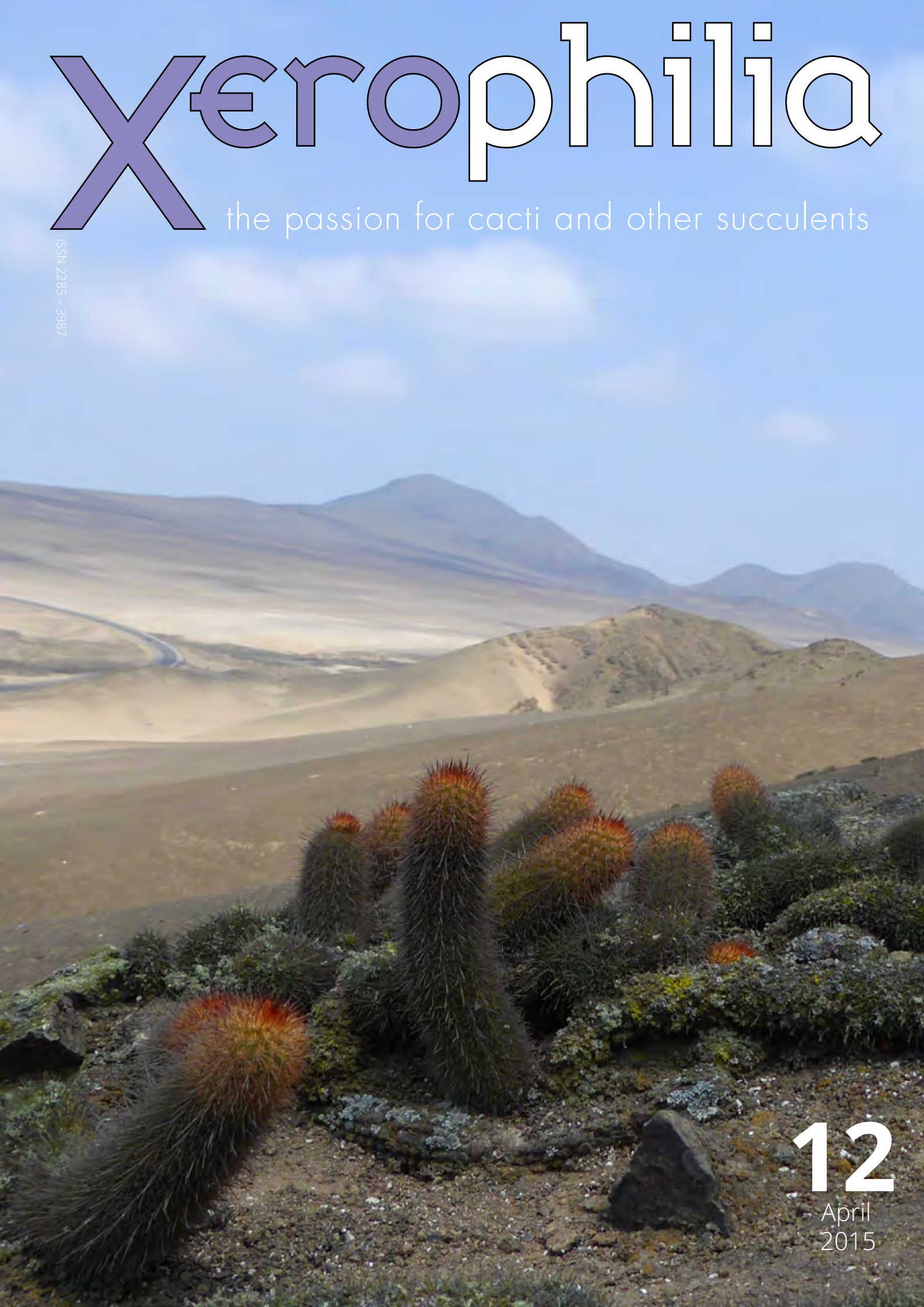


Xerophilia

the passion for cacti and other succulents

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12

April
2015

Xerophilia

the passion for cacti and other succulents

summary

3 · Editorial 11

| Eduart

Contributions

4 · Sierra de San Miguelito

| Pedro Nájera Quezada & al.

37 · Sierra de Santa Bárbara

| Claudia Martínez Lopez.

Travelogues

25 · Peru, Between Mountains & Sea

| Håkan Sönnermo

73 · Botanical Trip in Tenerife

| Massimo Afferni

117 · A Dane Visiting Romania Third Part

| Erik Holm

Bits & Pieces

81 · *Calibanus* ... 'Wilson'

Collection Pictorials

83 · Why Cacti?

| Zolt Mihail Demeter

Cultural Notes

101 · Nopal, Cultural Pillar of Mexico

| Leo Rodriguez

Xero-Art

123 · The *Opuntia* Impressionist

| Eduart Zimer

Habitat Pictorials

71 · *Turbincarpus valdezianus* in Spring

| Manuel "Melo" Salazar González

97 · Snakes and Succulents in Habitat

| Ricardo Ramirez Chaparro

Connoisseur's Notes

53 · Active Areoles on *Pereskia* Fruits

| Marlon Machado

56 · Cultivation of Cacti & Succulents in Dannemark

| Martin Tversted Ravn

89 · The Ideal Cactus Substrate

| Javier Mera Rangel

115 · *Peperomia tetraphylla*

| Noelene Tomlison

In The Name of the Law

109 · Tubifex...!

| Dag Panco

News & Events

111 · Call for - *Echinocereus ortegae*

| Michael Lange & Werner Rischer

129 · Online magazines

| Xerophilia

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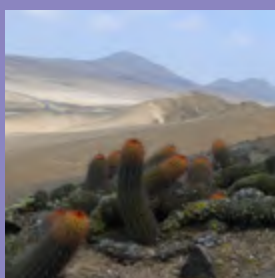
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Front cover

Haageocereus tenuis, Chancay, Peru.

photo by Håkan Sönnermo



Back cover

Masticophis taeniatus and
Escobaria chihuahuensis

photo by Ricardo Ramirez Chaparro.

Xerophilia

the passion for cacti and other succulents

editorial 12

OK!

It's not easy to swim against the tide! But it is possible! Our campaign against looters lacking awareness and greedy buyers triggered adverse attitudes toward the

journal and its editorial staff members. This went deep. There have been "friends", who turned their backs on us; there have been acquaintances who exhibited their outrage on social networks; some went for our throat accusing us of being Taliban. Some others, most of them, found our "name and shame" approach as potentially dangerous for them and damaging for their relation with the "suppliers"; especially a vice-president of an European cactus association mocked us – speaking in his own name – explaining on the official forum of the association, that the laws of underdeveloped countries just come and go or change all

the time, until disappearing into oblivion, and that the inhabitants of a corrupt country do not deserve the riches of their nature (!!). Wretched excuses invoked only to justify or accept lootings from which they only can benefit!! ... as this is the source of the illegal genetic material they are selling!!

Despite opposition and adversity (yes, we got our fair share) we will not give up our position, just because some people without education, without morals, without ethics, without innate common sense, are critical towards us when we support the law. The Law is the Law and where there is no Law, there's nothing! Besides the power of principle in itself, we are reinforced by rewarding outcomes, as well as positive confirmations.

Besides the fact that some of those who felt targeted became overnight – ostensibly – very vocal advocates of the protection of endangered species, we note that on the social media groups and especially on Facebook, a kind of "tranquillity" has been established. Everybody's a bit reluctant to reveal themselves, risking to be exposed. No one is bragging with their illegal purchases anymore. Even so only, and it's Ok!

On the other hand, our interventions have created premises for debates – the most notable on BCSS Forum – largely overlapping topics we have addressed ourselves: the ethics of sellers and buyers, anomalies in the legislation regulating the trade of succulent plants, criticism in regards to the activity of regulatory bodies (stating with CITES and ending with rigid government policies), their excessive politicization and bureaucratization, etc.

Xerophilia has adopted from the start this vibrant line of and we remain consistent: we will be intolerant towards any deliberate destruction of rare or endangered species, only for a miserable commercial profit or to satisfy the sick ego of a small group of collectors.

We wish to remind everyone that – as it is normal – our magazine is open to any right of reply. Unfortunately, beyond approaches the likes of "if you don't like it, buy cheap ferocacti" expressed around the corners, no one seems to have something serious to say.



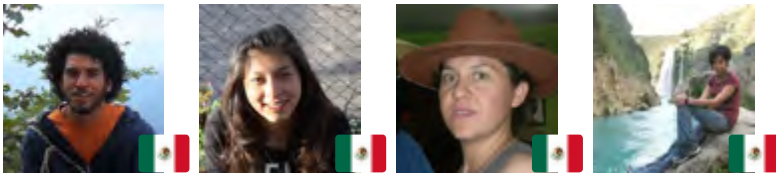
summary →

Eduart

sierra de san miguelito

a preliminary regional ecological analysis

Contributions



Pedro Nájera Quezada, Jovana Jaime Hernandez, Claudia Lopez Martinez, Sandy Karina Neri Cardona

"Plants walk in time, not from one place to another: from one hour to another hour." J. Sabines – Adán y Eva, frag.

Introduction: the Sierra de San Miguelito is a mountainous enclave which is located south and east of the San Luis Potosí state's capital city, and is part of the Tangamanga basin valley brink, the valley where the conurbation and the surrounding agricultural and industrial areas have established. It has three of the highest peaks in the state, Cerro Potosi 2800 meters above sea level, Picacho del Fraile 2840 masl and Cerro del Órgano approximately 2880 masl, this in contrast to the lower parts which are around 1900 masl. The mountains include the municipalities of San Luis Potosi Villa de Reyes, La Pila and Carmona and Villa de Arriaga. The importance of the Sierra de San Miguelito, in its two sections, consists in capturing the water that supplies the capital's main reservoirs, as well as the major tributaries that cross the region.

This paper aims to be a support tool and disclosure to be used in decision-making, and intends to emphasize the importance of biodiversity contained by this region.

History

In ancient times there was no town of importance



summary →





and all that was brought to the light in regards the first culture that developed in this region, archaeological remains that have been found in relatively close proximity to the state capital, indicates a previous occupation of the Tangamanga valley by people who enjoyed a superior culture to that of Huachichiles or Chichimecas. Pretty much in the same way as today, these settlements had a close relationship with the Sierra de San Miguelito, which has always functioned as a great source of hydrological, metallurgical and of course renewable natural means. After being conquered by the Spaniards and loss of their land, the mountains served first as a center of refuge for the native population who maintained a state of open war in the region, which is called the Chichimec War², which is recognized as one of the bloodiest and long lasting of the entire conquest of America. It is well known that the natives fought to the death and warfare techniques were very different to those used by the Tlaxcala and Aztec armies, which caused great fear among the conquerors because they used to fight in scattered groups, naked, painted in red, mostly in nopaleras³ or ar-

Agave gentryi, Cerro el Potosino, Sierra de San Miguelito.

reas with lots of rocks, which precluded the use of the Spanish artillery and cavalry and represented great benefits for indigenous resistance, causing severe life losses to the invading forces.

