of the Desert

The Tempe Mission Palms Hotel

Tempe, Phoenix, Arizona USA

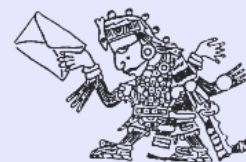
Speakers from around the world

Plant & pottery sales, auctions and field trips

Details at cssaconvention.com

Huitzilopchtia downloads

For *Mammillaria* fans, this PDF occasional newsletter, published by David Hunt, is a great read and now you can download all the issues free from:



http://www.cactusexplorers.org.uk/Huitzilopchtia_home.htm

Cactus Tattoos



Today's fashion for body art gives a new opportunity for cactophiles. Are these tattoos the first to feature cacti? Thanks to Andrew Gdaniec for sharing his new artwork with us.

CSSA Archives

The Cactus and Succulent Society of America has a long and distinguished history. Chuck Staples, CSSA Historian, tells us about the valuable contents of the Society's archives on page [79](#). Particularly useful will be the comprehensive lists of contents of the journal and *Haseltonia*.

The Zone 6 Show

Saturday 3rd June 2017

Great Missenden Memorial Centre,
Link Road, Great Missenden,
Bucks, HP16 9AE.

13:00 until 16:30

Sales: Plantlife; William's Cactus

Admission: £2

(Exhibitors and under 16s free entry)

Download [Schedule](#)

Le Couleurs Cactus Club présente la 10^{ème} édition de

Couleurs Cactus

Le salon des cactus et plantes succulentes

10^{ème} édition !!!
 9h - 12h30
 13h30 - 18h

Découvrir . Apprendre . Collectionner
27 - 28 mai 2017
 Égliseneuve près Billom
 ENTRÉE GRATUITE

10^{ème} édition du salon Couleurs Cactus

27 - 28 mai 2017
 9h-12h30 et 13h30-18h

Centre culturel
 63160 Égliseneuve près Billom
 30km à l'est de Clermont-Ferrand
 GPS : 45.721523, 3.391966

Venez découvrir en famille la beauté et l'extraordinaire diversité de ces plantes adaptées aux milieux arides. Les exposants et les bénévoles de l'association seront heureux de vous faire partager leur passion.

Foire aux plantes : nombreux stands
 Exposition de plantes de collection
 Buvette sur place
 Conférences :

- Samedi 15h : Découvrir les plantes succulentes, par Philippe Corman
- Samedi 19h : Voyage au Namaqualand, par Éric Mare
- Dimanche 15h : Découvrir les plantes succulentes, par Jacques Brun

Tirages de la tombola :
 ~ Samedi 16h30
 ~ Dimanche 16h

(Les gagnants absents seront avertis par téléphone)

Plus d'infos :
www.couleurs-cactus.fr
contact@couleurs-cactus.fr

The Mammillaria Society
Annual Meeting
 RHS Wisley,
 Hillside Centre
 Woking, GU23 6QB
 10.00 – 16.30
Two talks, Plants for Sale and Refreshments

BCSS Oxford Branch Show
with the Haworthia Society
Saturday 12th August 2017
10.00 – 15.00
 Old Mill Hall,
 Grove nr. Wantage OX12 7LB
Light refreshments.
 Plants for sale by
Craig Barber – William’s Cactus;
Daniel Jackson – Ottershaw;
Branch Plant Sales
 Ample free car parking in front of hall
 Organiser: [Bill Darbon](#)
[Show Schedule](#)
[Entry Form](#)
[Map of Show Venue](#)
[Directions for getting to the show](#)

Tephrocactus Study Group
Annual Meeting
Sunday 14th May 2017
 Coddington Village Hall, Main Street,
 Coddington, Newark NG24 2PN
Free Admission. 10:30 for 11.00am start
 Plant Sales and talks
 Tea/Coffee provided. Pub lunch nearby.
www.tephro.com

IN THE GLASSHOUSE

Loxanthocereus xylorhizus

Graham Charles discusses a distinct cereoid cactus from Peru. It is very localised in habitat and rare in cultivation.

The genus *Loxanthocereus* Backeberg was included in *Cleistocactus* in the *New Cactus Lexicon* but recent molecular studies suggest that it should be recognised as distinct, and different from both *Cleistocactus* and the more-closely related genus *Borzicactus*.

Ritter accepted the genus *Loxanthocereus* and described *L. xylorhizus* in his book *Kakteen in Südamerika* Band 4 (1981). He had first collected it in 1953 as FR321 "High mountains, North of Chosica, Lima, Peru. Rare". The species name refers to the woody root of the plant.

The well known locality is at about 1000m in the Quebrada California, south of Chosica in the Rimac Valley. This habitat was visited by Martin Lowry *et al.* in October 2002 (BLMT452.01) and by Paul Hoxey in July 2008 (PH773.03). It is quite near to Lima and the area has been subject to considerable urban development. I am told that the place where Martin went is now a private housing estate and it is not known if any plants are still growing there.

The locality is very arid but may only receive occasional mists and rainfall is rare. However, the plants had flowered and some seed was found. I have a number of seedlings from this collection and one flowered for the first time in 2016 (Fig.1). The plant is about 25cm tall and about 10 years old.

In cultivation, this plant is slow growing and sensitive to excess moisture at the roots. It needs the brightest place available in order to develop its strong spination, and the seedling that flowered was on the top shelf of the glasshouse, a place where all the available sun can be enjoyed.

This is a rare plant in cultivation and may also be rare in habitat. Ritter's location is not



Photo: G. Charles

Fig.1 *Loxanthocereus xylorhizus* BLMT452.01 grown from seed and flowering at 25cm tall and an age of about 10 years.

Qu. California since he said that it was high mountains north of Chosica. I was interested to read the account of Holger Wittner (2013) who climbed the mountains near Chosica. He reports finding a scattered population between 950 and 1300m. In 1996, Ostolaza (1996) had visited California and reported less than 50 individuals in a disturbed environment. He declared the plant to be Critically Endangered.

There was a good picture of a flowering plant (in habitat?), published as part of an identification competition, in *Cactus Adventures*

Photo: P. Hoxey

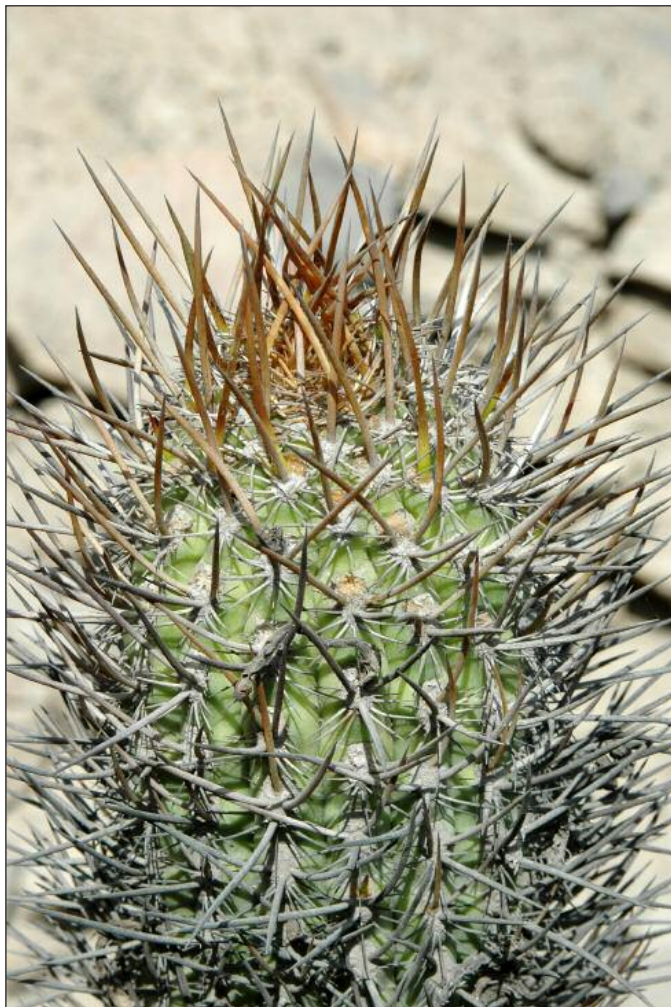


Fig.2 *Loxanthocereus xylorhizus* PH773.03
Quebrada California, near Chosica, Río
Rímac, Peru. 990m July 2008.

78:31.

I am not aware of seeds of this plant ever being available commercially, not even in Ritter’s catalogues. I am hoping that another of my seedlings will flower and give me the chance to produce seeds in cultivation.

Acknowledgement

Thanks to Paul Hoxey for the use of his pictures and information about the habitat.

References

OSTOLAZA, C. (1996) A Closer Look at the Conservation Status of Cacti in the Vicinity of Lima, Peru. *British Cactus & Succulent Journal* 14(4):158–174.

WITTNER, H. (2013) *Loxanthocereus xylorhizus* — ein Überlebenskünstler. *Kakteen und andere Sukkulenten* 64(9): 239–246.

Graham Charles

Photo: P. Hoxey

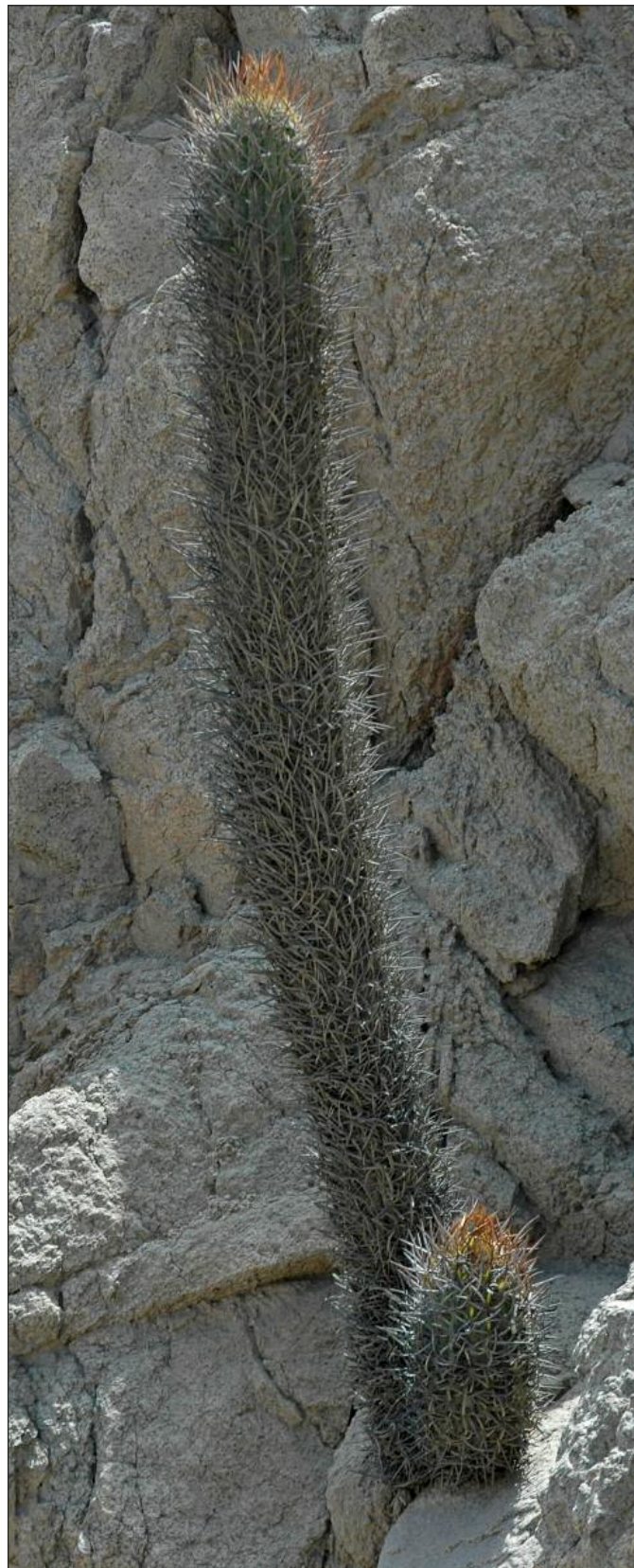


Fig.3 *Loxanthocereus xylorhizus* PH773.03
Quebrada California, near Chosica, Río
Rímac, Peru. 990m July 2008.

JOURNAL ROUNDUP

Piante Grasse Special



Sulcorebutias from the Cordillera Mandinga

The latest special issue from the Italian Society is a beautifully illustrated account of searching for sulcorebutias in Bolivia. The text is English as well as Italian, a welcome addition that considerably adds to the book's international appeal.

There are many well-printed photographs of the varied plants encountered during the searches and examples in cultivation. They illustrate the difficulty in applying names to these pretty plants which often have such diverse appearance.

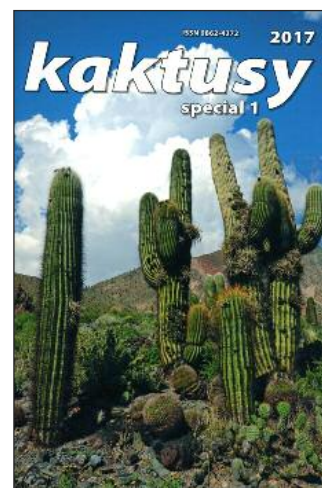
Available to non-members for 20€ (including postage within Europe). Please email segreteria.nazionale@aias.info for details of payment.

GC

Cactaceae Systematics Initiatives 35



The latest edition of CSI was published in December. It includes an account of the consequences of the molecular study of *Copiapoa* by Larridon *et al.* There are also notes about Argentinian opuntias. Available by subscription from [David Hunt](#).



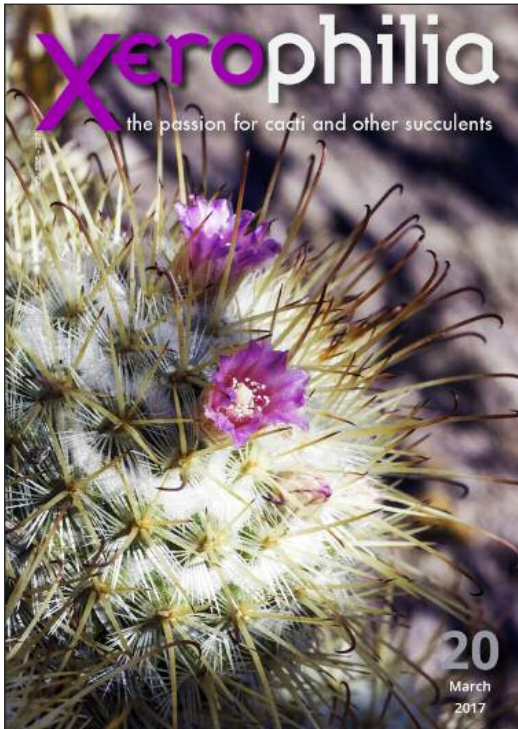
The first Special issue of *Kaktusy* for 2017 describes the cacti of the Quebrada de Humahuaca in northern Argentina. This remarkable valley has a wide range of genera, many popular in cultivation. Text is Czech and there are many good pictures of the plants and spectacular localities.

<http://www.cs-kaktusy.cz/>

ON-LINE JOURNALS

On-line Journals for you to download free

Publishing journals on the web is now very popular. Creating them is a lot of work so perhaps that is why some have ceased publication. Here are some links for you to download and enjoy.



Xerophilia

Issue 20 of *Xerophilia* appeared in April 2017. It is published in English as well as the language of the original article. The quality of the contents is varied and impressive. There is lots to read in its 144 pages.

Contents include: *Mammillaria bertholdii*; Mysterious cacti of Isla Pelicano & Isla Tiburon; *Mammillaria bombycina*; Xero Arts; Small South Africans in the land of cacti; The genus *Monanthes*; Notes on *Tephrocactus geometricus*; Afriston Botanical Garden;

The magazine may be downloaded free as a pdf from <http://xerophilia.ro>

Contact: xerophilia@xerophilia.ro

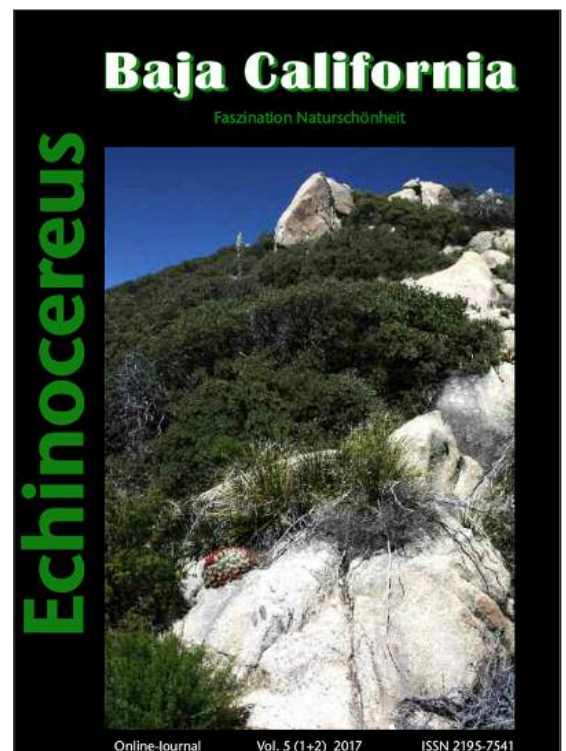
ECHINOCEREUS Online-Journal

The German language on-line journal for *Echinocereus* lovers. The goals of this journal are to study the genus *Echinocereus*, to publish articles about the continuous research on these plants (classification, morphology, evolution) as well as to protect the genus *Echinocereus* by reproduction from seeds and distribution of the seedlings.

This issue, published in January 2017, is 274 pages dedicated to Baja California. It covers not only *Echinocereus* but also other cacti and places on this remarkable peninsula.

The downloaded pdf file allows printing, but does not permit copying of the content. For those of us who do not understand German very well, the publishers also provide a downloadable MS Word document of the text making it possible to copy and paste it into a translation program. This is a major benefit of online journals and I thank them for this useful feature.

See website: www.echinocereus.eu



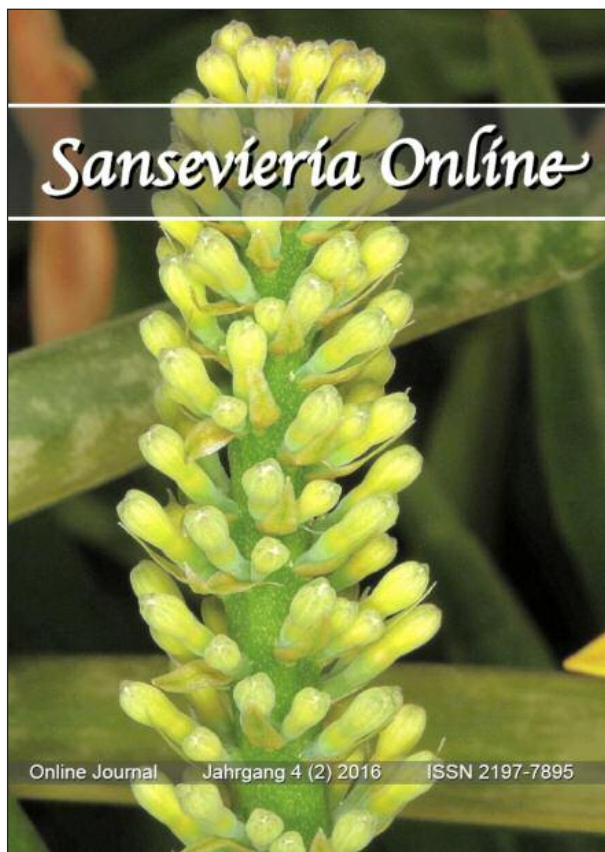
Sansevieria Online

The online journal for the growing number of enthusiasts for this genus. A small group of *Sansevieria* enthusiasts publish the first *Sansevieria* online journal in German. They welcome contributions on systematics, morphology, physiology, evolution etc.