After the pacification of the region by Captain Miguel Caldera, the area became an indispensable source not only for water, but, charcoal, tin, also livestock and hunting potential were exploited. After the independence and the moments before the outbreak of the revolution, the mountains had not suffered major impact due to human activities, or minor damages were somewhat repaired by nature itself. However, during the Porfiriato⁴ times (late 1800's to early 1900's) the development in terms of national infrastructure was greatly promoted, among them are the introduction of the telegraph, railways and major hydrographic works, forcing villagers to increase the use of wood in the Sierra of San Miguelito as well as in Sierra de Álvarez and commanding massive alienations of the ecosystem and landscape, which changed



1 - *Bescorneria rigida*, *El Órgano*. 2 - *Agave schidigera*, *La Amapola*. 3 - *Dasyilirion parryanum*, *Las Mesas*.

irreversibly. Today railroad sleepers and rails are in many cases the same ones placed before the revolution and are gradually being replaced by concrete sleepers.

The Sierra de San Miguelito is consisting entirely of basalt, just in an elevated part a relict sedimentary layer is present, probably from ancient times

when the mountains in question originated and magma partially covered the seabed; now, after erosion, it became visible in the southwestern part of the mountain. Soil type corresponds to Leptosols Regosols and Phaeozem all purely igneous in origin; predominant climate type is temperate sub-humid (Cwbg), with summer rains, with an average temperature of 15°C., minimums below -4°C and maximums above 30°C, but this happens only rarely each year. The vegetation in the Sierra consists of patches of shrub oak forest, pinyon pine



1 - *Coryphantha clavata* ssp. *stipitata*, Rio la Laja Sierra Sn Miguelito. 2 - *Nolina humilis*, La Mina Elizabet.

woodland, oak forest, pine forest, rangeland and alpine pasture, these last two being differentiated by their location: while natural grasslands are found in the foothills of the mountains, the ones referring to as alpine grasslands are found in the high mountain plateaus, surrounded by pinyon pine forests and mainly by shrub oak forest. Annual precipitation is not well determined, since no weather stations exist inside the mountainous area and the ones from the valley are far away from the mountains; however it is very obvious that the mountains receives more rainfall, one can speculate that precipitation could be up to 2000 mm per year, while in the valley barely reaches 1500 mm per year on average.

Over the past four years we have been making

expeditions into the mountains in order to assess biodiversity, all as part of my thesis evaluating biodiversity throughout the area of influence of the state's capital city. Likewise previous visits have been made with the intent to promote awareness of the Sierra and push a decree intended to establish the Sierra de San Miguelito as a protected state natural area and, with these occasions, we have also gathered data and information relevant to this natural area. See Table 1

Flora

All forested regions consist of a large number of structural elements useful for their regional development characteristics, consequently they are called natural resources, and this mountain range is no exception. The vegetation types according to Rzedowski 1965 correspond to, Natural Grassland or Rangeland (PN), Shrub Oaks (EA), Pinyon Pine Woodland (PÑ), Oak Forest (E), Alpine Grasslands



1



2



3

(PA), Pine Forest (P) referred in ascending order in relation to height in the mountains, because the higher up in altitude, the gradual increase in humidity and decreasing temperature effect is evidently reflected in the vegetation. Over 2200 masl are the main areas of oak and of pinyon pine forests (*Pinus cembroides*); this area also includes the presence of several species of which the following are mentioned:

Corallorhiza aff. *wisteriana*, *Hexalectris grandiflora*, *Schiedeella* aff. *saltensis*, *Coryphantha potosiana*, *Coryphantha clavata* ssp. *stipitata*, *Mammillaria bocasana* ssp. *eschauzieri*, *Stenocactus ochoterenanus*, *Pachyphytum hookeri*, *Echeveria schaffneri*, *Echeve-*

1 - *Nolina texana*, Cañón de la Laja, Villa de Reyes. 2 - *Manfreda maculata*, Mesa el Corral Falso, Villa de Reyes. 3 - *Lennoa madreporoides*, Cañón de la Laja, Villa de Reyes.

ria agavoides, *Echeveria hialina*, *Calibanus hookeri*, *Nolina humilis*, *Nolina texana*, *Nolina parviflora*, *Schaffnerella gracilis* and *Calochortus barbatus*; in the higher parts of the mountains, relictual areas of ancient pine forests can be found, consisting mainly of *Pinus teocote* and *P. strobiformis*.

We make a special mention of xerophytic flora for at least two main reasons; first because of the

summary →



Two endemic species:
● *Nolina humilis*, Órgano.
● *Mammillaria bocasana* ssp. *ezchauzieri*, Cañada de Lobo (left).

Endemic species

Family	Genus-species
ASPARAGACEAE	<i>Nolina humilis</i> ●
ASTERACEAE	<i>Koanophyllon rzedowskii</i>
ASTERACEAE	<i>Senecio heterodontus</i>
CACTACEAE	<i>Coryphantha potosina</i>
CACTACEAE	<i>Mammillaria bocasana</i> ssp. <i>ezchauzieri</i> ●
CISTACEAE	<i>Helianthemum argenteum</i>
CONVOLVULACEAE	<i>Ipomoea schaffneri</i>
CRASSULACEAE	<i>Sedum fuscum</i>
CUCURBITACEAE	<i>Echinopepon palmeri</i>
POACEAE	<i>Schaffnerella gracilis</i>

summary →



1



2



3

great importance these species have conferred due to conservation issues, second because they are useful to distinguish the prehistoric similarities with other regions (See Sierra Sta. Barbara by Claudia L. Martinez), not to mention the interest manifested by our readers for these species. Thus, as to the drought tolerant plants the following species were found: See Tables in pages 11 and 12.

Likewise, it is extremely important to mention the species found in the region and which are exclusive or quasi-exclusive to the mountains, this in order to direct conservation strategies in such a manner to avoid affecting the local biodiversity. Therefore, in terms of apparently micro-endemic, or unique to these mountains, the following species were found: See Table in page 9

Families which were most abundant were *Asteraceae* (106 spp.), *Poaceae* (87 spp.) and *Cactaceae*

1 - *Coryphantha clavata* ssp. *miquelitensis* nom. prov., *La Mina Elizabet*. 2 - *Coryphantha clavata* ssp. *stipitata*, *Cañada de Lobo*. 3 - *Agave* aff. *parryi*, *La Mesa Redonda*.

(38 spp.), however mostly species of the genus *Quercus* are the dominant.

Fauna

Due to the lack of necessary equipment, as well as financial and material resources such as traps, camera traps, mist nets, etc., faunal analysis cannot be regarded as complete as the flora, for instance it is clear from the beginning of the lack of identifications for rodents, reptiles and bat among others.

Significantly, species that historically existed in



Pachyphytum hookeri, Arroyos-Tierra Blanca.



Echeveria miquelitis nom. prov., Cañón de la Laja
Sierra de San Miguelito

Xerophilous flora

No.	Family	Genus-species	N	S
1	ASPARAGACEAE	<i>Agave gentryi</i> B.Ullrich	1	1
2		<i>Agave parryi</i> Engelm.	1	1
3		<i>Agave schidigera</i> Lem.	1	1
4		<i>Beschorneria rigida</i> Rose	1	1
5		<i>Calibanus hookeri</i> (Lem.) Trel.	1	1
6		<i>Dasyllirion cedrosanum</i> Trel.		1
7		<i>Dasyllirion parryanum</i> Trel.	1	1
8		<i>Manfreda guttata</i> (Jacobi & C. D. Bouché) Rose	1	1
9		<i>Manfreda maculosa</i> (Hook.) Rose	1	1
10		<i>Nolina humilis</i> S.Watson	1	1
11		<i>Nolina parviflora</i> (Kunth) Hemsl.	1	1
12		<i>Nolina texana</i> S. Watson		1
13		<i>Yucca filifera</i> Chabaud	1	1
14	BROMELIACEAE	<i>Hechtia glomerata</i> Zucc.	1	1
15	CRASSULACEAE	<i>Echeveria agavoides</i> Lemaire	1	1
16		<i>Echeveria humilis</i> Rose	1	1
17		<i>Echeveria lutea</i> Rose		1
18		<i>Echeveria schaffneri</i> (S.Watson) Rose	1	
19		<i>Graptopetalum pachyphyllum</i> Rose	1	1
20		<i>Pachyphytum hookeri</i> (Salm-Dyck) Berger	1	1
21		<i>Sedum fuscum</i> Hemsley	1	1
22		<i>Sedum glabrum</i> (Rose) Praeger	1	1
23		<i>Sedum liebmannianum</i> Hemsl.	1	1
24	CACTACEAE	<i>Coryphantha clavata</i> (Scheid.) Backbg.)	1	
25		<i>Coryphantha clavata</i> ssp. <i>stipitata</i> (Scheidw.) Dicht & A.Lüthy		1
26		<i>Coryphantha potosiana</i> (Jacobi) glass & Foster	1	1
27		<i>Cylindropuntia imbricata</i> (Haw.) F. M. Knuth	1	1
28		<i>Cylindropuntia perrita</i> Griffiths	1	1
29		<i>Cylindropuntia tunicata</i> (Lehm.) F.M.Knuth		1
30		<i>Echinocactus horizonthalonius</i> Lemaire	1	
31		<i>Echinocereus enneacanthus</i> Engelm.	1	1
32		<i>Echinocereus polyacanthus</i> var. <i>densus</i> (Regel) N.P.Taylor	1	1

Xerophilous flora				
No.	Family	Genus-species	N	S
1	CACTACEAE	<i>Echinocereus pulchellus</i> (Mart.) K.Schum.	1	1
2		<i>Echinocereus triglochidiatus</i> Engelm.	1	1
3		<i>Ferocactus histrix</i> (DC.) G.E.Linds.	1	1
4		<i>Ferocactus latispinus</i> (Haw.) Britton & Rose	1	1
5		<i>Mammillaria bocasana</i> Poselg.	1	
6		<i>Mam. bocasana</i> ssp. <i>eschauzieri</i> (J.M. Coult.) Fitz Maurice & B. Fitz Maurice	1	1
7		<i>Mammillaria crinita</i> subsp. <i>crinita</i>	1	1
8		<i>Mammillaria decipiens</i> Scheidw.		1
9		<i>Mammillaria densispina</i> (Coulter) Orcutt	1	1
10		<i>Mammillaria lloydii</i> (Britton & Rose) Orcutt	1	
11		<i>Mammillaria magnimamma</i> Haw.		1
12		<i>Mammillaria muehlenpfordtii</i> Foerster		1
13		<i>Mammillaria orcuttii</i> Boed.	1	1
14		<i>Myrtillocactus geometrizans</i> (Mart.) Console	1	1
15		<i>Mammillaria trichacantha</i> (K. Schum.) Britton & Rose		1
16		<i>Opuntia engelmannii</i> ssp. <i>lindheimeri</i> (Engelm.) U. Guzmán & Mandujano	1	1
17		<i>Opuntia hyptiacantha</i> Web.		1
18		<i>Opuntia joconostle</i> F.A.C. Weber	1	1
19		<i>Opuntia lasiacantha</i> Pfeiff.	1	1
20		<i>Opuntia leucotricha</i> DC.	1	1
21		<i>Opuntia micrarthra</i> Griffiths	1	1
22		<i>Opuntia streptacantha</i> Lem.	1	1
23		<i>Opuntia tomentosa</i> Salm-Dyck	1	1
24		<i>Stenocactus coptonogonus</i> Berger		1
25		<i>Steno. dichroacanthus</i> ssp. <i>violaciflorus</i> (Quehl) U. Guzmán & Vazq.-Ben.	1	1
26		<i>Stenocactus ochoteranianus</i> Tiegel	1	1
27		<i>Stenocactus sulphureus</i> (A. Dietr.) Bravo		1
28		<i>Stenocactus tricuspидatus</i> Berger		1
29		<i>Stenocereus griseus</i> (Haw.) Buxb.	1	
30		LENTIBULARIACEAE	<i>Pinguicula macrophylla</i> Kunth	1
31	<i>Utricularia livida</i> E. Meyer		1	1

Mammillaria spp., Cañada de Lobo.