This issue includes: The inflorescence of *Sansevierias*; a new cultivar: *Sansevieria cylindrica* 'Boncel'; Shield bugs (*Pinnaspis strachani*) as companions of *Sansevieria*; Not only *sansevierias* in the Botanical Garden of the University of Potsdam: a plant paradise in Welterbe "Park Sanssouci"; Flower pictures of *Sansevieria burmanica*.

The next issue will be available on May 1st 2017 and there is a cumulative index already published.

Download the PDF from www.sansevieria-online.de where you can also find a special issue containing field number lists and an index to the journal.



Schütziana

The latest issue of *Schütziana*, the specialist online journal for *Gymnocalycium* enthusiasts, features:

Gymnocalycium friedrichii (Werderm.) Pažout ex Schütz – Evaluation from a different perspective

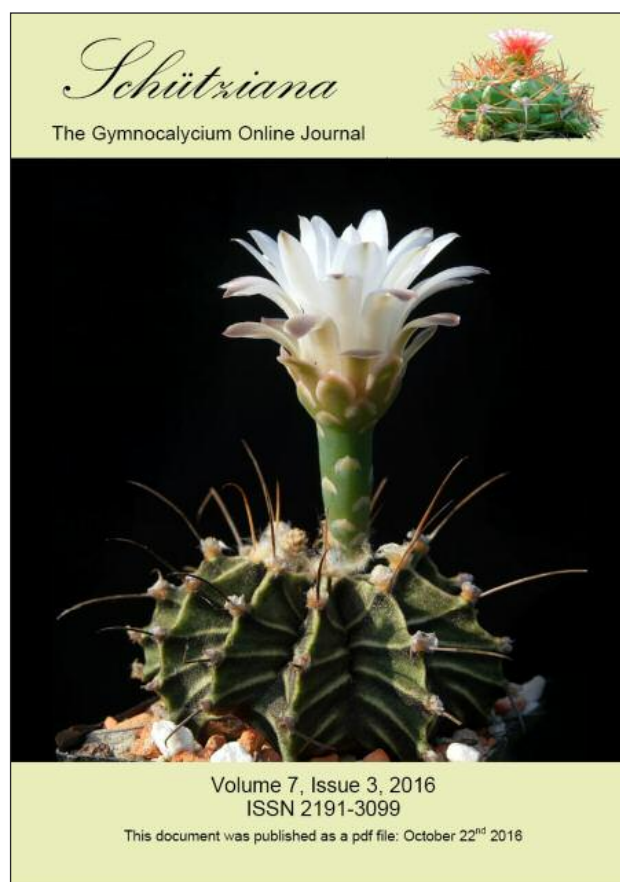
Gymnocalycium bruchii (Spegazzini) Hosseus subsp. *deminii* Gapon et Neuhuber

The text of this valuable publication is available in English, German, Russian and Japanese.

The pictures and distribution maps give a clear insight into the plants found in habitat and culture.

You can download free all the issues from:

www.schuetziana.org



Sukkulenten (formerly Avonia News)

Free German language on-line newsletter of "Avonia", the quarterly journal of the German Society for other Succulents.

From 2015, the on-line journal has been called "Sukkulenten"

This issue discusses *Quaqua* and *Lithops optica* Rubra

See website: www.fgas-sukkulenten.de

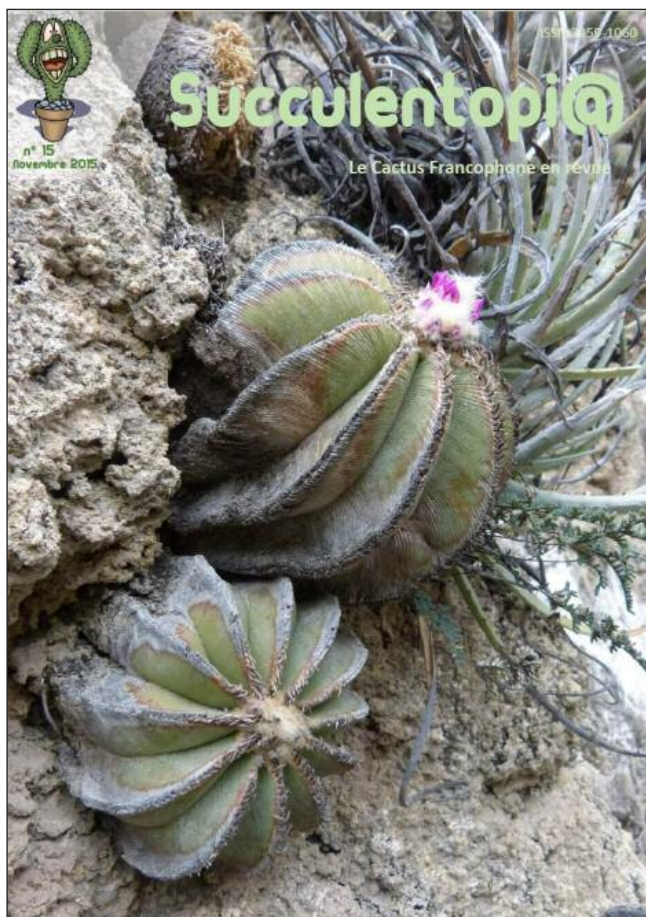
Annual seed list for members and much more.

Special interest groups for *Aloe* (incl. *Haworthia* etc.), *Ascleps*, *Euphorbia*, *Mesemb*s and *Yucca*/winter-hardy Succulents.

For membership and further information contact:

Dr. Jörg Ettelt: Morgenstr. 72, D-59423 Unna, praesident@fgas.sukkulenten.de or

Wilfried Burwitz: Postfach 100206, D-03002 Cottbus, geschaeftsstelle@fgas.sukkulenten.de



Succulentopi@

The 15th issue of this free online journal appeared more than a year ago. I wonder why no further issues have appeared. It would be a great pity if this valuable publication ceased to be published.

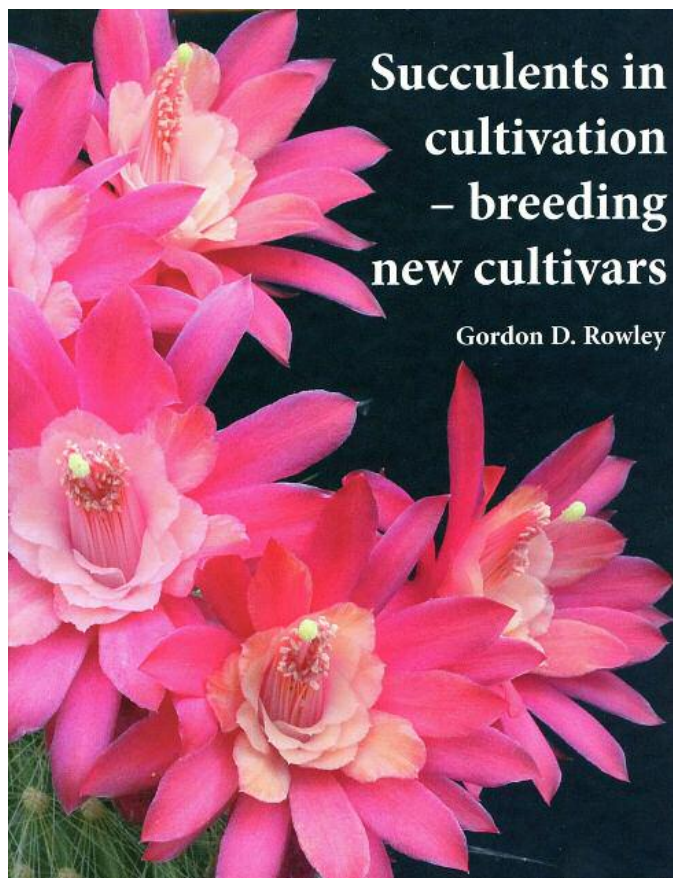
It was the first online journal published in French. The quality is excellent in every respect.

Back issues are available as a free PDF downloads from:

<http://www.cactuspro.com/succulentopia>

THE LOVE OF BOOKS

News of Recent Publications. A Reminder of Old Favourites.



Succulents in cultivation — breeding new cultivars

Gordon D. Rowley

It is remarkable that Gordon Rowley is still writing books some years after his 90th birthday. He has long had an interest in cultivars, believing that distinct forms of wild species are better treated as cultivars rather than being given botanical names.

The cultivation of cacti and succulents has been dominated by species rather than artificially produced hybrids which are so popular with gardeners growing other plants. Even so, there has been a long standing market for hybrid epicacti and the various series of echinopsis hybrids. The number of cultivars and hybrids of other succulents has recently increased dramatically and many of these are offered for sale from genera such as *Echeveria*, *Haworthia*, *Agave* and *Lithops*.

This book documents the history of cultivars, the way they have been produced and the process of giving them names. Succulent plant breeding in twelve plant families is described and illustrated with good quality pictures by the author and many other contributors.

There is an extensive bibliography and a comprehensive index.

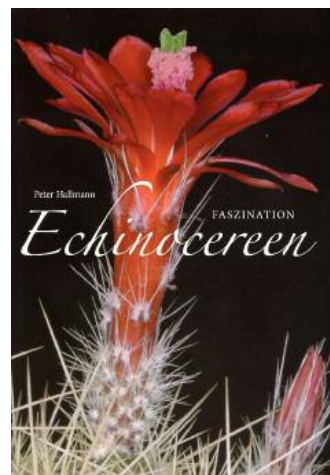
With the increased popularity of hybrids and cultivars, this book has arrived at a good time. It is an interesting read and the author's style is entertaining and easy to follow.

Hardback with dust jacket, 235 x 285mm, 248 pages, with 473 colour photos and 24 B&W line drawings.

Published by the BCSS and available for sale at £35 (UK) or £38 overseas. See [website](#)

Faszination Echinocereen

Peter Hallmann



The German Cactus Society (DKG) has been very active lately publishing its series of books and this, the latest, is the largest to date with 320 pages 17 x 24cm and 631 excellent colour pictures. The text is German, but this is largely a picture book with wonderful illustrations of plants in cultivation and habitat.

Very good value at 10€ in Germany or 12€ elsewhere but only available to members of the DKG, a good reason to join!

See [website](#) for details of how to order.

GC

SUCCULENTS ON A PLATE

Graham Charles begins a new regular feature about antique illustrations of succulents. The first is a plate from *Plantae selectae*, one of the most beautiful of all botanical books, published by Christoph Trew between 1750 and 1773.

Photo: G. Charles



Figure 1. Plate XXX from *Plantae selectae*, painted by Georgius Dionysius Ehret and described by Christophorus Jacobus Trew, 1752.

The hand-coloured folio engraving in Figure 1 was made from a copper plate. The overall plate size is 298 x 440mm and is one of 100 plates published in Trew's *Plantae selectae*.

The plant name on the plate is a pre-Linnaean phrase name: *Cereus minimus scandens polygonus spinosissimus flore purpureo*. Linnaeus praised this work in a letter to Trew, calling it one of the great miracles of the century. In his *Species Plantarum*, Linnaeus gave this plant the binomial name *Cactus flagelliformis*, later to become *Cereus flagelliformis* Miller and eventually the name we use today: *Aporocactus flagelliformis*



Figure 2. Ehret (1748) *Plantae et papilionos rariores depictae et aeri, incisae a Georgio Dionysio: t.2*, as *Cereus minor scandens polygonus spinosissimus, flore purpureo*. [Smaller, scandent, many-angled and very spiny cereus, with purple flower].

Lemaire.

The artist, Ehret was a German botanist, best known for his illustrations. His first major sale was through Christoph Jacob Trew, a doctor and botanist in Nuremberg, who became his patron, and used many of Ehret's botanical illustrations in his own work. The 1730s saw Ehret travel to Britain, where he was introduced to Sir Hans Sloane and to Philip Miller, curator of the Chelsea Physic Garden; he also spent time in the Netherlands in the

garden of George Clifford, a Director of the Dutch East India Company. There Ehret met Carl Linnaeus, then Clifford's botanical curator, who was working towards his own new system of botanical categorisation.

While Ehret's early drawings were made on both paper and vellum, his preferred media for finished work became bodycolour (opaque watercolour) on vellum, influenced by time spent in Paris at the Jardin des Plantes in 1734. His drawings for *Plantae selectae* had been acquired over a number of years by Trew, who then entrusted them to Johann Jacob Heid, an engraver in Augsburg, to be prepared for publication. (Trew's collection of drawings for *Plantae selectae* are now chiefly housed in the University Library of Erlangen, Bavaria.) The images that Trew chose to publish were those from plants recently introduced or then unknown to the public such as the banana and pineapple, neither of which had been tasted in Europe at that time.

Roy Mottram pointed out to me this was not the first place where this image appeared. It derives originally from the plate shown in

Figure 2, from which it has been horizontally flipped. The original is from Ehret's own 1748 work on rare plants & butterflies. Roy Mottram reproduced this in *CactusWorld* 29(2): 89. (2011), and designated the plate as the lectotype of the species. It was the one illustration listed by Linnaeus which was readily recognisable as genuinely being of *Aporocactus flagelliformis*.

Also of interest is that in this earlier work, Ehret's phrase name was "*Cereus minor*...." (Lesser cereus); changed later by Trew to "*Cereus minima*..." (Least cereus).

I am grateful to Roy Mottram for his contribution to the story of this historic plate.

Graham Charles

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FREE download of The Chileans Journal of South American cacti.

The Chileans started in Autumn 1965 as a study group for Neoporteriae. It was founded by John Donald, David Whiteley and Harry Middleditch in consultation with Dodonaeus, a Belgian study group, and Dr. Priessnitz of Austria.

The aim was to exchange information about cultivation and propagation, sharing photographs, and exchanging spare plants.

The first 'Bulletin' was published as a stapled set of A4 sheets in March 1966. It did not take long before the scope was extended to include cacti from other South American countries.

Due to the failing health of Harry Middleditch, *The Chileans* Number 73 will be the last issue to be published so membership of the organisation is closed. All editions are now available for free [download](#) as PDF files.

I am grateful to Paul Hoxey for PDF files of

the issues up to Number 51. These have now been processed with OCR to make the text searchable but please note that this process is not completely accurate. Issues from 52 to 73 were produced from the original print files so the active text should be accurate.

I am also grateful to Chris Leather (who originally produced the print files for Nos. 72 & 73) for the originals of the illustrations from No. 52 onwards.

Two indices were published and image PDFs of these are available for download:

[Index of Numbers 1 to 30](#)

[Index of Numbers 31 to 51](#)

If you have not previously read any of *The Chileans*, I hope you will download some issues and enjoy the contents. The translated articles are particularly interesting.

Graham Charles

[Chileans download home page](#)

SOME OBSERVATIONS ABOUT DISCOCACTUS ZEHNTNERI SSP. PETR-HALFARII

Gerardus Olsthoorn tells us about a recently found *Discocactus* taxon which is still rare in cultivation. It is disturbing to learn that so soon after its discovery, it is already under threat.

Photographs by the author unless otherwise stated.

1. Ecological observations

Discocactus zehntneri ssp. *petr-halfarii* grows in the municipality of Juazeiro, Bahia, beside the road BR 235 which goes from Juazeiro to Uaua, growing 26km east of Juazeiro.

It consist of two small sub-populations, the first one directly beside the road, the second 800m into the caatinga to the south. The plant grows in caatinga soil with accompanying cacti: *Melocactus zehntneri*; *Cereus jamacaru*; *Pilosocereus pachycladus* ssp. *pernambucoensis*; *Pilosocereus gounellei* and *Arrojadoa rhodantha*.

It differs from *D. zehntneri* ssp. *zehntneri* and *D. zehntneri* ssp. *boomianus* in growing directly

in caatinga soil in which it can be compared with *D. bahiensis* which has the same habit, whereas the other subspecies of *D. zehntneri* grow on granite and sandstone outcrops (ssp. *zehntneri*) or sandstone outcrops and white sand (ssp. *boomianus*). The form *horstiorum* even grows on iron ore rocks.

In 2010, some 6km from this locality, we could find a small population of *D. bahiensis* growing directly beside the road, which during our 2014 visit had already diappeared. In the neighbourhood are several granite rock outcrops which harbour only *Pilosocereus gounellei* populations.



Fig.1 The disturbed habitat of *Discocactus zehntneri* ssp. *petr-halfarii*.



Fig.2 *Discocactus zehntneri* ssp. *petr-halfarii*.



Fig.3 *Discocactus zehntneri* ssp. *petr-halfarii*.



Fig.4 *Discocactus zehntneri* ssp. *petr-halfarii*.



Fig.5 *Discocactus zehntneri* ssp. *petr-halfarii*.



Fig.6 *Discocactus zehntneri* ssp. *petr-halfarii* at the type locality.



Fig.7 Excavations at the type locality.

This whole area southeast of Juazeiro is being developed into agricultural areas with irrigation systems that make use of the water resource of the nearby Rio São Francisco. The main cultivation is sugar cane plantations.

During our 2010 visit we could observe large sugar cane plantations 5km distant from the *Discocactus zehntneri* ssp. *petr-halfarii* locality. The road at that time was a dirt road, however, beside the road there was already excavation activity on behalf of irrigation pipes which already had destroyed several discocactus plants (Figure 7).

On visiting the habit in 2014 the road had been asphalted and a stretch of 50m beside the road was being cleared of all vegetation resulting in the destruction of all the discocactus plants in this stretch. (Figure 8). We did not look at the population in the interior of the caatinga during this visit, however, sugar cane plantations were already less than 2km from the locality.

In the *Boletín Latinoamericana y del Caribe de Cactaceae*, August 2012, there is an article by Joana B. Nascimento and Marcus Meiado describing the details of a study by the first author to be undertaken to determine population dynamics of the species. After my visit in 2014, in correspondence with Marcus Meiado, he confirmed the continuation of this study by Joana. Preliminary counts gave the number of 1945 individuals (Santos *et al* 2015). The results of population dynamics will be published soon (M Meiado pers. comm.)

So the prospect for this population is not very good and I don't have any knowledge if there is yet another population. This whole area is not protected in any sort of way so I think it will be gone in the near future.



Fig.8 Plant damaged by excavations.



Fig.9 Plant flowering in cultivation.

2. Some taxonomic observations

This plant was described as *Discocactus petr-halfarii*. Directly after its description, Braun (2008) considered it a ssp. of *D. bahiensis*.

With most other researchers of the Brazilian cacti it is more or less a consensus, however, that it is related to *D. zehntneri* and not *D. bahiensis*, and in 2015 Marianna Rodrigues Santos made the adjustment in *Phytotaxa* reducing the plant to a ssp. of *D. zehntneri* based on its DNA analysis of the genus *Discocactus* which she had made for her doctoral thesis. Regrettably, this doctoral thesis has not been published so enabling it to be consulted publicly.

The facilities of genetic studies of the university UFSCAR, Sorocaba, under professor Evandro Marsolo Moraes is going to undertake a new genetic study of *Discocactus*, which currently suffers from lack of resolution in the genetic studies, which was one of Marianna's problems (Marlon Machado, pers. comm.) so I hope that this new study can make things clearer.