Ferocactus histrix, Cañón de la Laja, Villa de Reyes.





1 - *Stenocactus phyllacanthus*, *Picacho del Águila*. 2 - *Coryphantha potosiana*, *Cerro el Potosí*. 3 - *Echinocereus acifer*, *Cerro Peñas Blancas*. 4 - *Mammillaria bocasana* ssp. *eschauzieri*, *Rio la Laja*. 5 - *Mammillaria bocasana* ssp. *eschauzieri*, *La Mina Elizabeth*. 6 - *Mammillaria aff nana*, *Bledos*. 7 - *Mammillaria magimamma*, *Mesa el Corral Falso*, *Villa de Reyes*. 8 - *Stenocactus* sp., *A. Potosino*. 9 - *Stenocactus* sp., *Rio la Laja*. 10 - *Stenocactus ochoterenanus*, *Paso Blanco*.



1 - *Stenocactus sp.*, El Fraile. 2 - *Stenocactus sp.*, El Órgano. 3 - *Stenocactus sp.*, La Mina Elizabet. 4 - *Pachyphytum hookerii*, C. el Picacho del Fraile. 5 - *Echeveria agavoides*, Cañón de la Laja Sierra de Sn Miguelito. 6 - *Pachyphytum hookerii*, Arroyos-Tierra Blanca. 7 - *Pachyphytum hookerii*, Cañón de la Laja SSM Villa de Reyes. 8 - *PheMERanthus humilis*, Área Mineralizada la Blanca. 9 - *Sedum fuscum*. 10 - *Sedum fuscum*, Mesas de Juan de León Sierra de San Miguelito.

summary →



Mammillaria densispina, Mesa Romerillos.

summary →



Stenocactus ochotherenanus, Arroyo San Miguel.

summary →



Mammillaria densispina fma. rubra, Arroyos-Tierra Blanca



Stenocactus ochotherenanus, C. el Hormiguero.

summary →



summary →

summary →

Pinguicula macrophylla, Mesas de Juan de León .



summary →

summary →

Mammillaria densispina, El Órgano



1



2



3

1- *Corallorhiza wisteriana* (Orchidaceae), Tepozán.
2- *Peperomia monticola*, Las Capillas. 3- *Pinus strobiformis*, El Órgano.

the mountains were the Mexican Wolf (*Canis lupus baileyi*), wild turkey (*Meleagris gallopavo intermedia*), and collared peccary (*Tayassu tajacu*). There is, if not surprisingly enough, a fish species that is endemic: *Xenophrys captivus*, which is seriously threatened as it depends on the few tributary rivers that exist in the southern mountainous region and these are directly influenced by the higher altitude vegetation and the presence of fire, being the best preserved areas while being the more humid, but in turn, present more risk of fire due to the large amount of biomass that they accumulate. See Tables below and at right.

Environmental risks and social problems

Natural wildfires: apparently the incidence of some forest fires are natural, since the accumulation of biomass is occurring in large quantities in the conserved regions and vegetation appears to have high resilience to this type of damage when they are sporadic only.

Mammals

<i>Canis latrans</i>
<i>Didelphis virginiana</i>
<i>Lepus californicus</i>
<i>Lynx rufus</i>
<i>Mustela frenata</i>
<i>Odocoileus virginianus</i>
<i>Procyon Lotor</i>
<i>Puma concolor</i>
<i>Sylvilagus audubonii</i>
<i>Echinopepon palmeri</i>
<i>Schaffnerella gracilis</i>

Arsons: accidental fires are caused at present by campers mainly by abandoning gas bottles and leaving open fires behind. In the past, when charcoal production was common, fires started often by not watching closely the charcoal production piles. It is also worth mentioning that we also learned of arson incidents by villagers, whether because of issues relating to land occupancy, land use or political intentions.

The social problem lies almost entirely on issues relating to land occupancy, the part of the mountain range that forms the basin where the capital is located, is because of its proximity under constant threat due to urban developments intended typically to create high value residential areas.

Building houses in the low hills preceding the

Birds

<i>Aphelocoma californica</i>
<i>Aquila chrysaetos</i>
<i>Bubo virginianus</i>
<i>Buteo albonotatus</i>
<i>Buteo jamaicensis</i>
<i>Callipepla squamata</i>
<i>Campylorhynchus brunneicapillus</i>
<i>Caracara plancus</i>
<i>Cardinalis cardinalis</i>
<i>Cardinalis sinuatus</i>
<i>Cathartes aura</i>
<i>Centrus aurifrons</i>
<i>Colaptes auratus</i>
<i>Colinus virginianus</i>
<i>Columbina inca</i>
<i>Coragyps atratus</i>
<i>Corvus corax</i>
<i>Cyananthus latirrostris</i>
<i>Dendroica coronata</i>
<i>Elanus leucurus</i>
<i>Falco mexicanus</i>
<i>Falco sparverius</i>
<i>Geococcyx californianus</i>
<i>Icterus parisorum</i>
<i>Mimus polyglottos</i>
<i>Myadestes occidentalis</i>
<i>Parabuteo unicinctus</i>
<i>Pipilo fuscus</i>
<i>Pipilo maculatus</i>
<i>Polioptila caerulea</i>
<i>Pyrocephalus rubinus</i>
<i>Sialia spp.</i>
<i>Sphyrapicus varius</i>
<i>Toxostoma curvirostre</i>
<i>Turdus grayi</i>
<i>Turdus rufopalliatus</i>
<i>Tyrannus vociferans</i>
<i>Tyto alba</i>
<i>Wilsonia pusilla</i>



mountains has caused, for more than twenty years ago, big problems with flooding triggered by rain, affecting the rest of the city, yet construction continues as it is the area with the highest residential value. Likewise, the presence of these houses in the highlands cause a shortage of drinking water in the lower parts of the city by supplying water for residents of the highlands areas.

The threats in the area are very diverse; the region is severely affected by overgrazing, irrational exploitation of natural resources, such as illegal logging of *Pinus cembroides* for Christmas trees. Likewise it was also observed that currently various species are being collected to serve as Christmas ornaments, among which: *Ferocactus latispinus*, *Ferocactus hystrix*, *Mammillaria bocasana*, *Mammillaria magnimamma*, *Stenocactus* sp., *Coryphantha potosina*, *Coryphantha clavata*, *Echeveria agavoides*, *Echeveria humilis*, *Sedum glabrum*, *Tillandsia us-*

Regeneration of a burned area in the high part of San Miguelito, photo by José Gabriel Hernández Marín.

neoides, *Peperomia* sp. and *Selaginella* sp. These species are offered for sale in all markets, both in the streets and the permanent stores, at bargain prices.

Conclusions

The Sierra de San Miguelito presents a varied diversity, consisting of 579 species, due to the contrasting variations in climate and exposure, altitude and the steepness of the terrain.

This is further proven by the large number of endemic or rare species or fragmented populations which are separated by ecological boundaries, such as the Sierra San Miguelito and the Sierra Sta. Bárbara.



summary →

summary →

Regeneration of a burned area in the high part of San Miguelito, photo by José Gabriel Hernández Marín.



Ritual stone circle made by natives of the Guachichil tribe.

Declaring the region as a protected natural area (ANP) is urgently required, even more after the approval of the already existing "Technical Justification Study", in order to protect it properly and thus ensure the future supply of water to the capital city.

Also the high level of degradation observed in the area in question is so evident, that it is imperative to implement not only reforestation programs, but also of sustainable use and management programs, to teach rural communities how to get their much needed resources from the field and still implement good strategies for reforestation, to reforest with archetypal vegetation types and corresponding species, to implement proper management such as crafting collection trenches and performing reforestation activities during the rainy season in order to increase the survival rate.

By the same token, in order to prevent the looting of species special programs should be implemented, to teach people to collect sustainably species, or if not possible, to cultivate these species and legally sell them, as in the case of Christmas trees and other seasonal "ornaments" already mentioned above, as well as specialized nurseries

for propagation of species that are usually gathered in much longer periods during the year. Although not all of them are considered threatened species, abuse and over-collection can result in the inclusion in the corresponding Mexican Official Normativity 059 SEMARNAT 2010, as the case of *Echeveria agavoides*, *Pachyphytum hookeri*, *Coryphantha clavata* ssp. *stipitata* and others.

Emphasis should be given to facilitate advice regarding the sustainable use and conservation of natural resources through courses and workshops, productive projects such as tree nurseries focused on species that are currently over-collected, boosting the cooperative activities conforming to regional trade and livestock management plans and implementation of strategies supporting ecosystem restoration; there are several easily accessible and inexpensive methods that can be applied, such as the mending of gullies, creation of filtration dams, cobblestone paving along the contour lines, etc.

Finally, this paper encourages government to shift to a policy linked to the environment, which in this case not only indirectly affects the city, but also impacts decisively on local social welfare.

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Notes

- 1 Map: The blue line represents the basin where the city is located, the purple shadow represents the area of influence of the capital city and the white polygon indicates the Sierra de San Miguelito.
- 2 The Chichimeca War took place mainly in the current states of Zacatecas, Guanajuato, Aguascalientes, Jalisco and San Luis Potosí between Zacatecos and Guachichiles natives against the Spaniards and their indigenous allies. It consisted of a series of conflicts over sovereignty of native tribes and happened between 1547-1600, most of these conflicts revolved around the gold and silver veins that were very abundant in the region: Cerro de San Pedro, La Bufa, Real de Catorce, Concepción del Oro, Charcas, etc.
- 3 La Nopalera is an area where cactus populations occur naturally and where dominant were species of the genus *Opuntia*.
- 4 The Porfiriato or Porfirism is the historical period during which the exercise of power in Mexico was under the control of Porfirio Díaz. (Wikipedia)

Regeneration of a burned area in the high part of San Miguelito, photo by José Gabriel Hernández Marín.

peru

between mountains and sea



Håkan Sönnermo

Translation by Erik Holm

Well, I was back in Peru, this chaotic but totally amazing country! After driving our car through Lima's inhuman traffic, for a vehicle inspection and approval, we finally left Lima driving

northbound.

When you go way north from Lima you just see sand and rock. The road is dug out of the sand and you could almost expect it to flow into the sea. How can everything stay where it is? Will it? Perhaps it is best not to stay here but just go ahead despite the stunningly beautiful ocean like views. There is no life at all, just sand and more sand blowing around. Here falls no rain at all, but the only thing



Loxanthocereus sp., Haageocereus sp...? Chancay, N Lima.

summary →





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1, 2 & 3 - *Haageocereus tenuis*, Chancay, N Lima.

that could possibly fall from the sky is a little damp mist from the sea. No life at all exists here.

As we approach Chancay, a town situated at the mouth of a river which has its source high in the Andes, we see for the first time, a little green around the river. The water that should just run into the ocean is domestically used by the people of Chancay and for various irrigation projects. A

calm wondering runs through my head: what will happen to all these cities that are so dependent on water from the mountains when glacial ice has melted away in global warming?

We continue north and stop at a place that has become one of my favorite places. This is the life! Despite the fact that what we see is just sand and bare rock, I know that here we will find a colony of *Haageocereus tenuis*. We park the car and walk out into the desert with a few water bottles and our camera. Soon we meet *Haageocereus tenuis* lying in the sand. It is quite a large colony that we found last year. We observe several budding



1

1 - *Haageocereus tenuis*. Chancay, N Lima. 2 - Carlos Alberto Jiménez López & *Haageocereus tenuis*, Chancay, N Lima.

specimen and notice that all plants are directed away from the sea. One might think that they should be directed towards the sea instead taking advantage of the little moisture that come with the mist from the sea. This habit was seen in almost all the species we saw near the coast. Could it be that the plants are protecting themselves against the drifting sand?

We continue up into the mountains and meet several *Loxanthocereus acanthurus* ssp. *pullatus* that reveal themselves with their beautiful red flowers. They grow along with *Haageocereus* sp. and both are very similar so without flowers, it is difficult to decide which is which.

I continue alone even further into the mountains and dunes. After a walk of 30 minutes I discover, to my great delight a new colony of *Haageocereus tenuis*. Beautiful red fruits are on some plants. On the way back we climb up on the hills overlooking the sea. Up there grow fine specimens of *Loxanthocereus* / *Haageocereus*. We are very pleased with these hours in the kingdom of sand

2





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2

1 & 2 - *Haageocereus pseudomelanosteles* ssp. *chryseus*, N Barrancas

and return to the car for the onward journey to Pativilca.

Here, we made several attempts to find *Haageocereus lanugispinus* among the sand dunes outside Paramonga without any result. It is perhaps unfortunately extinct.

After an overnight stay in Barranca and a swim in the ocean we went further north to Fortaleza de Paramonga, a beautiful building that was erected for religious purposes by the Chimor people in Peru during the years 1200-1400. After our visit there we went north and found both *Mila* and *Haageocereus* and large fields of *Tillandsia* growing near the road. We climbed up on a mountain top and studied *Haageocereus pseudomelanosteles* ssp. *chryseus*. This beautiful plant lit up the otherwise barren hillside with its yellow stems and white flowers.

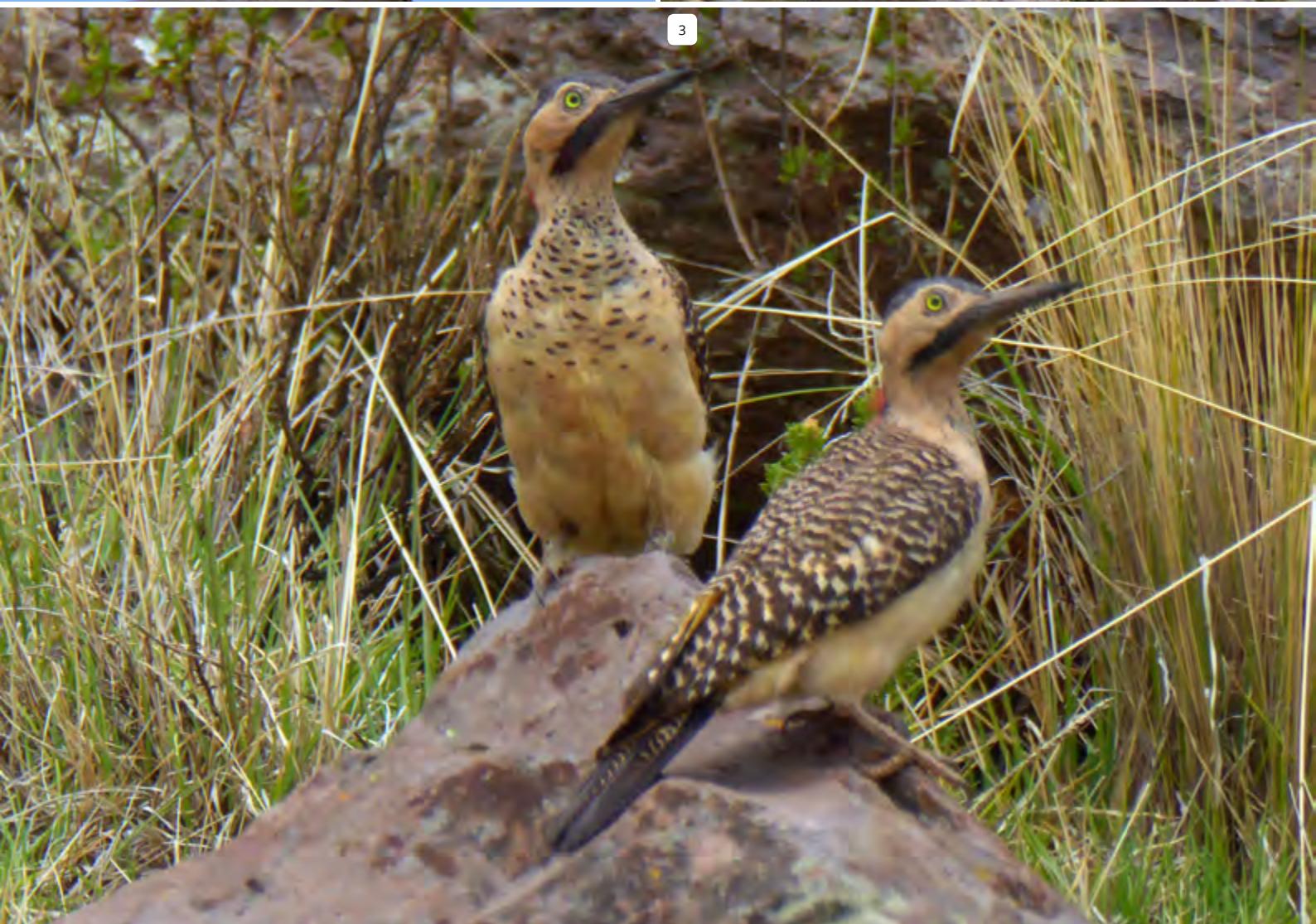
On the way back to Barrancas, we made a detour down to the ocean to see if we could find any plant life. But here it was just sand and rock without any



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life. We did, however, have a nice swim at Punta Bermejo.

The next day we made an effort to travel to Cajatambo way up in the Andes. The road was terribly bad and after a 5 mile journey, our car broke down but luckily we got help from another car that towed us back to Paramonga for repair. During the stop and while waiting for help, we found some beautiful, large *Haageocereus* sp. which grew near a stream. We successfully collected some seeds from these *Haageocereus*.

1- Falcon on a rock. 2 - *Bubo virginianus*, at 4800 m, close to Macusani. 3 - *Colaptes rupicola*.

We even saw some great *Armatocereus* high up in the mountains.

It was probably lucky that we didn't come forward on the road to Cajatambo for we were told about a car that plunged down a steep a little higher up. On my previous visit to Cajatambo a



Cumulopuntia boliviana, Lago Umayo, Puno, 4100m.





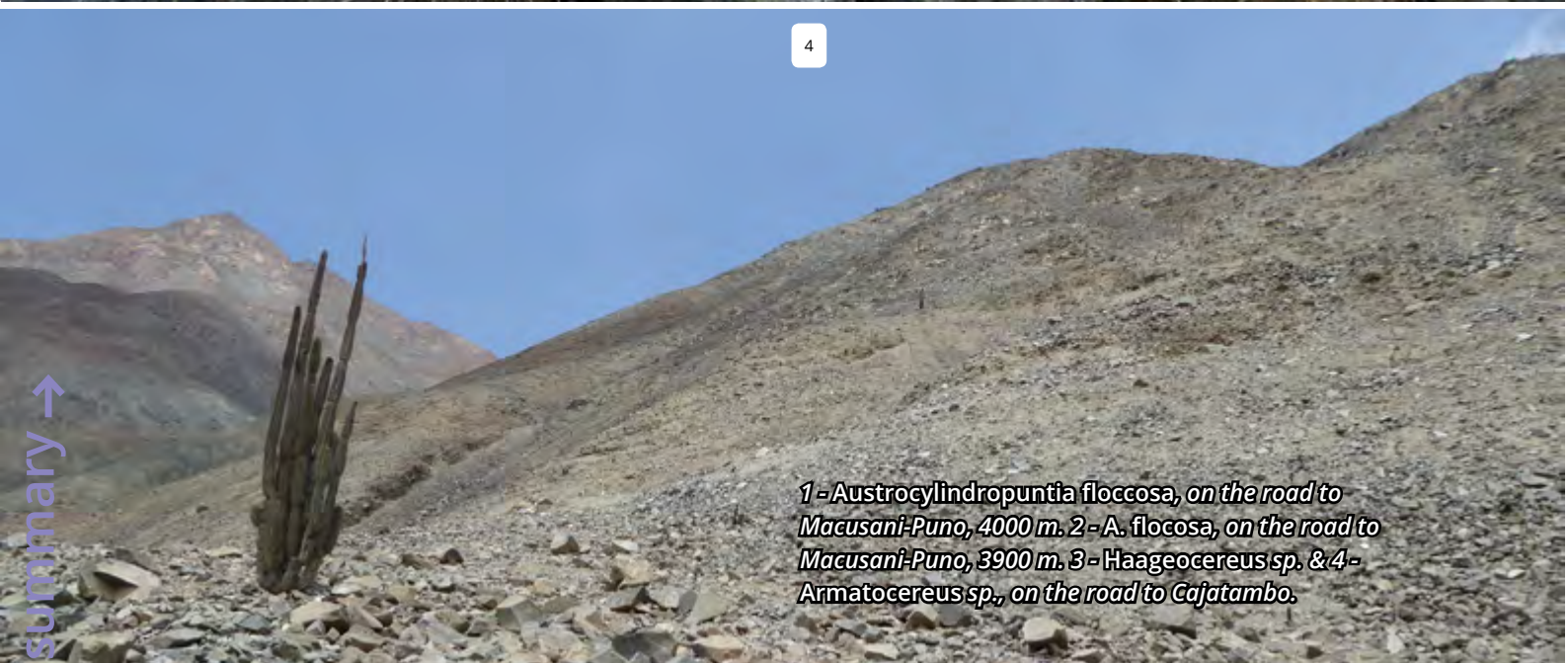
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1 - *Austrocylindropuntia floccosa*, on the road to Macusani-Puno, 4000 m. 2 - *A. floccosa*, on the road to Macusani-Puno, 3900 m. 3 - *Haageocereus* sp. & 4 - *Armatocereus* sp., on the road to Cajatambo.