There are reasons to believe that *D. zehntneri*

Photo: G. Charles



Fig.10 A young seedling of *Discocactus zehntneri* ssp. *petr-halfarii* flowering in a 10cm pot.

ssp. *petr-halfarii* has some genetic influence of *D. bahiensis* as it has characteristics of both, for instance, the fact that it grows in caatinga soil which is a typical trait of *D. bahiensis*.

I would like to thank Marlon Machado and Marcos Vinicius Meiado for the information given by them.

Gerardus Olsthoorn

I was very pleased to receive this information from Gerardus. Ever since I first saw this beautiful plant, I wanted to introduce it to readers of the **Cactus Explorer** since it is almost unknown in cultivation in the UK. I was waiting for one of my seedlings to flower and this year one did (Figure 10). It first flowered when only about 8cm in diameter. I grow discocacti grafted because this is the best way to ensure survival in our inhospitably cold climate.

The plant was first described in 2008 in the Czech Journal *Kaktusy* having been found in 2007 by Milan Zachar, Miroslav Halfar and Werner van Heek.

I bought some seedlings at ELK from Miroslav Halfar and grafted some on trichocereus stocks. The ones I left on their own roots have also done well so perhaps this is one of the easier species to grow. I always thought it looked as if it was a form of *D. zehntneri*, one of my favourite species.

Earlier this year I sowed seeds which germinated well and are growing steadily, some now grafted on pereskiosis. There is something really exotic about discocacti,

Photo: G. Charles



Fig.11 An older plant of *Discocactus zehntneri* ssp. *petr-halfarii* flowering in a 13cm pot.

perhaps because they are so difficult to cultivate. For me, it is the appearance of the flower buds which so quickly mature into beautiful nocturnal sweet-smelling blooms that I find so appealing. I dream of one day being in their habitat to witness the plants flowering which I understand is in January/February. GC

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TRAVEL WITH THE CACTUS EXPERT (17)

Zlatko Janeba continues his popular series of articles about exploring the American South West.

Photographs by the author.

After a good sleep on the fresh mountain air and, after a really rich breakfast, we got a suggestion to visit an abandoned mine or a kind of a ghost town in the nearby mountains. And since the dirt road was supposed to be quite bad and still covered in snow (although it was middle of May, well, exactly 13th May 2006) we all (Josef, Dave and his wife, me) took off with my 4WD Subaru Outback. We took a road marked as CO Rd 18 (Formile Rd).

After a while, when passing a montane meadow at an elevation of some 3070 m, I noticed some white and pinkish flowers next to the road. We stopped immediately and, to our surprise, the flowers belonged to *Pediocactus simpsonii* (Fig.3). So we surveyed the area a little bit and in a relatively short time

we found some dozen pedios and many of them were in flower. The flower colour was quite variable. We saw white, pinkish, dark pink and almost purple flowers there (Fig.2).



Fig.1 The ruins of an old mine high in the mountains of Colorado.



Fig.2 *Pediocactus simpsonii* with beautiful pink flowers at elevation over 3000m. Near Jefferson, Colorado.



Fig.3 A montane meadow with flowering *Pediocactus simpsonii* (over 3000m) The distant hills were still covered in snow even it was mid May. Near Jefferson, Colorado.



Fig.4 A habitat of *Pediocactus simpsonii* on the open montane meadow with aspen groves and wooden cabins near Jefferson, Colorado. Dave's cabin is the rightmost one. A dream place for lover of winter hardy pedios.

The plants were quite large, up to 15cm in diameter, depressed-ovoid. The dominant features of the landscape were not only wooden cabins but also old and magnificent Rocky Mountain bristlecone pine (*Pinus aristata*). This is the most populous of the three bristlecone pine species (the other two are *P. balfouriana* and *P. longaeva*).

Then we reached the abandoned mine with old wooden buildings that were falling apart, even so, they were very photogenic (Fig.1). Nearby we could also observe a brook with several nicely created beaver dams, built by the North American beaver (*Castor canadensis*).

We returned back to Dave's cabin and got there some time before lunch was being served. Tempted to see more pedios we rambled around and not too far from the cabin we saw more of them (Fig.4). *Pediocactus simpsonii* was really common there and while in flower, they were even quite easy to spot. The smaller specimens often grow obscured by other vegetation such as grasses and sagebrush (Fig.5). On the way back we found some pedios just several meters from Dave's cabin. I only wished I could have a cabin here too.

Although we were offered the chance to stay one more night and, although it was very tempting, we were short of time and with a heavy heart we decided to leave. We said thanks and goodbye to our marvelous hosts and packed our stuff. We passed the city of



Fig.5 .Smaller flowering plant of *Pediocactus simpsonii* hidden in vegetation (3000m elevation), near Jefferson, Colorado.

Fairplay and drove along U.S. Hwy 285 further South but we could not go for much longer. The meadows along the road were so enticing that we had to stop again somewhere.

So, Northeast of Johnson Village we took the forest service road 431 going to the west towards East Buffalo Peak. There we stopped on the mountain meadow with open stands of pine trees at an elevation of some 2830m and again we encountered numerous *P. simpsonii*. At that place we saw plants with a prevailing pinkish flower colour (Fig.6). The pedios were growing in clayish soil among tall grasses.

We continued further and we made our next stop about 5 miles East of Johnson Village on U.S. Hwy 285 at an elevation of some 2770m. On both sides of the highway we observed yet another population of *P. simpsonii* and again in full flower (Figs.7&8). The flowers were either almost white or pinkish. As for the flowers it was really perfect timing and we enjoyed taking pictures a lot. Pedios grew in sparse grass cover on sunny spots among low pine trees (Fig.9). We also saw *Opuntia* sp., *Echinocereus viridiflorus* with emerging flower buds (Fig.10) and colonies of yuccas with long and narrow leaves. Although in my notes it is written *Yucca* aff. *angustifolia*, the correct name should be *Yucca glauca* (Fig.9).

Later we also visited the scenic viewpoint (Collegiate Peaks Overlook) just before Johnson Village. Even there, along the short trail, we discovered one *P. simpsonii* and several *E. viridiflorus* plants. Then we passed



Fig.6 Another habitat of *Pediocactus simpsonii* with pine trees (2830m elevation), Northeast of Johnson Village, Colorado.

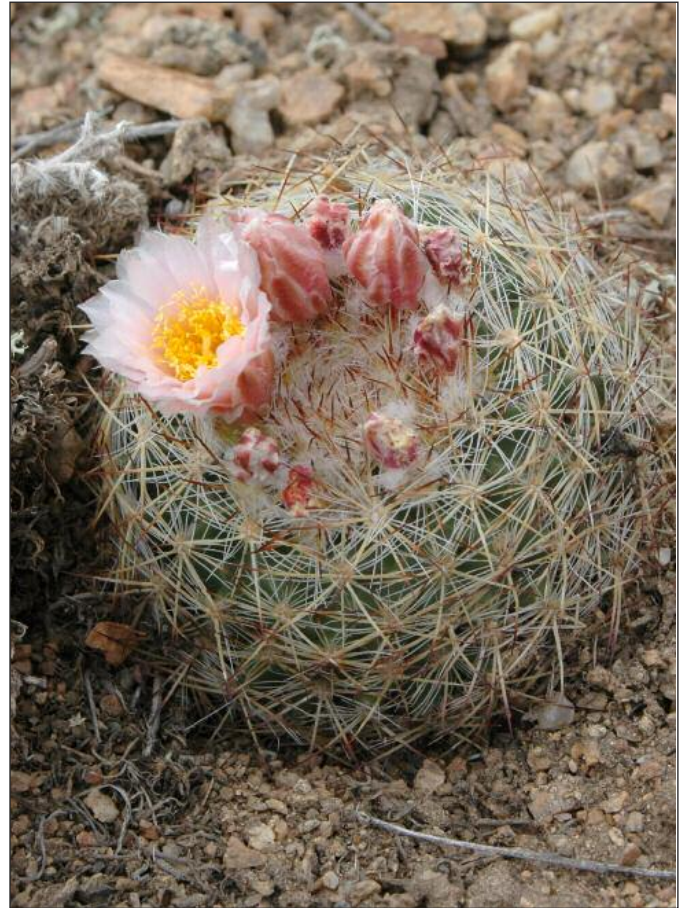


Fig.7 *Pediocactus simpsonii* with pinkish flower (2770m elevation), East of Johnson Village, Colorado.



Fig.8 Pink flowering *Pediocactus simpsonii* (2770m elevation), East of Johnson Village, Colorado.

Johnson Village and headed further South along U.S. Hwy 285. North of Poncha Springs we took U.S. Hwy 50 Westwards, towards Gunnison and Montrose.

I was driving and Josef was taking a nap. I was admiring the landscape and nature along the way when I suddenly spotted large white balls in the forest next to the road. I jumped on the break to stop immediately. Josef woke up with consternation, asking what is going on.

While getting of the car I tried to explain to him that I must have seen large pediocacti among the pine trees. Josef followed me with grumbling and I heard something about “a crazy cactophile”. But when he saw what I saw, his mood changed instantly and we both started shooting numerous photos.

We were about 8 miles East of the Monarch Pass at elevation of about 2730m. There, next to the road, was a gentle South-facing slope, where we found an attractive form of *P. simpsonii* – the plants looked like white spiny balls (Fig.11). The most white specimens reminded me very much of *Parodia nivosa* which I had observed many many years ago in Quebrada del Toro in Northern Argentina. The pediocacti were quite variable but the white spinations clearly prevailed. They were growing there on sunny rocky outcrops surrounded by tall pine trees (Figs.11,12&13). And they were really copious as can be seen in Fig.12. It was a wonderful experience to encounter such a rich and healthy population of this fascinating species. And, as a bonus, we



Fig.9 A habitat of *Pediocactus simpsonii* and *Echinocereus viridiflorus* in sparse pine forest at elevation of 2770m, East of Johnson Village, Colorado.



Fig.10 *Echinocereus viridiflorus* with emerging flower buds (2770m elevation), East of Johnson Village, Colorado.



Fig.11 A habitat of *Pediocactus simpsonii* East of the Monarch Pass, Colorado. Pedios were growing on sunny outcrops among yuccas and pine trees.

discovered one old crested specimen too (Fig.14). We also saw *Echinocereus viridiflorus* (Fig.15), *Opuntia* sp., and numerous *Yucca glauca*. On the other side of the road (the North-facing slopes) was thick forest of aspens and pine trees.

Excited from such a discovery, we drove along Hwy 50 further through the forested

mountains, over the Monarch Pass and then we enjoyed a lot of switchbacks going down the hill. The forest was gradually replaced by sagebrush cover and montane meadows. We decided to make a short stop next to Cross Bar Ranch, some 30 miles Southeast of Gunnison. There again we saw more of *P. simpsonii* and also a tiny species of *Sedum* with reddish



Fig.12 The plants of *Pediocactus simpsonii* were really copious and the population prosperous. East of the Monarch Pass, Colorado.



Fig.13 A detail of two smaller specimens of *Pediocactus simpsonii* East of the Monarch Pass, Colorado.



Fig.14 An attractive crested form of *Pediocactus simpsonii* East of the Monarch Pass, Colorado. succulent leaves and small yellow flowers.

Then we stopped some 8 miles West of Gunnison at an elevation of 2500m. We walked over low hills covered with sagebrush and observed the quite comon *Opuntia* aff. *polyacantha* (with smaller pads) and quite rare *P. simpsonii*. The cacti grew in a slate-clay soil there.



Fig.15 A cluster of *Echinocereus viridiflorus* growing under *Yucca glauca*. East of the Monarch Pass, Colorado.

The last stop of the day was just East of Montrose at the elevation of 2350m. There I did not see pedios anymore. There were only *Opuntia fragilis* and also a different type of yucca, with shorter and broader leaves than before, *Y. harrimaniae*. There was also an interesting plant *Asclepias cryptoceras* (Pallid Milweed) from the Apocynaceae (formerly Asclepiadaceae) family.

Quite tired, we reached Motel 8 in Montrose. We got a two bed room for USD 54 including working (really working!) internet and probably the best service so far. With a sixpack of beers we discussed what we had seen that day. And if I was to summarize the day in one short sentence: We spent an amazing day in *Pedioland!*

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A BRIEF HISTORY AND VISITS TO THE HABITAT OF MELOCACTUS MATANZANUS

We hear stories about the demise of *Melocactus matanzanus* in habitat so it is good to get an up to date assessment from the field. Jose Miguel Acuña Guerra describes the history and current situation concerning the survival of *Melocactus matanzanus* in Cuba
Photographs by the author.

After visiting almost all the habitats where *Melocactus* grows in the eastern provinces of the Cuban archipelago, there was a species of this genus that we were still not able to visit in its natural location. A melocactus of the western region, one of the most beautiful and for many decades one of those most coveted. An icon of Cuban cacti, present in the most important collections. I refer to *Melocactus matanzanus* León.

It was collected in 1927 by Joseph Sylvestre Sauget, a Frenchman that resided in Cuba, well-known as brother León for his religious condition. Described by him in 1934 as a lightly depressed plant, 7–8cm high, with 8 or 9 ribs, close areoles; spines 1–1.5cm long, of yellowish colour, between 8 and 9 radial spines, 1 central

spine of variable length. Flowers 17mm long, rosy, attractive with 27 sepals, numerous stamens, stigma lobes are small, 4 or 5 in number. Fruit elongated 1.5cm long, shiny black seeds. Its author reported large colonies (León 1934).

This endemic cactus named 'matanzanus' because it grows in Matanzas province, near the major city with a similar name. Symbol of this region, they are growing on low elevations of serpentine rock. These hills constitute a fringe that is located to the south of the formations of calcareous rock of the north coast of the Matanzas, Mayabeque and Havana provinces. These areas are covered with evergreen dry forest or evergreen thorny scrub. The cuabal Las Tres Ceibas de Clavellinas is the type

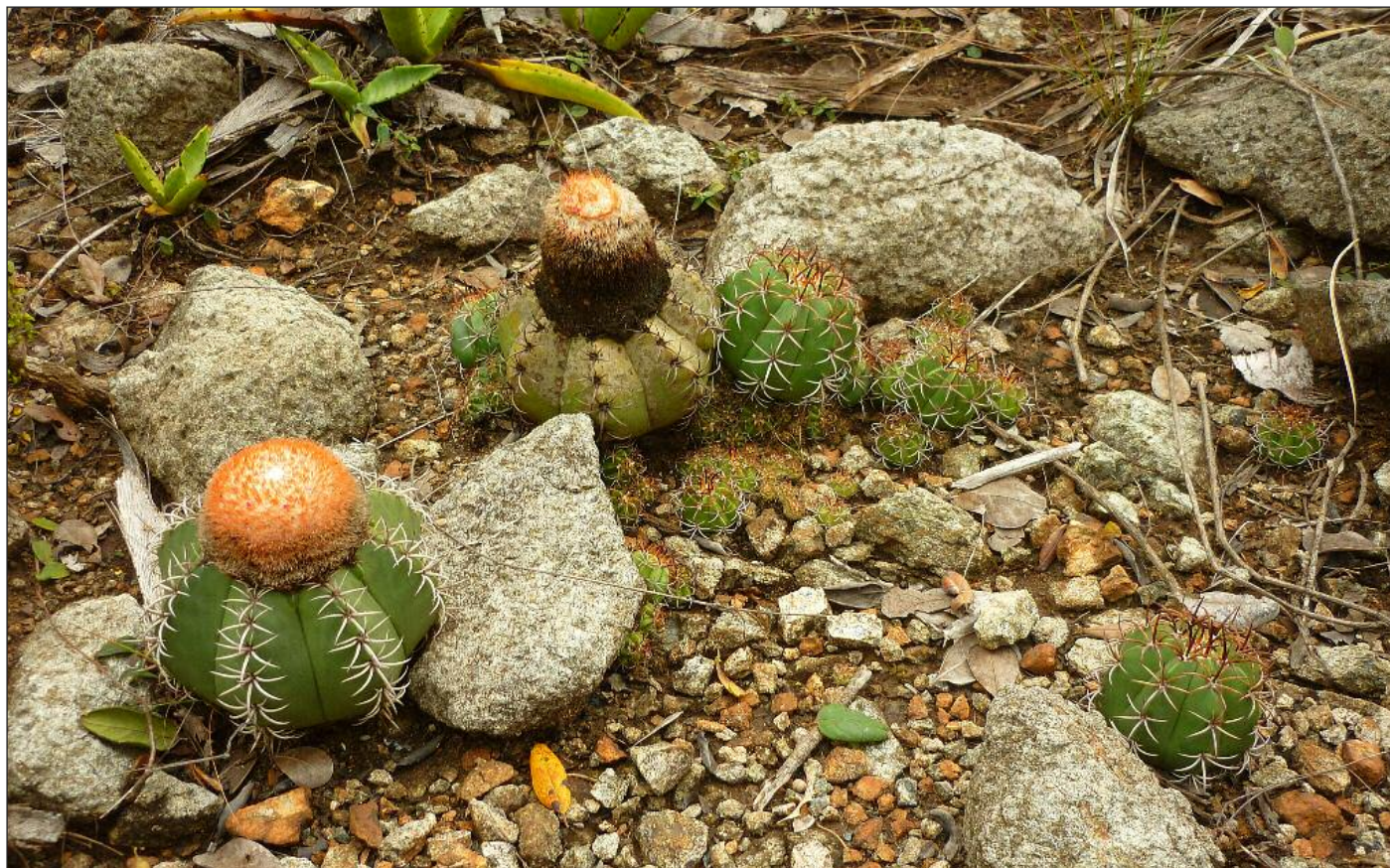


Fig.1 An old *Melocactus matanzanus* with a tall cephalium and productive progeny.



Fig.2 View of the bridge of Bacunayagua from the Valley of the Yumuri.



Fig.3 Young plant of *Melocactus matanzanus* in habitat.

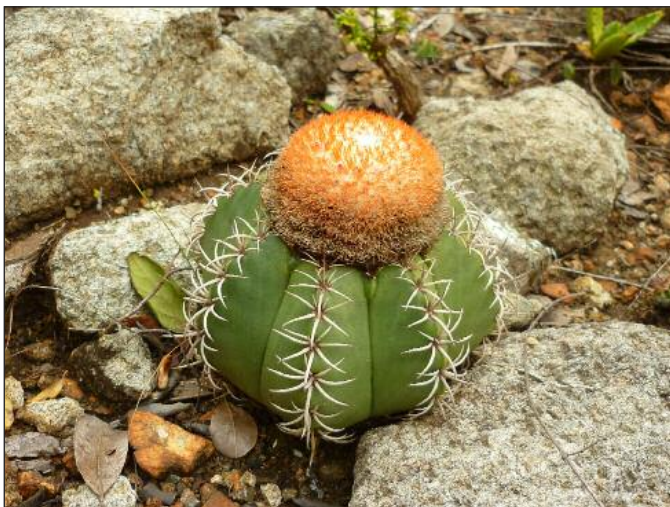


Fig.4 Healthy mature cactus with multiple flowers ready to open



Fig.5 In its natural area *Melocactus matanzanus* can increase the number of ribs and enlarge its diameter.

locality of this beautiful 'melo'. Cuabal means dense, impenetrable scrub, and refers to the vegetable formation of thorny xeromorphic scrub on serpentine.



Fig.6 Maikel Pérez next to *Melocactus matanzanus* and juvenile of *Agave legrelliana* under the shade of *Coccothrinax miraguama* subsp. *roseocarpa*.

M. matanzanus is small in comparison with other related species. It takes between 5 and 7 years to produce a cephalium of dense bristles, of orange to reddish colour on a base of white wool. The cephalium is 8cm in diameter and 5cm high.

The central spine is generally absent in juvenile plants and it begins to appear singly when the cactus approaches its sexual maturity, first on the areoles of the apex that then move



Fig.7 The endemic *Mesechites roseus* (A. AD.) Miers (Apocynaceae) in flower. It grows in the surroundings of the serpentine hills.



Fig.8 Following the recovery of the habitat, some cacti have died or they show fire burns. Colony 2.



Fig.9 It is common that some young melocacti germinate under the protection of older plants.



Fig.10 A small *Agave legrelliana* growing in rocky ground next to this beautiful melocactus in Tres Ceibas de Clavellinas.

during the successive growth of the plant. The lack of central spines makes that the juvenile *Melocactus matanzanus* look identical to *M. actinacanthus*. It is worth emphasizing that in contrast there are juveniles of *M. actinacanthus* with central spines that disappear during ageing. At the present time many authors consider that they are the same species.

It is an easy cactus to cultivate. Within 5 or 6 months of being harvested, the seeds have a viability of 95% by any means of germination. *M. matanzanus* generally rests in the dry period, although there is a report of plants that flourish and produce fruits during the whole year, as much in habitat as in cultivation. Mature plants can continue increasing the number of ribs that can arrive at 11 or more. Grafting can accelerate their development and then they reach maturity in 3 or 4 years.

At its geographic location *M. matanzanus* survives minimum temperatures of 15°C in the winter nights (the dry period in Cuba). They don't seem to be affected by the abundant precipitation in summer (the humid period) when an average of 1400–1800mm annual rainfall is reported for that area (Borhidi, 1970).

Brief History

For a long time *Melocactus matanzanus* was a cactus not studied, almost unknown in the botanical records, according to Ríha (1971) it was the most frequent of the Cuban melocacti, however, already he thought that, due to their small population in a restricted area, *M. matanzanus* could disappear from fortuitous causes (Borhidi & Muñiz, 1970).

The beginning of the decade of the '80s is when big problems begin for this species. Although it was a signal for the loss of their



Fig.11 In this family group it is possible to observe the absence of the characteristic central spine in the juveniles that later grow in adulthood.



Fig.12 This view in the zone includes colony 4 of *Melocactus matanzanus* with its associated vegetation recovered in Tres Ceibas de Clavellinas.



Fig.13 The minuscule *Borreria eritrichoides* C. former Wright Griseb (Rubiacea) prefers the most exposed rocky places in the sun.

habitat, in this time before the economic peak, the cuabal Las Tres Ceibas de Clavellinas suffered a clearance for a plan of afforestation with *Pinus caribaea* Morelet. It was in 1983 that a fire affected the populated colony, the massive extraction of plants for national and foreign collectors decimated them at their habitat. By the middle of this decade the total number of *M. matanzanus* was of 576 and just 21 mature plants (Sosa, 1989).

At the end of the '80s the first steps were taken intended to count and to reinforce the populations of *M. matanzanus*, by the Group Juan Tomas Roig Nature Friends and an Agriculture Ministry initiative. Several collectors participated in that project for re-introducing cacti. The most important at that moment was the combination of specialists, fans and residents to create a plan to instigate the cultivation of *M. matanzanus* ex-situ and their later re-introduction. This project also carried out a very serious study on the main threats and gave proposal keys for the conservation of the cuabal, alerting the error of clearing the habitat for forest plans, the danger of the fires and to warn about the limitless collected with a commercial purpose (Sosa, 1989).

The carried out work had an initial success with invaluable statistical compilation, the high level of survival in a dozen sowings of *M. matanzanus* that endorse the effort and dedication. As for conservation, it would be one of the most important and unpublished projects carried out at national level with 4444



Fig.14 Forestry area with *Pinus caribaea* burnt by the fire.

introduced plants and a positive experience regarding environmental education.

Regrettably, the well-known economic crisis as Special Period stopped everything for lack of resources in 1993. The conservationist group informed the municipal government of this situation by means of a document that included all the details of the carried out work and they suggested that the recently founded Company for Flora and Fauna Protection should take charge of continuing with the conservation and cactus introduction (Sosa, pers.com.).

In 1994 the Ministry of Agriculture and several specialists proposed a plan directed to conserve species of restricted character, to maintain the biodiversity and to preserve the ecosystems. In Las Tres Ceibas de Clavellinas combined areas of cuabal and plantations of *P. caribaea* were assigned, only 158 hectares that included *M. matanzanus*. Among other areas dedicated for study, investigation and recreation (Rodríguez *et al.*, 1994).

At the end of the decade of the '90s is considered a decrease of the size and quality of the original habitat with just 3 very reduced colonies of *M. matanzanus*, 1150 in total, the losses include some of the melocactus introduced during the last years. The forest activity and the inadequate handling of the species and the habitat are the factors that lead to the cuabal Las Tres Ceibas de Clavellinas to a critical situation; for that moment a re-evaluation of the conservation status of *M. matanzanus* becomes critically endangered. According to Robledo (1999) it was ruled that



Fig.15 Imposing *Copernicia macroglossa* has recovered its natural space.

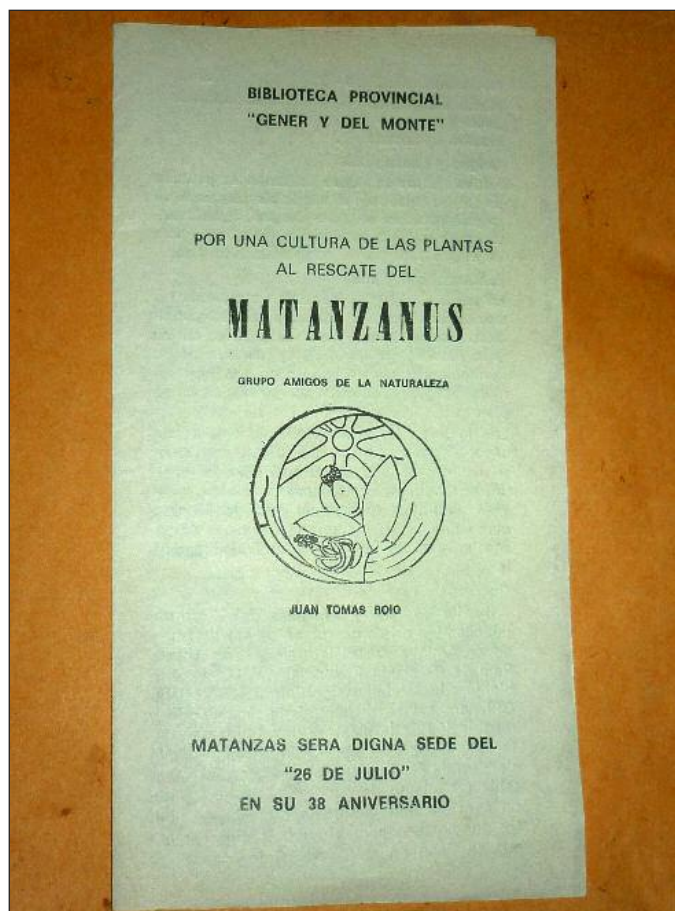


Fig.16 Pamphlet that summarizes the work of re-introduction of *Melocactus matanzanus* in its habitat.

the decrease in the number of individuals of *M. matanzanus* was primarily caused was by forest activity that produced abrupt changes in the ecosystem.

The investigative works of Lenia Robledo and their team of the University of Matanzas point in the first years of the XXI century to concrete measures that comprise a plan for handling the area and the conservation of *M. matanzanus*. Without abandoning the activities of protection of *P. caribaea*, the measures of conservation of the species of the plant formation of the cuabal are intensified. Count, monitored, handling of *M. matanzanus* and several suggestions regarding the undue use of technical forest, control of disease or improvement of fences and trails with native plants such as *Agave legrelliana* Jacobi. It is the influential approach of several personalities of the botanical world such as Ángela Leiva, in that time director of the National Botanical Garden, recently deceased (Robledo, pers. com.).

The Plan included government actions to accumulate more knowledge of *M. matanzanus*



Fig.17 Winter view of serpentine rock hills in the cuabal Tres Ceibas de Clavellinas, habitat of *Melocactus matanzanus*.

and its protection. To the technical personnel in the areas qualified him or her according to the specific handling requirements for *M.matanzanus* and the cuabal in general. The conservation and ex-situ reproduction was instigated. In 2004 two new colonies of *M. matanzanus* were located. The management actions in one of them, colony 5, are based on the natural recovery of the species; without re-introductions or modifications. A total of 1687 melocactus were counted (Robledo *et al.*, 2005).

The investigators also detected sick cacti with *Corynebacterium*. Intense work existed at that time with the reproduction in-vitro of *M. matanzanus* for reintroduced in habitat. After all, the number of individuals increased successfully, but there were problems detected over the course of the years, of malformations for the undue use of phytohormones in cultivation. Later gave way that method, at the moment the Cuban specialists in conservation dissuade the cactus development by means of phytohormones and they promote the cultivation ex-situ in common germination substrate preferably with habitat seeds.

In 2006, the workers of the Biological Station, created for conservation purposes and protection of the cuabal, take charge of removing the invasive plants and they protect the habitat of 385 hectares (Rygorsky *et al.*, 2007). The recovery, although slow, was already

evident, the indigenous plant formations gaining space.

The Trip

After the event of the IOS meeting had taken place in Cuba in July 2012, I had knowledge that a group of companions had visited the cuabal Las Tres Ceibas de Clavellinas; among them a Cuban collector who had visited the habitat in other occasions. He declared to me that there were almost no plants and that a guide of the protected area showed him the only mature melocactus. It also discouraged me from going because the area was almost inaccessible.

At the beginning of the year 2014 I decided not to defer my trip any more. I live in Havana that is relatively near to Las tres Ceibas de Clavellinas, and encouraged by Johan, a friend and collector, we decide to visit the habitat of *Melocactus matanzanus* and to see what was there for certain.

We approached the cuabales from the town of New Corral, located to the south of our objective. The bad information of how to get there made us return to the whole system of hills of serpentine toward the west. Everything was very damaged, covered with invasive plants and bovine livestock strolling. We crossed a labyrinth of roads the whole day that took us to the underside of the famous Bridge



Fig.18 The author at the entrance to the habitat of the protected *Melocactus matanzanus*.

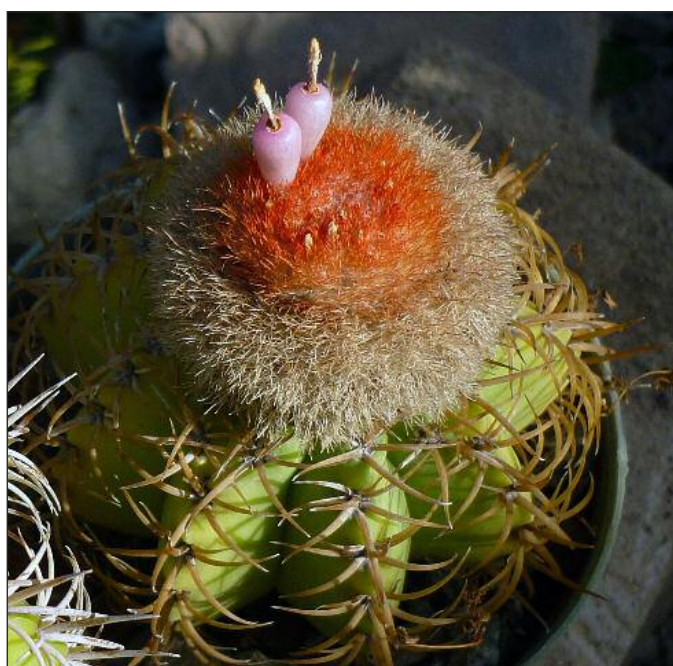


Fig.19 *Melocactus matanzanus* with fruits. Collection Lisvanys García. Ranchuelo, province Villa Clara.

of Bacunayagua. Thanks to a villager that invited us to eat lunch in their house, he informed us that we were far from the route to our destination. So like it was already late we return to Havana.

That same week and in the company of Amy, wife of Johan, and partner in our adventures, we repeated the expedition to Las Tres Ceibas de Clavellinas. We were on the freeway that leads from Havana to Matanzas. A couple of kilometers after crossing the Bridge of Bacunayagua a sign indicated a route to the right toward Corral Nuevo, exactly in 81 kilometers. We were travelling until the end of the same one, turning to the right is the



Fig.20 *Melocactus matanzanus* grafted on *Acanthocereus tetragonus*. Collection Salvador Arjona, Bayamo, province Granma.



Fig.21 Excellent *Melocactus matanzanus* with flowers and fruits, property of Rusbel de la Cruz. Holguin.

entrance of the Flora managed reserve Las Tres Ceibas de Clavellinas, that simply you arrive to the habitat of *M.matanzanus*. Although the road to the same cuabal is hard for a common vehicle, to walking enthusiastically it is not difficult and having been entertained by the variety of birds and butterflies that populate the Pine groves and groves, enjoyed with the diversity of endemism botanicals and, without 'understanding', because they recommended an impossible trip.

We arrive this way and we could request permission for 2 days more. It is sometimes complex to visit areas protected in Cuba. But it is the surest form, because a guide guarantees the access and the journey, at the same time they look after the security of the plants and the habitat.



Fig.22 The cuabales seen from the Bacunayagua bridge, to the right Pan de Matanzas, the highest elevation in that province.



Fig. 23 Lázaro (on right), helps the guide to restore a sign.

My trip partners were not available that day so in company of Maikel, another friend, I could complete a dream. A cold front had just entered fortunately and the wind of the north made the visit pleasant. Among these hills there are hardly paths and to cross the thorny hill under the heat of the tropical sun is an arduous task.

M. matanzanus grows at the summit of these hills and in the illuminated hillsides guided to the south. The six current colonies of *M. matanzanus* are distributed at several elevations. We visited the colonies 2, 3, 4 and 5, very taken care and signed, examples of the good conservation work carried out, all with dozens



Fig.24 The rustic posters that signal and warn the visitors they are in the whole area.

or hundreds of individuals in various periods of life. (Contrary to what we were told, there are many adults). Some young ones have grown under nurse plants, the endemic *Agave legrelliana*, *Coccothrinax miraguama* (Kunth) Becc. subsp. *roseocarpa* (León) Borhidi & O. Muñiz and mature *M. matanzanus*. Others grow among fissures of the rocks or beside trunks of several bushes. There are some melocactus with scars from fire burns. In the whole environment the recovery of the damage is denoted by the fire that made havoc 2 years ago. It is pleasant to see examples of the indigenous flora taking their place. It is necessary to highlight that the sixth colony arose spontaneous in a cleared area



Fig.25 Melocactus matanzanus of colony 1.



Fig.27 Lázaro Zardiñas admires this beautiful cactus.

that didn't end up being forested (Robledo, pers. com.).

According Mateo, our guide, the protected area is administered by the Forest Company and the Company for Flora and Fauna Protection in charge of the handling, use and protection of the available resources besides eliminating the invasive plants that try to settle, all this in spite of the low wages and bad work conditions. It was a pleasure to walk among these emblematic cacti and of course to



Fig.26 The next generation in preparation.



Fig.28 Young Melocactus in colony 1, observe the absence of a central spine.

photograph them in their habitat.

In June of 2016 I repeated the trip in the company of Lázaro Zardiñas, collector that contributed to spread seeds of *M matanzanus* in their natural habitat in past years. This time guided by Carlos, administrator and boss of the protected area, we visit the colony 1. This colony shows reintroduced cacti of several ages, the adults with fruits guarantee the next generations. Carlos tells us that the re-introduction was made because a fire destroyed everything, including the original melocactus colony 1; the earth burned it was roasted and the exposed serpentine rock melted the shoes, the fire's flames ascended dozens of meters, an entire hell.

Our guide witnessed that fire and fought to extinguish it. When looking around we feel pride seeing the re-established vegetation, protected by anti-fire breaks and surveillance towers. We also discovered the existence of a

seventh colony that like number 6 arose spontaneously and it is outside the protected area. Is it possible that these colonies always existed aided by the density of the cuabal, or that they are a result of the introduction of seeds by the conservationists years earlier. Maybe my friend Lázaro helped this, because he accessed the Tres Ceibas to the south, from Corral Nuevo town, a road that is inaccessible now. As it is, the significance is that there are more *Melocactus matanzanus* and the possibility of finding more colonies.

Epilogue

At the moment habitat loss exists in almost all the plant formations where cacti grow in Cuba. There are conservation strategies for several of these species and the government will with a view to the protection of the areas in their diverse variants. But the works are insufficient; they collide with the interests of growth and development from the near human populations to these areas. The insufficient information and study limit the specialists in the tasks directed to the environmental education, conservation plans and handling of the threatened species.

What happened to *Melocactus matanzanus* could be repeated to a great extent with other cactus species, with great taxa's diversity and habitats. It should not be expected that many of these are hopelessly damaged to execute preset actions that have demonstrated success in the restoration of half ambient of interest.

These and other matters were in the Cuban 20 Workshop of Conservation of Cactus, taking place in May of 2015. This event sponsored by several ONG's, united specialists and enthusiasts, it is part of the Cuban program of Conservation of Cactus and it is coordinated by the National Botanical Garden Conservation Group and the Cuban Society of Botany. One of the premises of this encounter was that for the viability of the cactus populations it is indispensable the effort in the conservation of their habitats, *M. matanzanus* in Las Tres Ceibas de Clavellinas is an example of it.

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Fig.22 The cuabales seen from the Bacunayagua bridge, to the right Pan de Matanzas, the highest elevation in that province.

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OPUNTIA GILVESCENS, A FORGOTTEN TAXON

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Introduction

Opuntia gilvescens was described by David Griffiths (1909) over 100 years ago (Figure 7). It is not an overly abundant plant, but it is distinctive and not rare. It has a large range. We have observed *O. gilvescens* in south-central and western Oklahoma, southern Colorado, central and western Texas, southern and central New Mexico, much of Arizona, southwestern Utah, southern Nevada, and far eastern California. In Mexico, *O. gilvescens* occurs in Sonora, Chihuahua, Coahuila, and apparently Durango and Zacatecas. It is often found on rocky soils, from 3,000 to 5,000ft, but it can be found in deeper soils and at lower elevations. The type locality is in "the foothills of the Santa Rita Mountains, AZ."

Description and Biology

O. gilvescens is frequently confused with *O. phaeacantha* because both are smaller opuntias. Unlike *O. phaeacantha*, *O. gilvescens* is often a symmetrical plant (Figure 1). Mature plants are typically about one meter in diameter or sometimes larger and partially ascending. The cladodes are larger and stiffer than those of *O. phaeacantha*. Cladodes on the main branches rest on edge on the ground but, unlike those of *O. phaeacantha*, secondary branches rise to 22 inches tall (exceptionally to 36 inches). The plants are closely branched and generally do not sprawl as *O. phaeacantha* does. The branches are stiff with woody support tissue, and they are not easily bendable even when dehydrated.

Mature cladodes are about 5–8 inches long, 5–7 inches wide and half-an-inch thick. The cladodes are obovate or nearly orbicular (Figure 2). First year cladodes are glaucous green or greyish-green and can lighten by the second year. In winter, some plants become lilac-purple or pink and often have slightly concave pads (Figures 1, 3).

Glochids are typically straw-coloured to dirty yellow, or sometimes darker golden brown to red-brown, typically darker with age. On younger pads they are one-eighth to a quarter inches long, neatly and evenly arranged in the areoles, often with a central clump and a surrounding ring of glochids that are slightly different in length but there is always a greater amount on the adaxial side. On older cladodes, glochids may be up to half an inch long, and become less regular in arrangement (particularly on edge areoles), with new glochids produced from the center, often producing concentric rings surrounding the entire areole.