(*Cleistocactus acanthurus*)

- 1 - *Loxanthocereus convergens ssp. pullatus*, Chancay.
- 2 - *L. convergens*, on the road to Omas.



(*Cleistocactus acanthurus*)

few years ago, I remember the difficult road that runs right next to a 500 m steep bluff.

After the car was repaired, we drove south again. We stopped at Punta Lachay and did a short stint near the sea to investigate whether there were any cacti. None were found and when we were driving back the car was stuck in the loose sand. Thanks to some fishermen we got it free again and continued our travel to Lima.

Next day we went on a trip to Omas to possibly catch sight of *Islaya*. After a few hours of driving on relatively good roads we discovered these special plants right next to the road. Some were in bloom but we were looking in vain for seeds. Right next door were some very beautiful *Loxanthocereus convergens* with red, beautiful flowers. Direct hit! We did not drive on towards Omas but turned around and went back to Lima again. In the midst of the violent traffic the car broke down again! Not



Haageocereus sp. growing in sandy mountains north of Barrancas.



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1 & 2 - *Islaya omasensis*, on the road to Omas. 3, 4 & 5 - *Lobivia maximilliana*, Lago Umayo, Puno. 6 - *Mila caespitosa*, north of Barrancas.

easy being a motorist in Lima and even worse with the engine not working!

The following day I traveled from Lima to Juliaca which is around 4000m altitude. In Juliaca a few friends waited with the car and we went to Puno

where we ended up in the middle of a dancing party. Not quite the recommended acclimation!

But after a good night's sleep and a rainy night I woke up to sunshine and a trip to Lago Umayo outside Puno. High altitude makes the walk slow here. Here we saw lots of *Lobivia maximilliana* with its red flowers and also a lot of *Cumulopuntia boliviana* ssp. *dactylifera*. The view of Lake Umayo was fantastic!

The next day, I wanted to travel to Lake Titicaca



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to row with a rowing boat. We traveled south towards Vilcauta and drove then down the road to Cachipucara. At the lake we got hold of a fisherman who lent us his rowboat and I got quiet for a moment on the lake. Lovely! On the way home we stopped at a few places, among others at a school with a promising mountain in the background. After a walk, I found both *Lobivia maximilliana* and *Cumulopuntia boliviana*. An additional stop was made at Sorapa where *Cumulopuntia boliviana* was encountered again and a *Lobivia* sp., possibly

1 - *Punotia lagopus*, Macusani at 4100 m, Puno, Peru. 2, 3 & 4 - *P. lagopus*, 4300 m, Macusani.

Lobivia pamapana.

The days in Peru were approaching the end but I definitely wanted to travel up into the Andes again to see my favorite cacti. After a lot of car trouble with five hours of waiting in Azángaro, angry dogs, police checks and salvage we could finally approach



1



2

1 - Tillandsia sp., north of Barrancas. 2 - The author, Lago Umayo, Puno, 4100m, January 2015.

the mountains. The first *Austrocyllindropuntia floccosa* grew near the banks of the Rio Crucero towards Macusani. There, together with *Lobivia maximilliana*. We went ahead and soon the first *Punotia lagopus* appeared. Like large pillows or prehistoric animals they are glooming with their yellow color. Whenever I see these amazing plants I am filled with great joy. After taking many photos and collecting seeds we drove further north and up to higher altitudes. The weather was sunny and warm and we enjoyed every second. After more meetings with *Austrocyllindropuntia floccosa* and *Punotia lagopus* we ate a quick lunch in Macusani and went north to further meet my favorites, now with Nevado Alicapac in the background, the snowy peaks made the scenery complete.

Late in the afternoon we traveled home towards Puno again, happy inside.

The journey then went over Lima and back to Sweden well aware that it was not the last time I visited Peru!

sierra de santa bárbara the southernmost region of "el gran tunal"

Contributions



Claudia López Martínez

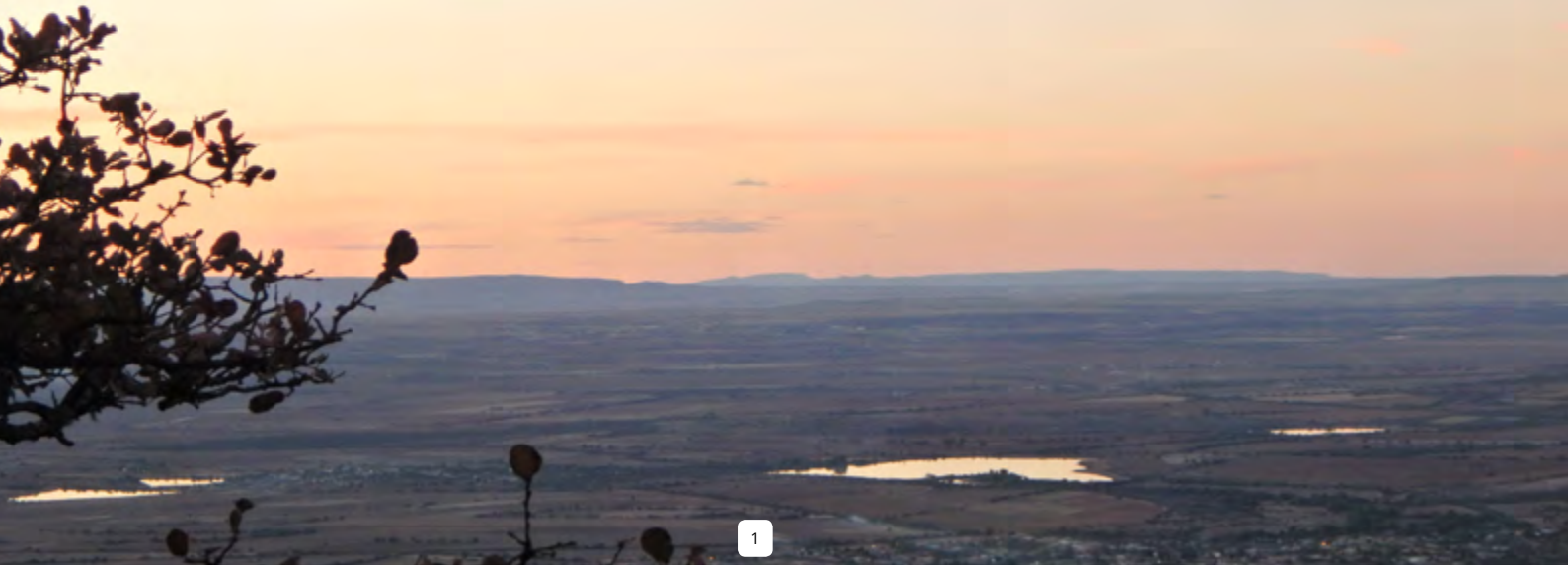
"Have you seen how plants grow? In the place where the seed falls comes the water: it is the water that germinates, and rises to the sun. On the trunk, the branches of water rise into the air ... Plants grow from one day to another. It is the land that grows; it becomes soft, green, and flexible. The rusty lump, the bark of old trees, it detaches, and returns". J. Sabines



summary →

Presa del Rosario

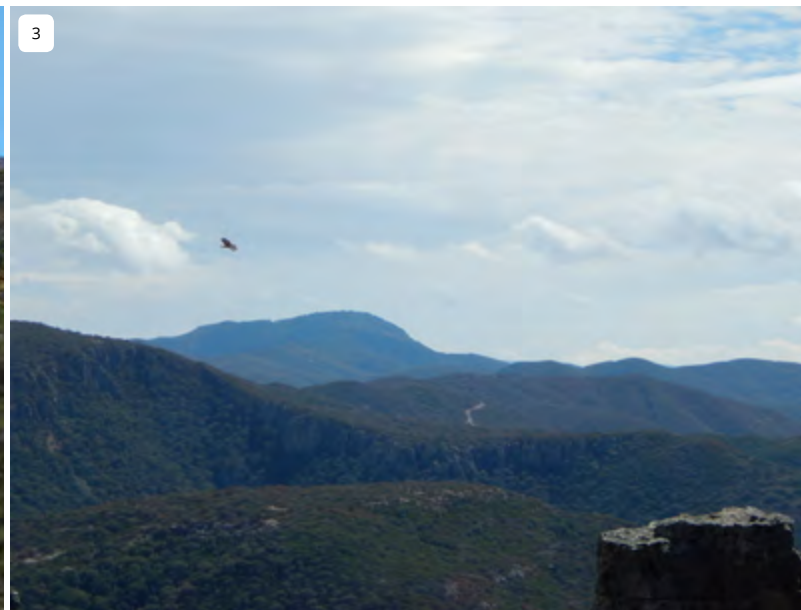




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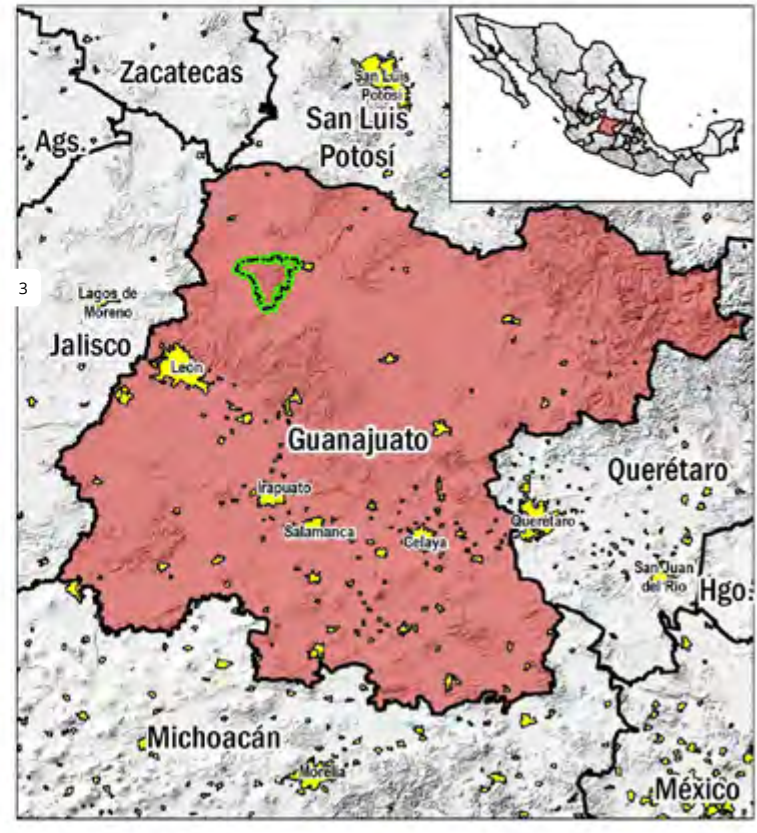
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At the triple frontier (San Luis Potosí, Zacatecas, Jalisco), with the adjoining state of Guanajuato in the northwestern part, lies the town of Ocampo. Founded in the early eighteenth century, this town was of great importance in the colonial era because the precious golden cargo was transiting through it, on the road always besieged by the natives. Purépecha, Otomi and Chichimeca were the ethnic groups that inhabited the region before the arrival of the Spaniards. It was also the territory of armed

1 - *The Community of Santa Bárbara, Ocampo.* 2 - *Asociación of Pinus and Quercus.* 3 - *Mesa de la Tortuga.*

clashes during the revolution, the Sierra de Santa Barbara southwest of the town was a good hiding for Villa and Carranza soldiers, while supporting the people lived in the lower parts.