Areoles on first-year cladodes may have no spines or up to four major ones, but two is common, often only upper areoles. The spine tips are translucent. On first-year cladodes with two major spines, both may be erect and one or both may be dark. Often both are white. Over time the spines become retrorse, but the major one may remain erect (Figure 4). A few much smaller spines (ca. a quarter inch) may also be present. Older spines are usually chalky white, but some populations have yellowish or darker brownish spines.



Fig.1 *Opuntia gilvescens* mature plant in winter, Kingman, AZ



Fig.2 *Opuntia gilvescens*, Kingman, AZ



Fig.3 *Opuntia gilvescens* lilac pads in winter, Belen, NM



Fig.4 *Opuntia gilvescens* cladode, near Bagdad, AZ

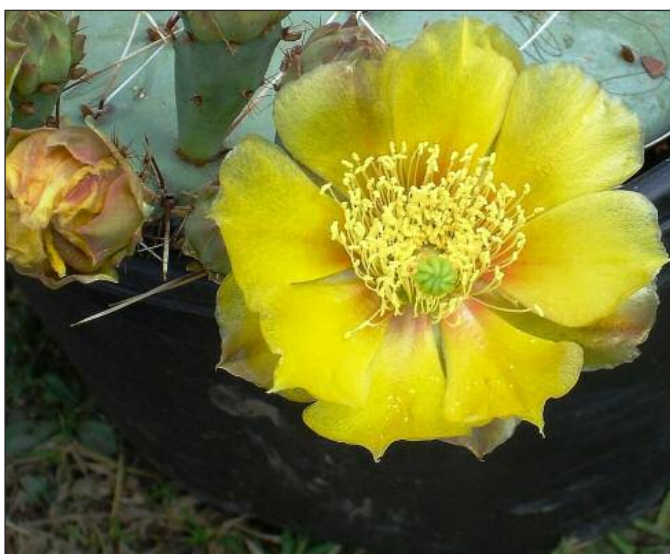


Fig.5 *Opuntia gilvescens* flower, Albuquerque, NM



Fig.6 *Opuntia gilvescens* unripe fruit, Albuquerque, NM

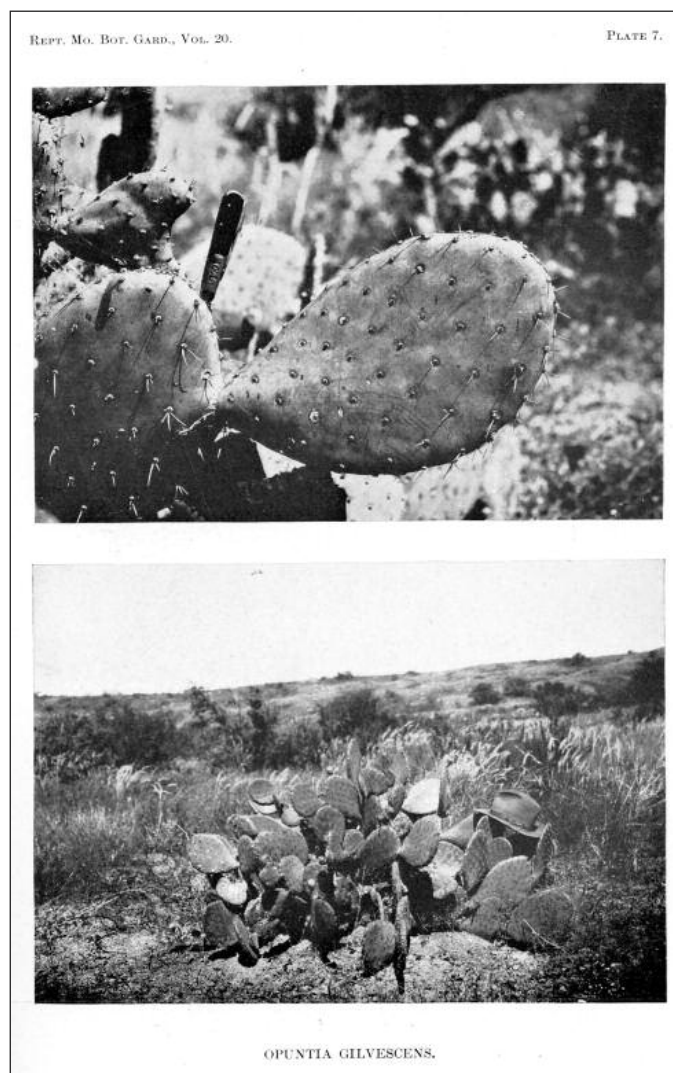


Fig.7 The illustrations of *O. gilvescens* that accompanied the first description by D. Griffiths in *Report of the Missouri Botanical Garden* 20: 87 (1909).

Typically, the longer of the two spines is approximately one inch long on young cladodes but may be nearly two inches on older cladodes. Some populations contain plants with longer spines up to two inches, even on newer cladodes, but this is not common.

Flowers are normally pure yellow or with a hint of red at the base of the inner tepals (Figure 5). Some populations in southeastern Utah and adjacent Arizona contain individuals with orange or pink flowers. The stigmas are green, pale-green, or even pale-yellow-green, and the style is creamy white. Kurtz (1948) reported that the pollen of *O. gilvescens* is about 130 μ m in diameter with up to 30 faces and about 15 μ m wider than the pollen of *O. phaeacantha*. Fruits often do not have a pronounced narrowing at the base and may

even have rounded bases. On some plants, fruits may be barrel-shaped or even subspherical (Figure 6). Fruits have more areoles than *O. phaeacantha*, and they are small with tight clumps of inconspicuous glochids. The ripe fruit is typically red to deep purplish, but may be pink or pink-green, and may even be mottled. The rind is usually light-green. Seeds are about three eighths of an inch in diameter with an additional 1/16 or 1/8 inch rim.

O. gilvescens is easily observed in the field as a plant constantly distinct from *O. phaeacantha*. Though *Opuntia* species are often plastic in their appearance, *O. gilvescens* has certain features (e.g., vertical branching; larger size; more woody structure; obovate or suborbicular cladodes; more areoles on the cladodes, ovaries and fruit; spines fewer and shorter; fruit typically without a pronounced narrowing/stipe at the base) almost always present. These characteristics collectively distinguish it from *O. phaeacantha*. *O. gilvescens* is hexaploid (Powell & Weedon, 2001; Ferguson, unpublished data).

O. gilvescens is an adaptable garden plant and forms from higher latitudes or altitudes are easily cold hardy to -15°F, especially if dry. The plants bloom easily and make an attractive, compact garden plant.

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HISTORICAL RECORDS OF THE RANGE OF **OPUNTIA FRAGILIS**

Root Gorelick reviews the recorded distribution of one of the most widespread and northerly distributed of all cacti.

The diminutive brittle prickly pear, *Opuntia fragilis* Haw., has one of the largest native ranges of any cactus, extending south to Arizona and west to islands in the Puget Sound and Strait of Georgia (Benson, 1982; Cota-Sánchez, 2002). Even more remarkable are that *O. fragilis* is found as far east as Ontario on islands in Lake of the Woods and as far north as the Peace River Valley in northern British Columbia and Alberta (Benson, 1982; Gorelick, 2015). A 1500km vicariant range extension to Kaladar, Ontario is also well-documented, but is probably an introduction by humans (Staniforth & Frego, 2000; Hancock, Darbyshire & Huntley, 2005).

My purpose here is to highlight that the northern range limit to the Peace River, the eastern range limit to Lake of the Woods, and the northwestern range limit to the Strait of Georgia have been documented for 130 years. While John Macoun (1883) mistook *Opuntia fragilis* for *O. polyacantha* Haw., which he called *O. missouriensis* DC. (the former name has priority), these two species are morphologically very similar, especially in colder climates where *O. polyacantha* tends to have smaller cladodes. These two species also hybridize in southern British Columbia as *O. x columbiana* Griffiths.

Regarding the northern range limit, Macoun (1883: 178) wrote:

A species which I believe to be the same, reappears again on the north bank of the Peace River, Lat. 56° 12', where it grows on the arid clay slopes, exposed often to a temperature of 55° below zero. It is found from Fort St. John to 50 miles below Dunvegan, or a distance of 150 miles.

This is remarkably close to the current northern range limit of the Cactaceae, at Fort St. John, at 56°17' N. Herbarium records exist for *Opuntia fragilis* at both Fort St. John, British Columbia and Dunvegan, Alberta (Gorelick, 2015). The range of this species extends 70km farther downstream (east-north-east) of Dunvegan to the eponymous town of Peace River, Alberta. It is not certain how recent this downstream range extension is, but the earliest herbarium specimen from the town of Peace River is from 1941, although there are herbarium records from almost 50km upstream on the Smokey River dating to 1903 (Gorelick, 2015). Moreover, *O. fragilis* is known to be able to survive movement by flooding rivers (Frego & Staniforth, 1985) hence its appearance in the town of Peace River is not surprising. Furthermore, fifty miles south of ("below") Dunvegan are the Kleskun Hills, from which herbarium specimens exist (Gorelick, 2015). Just south of the Kleskun Hills, near the town of Grand Prairie, the Peace River Grasslands end, being replaced by forests (Schmidt, Sperling & Macauley, 2014), hence the Peace River Valley population of *O. fragilis* is disjunct (Gorelick, 2015). *Opuntia fragilis* is very much a grassland species.

Macoun (1886) documented the eastern range of *Opuntia fragilis* at Lake of the Woods, in Ontario, near the Minnesota border at the only part of the continental United States north of the 49th parallel (due to an error at the end of the War of 1812, where negotiators mistakenly believed that Lake of the Woods was the headwaters of the Mississippi River). Macoun (1886: 532) wrote about *O. fragilis*:

Not uncommon on dry rocky islands in the Lake of the Woods, 1884. (A.G. Lawson.). This

then must be the plant referred to by Sir John Richardson as the 'prickly pear,' but which has not been detected within the last half century.

In the same passage, Macoun (1886) also documents the northwestern range of this species as extending to Hernando Island, in the Strait of Georgia. The northwestern-most herbarium record that I have found from the Strait of Georgia (no herbarium records exist for this species in Vancouver Island proper) was just a few kilometers north and west of Hernando Island, on Mitlenatch Island (Gorelick, 2015).

Overall, the range of *Opuntia fragilis* has not changed much in the past 130 years and/or we have not learned much more about its range in the intervening 130 years. This should give us confidence in future studies documenting range shifts in this species, especially as climate changes.

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TAXING TAXONOMIES: A COMPARISON OF THE VIEWS OF DAVID HUNT AND JOËL LODÉ

Recent authors have taken different standpoints regarding the number of genera and species they have accepted. The resulting alternative names for plants causes confusion. Will we ever achieve stability? Graham Evans has analysed the treatments in the *New Cactus Lexicon* and *Taxonomy of the Cactaceae*. The choice is yours.

Download the [Comparison](#)

For the first time in many a decade, there are currently two readily available taxonomic classifications of the Cactaceae, with *The New Cactus Lexicon* (NCL), edited by David Hunt, Nigel Taylor and Graham Charles, and Joel Lode's *Taxonomy of the Cactaceae* (TC) having very different views. Actually, it could be said there are three or even four if Edward

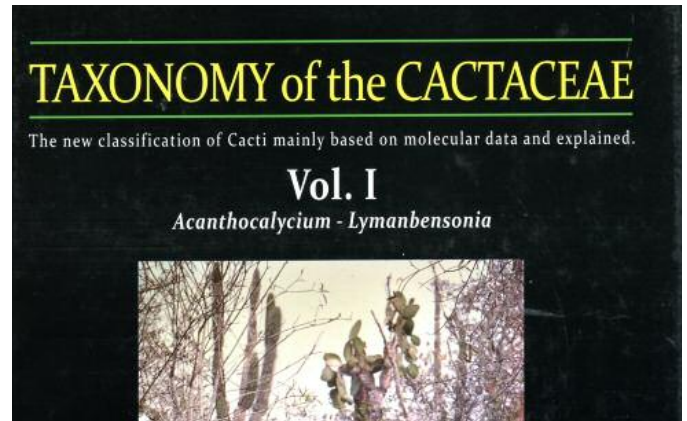
Anderson's *The Cactus Family* and Urs Eggli's German revision, *Das große Kakteen-Lexikon*, are taken into account but, although Eggli made a few significant changes, these works are based on the deliberations of the International Cactaceae Systematics Group and are essentially precursors to the similarly based NCL.



In simplistic terms, it could be said NCL adopts a 'lumping' philosophy while TC takes more of a 'splitting' approach. It is, however, probably pragmatic to say that NCL is based more on morphology and TC on DNA or molecular studies, with both principal authors perhaps using these methodologies to support their 'lumping' or 'splitting' mentalities. TC is the later work, published in 2015, while NCL dates back to 2006. During the intervening years many molecular surveys have been undertaken but David Hunt has kept us updated on his views via his ongoing *Cactaceae Systematics Initiatives* (CSI) journal, a second edition of the NCL's illustrations atlas (2013) and most recently the third edition of the *CITES Cactaceae Checklist* (CCC3), published online in 2016.

When CCC3 became available, I thought it would be interesting to fully compare the respective taxonomies of Hunt and Lodé, partly for its own sake as a learning experience but also perhaps with a view to re-labelling my collection and offering extracts of the result as handouts at some of my talks. So, as winter set in, my plants became dormant and the whirl of cactus-related events slowed to a standstill, I set about producing in tabular form summaries of the two classifications.

I thought this would be fairly straightforward until I realised there were significant inconsistencies and omissions in both Lodé's synonyms index and CCC3. For Lodé, I made the simple decision that I would accept the text of the two volumes over the separate index but for Hunt the situation was less clear because there were several sources of reference. Hunt has also adopted a system of 'preferred' and 'alternative' names, where those of choice tend



to be the larger generic concepts but smaller units with strong molecular support are accepted as alternatively valid, eg *Echinopsis* is preferred but *Acanthocalycium*, *Chamaecereus*, *Leucostele*, *Lobivia*, *Setiechinopsis*, *Soehrensia* and *Trichocereus* are considered justifiable (based on the 2012 analysis of Schlumpberger and Renner). There are, however, discrepancies between the genera accepted as 'alternative' in Hunt's various generic listings and the specific names presented in CCC3. There are also accepted genera, including *Oreocereus* and *Oroya*, that are presumably accidentally omitted, while other names accepted by Lodé, such as *Neoporteria*, are ignored completely. I have had, therefore, to make occasional editorial choices, normally relying on CSI as the most authoritative source but taking the most recent publication where this failed.

Having completed the two tables of accepted names, I then created a spreadsheet to compare the views of the two authors in respect of each genus and species retained by either or both of them. This is presented here, without further comment (other than to say I do not agree 100% with either classification) for your interest and perhaps to stimulate debate. *The New Cactus Lexicon* and *Taxonomy of the Cactaceae* are both available from Keith Larkin (www.keithscactusbooks.co.uk) and subscriptions to *Cactaceae Systematics Initiatives* can be purchased from David Hunt (dh@newcactuslexicon.org).

Who knows, if my taxo-masochistic tendencies do not subside, I may next attempt a listing of synonyms not accepted by either party ...

[Graham Evans](#)

DOWNLOAD Graham's Comparison
[HERE](#)

GYMNOCALYCIUM PONOMAREVAE GAPON ET NEUHUBER – A NEW SPECIES FROM THE SIERRA DE ANCASTI

Gymnocalycium ponomarevae Gapon et Neuhuber is described in this article as a new species. It differs from the *G. baldianum* (Spegazzini) Spegazzini by the red-pink colour of the flowers and its style position, it has more ribs, more spines, a larger receptacle and ovary. It grows at lower altitudes than *G. baldianum*. It differs from *G. baldianum* var. *albiflorum* Bercht by having more ribs and radial spines, flower colour and a smaller ovary.

It grows west of Villa El Alto, Province Catamarca, Argentina, at altitudes of 1050–1250m above sea level.

Photographs by Victor Gapon except where stated.

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Gert Neuhuber, neuhuber@gymnocalycium.info

The routes of the authors' journeys of around Argentina in different years ran through the Sierra de Ancasti in the province of Catamarca with its peculiar cactus flora. The particular interest (among others) to us was the species *Gymnocalycium baldianum* (Spegazzini) Spegazzini, so popular among cactus fans for its red flowers. It is easier just to climb to the ridge from the East, from

the province of Santiago del Estero. If all goes according to plan, and you never get lost, then in the evening you can reach the provincial capital – San Fernando del Valle de Catamarca [Figs. 1–2].

The cactus flora on the east slopes of the Sierra de Ancasti is represented by *Cleistocactus baumannii* Lem.; *C. smaragdiflorus* Britton & Rose; *Lobivia*



Figure 1. Google map of part of Catamarca Province with the eastern part of the Sierra de Ancasti.



Figure 2: Road to the top of Sierra de Ancasti in the direction of Tintigasta.



Figure 4: *Gymnocalycium saglionis* var. *australe* VG-1331.



Figure 3: *Cleistocactus baumannii* VG-1331, El Cañada 487m.



Figure 5: *Acanthocalycium klimpelianum* var. *macranthum* VG-1332, El Mojon at 698m



Figure 6: *Opuntia elata* VG-1272, El Alto, 960m



Figure 7. *Cleistocactus smaragdiflorus* VG-1272.



Figure 8. *Parodia microsperma* ssp. *sanguiniflora* var. *alijilanensis* VG -573, El Desmorte, 1013m.
Photograph: N. Ponomareva.



Figure 9. *Lobivia aurea* var. *dobeana* VG-1273, Iloga, 1148m



Figure 10. *Gymnocalycium baldianum* aff. VG-988, Vilisman, 1157m. Photograph: N. Schelkunova



Figure 11. *Gymnocalycium baldianum* aff. VG-988, Vilisman, 1157m. Photograph: N. Ponomareva.



Figure 12. *Gymnocalycium baldianum* aff. VG-988, Vilisman, 1157m.



Figure 13. *Gymnocalycium baldianum* aff. VG-1273



Figure 14. *Gymnocalycium baldianum* aff. VG-1273



Figure 15. *Gymnocalycium baldianum* aff. VG-1273
Photograph: N. Ponomareva.



Figure 16. *Gymnocalycium baldianum* var. *albiflorum* VG -573



Figure 17. *Gymnocalycium baldianum* VG-559, El Portezuelo, 1699m. Photograph by N. Schelkunova.



Figure 18. *Gymnocalycium ponomarevae* VG-988 in culture.



Figure 19. *Gymnocalycium ponomarevae* has 16–20 ribs. Photograph: GN-1083, El Alto, 1080m.

Photograph: G. Neuhuber



Figure 20. *Gymnocalycium ponomarevae* VG-988, plants have 7–11 spines.



Figure 21. Wintering specimen of *Gymnocalycium ponomarevae* VG-988 with central spine.



Figure 22. Four-year-old seedling of *Gymnocalycium ponomarevae* VG-988.



Figure 23. Flower of *Gymnocalycium ponomarevae* VG-1273.

Table 1. Comparison of *G. ponomarevae* with related taxa.