Mining (tin), logging, hunting and grazing animals are some of the relationships that the inhabitants of this area had (and still have) with the Sierra in question: Santa Barbara.



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Map of the region, specially created for Xerophilia by Miguel Angel González Botello. 1 - Tillandsia spp. 2 - Comarostaphylis polifolia

In terms of natural history

The Sierra de Santa Barbara is a region in which oak forests are prevailing, with some areas of pine forests and secondary vegetation surrounded by pastures and rain fed agricultural land. The dominant climate is temperate, with an average annual temperature between 12°C and 18°C, and with a minimum of -3°C and 18°C; annual rainfall of 200 to 1.800 mm.

The geological formation is of extrusive igne-

ous origin and 100% of the soil is of the Phaeozem haplic type (PHH). (FAO-UNESCO, 1989)

The main types of vegetation and land use in this region are: Oak forest (45%), agriculture, livestock and forestry (26%), natural grassland (20%) and Pine forest (9%). There is oak forest vegetation in good condition, especially in remote areas with no roads. La Sierra de Santa Barbara-Santa Rosa is considered state wide the richest area in regards to the variety of the oaks. Although logging represents a serious problem, this Sierra still plays an important role as a biological corridor for the continuity of oak forests and also provides an important environmental service mainly due to water uptake.

summary →



Materials and methods

In the period from September to February (2014-2015) several tours in different parts of the Sierra have been conducted, with the aim of generating a flora and fauna review for this area. Partial results are presented in the corresponding annexes.

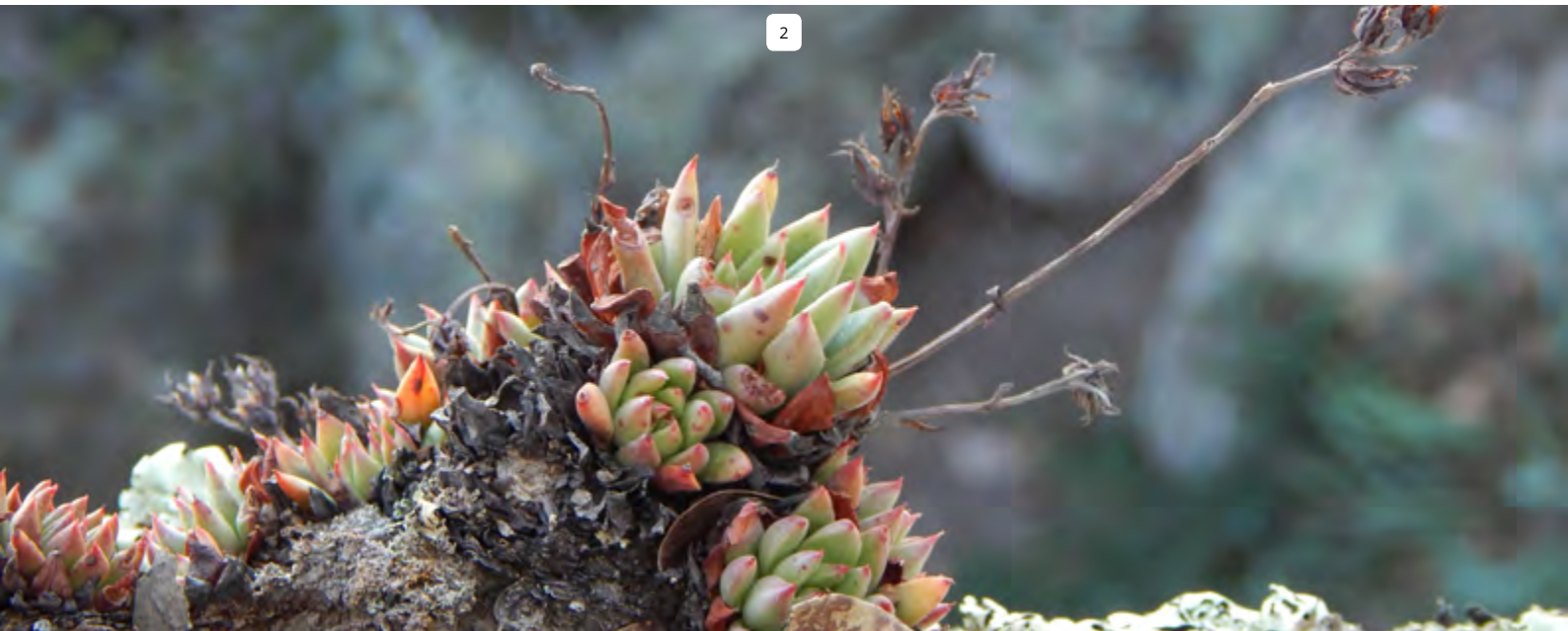
Among the major identified species stands out the genus *Quercus* (oak trees) with about 7 species, *Pinus cembroides* (Mexican pinyon), *Juniperus flaccida* (Weeping juniper) and *Buddleja sessiliflora* (Rio Grande Butterfly-bush, in disturbed areas). Other species of shrub layer are: *Arctostaphylos pungens* (pointleaf manzanita or Pingüica), *Comarostaphylis polifolia* (Mexican comarostaphylos), *Dasyilirion parryanum* (Blue desert spoon), *Agave parryi* (Par-

1 - *Agave aff. neomexicana*. 2 - *Beschorneria rigida*.
3 - *Agave parryi*.

ry's agave), *Yucca filifera* (Joshua tree) *Beschorneria rigida* (Agave lily), some grasses from genera *Bromus*, *Muhlenbergia*, *Chloris* and *Aristida* are also present. At the same time, a list of managed species (Appendix 1) was generated, primarily medicinal plants, information obtained through informal interviews. Most of the collected data were provided by Mrs. Teresa Martínez who has extensive knowledge of the Sierra and its resources.



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The Sierra de Santa Barbara

This Sierra has priceless forest resources, which bring a vital contributing to the development and welfare of surrounding populations, either from the ecological point of view (source of biodiversity, protection of hydrographic basins, shelter for wildlife) as from a socio-economic point of view (generating income through seasonal employment, covering basic needs of rural communities, such as food, fuel, medicines, etc.).

In the list of species present-verified (Appendix 1), regardless of the *Fagaceae* family, stand out the families *Asparagaceae* and *Cactaceae*. Although much of the problems in this Sierra consist in the gathering of cactus species, it is notorious that

1 - *Pachyphytum brevifolium*. 2- *Echeveria sp 1*.

these plants are not being attractive for the residents of the area.

Otherwise the crassulacean species are receiving a constant pressure from looting, mainly in holiday seasons, are sold by sacks with individuals of all sizes, also removal of moss which is used for Christmas decorations, and the thin layer of oak leaves mould collected for diverse purposes, are among other causes that negatively affect the growth and reproduction of these vulnerable species.