Taxon	<i>G. baldianum</i>	<i>G. ponomarevae</i>	<i>G. baldianum</i> var. <i>albiflorum</i>	<i>G. × heidiaea</i>
Stem diameter	40–70mm	<60mm	<60mm	<100mm
Ribs	6–9	16–20	9–12	9–11
Radial spines	3–7	(7–)9(–11)	5–7	(5–)7(–9)
Central spines	0(–1)	0(–1)	0	0(–1)
Flower height	35–40mm	45–60mm	50–55mm	45–73mm
Flower colour	intensive purple	pale to saturated pink and red-pink	white with light-red throat	whitish, pale-pink to red, lilac
Ovary size	2.5–5mm x 2–4.5mm	9–13mm x 5–6mm	14–18mm x 6–7mm	10–20mm x 5–7mm
Altitude range	1100–2000m	1050–1250m	700–1150m	1000–1200m

aurea var. *dobeana* Rausch; *Parodia microsperma* ssp. *sanguiniflora* var. *alijilanensis* nom. prov.; *Acanthocalycium klimpelianum* var. *macranthum* J.G.Lamb.; *Opuntia ficus-indica* Mill.; *Opuntia quimilo* K.Schum.; *O. elata* Salm-Dyck; *Cereus peruvianus* Mill. and *Gymnocalycium saglionis* var. *australe* H.Till (subgenus *Microsemineum*) – see Figs.3–9. The first representatives of the subgenus *Gymnocalycium* seen in the triangle Villa El Alto – Vilisman – El Desmonte at altitudes of 1050–1250m, but the colour of their flowers is not red! [see Figs.10–15] *Gymnocalycium baldianum* var. *albiflorum* Bercht has been described from the same region, however, we found that the plants did not correspond to the description of *G. baldianum* var. *albiflorum*, and the area of this last mentioned taxon is to the North of El Alto [Fig.16]. We identified our findings as *Gymnocalycium baldianum* aff. but *gymnocalyciums* with pure red flowers (*G. baldianum* s.str.) on this road can only be found above 1300m [Fig.17], which correlates well with earlier

publications about the distribution of this species (Neuhuber & W. Till,1999).

Our findings can't be assigned to the species *G. baldianum*, because they have noticeably more ribs, as well as a different colour and structure of flowers – see Table 1 (above).

Other pretenders of the relationship to *G. baldianum* var. *albiflorum* should be considered. In 1998, H. Till and the second author of this article showed that this taxon does not belong to the complex of *G. baldianum* (H. Till & Neuhuber, 1998). And in the next year it was formally declared as a synonym of *G. rosae* H. Till (Neuhuber & W. Till, 1999). After that G. Charles regarded it as belonging to the *G. kieslingii* Ferrari complex (Charles, 2009). The study of the systematic position of this taxon is beyond the scope of this article. It is important for us that our finding can't be attributed to the taxon *G. baldianum* var. *albiflorum*, because this has fewer ribs and spines and a totally different colour of flowers.



Figure 24. Flower section of *Gymnocalycium ponomarevae* VG-988.



Figure 25–27. Variability of flower colour of *G. ponomarevae* from the same location (VG-988).



Figure 26. Flower of *G. ponomarevae*



Figure 27. Flower of *G. ponomarevae*



Figure 28. Seeds of *Gymnocalycium ponomarevae* VG-988, Photograph: V. Schädlich.



Figure 29. Natalia Ponomareva at work in Argentina.

Therefore, we propose to consider the plants we found as a separate species.

Gymnocalycium ponomarevae Gapon et Neuhuber **spec. nov.**

Typus: Argentina, Provincia Catamarca, prope Vilisman, 1157m s.m., leg. V. Gapon VG10-988/4547, 04.02.2010. **Holotypus:** WU (Inventar Nr. 4028, planta in liquore alcoholico); **Isotypus:** WU (Inventar Nr. 4029, 4030, flos in liquore alcoholico).

Diagnosis: Differs from *G. baldianum* (Spegazzini) Spegazzini by the red-pink colour of the flowers and the style position (the base of style is submerged into the ovary), it has more ribs, more spines, a larger receptacle and ovary. It grows at lower altitudes than *G. baldianum* and differs from *G. baldianum* var. *albiflorum* Bercht by more ribs and radial spines, the colour of the flowers and a smaller ovary.

Description: Body up to 60mm diam., flattened-globular, up to 20mm high from the soil level and with a sturdy taproot. *Epidermis* greyish-green. *Ribs* 16–20 (less on young plants), straight, up to 10mm wide at the base, 3–4mm high, divided into humps with small chins, separated by horizontal cross grooves. *Areoles* slightly deep to sitting up, with short white woolly felt, round to slightly elongated, up to 3mm long. *Spines* (7–)9(–11), thin, radiating sideways and down, usually slightly curved, creamy to white, the base is usually red to brownish, more or less equal in length, up to 10mm long; 0(–1) central spine. *Flowers* from areoles near the apex, funnel shaped, 45–60mm long and 35–45mm in diameter. *Perianth Segments* up to 25mm long, wide spatulate, pale pink to pink and red-



Figure 30. Goats – the No. 1 enemy of *Gymnocalycium ponomarevae* at the habitat VG-988, Photograph: N. Ponomareva.

pink at first, with carmine tints later, darker at the base, outer tepals with wide light olive-green-brownish middle stripe. *Pericarp* up to 30mm long, 8–10mm diameter, green, scales green, with light or pale-pinkish margins. *Filaments* pink, 1 row at the base, short, leaning onto the style, a further series inserted on the receptacle wall, in the top part curved towards the centre; *Anthers* yellowish. *Style* pink to intensive-pink; *Stigma* white with 7 (up to 10) stigma lobes, the base of the stigma is at the level of the second anther ring; *Ovary* white-walled, 9–13mm long, up to 6mm diam.; *Fruit* club-shaped, green when ripe, vertically opening; *Seeds* black, partially or completely covered with a dry brown skin (subgenus *Gymnocalycium*), HMR wide, from round to slightly drop shaped, recessed, the centre raised. [Figs.18–28].

Distribution: Argentina, Prov. Catamarca, west of El Alto, in the region between Vilisman and El Desmonte in the Sierra de Ancasti, 1050–1250m above sea level.

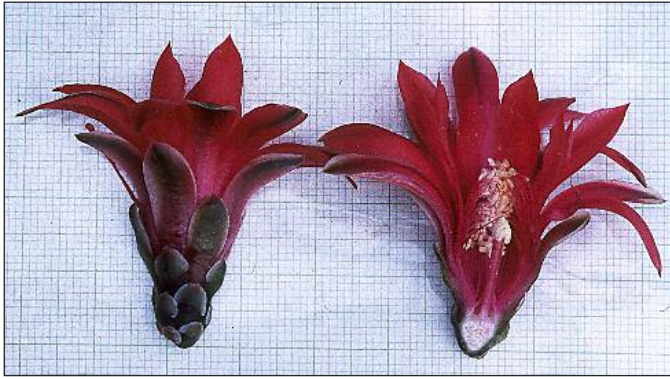


Figure 31. Flower section of *Gymnocalycium baldianum* GN-738. Photograph: G. Neuhuber

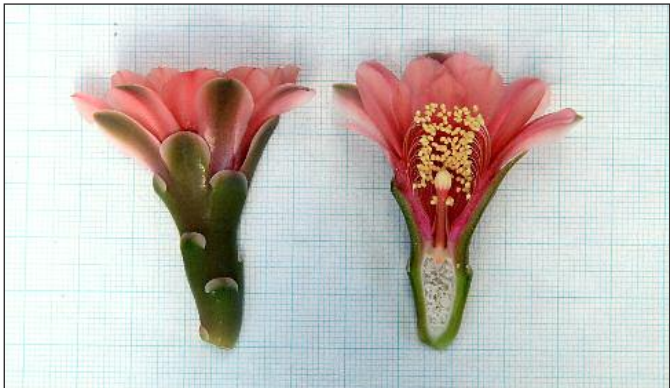


Figure 33. Flower section of *Gymnocalycium ponomarevae* GN-1031, El Desmonte, 1220m. Photograph by G. Neuhuber.



Figure 35. *Gymnocalycium baldianum* var. *albiflorum* VG -573 in culture.



Figure 32. Flower section of *Gymnocalycium ponomarevae* GN-1083. Photograph: G. Neuhuber



Figure 34. Flower section of *Gymnocalycium baldianum* var. *albiflorum* VG -573.



Figure 36. Comparison of *Gymnocalycium x heidiae* VG-1343 (left) and *Gymnocalycium ponomarevae* VG-988 (right).



Figure 37. Comparison of flower sections of *Gymnocalycium ponomarevae* VG-988 (left) and *Gymnocalycium x heidiae* VG-1343 (right).

Etymology: The new species is named in honour of Natalia Ponomareva (Moscow) – member of the 2012–2016 Russian expeditions to Argentina, Uruguay, Brazil and Bolivia, the wife of the first author. [Fig.29].

Conservation status: We observed plants of *G. ponomarevae* in a high-altitude zone to the west of El Alto about 10–13 kilometers in meridian direction. This is not an agricultural area, but local people use this district as a pasture of cattle [Fig.30] so it would be better to give it currently a Near Threatened (NT) status – likely to become endangered in the near future.

Comparative discussion.

G. ponomarevae differs from *G. baldianum* by red-pink (versus red-purple) colour of the flowers and the style position (the base of style is submerged into the ovary), has more ribs (16–20 versus 6–9), more spines (9–11 versus 5–7), a larger receptacle and ovary (9–13 x 5–6mm versus 2.5–5 x 2–4.5mm [Figs.31–33]. It grows at lower altitudes, 1050–1300m versus 1100–2000m for *G. baldianum*.

It differs from *G. baldianum* var. *albiflorum* Bercht by more ribs (16–20 versus 9–12), the colour of the flowers (red-pink versus white) and smaller ovary [Figs.34–35].

Perhaps *G. ponomarevae* has a hybrid origin and two of the mentioned species could be its ancestry. If so, we have to analyze a relationship of *G. ponomarevae* with *G. × heidia* Neuhuber & W. Till as

well. As you can see on table 1 and the flower sections [Fig. 36–37], they are totally different – the last one has a larger stem, a bigger flower and ovary, another colour of flower, less ribs and spines. Important also is an effective geological barrier between the areas of these taxa – two mountain ridges (Sierra de Ancasti and Sierra Graciana).

The authors express their gratitude to G. Charles (England), N. Schelkunova and N. Ponomareva (Moscow), L. Zaitseva (Chelyabinsk), V. Schädlich (Germany) for assistance in preparation of this work for publication; N. Gapon, S. Batov (Moscow) and S. Chikin (Perm) for participation in field studies.

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ELKO COUNTY, NEVADA, THROUGHOUT THE YEAR 2015

It must be a joy living close to where cacti grow naturally. One such place is Salt Lake City, Utah. **Article and Photographs by Petr Šimon.**

The area south of Wendover, Elko County, Nevada, USA, will be deeply engraved in my heart for many reasons. The first is very simple. I have only ever seen cacti in the US. The second reason is a great day I spent with Blake Wellard, a cactus specialist from the University of Utah, Salt Lake City. The third one, I visited this locality four times in the year 2015 with four different and incredible people (Fig.1).

My first visit was with Blake in late winter (February 8th, 2015). It was my very first trip to the desert, and we spent there the whole day. A couple of weeks before, Blake had found cacti

near Wendover, so we wanted to check nearby localities. We selected as many rocky places as possible in advance. At the first locations we visited we only found opuntias and bushes.

The next place we visited was south of Wendover close to the road 93. We found many opuntias (Fig.2) again and, to our surprise, the first escobarias. It was a very dry period of the year, and these plants were flattened and almost buried in soil. Even the adult plants were dry and smaller than usual, almost invisible from a distance. We even found dry fruits on these plants. Opuntias at this locality also appeared



Figure 1: Typical landscape at north-east Nevada.



Figure 2: Not very typical *Opuntia erinacea* in a very good shape.



Figure 3: Opuntias with usual shape and spination.

slightly different (Fig.3), both in shape and in spination.

Based on Blake's and his friend's knowledge, *Escobaria vivipara* should not grow here (Fig.4). The only described plants in this area are opuntias and *Pediocactus simpsonii*. However, we did not find any pedios.

Throughout the day, we searched for cacti across flat lands with sagebrush (*Artemisia* sp.) and wild horses and over steep slopes with juniper (*Juniperus* sp.) and pine trees (*Pinus* sp.). Our last stop was the exact place of Blake's night visit a couple weeks prior. This area was significantly different from our previously visited sites, full of the red

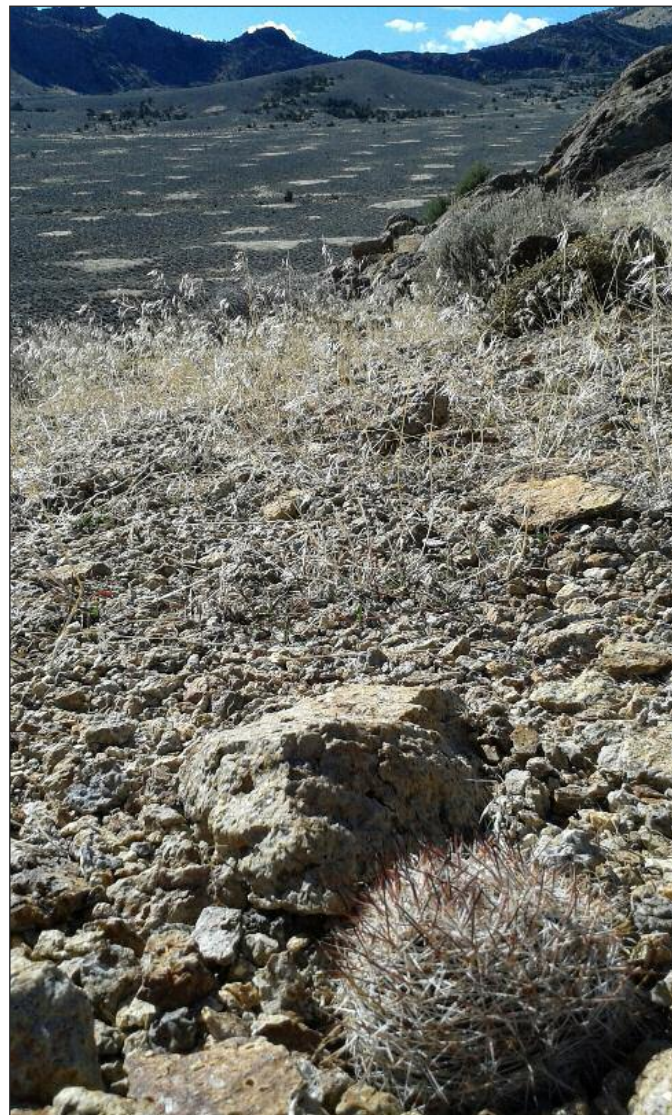


Figure 4: Our first escobarias and land overview.



Figure 5: These clumps of echinocereus were the most common.

stones and rocks with very sparse vegetation of taller plants. And the most important to us, there were large numbers of *Echinocereus engelmannii*



Figure 6: Young echinocereus plant with dark spination.

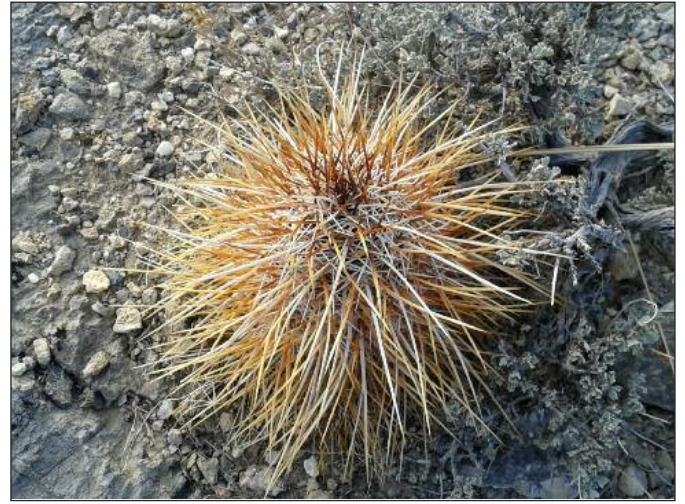


Figure 8: This is the goal of all cactus enthusiasts.



Figure 7: A slightly hairy plant with yellowish and short spination.

(Fig.5).

We wanted to check this locality during the day to discover the



Figure 9: Opuntia from Silver Island Mountains slopes.



Figure 10: Echinocereus from Elko County, Nevada.

distribution of echinocerei, variability of spination length and colour, accompanying vegetation and the environment in general. This locality is one of the most northern for



Figure 11: The amount of plants on this locality was breathtaking.

Echinocereus engelmannii, and the plants were highly variable. For instance, some had one head while others were growing in clumps (Fig.6).

The plants were also quite varied in spination length, quantity and colour. With colours ranging from almost whitish, through light-yellow, brown, golden, to dark-brown, purple and practically black (Fig.7).

The spination character showed variations such as a strong central spine, very dense spines, straight or bent spines, and even an excellent plant looking similar to *Parodia maxima* from South America (Fig.8).

This February visit south of Wendover, Elko County, Nevada, was my first experience with cactus plants in the US. It was a great, sunny day in the dry desert, with hot weather and cold wind in the shade. Thanks to Blake, I



Figure 12: *Opuntia* close to Silver Range Mountains, Tooele County, Utah.

saw many excellent cacti and enjoyed a great time out of the city.

My second visit (March 28th, 2015) to this area was a hiking trip with my friend Zhesen Tan to Silver Island Mountains, Tooele County, Utah (Fig.9). We wanted to reach Graham Peak (2305m alt.), and I hoped to find cacti around, too. From the peak, we had a great overlook of the Bonneville Salt



Figure 13: Opuntia from the same locality with a different flower colour.



Figure 14: *Sclerocactus pubispinus* with bud, Elko County, Nevada.



Figure 15: *Escobaria* from the same locality in Nevada.

Flats (1285m alt.). Among others, the salt flats are known for high speed competitions, a salt source, and the brine shrimp industry.

We found opuntias, but I wanted to show the beauty of other cacti to a cactus non-enthusiast. Therefore, we decided to go directly to the locality south of Wendover where I have seen echinocerei. I was again amazed by the beauty of this locality, and the weather

was warmer and even drier than my first visit. We saw *Echinocereus engelmannii*, *Escobaria vivipara* and *Opuntia erinacea* in very good shape with no significant marks on the buds.

Then I visited the surroundings of Wendover again with my wife Anna during late May (May 25th, 2015). After stopping at the Bonneville Salt Flats, we wanted to check the Silver Range Mountains that are north of Wendover. The slopes were covered in flowering opuntias all around (Fig.12).

The colours of the flowers ranged from light yellow to pinkish and purple tones (Fig.13).

Our last stop was again where Blake found echinocerei. We hoped to see *Echinocereus engelmannii* in bloom. We had enough time to study the larger area in detail. We also wanted to find species other than echinocerei and escobarias. After a short walk, not far away from the places we visited with Blake or Zhesen, we really found a “new” species, *Sclerocactus pubispinus* (Fig.14). This species is native to northeast Nevada and the middle of the Nevada Utah border.

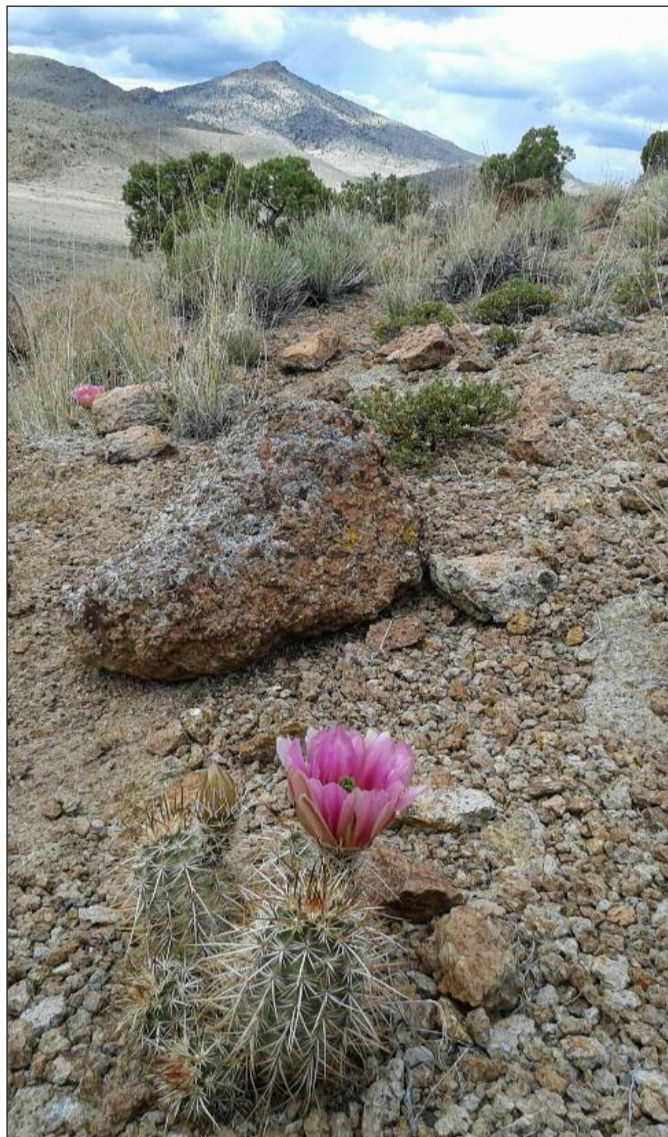


Figure 16: *Echinocereus engelmannii* in flower, Elko County, Nevada.

To our surprise, we only found one young and one adult plant of *Sclerocactus pubispinus* with a small bud after half a day's search. However, we studied many *Escobaria vivipara* plants with old fruits and new buds (Fig.15).

But the highlight of this trip was finding our desired echinocerei in bloom. In comparison with the previous spination variability, these flowers were almost uniform in size, shape, and even colour. Though the flowering period was only just beginning, the locality was amazing (Fig.16).

I walked with my wife around places I visited before. It was a nice change in



Figure 17: *Sclerocactus pubispinus* with the rest of flower (the same plant as Fig. 14), Elko County, Nevada.



Figure 18: *Echinocereus* and insect beetle, Elko County, Nevada.

comparison with the colourless spring.

My last visit to this locality was on Saturday August 29th, 2015. It was a day trip with my Czech friend from University. He is tourist enthusiast and great hiker, so he wanted to understand what I am talking about all the time on weekdays and why I can spend entire



Figure 19: *Escobaria* (PS26), Wendover, Elko County, Nevada.

weekends looking for cacti.

We decided to spend the entire day at the best echinocereus locality south of Wendover. We tried to find and study fruits on all possible species. The first was a sclerocactus area with two individuals, adult and young plant (Fig.17). When my wife and I found the same plants in May, they had buds. Now, the adult plant had flowers without fruit and seeds.

I hoped to find some echinocereus seeds to study since there were countless plants. We checked a large amount of plants. However, the only things we found were flower remains and bugs (Fig.18).

We walked around and hiked all the peaks in the close proximity. We found a new distribution of echinocerei and escobarias. The escobaria fruit was usually hidden deeply in the plant, but we could study seeds (Fig.19). On the other hand, the fruits and parts of the flowers had been eaten. There were also various dead bugs around plants.

In comparison with my previous articles from other localities, at this area, I experience full sun with much drier and windier weather. The rocky localities were very dry, and the plants were not very hydrated even at the beginning of the spring growing season.

Petr Šimon

FIELD OBSERVATIONS AND THREATENING ENVIRONMENTAL FACTORS OF ECHINOFOSSULOCACTUS SULPHUREUS (DIETR.) MEYRÁN

Jaroslav Záhora, Pedro Najera Quezada, Jose Luis Flores Flores, Arturo Pascalín Colín, and Jan Říha tell us the fascinating story of *E. sulphureus* and its habitat. The invasion of alien grasses is a threat to many cactus habitats and here is a well-illustrated account of its devastating effect on the environment

The reason for using the generic name *Echinofossulocactus* should be one important thing mentioned in advance. The first author is grateful to all co-authors, who would otherwise have preferred to use a different name for the genus, for being so kind as to be able to tolerate the name *Echinofossulocactus* according the last recommendation by Lodé (2015) with regard to the fact that this joint work is not focused on taxonomy.

Surely there are many reasons why the application of the genus *Echinofossulocactus* is so difficult. But it is certainly not applicable to *E. sulphureus*. Its identification is very simple. The most important features include small pale yellow flowers, and its clustering ability of adult plants by sprouting from the base of the stem. Moreover, their appearance at the locality is relatively uniform which is quite in contrast with other *Echinofossulocactus* species from their habitats. Only in the stage without



Figure 1 *Echinofossulocactus sulphureus* at the locality near La Vega, Querétaro (28th February 2010). That similar sights could please us in the future as well as our children is a common hope of all authors...

Table 1 The main differences between *E. sulphureus* and *E. lamellosus* based on field observation of many wild populations and from cultivation.



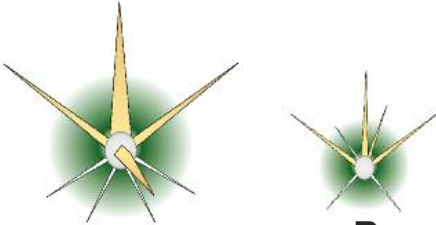
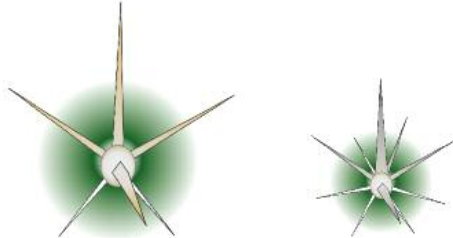


General Information	<i>E. sulphureus</i> (Dietr.) Meyrán (N 89.282, La Vega, Querétaro)	<i>E. lamellosus</i> (Dietr.) Br. & R. (N 87.003 Hualula, Hidalgo)
<p>Stem: young plants solitary, later caespitose.</p> <p>Ribs: generally ± 34 (up to 55)</p> <p>The plants shown were growing together from seeds. The scales are identical. Both plant groups were separated from one original photo.</p>	 <p>up to 8cm in diameter</p>	 <p>up to 14cm in diameter</p>
<p>Spination: The length of the spines is comparable.</p> <p>A: dominant form of spination B: less common pattern of the cluster of spines</p>	 <p>A B</p> <p>Uppermost spine flattened</p>	 <p>A B</p> <p>Colour of spines more variable</p>
<p>Flower: pale yellow colour is uniform at the locality of <i>E. sulphureus</i>, while the intensity of pinkish-purple colour of <i>E. lamellosus</i> is variable</p>	 <p>up to 2.5cm in diameter</p>	 <p>up to 4.5cm in diameter</p>



Figure 2 Typically solitary growing *Echinofossulocactus anfractuosus* on limestone outcrops near Santa Teresa Devoxthá, Hidalgo (18th February 2005). Photograph: J. Záhora



Figure 3 Beginning of the splitting process of the vegetative apex of *E. crispatus* growing near Mexico D.F. Photograph: Jose Sánchez



Figure 4 Dichotomically splitting stem of *E. crispatus* growing near Mexico D.F. Photograph: Jose Sánchez



Figure 5 The resulting appearance of a thus created cluster of *E. crispatus* is a well evolved adaptation for pastures. Photograph: Jiří Horal near Concepción Buenavista, Oaxaca.



Figure 6 Flowering *E. crispatus* growing near Mexico D.F. (January 2017) Photograph: Jose Sánchez



Figure 7 Flowering *E. crispatus* growing near Mexico D.F. (January 2017) Photograph: Jose Sánchez



Figure 8 The clustering ability by sprouting from the base of the stem of *E. sulphureus* of adult plants is probably better adaptation for steep rocky cliffs in their habitat. Photograph: J. Záhora



Figure 9 Much more successful in creating of such “anti-erosion measures” for collecting small stones, sand, silt and clay material as well as particles of organic matter is *Mammillaria compressa*. There are also two small *E. sulphureus* in the lower left corner. Photograph: J. Záhora



Figure 10 Top view on the “riches” accumulated in “collecting pocket” by the same cluster of *M. compressa*. Photograph J. Záhora



Figure 11 Not too reasonable “capturing” of stony material by *E. sulphureus*. Photograph: J. Záhora



Figure 12 Created “collecting pocket” made by the *E. sulphureus* cluster with a beautiful spination. Photograph: J. Záhora



Figure 13 Similar growth strategy was seen in *E. lamellosus* 20km in a northerly direction from the locality of *E. sulphureus* on limestone rocks (top view). Photograph: J. Záhora



Figure 14 Side view of a big group of *E. lamellosus* with closed flowers trapped in a tuft of *Selaginella* sp. The locality is the same as the previous picture. Photograph: J. Záhora



Figure 15 This clustering strategy is also a great competitive advantage in spreading *E. lamellosus* into secondary pastures near El Portugués, Querétaro. Photograph: Jiří Horal.

the flowers could *E. sulphureus* be confused with the more robust *E. lamellosus*, less likely with the never sprouting *E. anfractuosus* (Fig. 2) or with *E. crispatus* with a slightly curved central spine, and if clustering then in a dichotomous way as an exception in the genus *Echinofossulocactus* (Figs.3, 4, & 5). Key differences between *E. sulphureus* and *E. lamellosus* are summarized in Table 1 because both species are growing in the vicinity.

It's been 171 years when the unusual sulfur-colour of the flowers was first observed on plants imported from nature. It attracted the attention of Dr. Albert Dietrich, the editor of the gardening magazine *Allgemeine Gartenzeitung*, so much so, that he described in 1845, in the 22nd issue of the 13th edition of that magazine, the new species, as *Echinocactus sulphureus*. In the explanation he noted that it

is one of the most difficult to distinguish representatives of the former taxonomic unit called "Costis membranacea-compressis" assembled at that time into a group of *Echinocactus* and that "without the flower it is impossible to distinguish between *E. arrigens*; *E. crispatus* and *E. tetraaxiphus*". It was regarding the original plants, which were delivered initially to Mr. Karl Ehrenberg directly from Mexico. The species name caught attention immediately, and directly in the following year it was cited again as *Echinocactus sulphureus* by Mr. Theodore Rümpler in the book: Carl Friedrich Förster's *Handbuch der Cacteenkunde*.

About the fate of these plants subsequently proclaimed these Messrs: Salm-Dyck, Schumann, Britton & Rose and Backeberg. At that time, knowledge of the isolated locality was clearly missing and the diversity of the



Figure 16 A specimen of *E. sulphureus* nearly 30 years old (N 89.282). The plant originated from the original seeds collected by Helmut Nagl, Austrian cactus enthusiast, from the location in the Canyon that was flooded in 1995 by Zimapan reservoir dam.

Photograph: J. Záhora

flower colour was not seen as a sufficient diagnostic feature. Consequently, all the above mentioned authors in unison doubted the validity of the name *E. sulphureus* and assigned this species to the then known species *Echinofossulocactus gladius*, *E. lamellosus* or *E. anfractuosus*. Much later, from 1961 till 1977, were even three localities of *E. sulphureus* discovered due to the activities of Hernando Sanchez-Mejorada, Felipe Otero and finally Jorge Meyrán. The last named botanist recombined the species among the members of the genus *Echinofossulocactus* (for more information see *Cact. Suc. Mex.* **XXII**: 36–40, 1977).

In 1989, Helmut Nagl from Austria found an additional population near La Vega (N 89.282). But it was, unfortunately, at the bottom of the valley of the river Moctezuma, in a place that was later, in 1995, flooded by

the Zimapan reservoir dam supplying the Mexican capital with drinking water.

E. sulphureus from the locality near La Vega was until recently considered to be extinct. In 1990 I got from Helmut Nagl a few seedlings from this population with a warning about their extraordinary rare value. Today, they are, as shown in the accompanying photo (Fig. 16), flowering and fruiting individuals. In 2009, the meticulous and tireless cactus hobbyist Jiří Horal discovered directly above the Zimapan dam the continuation of the *E. sulphureus* population from the valley. It seemed that this species had survived the filling of the dam. At first, it was amazing to see supposedly extinct plants as alive and flowering specimens. This location is also exceptional in that there are *Mammillaria scheinvariana* still growing there, reportedly the only cactus, which was discovered from a boat, because it helped to



Figure 17 The view from the locality of both *E. sulphureus* and *M. scheinvariana* on a steep wall above the Zimapan dam water level where their flooded habitats were in the past. Photograph: J. Záhora



Figure 18 The rocky outcrop was formerly covered with a sparse vegetation, but in January 2016 was overgrown by compact stands of invasive grass *Melinis repens*. Photograph: J. Záhora



Figure 19 A romantic as well as frightening view on the access path on the last visit (2016). After six years the path was hopelessly closed by foreign grass from both sides. The worst is that the compact grass stands do not allow the penetration of sunlight. Photograph: J. Záhora



Figure 20 The rate of overgrowing the locality is evident when comparing the appearance of an access path in 2010. Photograph: J. Záhora



Figure 21 Or it is possible to compare the appearance of the locality 6 years ago, in 2010. Photograph: J. Záhora



Figure 22 And what it looked like in January 2016. Photograph: J. Záhora



Figure 23 Previously abundant clusters of *E. sulphureus* are now only in the most extreme bare habitats. They are also exposed to changes in microclimatic and soil conditions due to the presence of invasive grasses, and to the consequent increased susceptibility of cacti to fungal infections or other pest infestations. Photograph: J. Záhora



Figure 24 This is an unequal, unfair competition.
Photograph: J. Záhora



Figure 25 Co-existence of cacti and grasses is hardly imaginable. Pictured in the middle is a mummy of a *E. sulphureus* cluster. The accumulated nutrients will then be successfully recycled by grasses.
Photograph: J. Záhora



Figure 26 (upper from 2010) and **27** (below from 2016). Comparison of the status of *Mammillaria hofmanniana* trapped in the tree trunk of *Gochnatia hypoleuca* after six years. The way to avoid the invasion of the grasses? Photographs J. Záhora.



Figure 28 (upper from 2010) and **29** (below from 2016). Comparison of the state of *Mammillaria compressa* (left) and *M. hofmanniana* (right) which was unable to survive. Additionally, in the rock grew up new grass. Photographs: J. Záhora.



Figure 30 In January 2016, we have been unable to find even one *M. scheinvariana* in the grass stands. This image dates from 2012.

Photograph: J. Záhora



Figure 31 The seed bank of the grass *M. repens* on the floor determines the fate of this habitat.

Photograph: J. Záhora



Figure 32 Symbolic capture of *M. repens* seed in juvenile spination of young *E. sulphureus*, which had just begun to create ribs.

Photograph: J. Záhora



Figure 33 The real scenery with *E. sulphureus*, whose rocky background will be used in the next four compilations for simulation and clarification of deleterious processes which occur at the locality nowadays.

Photograph: J. Záhora



Figure 34 Compilation A: The rocks in background is colorless in order to stress the interactions between key players. *E. sulphureus* specimen starts sprouting.



Figure 35 Compilation B: Created “collecting pocket” for accumulation of small stones, sand, silt and clay material as well as particles of organic matter. All this is improving the water and nutrient regimes in such protosoil and their inhabitants, friendly micro-organisms inclusive. This can attract also growth of *Selaginella* sp. (at the bottom).



Figure 36 Compilation C: In the next stage the grass *M. repens* comes on the scene growing up from the caught seeds. Accumulated inorganic and organic material speeding up not only the growth of *M. repens*, but also the decomposition processes which make more nutrients available. *E. sulphureus* is no more competitive enough, and is partly dying.

make accessible the vertical rocky cliffs above the level of the dam (Weightman, 2003). After filling the dam *M. scheinvariana* has also long been considered as disappeared. In 2012, however, a few plants have been found that proved that this *Mammillaria* remained preserved in the nature (Záhora *et al.*, 2012; see Fig. 30). On January 7th, 2016, we visited the location for the last time. It appears that neither *M. scheinvariana* nor *E. sulphureus* have won. The location was literally overgrown by the aggressive invasive African grass *Melinis repens* in whose shadow all perishing. We observed the impact of *M. repens* not only on the *Mammillaria*, but against all the species in the ecosystem, even *Opuntia* and *Myrtillocactus* have a hard time dealing with associated *Melinis*. We also noted that it was not only the presence of invasive grass, but also the lack of grazing what permitted this inundation to take over on a large scale.

Thus extremely rapid invasion of exotic grasses is a disaster for the irreplaceable native local flora, but in terms of thermodynamics and ecology it is the only natural response to the new offer of available nutrients. These will be capitalized differently in live and dead plant parts and that will initiate another stage of "rhizospheric market", another trade with



Figure 37 Compilation D: The grass clump wins. It is able to respond more flexibly to fluctuations caused by climate change and anthropogenic loads. It can survive any extreme long periods of drought in the form of seeds whose large numbers are permanently produced.

organic compounds and energy between roots, soil micro-organisms and soil body. Ultimately it may even be an increase in the carrying capacity of the environment.

The reminiscences of Jan Říha

I have known this area since 1977, when I, together with Rudolf Šubík, Hernádo Sánchez Mejorada, Jorge Meyrán García, and others visited this area, then again in 1979 and 1981.



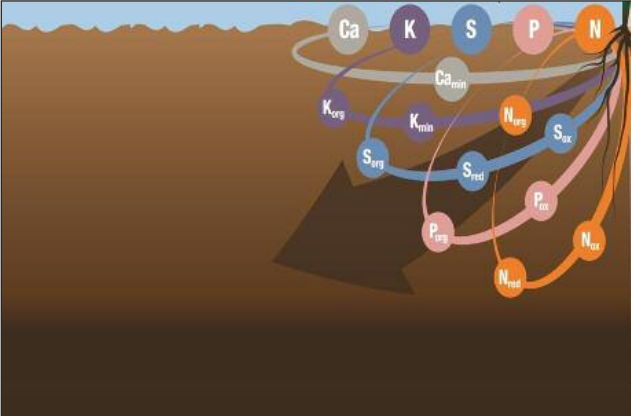
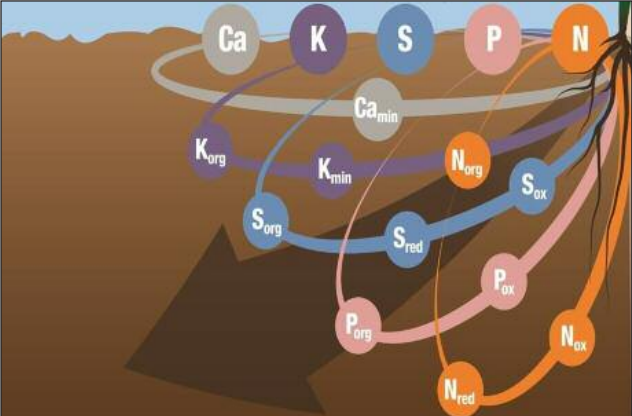
At that time, the dam was only under construction and it was possible to reach into the deep canyon from the Cd. Zimapan through Barranca de Toliman. In the deep canyon flowed then only a very small river Rio



Figure 38 Hernádo Sánchez Mejorada (left), and author of the reminiscences, Jan Říha.

Photograph from the archive of Jan Říha.

Table 2: The main reasons for the better competitive ability of Natal grass, *M. repens*.