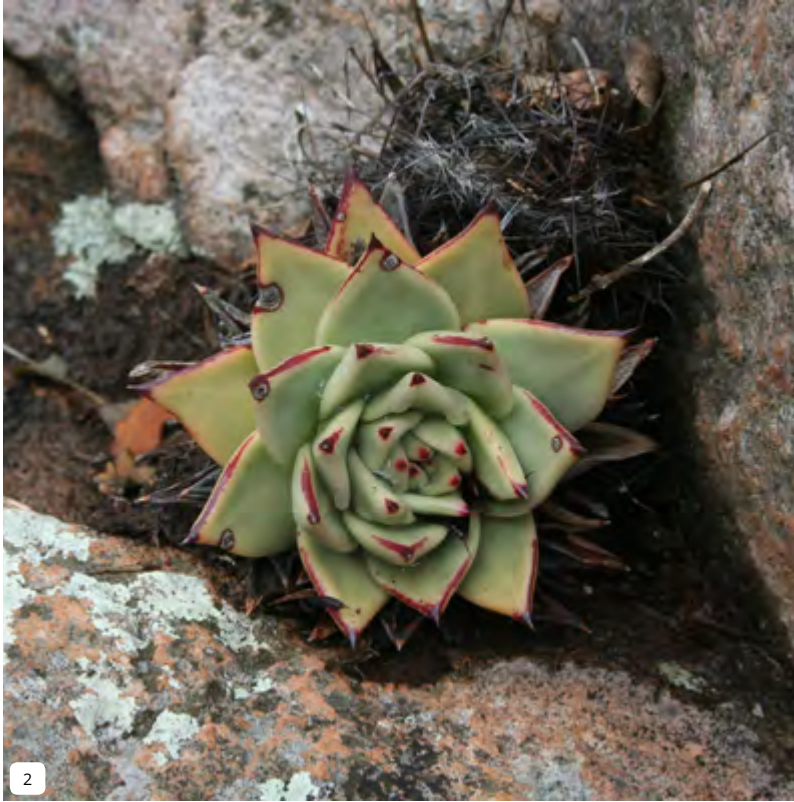
Graptopetalum pachyphyllum

No.	Family	Genus-species	Authority	Status	Confirmation	Geoform	Use
1	Asparagaceae	<i>Schinus molle</i>	L.	In	Verif.	Valley	ritual
2		<i>Beschorneria rigida</i>	Rose	N	Verif.	Sierra	Ornamental
3		<i>Milla biflora</i>	Cav.	N	Verif.	Sierra	Comestible
4		<i>Dasyllirion parryanum</i>	Trel.	N	Verif.	Sierra	None
5		<i>Nolina humilis</i>	S.Watson	N	Verif.	Pasture	Textile-fiber
6		<i>Nolina texana</i>	S.Watson	N	Verif.	Sierra	Textile-fiber
7		<i>Agave filifera</i> ssp. <i>schidigera</i>	Lem.) A.Terracc.	N	Verif.	Sierra	Textile-fiber
8		<i>Agave parryi</i>	Engelm.	N	Verif.	Sierra	Textile-fiber
9		<i>Yucca filifera</i>	Chabaud	N	Verif.	Sierra	Tools
10		<i>Hemiphylacus latifolius</i>	S.Watson	N	Verif.	Sierra	None
11		<i>Agave filifera</i> ssp. <i>schidigera</i>	Trel	N	Verif.	Sierra	Textile-fiber
12	Asteraceae	<i>Machaeranthera tanacetifolia</i>	(Kunth) Nees	N	Verif.	Sierra	None
13	Begoniaceae	<i>Begonia gracilis</i>	Kunth	N	Verif.	Sierra	Ornamental
14	Bromeliaceae	<i>Tillandsia tortilis</i>	Baker	N	Verif.	Sierra	None
15	Cactaceae	<i>Mammillaria densispina</i>	(J.M. Coult.) Orcutt	N	Verif.	Sierra	None
16		<i>Echinocactus acifer</i>	Hopffer ex C.F.Först	N	Verif.	Sierra	None
17		<i>Mammillaria trichacantha</i>	(K. Schum.) Britton & Rose	N	Verif.	Sierra	None
18		<i>Stenocactus ochoterenianus</i>	Tiegel	N	Verif.	Sierra	None
19		<i>Stenocactus coptonogonus</i>	(Lem.) A. Berger ex A.W. Hill	N	Verif.	Valley	None
20		<i>Ferocactus latispinus</i>	(Haw.) Britton & Rose	N	Verif.	Valley	Comestible
21		<i>Ferocactus histrix</i>	(DC.) G.E.Linds.	E	Verif.	Sierra	None
22		<i>Helianthemum glomeratum</i>	(Lag.) Lag. ex Dunal	N	Verif.	Sierra	Medicinal
23	Comelinaceae	<i>Thilandsia</i> spp. 1	*	*	Verif.	Sierra	None
24		<i>Thilandsia</i> spp. 2	*	*	Verif.	Sierra	None
25	Convulolaceae	<i>Ipomoea capillacea</i>	(Kunth) G. Don	N	Verif.	Valley	None
26	Crasulaceae	<i>Echeveria agavoides</i>	Lem.	N	Verif.	Sierra	Ornamental
27		<i>Echeveria</i> spp. 1	*	*	Verif.	Sierra	Ornamental
28		<i>Villadia aristata</i>	Moran	N	Verif.	Valley	Ornamental
29	Cupressaceae	<i>Juniperus flaccida</i>	Schldtl.	N	Verif.	Sierra	None

No.	Family	Genus-species	Authority	Status	Confirmation	Geoforn	Use	
30	<i>Ericaceae</i>	<i>Arctostaphylos pungens</i>	Kunth	N	Verif.	Sierra	Comestible	
31		<i>Comarostaphylis polifolia</i>	(Kunth) Zucc. ex Klotzsch.	N	Verif.	Sierra	Comestible	
32	<i>Euphorbiaceae</i>	<i>Euphorbia radians</i>	Benth.	N	Verif.	Valley	None	
33	<i>Fagaceae</i>	<i>Eysenhardtia polystachya</i>	(Ortega) Sarg	N	Verif.	*	None	
34		<i>Dalea lutea</i>	(Cav.) Willd.	N	Verif.	Valley	None	
35		<i>Prosopis laevigata</i>	(Willd.) M.C.Johnst.	N	Verif.	Sierra	Tool	
36		<i>Acacia farnesiana</i>	(L.) Willd.	N	Verif.	Valley	Medicinal	
37		<i>Quercus rugosa</i>	(Masam.) J.C.Liao	N	rep.	Sierra	Wood	
38		<i>Quercus glabrescens</i>	Benth.	N	rep.	Sierra	Wood	
39		<i>Quercus mexicana</i>	Bonpl.	N	Verif.	Sierra	Wood	
40		<i>Quercus laurina</i>	Bonpl.	N	rep.	Sierra	Wood	
41		<i>Quercus fulva</i>	Liebm.	N	rep.	Sierra	Wood	
42		<i>Quercus microphylla</i>	Née	N	rep.	Sierra	*	
43		<i>Quercus castanea</i>	Née	N	rep.	Sierra	*	
44		<i>Quercus jonesii</i>	Trel.	N	Verif.	Sierra	Wood	
45		<i>Quercus striatula</i>	Trel.	N	Verif.	Sierra	None	
46		<i>Lamiaceae</i>	<i>Salvia patens</i>	Cav.	N	Verif.	Sierra	Medicinal
47			<i>Salvia reptans</i>	Jacq.	N	Verif.	Sierra	Medicinal
48	<i>Lentibulariaceae</i>	<i>Pinguicula macrophylla</i>	Kunth	N	Verif.	Sierra	None	
49	<i>Orobanchaceae</i>	<i>Conopholis alpina</i>	Liebm.	N	Verif.	Sierra	None	
50	<i>Pinaceae</i>	<i>Pinus cembroides</i>	Zucc.	N	Verif.	Sierra	Wood	
51	<i>Piperaceae</i>	<i>Peperomia monticola</i>	Miq.	N	Verif.	Sierra	Comestible	
52	<i>Polemoniaceae</i>	<i>Loeselia mexicana</i>	(Lam.) Brand	N	Verif.	Sierra	Medicinal	
53	<i>Polypodiaceae</i>	<i>Polypodium</i> spp.	*	N	Verif.	Sierra	None	
54	<i>Pteridaceae</i>	<i>Cheilanthes</i> spp.	*	N	Verif.	Sierra	None	
55	<i>Scrophulariaceae</i>	<i>Penstemon campanulatus</i>	(Cav.) Willd.	N	Verif.	Valley	None	
56		<i>Buddleja sessiliflora</i>	Kunth	N	Verif.	Valley	Tool	
57		<i>Mecardonia procumbens</i>	(Mill.) Small	N	Verif.	Sierra	Medicinal	



Sierra de Santa Barbara



1 & 2 - *Echeveria agavoides*. 3 - *Tillandsia* sp.
4 & 5 - *Stenocactus ochoterenanus*.





summary →

summary →

Penstemon campanulatus



Ferocactus histrix



Ferocactus latispinus

summary →

summary →



Mammillaria trichacantha



Mammillaria densispina



1 - *Pinus cembroides*. 2 - *Stenocactus sp.*

Wildlife

The birds that stand out for their dominance are *Aphelocoma californica* (Western Scrub-Jay), *Corvus corax* (Common Raven), *Icterus parisorum* (Scott's Oriole), *Junco phaeonotus* (Yellow-eyed Junco), *Buteo jamaicensis* (Red-tailed Hawk), *Aquila chrysaetos* (Golden Eagle).

As for reptiles, dominating is *Crotalus sp.* (rattlesnake). Mammals include *Odocoileus virginianus* (white-tailed deer), *Canis latrans* (coyote), *Lynx rufus* (bobcat or mountain cat), *Mephitis sp.* (striped skunk), *Sylvilagus sp.* (cottontail rabbit), *Lepus californicus* (American desert hare), *Dasyus novemcinctus* (nine-banded armadillo), *Urocyon cinereoargenteus* (gray fox), *Didelphis virginiana* (common opossum) and *Sciurus sp.* (squirrel).

The footprint of the ancient inhabitants of the Sierra has also been allowed to see.

During the tours of flora-fauna identification various archaeological pieces were found, especially in the area identified as "Cerro Alto" (high hill); traces of ancient settlements that according to the literature were habited by semi-nomads; influenced by their northern neighbors, the great tungal chichimecas and at its southern side with the influence of the artisans of the Chupícuaro region, who lived along the Lerma river and developed more advanced than the northern agricultural techniques.

The ferocity and skill of the chichimecas hunters coupled with sophisticated craftsmanship and Chupícuaro's agriculture connect in this region to give rise to a lineage that had extended over time in families of direct and indirect descendants, who retained some features that allow us to even recognize that family relationship derived from that original ancestor.

summary →



1



2



4



3

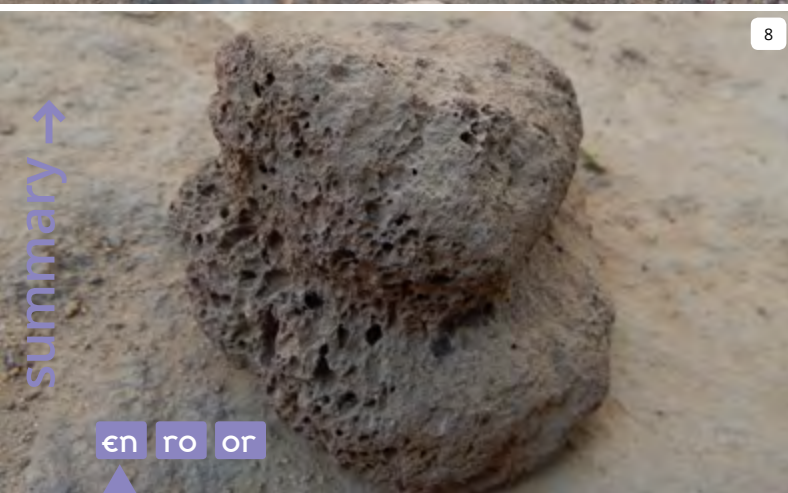
1. Spearhead. 2. Piece of an axe. 3. Obsidian spearheads. 4. Part of a figurine with characteristic ochre residues. 5. Cutters used for different activities, but mainly to cut various species of Agave, in order to obtain "Aguamiel" (a kind of mead) and, consequently, pulque. 6. Obsidian prismatic blade used mainly for self-sacrifice, as part of the offerings due to several gods. 7. Piece of pottery, possibly a pot "handle". 8. Scraper for raw skins.



5



6



8



7

summary →

en ro or



1 - Environmental issues. 2 - Water erosion. 3 - Cutting of Pinus cembroides. 4. Natural pasture.

Environmental problems

The use of resources beyond its regeneration capacity is a general problem in the forests of Mexico, this is manifested in accelerated deforestation and subsequently loss of biodiversity. In addition to this there is also over-extraction of forage for grazing or fuel wood for domestic or commercial purposes; also including the collection of plants for various purposes including food,