<i>E. sulphureus</i> (Dietr.) Meyrán	<i>Melinis repens</i> (Willd.) Zizka
	
<p>Above ground part of the plant Dry and wet atmospheric deposition of key nutrients (N, S, P, Ca, Mg, K, ...) is expected to be considerably lower because of the smaller surface area for collecting atmospheric pollutants than that is exposed by above ground plant biomass of <i>M. repens</i>. Despite the lower level input of nutrients from atmospheric depositions they are too high for <i>E. sulphureus</i> demands, and can paradoxically destabilize their health status. The more conservative strategy of <i>E. sulphureus</i> focused on collecting water for overcoming a drought period is no longer successful enough for plant competition here.</p>	<p>Above ground part of the plant Overshadowing discriminates plants living on the soil surface which demand intensive sunshine like cacti. Even standing death can collect higher amounts of dry and wet atmospheric deposition compared with cactus plants. In addition, the grasses are generally phylogenetically younger, cleverly hiding meristematic tissue beneath, and exposing to the sun only mature tissue unlike cacti, which must protect their intricately vegetation apex with spines and apex wool. This ability even more favours <i>M. repens</i> in different current stress conditions.</p>
	
<p>Soil and root interactions The nutrients cycles in the soil under the <i>E. sulphureus</i> are decelerated due to low inputs of carbohydrates (dark brown arrow), and because of it the nutrition of cacti is based on very efficient and well controlled retranslocation of nutrients which needs the presence of highly specialized groups of soil microorganisms. Antropogenic nutrient loads can disrupt this fragile balance.</p>	<p>Soil and root interactions High gains of photosynthesis spreaded into the soil (dark brown arrow) are stimulating rapid multiplication of other groups of microorganisms and consequently intensive transformations of accumulated organic matter. Moreover, this tall grass is self-sufficient in a case of a lower amount of soil nitrogen, because it can employ its own nitrogen-fixing microbial endophytes.</p>

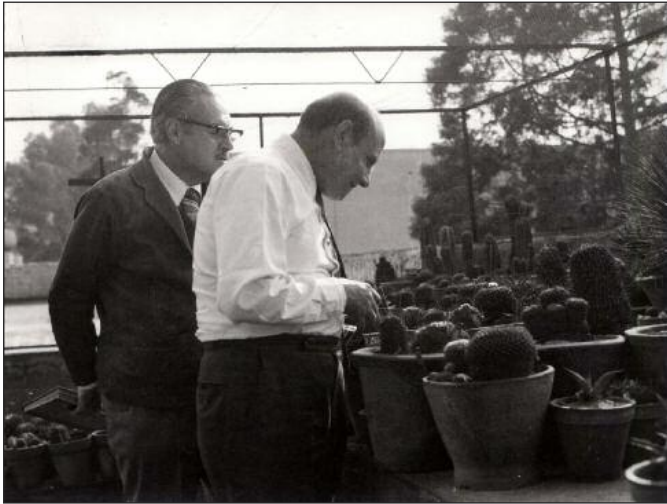


Figure 39 Hernándo Sánchez Mejorada (right) and Jorge Meyrán García photographed in 1977 on the roof of the Meyrán's house before departure on a joint journey to Querétaro.

Photo from the archive of Jan Říha. Moctezuma, meaning it was a time of drought. It was an extraordinarily amazing area regarding the occurrence of plants. Plants we found growing there were a dwarf form of *Strombocactus disciformis*, two species of *Echinofossulocactus*, *Echinocereus*, several *Mammillaria* species, and other succulents; *Agave*, *Echeveria*, *Sedum*, *Pinguicula*, and others. The bottom of the canyon was almost in deep shade, sunlight getting there only when sun was directly above, plants on the steep walls grew there, even though dry, but with high air humidity. Among others, we found there also *Echinofossulocactus sulphureus*, respectively similar plants that were found later at the top edge of the canyon. J. Meyran was already at that time working on re-evaluation of this genus. We have had long discussions ... compared with today's level of knowledge, it was incomparably poor. As well, the *Mammillaria scheinvariana* was at that time already known to us from the canyon. It is doubtful that it was discovered from a boat on the dam lake, this statement is just the kind of inventiveness of subsequent followers of the first discoverers. However, it is a fact that we didn't pay sufficient attention to any of these plants. With Léia Scheinvar and H. Sánchez-Mejorada, we intended to spend more time studying this area, but the co-operation with Inst. de Biología was at that time a little stifled.

We have been repeatedly on the top edge of



Figure 40 Jorge Meyrán García (right) and Hernándo Sánchez Mejorada photographed from a different perspective in the same situation as on the previous photo.

Photo from the archive of Jan Říha. the canyon, both on the east and on the west sides. From Cadereyta Montes it was possible to get to the bottom of the canyon of the Rio Moctezuma where on steep rocks grew hundreds of *Echinocactus grusonii*, rare *Mammillaria herrerae*, common *M. elongata* and others. The main and more convenient access was otherwise from Zimapan. At that time there were wonderful completely untouched landscapes with thousands of cacti in different vegetation types.

Short notes from Jorge Meyrán García

In December 1969, Mr. Felipe Otero gave me one or two specimens of this genus, the species of *sulphureus*. One of them still lives in my collection (Figs. 41, 42 & 43 on the next page; which were photographed in January, 2017). On the 19th of March 1977, we went together with Jan Říha and others (see above) to the beginning of the Toliman Canyon, in the state of Hidalgo, where we found this species with their yellow flowers growing among many other succulents, such as *Echinocactus platyacanthus*, *Stenocereus dumortieri*, *Myrtillocactus geometrizans*, *Echinocereus cinerascens*, *Coryphantha clava*, *Mammillaria compressa*, *Dolichothele longimamma*, *Opuntia imbricata*, *O. stenopetala*, *O. cantabrigiense*, *Pachyphytum glutinicaule*, *Agave striata*. On the upper parts, we could see *Astrophytum ornatum*, *Dasylyrion acrotriche*, *Hechtia argentea*, *Agave albicans* and *Yucca filifera*.



Figure 41 Almost fifty(!) years old original plant of “sulphureus” from Felipe Otero. Photographed in the collection of Jorge Meyrán García in January 2017. Photograph: Javier Castañón.

Acknowledgments

The authors would like to express many thanks to all those who helped us, particularly to Helmut Nagl, Jorge Meyrán García, Harald Perndl, Vojtěch Myšák, Jose Sanchez, Javier Castañón, Pavel Pavlíček, Jiří Horal, Jaroslav Bohata as well as for the financial support given to the first author for the study trip offered by the Mendel University in Brno, Czech Republic in 2015/2016. Special thanks should be given to Graham Charles for his kind help with improving the English text.

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Figure 42 A new sprout growing from the same plant as is documented in Fig. 41

Photograph: Javier Castañón.



Figure 43 The yellow flower buds preparing in January 2017 for the current vegetation season (the same plant as is documented in Fig. 41).

Photograph: Javier Castañón.

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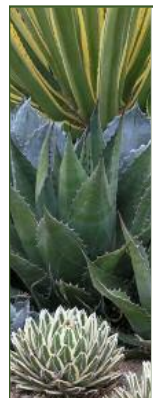
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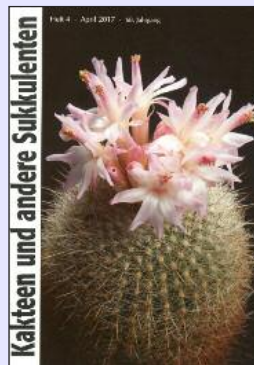
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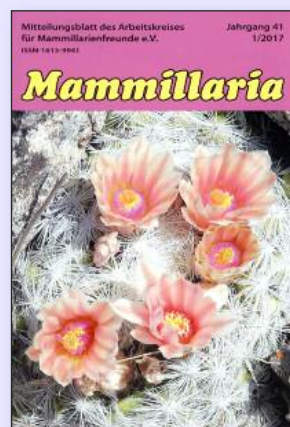
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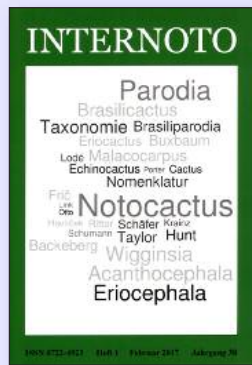


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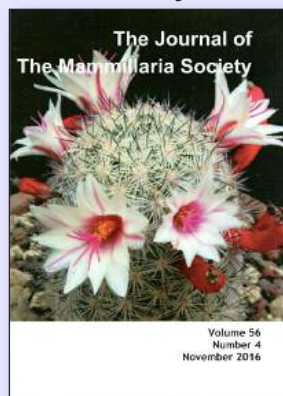
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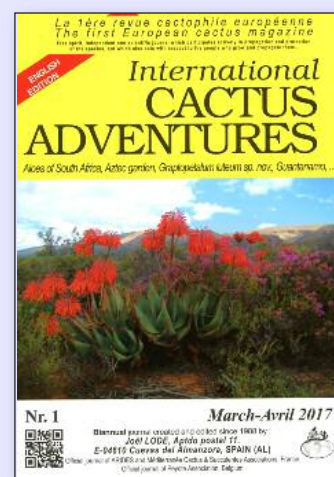
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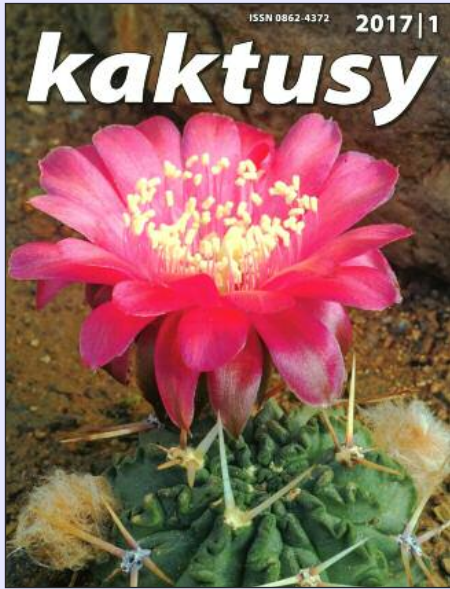


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RESOURCES IN THE CSSA ARCHIVES

The Cactus and Succulent Society of America has a long and distinguished history. Chuck Staples, CSSA Historian, describes the valuable contents of the Society's archives.

The archives is a web page designed initially in 2012 by Gunnar Eisel, CSSA General Manager, for historical material compiled by Chuck Staples, CSSA Historian. The web page was updated with a new look in February 2017 with the help of computer guru Bob Jewett. To view the updated web page you need visit www.cssainc.org then click on Archives which will take you to the home page of the archives. Here is an explanation of each item shown on the archives face page as you click your way through the item(s) you wish to look at.

CSSA HISTORIES

BOARD MEMBERS & OTHER POSITIONS: A historical listing of board members and other positions appointed by the board of directors — from the current year and each year all the way back to 1929 (beginning of CSSA).

PRESIDENTS: A choice of (a) CSSA Presidents in alphabetical order with year(s) of presidency and awards, or (b) images of presidents from the current year back to 1929.

EDITORS: A choice of (a) CSSA Editors in alphabetical order with year(s) as an editor and the periodical they were editor of or (b) images of editors from the current year back to 1929, along with the periodical they were involved with.

CONVENTIONS: A listing of biennial conventions with locations, speakers, etc., from the most current odd year and each odd year back to the first in 1941.

HONOUR AWARDS: Choices of CSSA awards for (a) Fellow, (b) Special Service, (c) Superior Service, (d) Friend, (e) Myron Kimnach Lifetime Achievement or (f) Conservation. Click on the special award you wish to look at, then click for a choice of (i) awards in alphabetical order which gives you names and year of awards or (ii) reasons for awards with images of awardees from current all the way back to the first award of each award type.

JOURNAL: Choice of (a) all articles and authors from each issue, (b) publication date of each

issue for research purposes by botanists, taxonomists or other interested parties or (c) art works from various issues — all back to 1929.

HASELTONIA: Choice of (a) all articles and authors from each issue or (b) publication date of each issue for research purposes by botanists, taxonomists or other interested parties — all back to its inception in 1993.

AFFILIATES: Choice of (a) a listing of various regional conferences with locations, speakers, etc., from the most current even year and each even year back to the first year for each region or (b) histories of various societies.

MISCELLANEOUS 1: Choice of (a) time line of CSSA firsts or (b) newsletter archives.

OTHER HISTORIES

IMPORTANT SUCCULENTISTS: Choice of (a) short biographical sketches of some of the people (25 so far) that have dedicated much of their lives to the cactus and succulent plant world or (b) images related to those people.

MOVERS AND SHAKERS OF THE CACTUS & SUCCULENT PLANT WORLD: This is a list of people and where you can find biographical data about them in various English language publications.

PLANTS: History of cactus and succulent plant species.

MISCELLANEOUS 2: Choice of:

- (a) Cactus and Succulent Society or club founding dates.
- (b) Cactus and Succulent people calendar birthdays.
- (c) Ed and Betty Gay guest book of signatures.
- (d) Some deceased authors.
- (e) Etymology of Succulent Genera erected by Carolus Linnaeus.
- (f) Larry Mitich 3x5" card file.
- (g) Succulentists and their transportations.

[Charles J. Staples](#)

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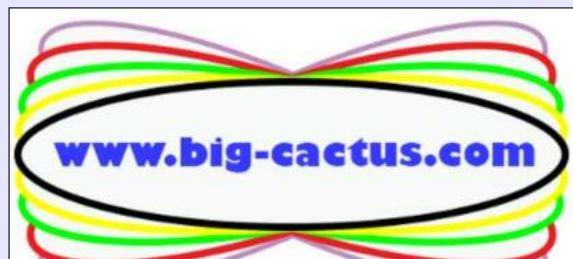
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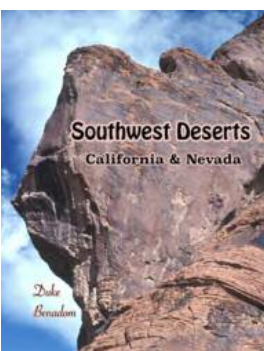
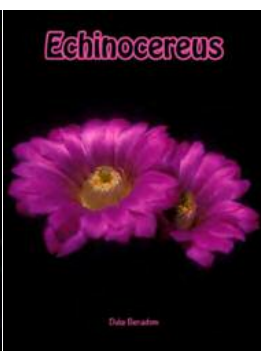
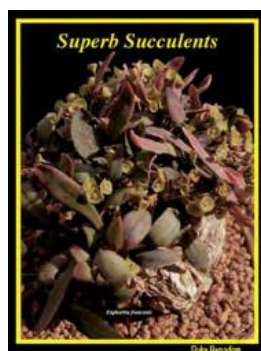
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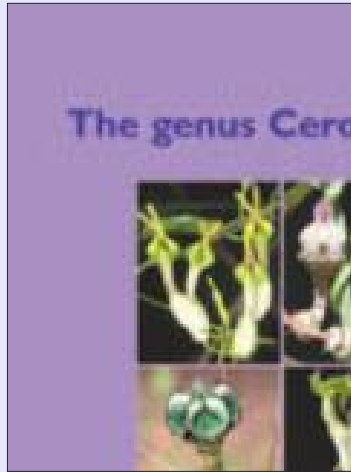
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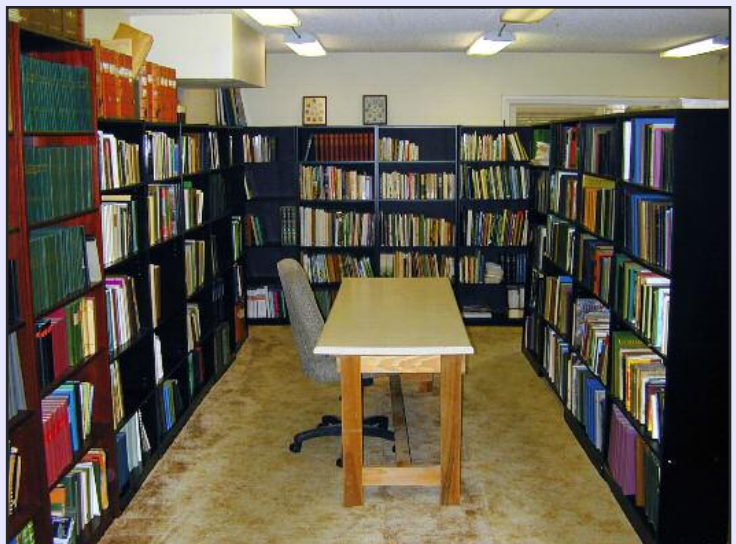
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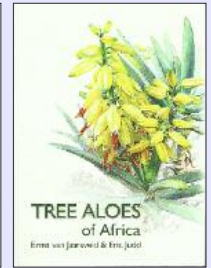
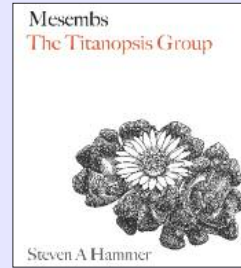
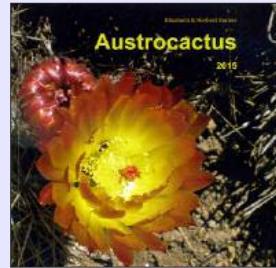
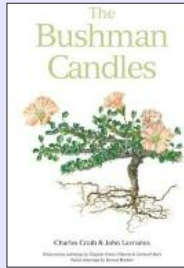
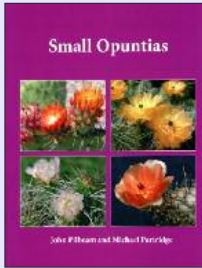


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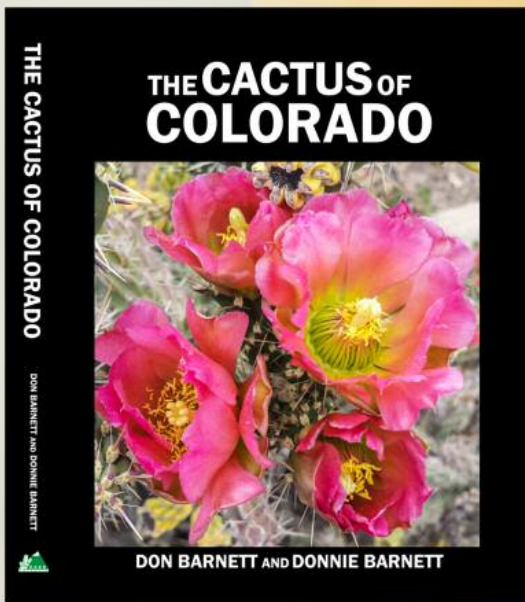
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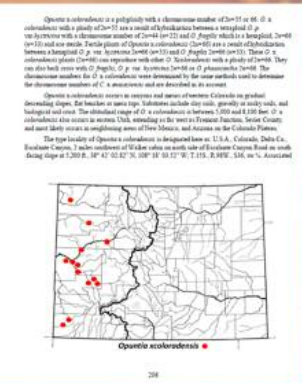
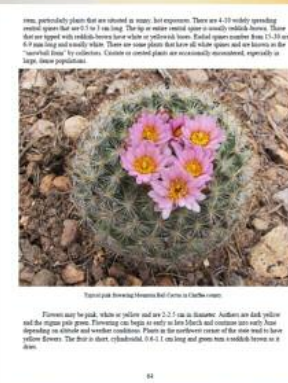
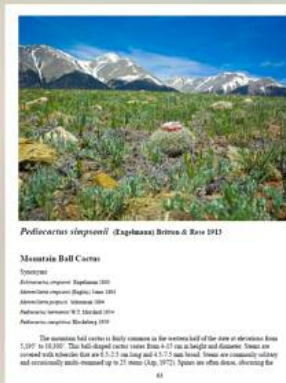
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