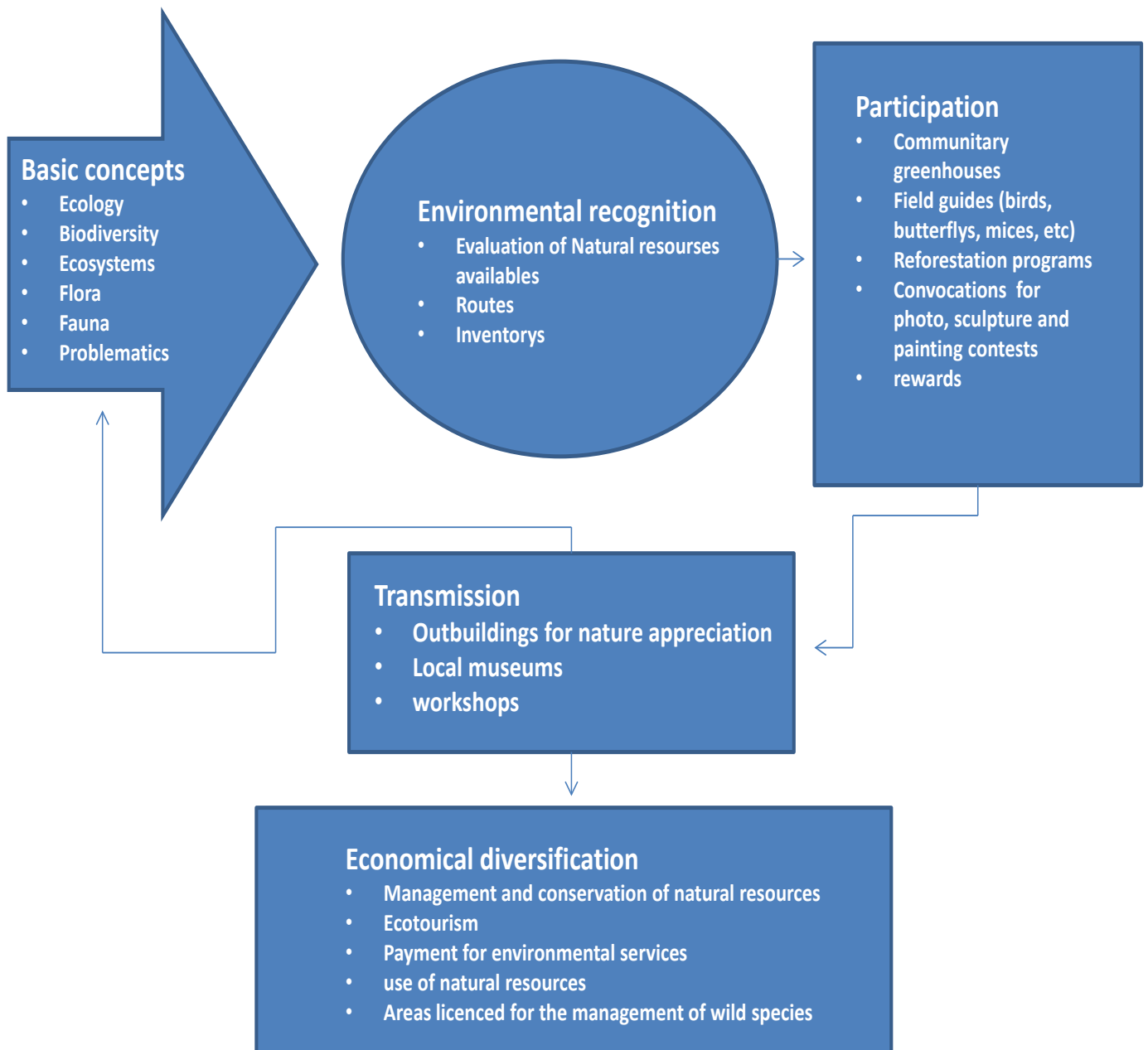
The main threat to the integrity of the region is the gathering of wood for local usage as fuel; besides overusing the native vegetation cover is widespread and the collection of vegetable products (including non-timber) is done without government regulation, there is also needs for people

living the region to engage in these activities.

This has resulted in degradation processes of resources leading to severe erosion problems and consequently destabilizing the microclimate issues which potentiate the incidence of wildfires whether caused by anthropogenic or "natural" factors.

Conclusion

The Sierra de Santa Bárbara like any forest, jungle, desert, wetland, is a key element of the planet



function, each of the links: soil, moss, plant, rock, wooded, mountain, water body, venison, rodent, etc., has a role to fulfil. Although it is well known that the current socio-economic and political system does not perceive the subtle network that weaves between each of these elements, unfortunately everything is measured by its usage value or its commercial value and this is the mind-set all those who tried in various ways to support conservation of biodiversity have to confront.

What to do?

Since the beginning of mankind until today, man has tried to satisfy his curiosity seeking answers in regards to the origin of things, the world, and even question their own existence. The admiration of nature accompanies us with every step. The perception has been influenced mainly by subjective factors such as our past experiences, our education and culture, and cognitive schemes that have

„Educación ambiental” diagram focused on students of the 3rd-4th degree, actually applied in the Community of Santa Barbara Gto. Currently in Phase 2; planned, designed and implemented by the author.

already formed in our brains. Here is where lays the answer regarding individual and social tasks concerning environmental protection: education, as "nobody loves what he does not know". If you work systematically with environmental education programs, from basic concepts, recognition of environment, participation and finally transferred to third parties is possible to achieve a shift which positively modifies the current environmental situation. Also we will become the owners of the various ecosystems, beneficial tools for diversification of existing businesses. To achieve this it requires the joint participation of the population, local authorities, educators and specialists.

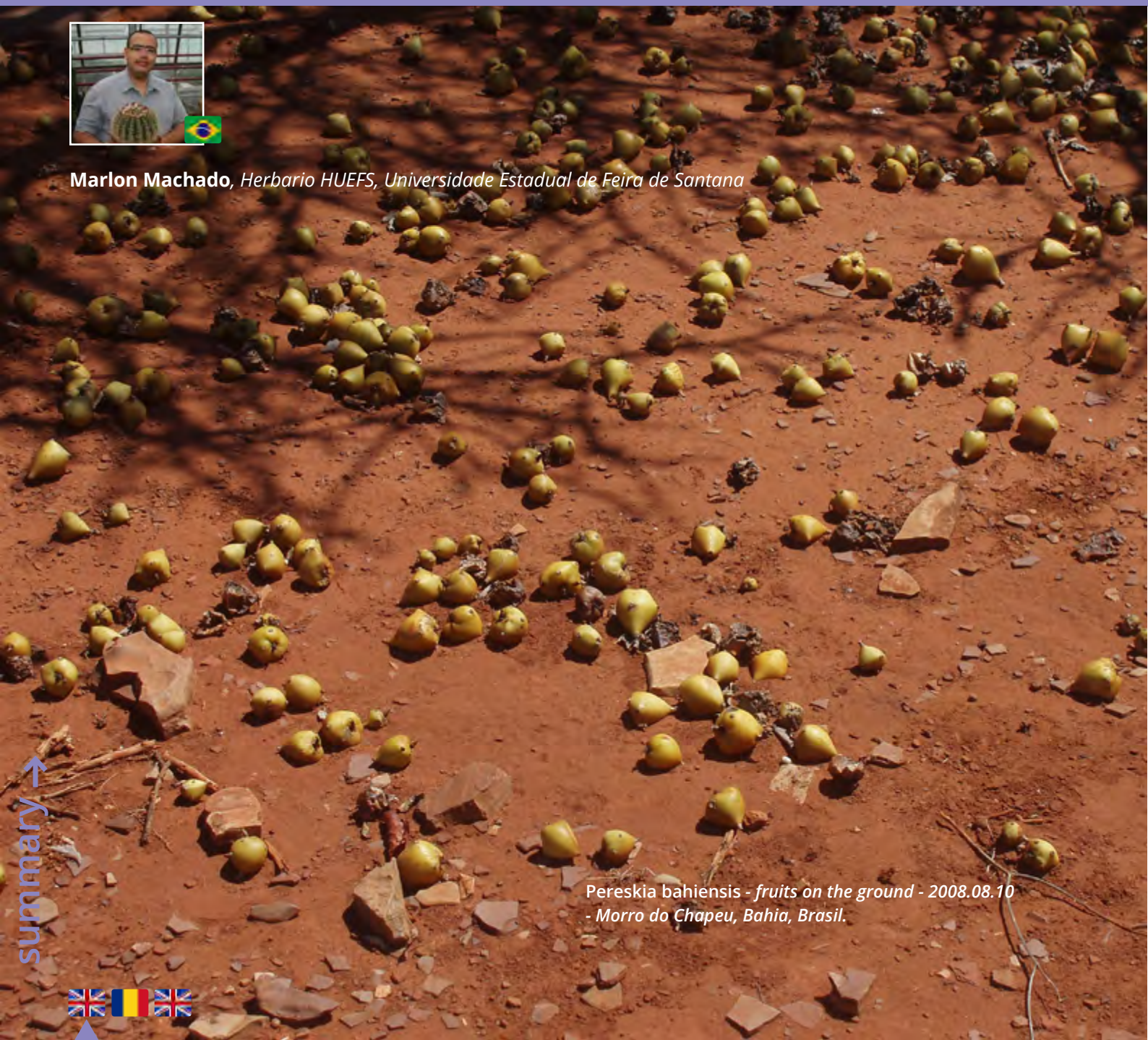
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active areoles on pereskia's fruits



Marlon Machado, Herbario HUEFS, Universidade Estadual de Feira de Santana



Pereskia bahiensis - fruits on the ground - 2008.08.10
- Morro do Chapéu, Bahia, Brasil.

summary →



Pereskia bahiensis - fruits - 2010.01.02 - Umburanas, Bahia, Brasil.

Xerophilia: Marlon, please tell us about the phenomenon we can see in those photos. That is there are leaves, flowers and fruits growing from another fruit...? Are they sterile fruits? Or fertile fruits? All *Pereskia* do this?

Pereskia albiflora - fruit - 2011.01.04 - Itaobim, Minas Gerais, Brasil.

Marlon Machado: Yes, in all *Pereskia* species the areoles in the fruit remain active, and can develop new flowers and subsequently new fruits, resulting in a chain or fruit cluster. But the leaves in the fruit correspond to the scales (or perula) found in most other cacti - for example, *Gymnocalycium*.

The interesting thing about the cacti is that the flowers not only have an inferior ovary (that is,

sunken in a hypanthium - a floral cup or flower disk), but the whole hypanthium is sunken (or enveloped) by stem tissue, hence the areoles on the exterior of flowers and fruits. Besides *Pereskia*, many of the opuntioids also do the same thing, and some *Cylindropuntia* (chollas) are known to produce chains of fruits. Also, fallen fruits of the opuntioids readily grow new stems, helping in the dispersion of the plants.

cultivation of cacti and other succulents in denmark

Connoisseur's Notes



Martin Tversted Ravn
Translation by Erik Holm



summary →

Opuntia polyacantha cv. "Fabian" -- another of my own breeding. Very nice flower but a little too small and it dislikes our wet winters. Still a lot of work to do! Here swimming in *Delosperma pilosulum*.





Opuntia basilaris f. brachyclada from California. In Denmark a greenhouse plant. Sown here and flowering four years after.

As I write it's February and outside the snow lie like a blanket over the plants. The weather is quite still and it's a freezing minus 7°C. Up through the snow stick out small cacti parts, tips of various *Yucca* species and - in a special section of the garden - are used pitchers from the various *Sarracenia* species and hybrids from 2014. Insectivorous plant traps have a limited life and after the active flowering ends, they stand as bizarre sculptures until the warmth of spring makes them rot completely. Along the wall of the house there are various *Delosperma* species and varieties many of which have been outside for nearly 14 years.

Denmark's climate

Denmark is the peninsula of Jutland, in continuation to the north of Germany plus 443 named islands in Skagerrak and Baltic seas. The Atlantic Ocean is on one side and Norway and Sweden on the other side. It's hard to explain exactly what climate Denmark has. It is of course a temperate climate, but quite unpredictable from year to year.

We are strongly influenced by the Gulf Stream without which we would have a climate similar to southern Alaska, but basically a winter here depends on which direction the wind blows.

Do we get relatively mild weather from the west, or is it Siberian cold from the continent? Some winters we come through with lots of rain without ever getting below minus 10°C and other winters give us frost day and night for many weeks. The average temperature in winter is around 0°C. A few years ago we had a very mild winter, apart from two weeks where the temperature dropped below -25°C.

It caused 25 species and varieties of South African *Delosperma* to die since they had not found it necessary to go into hibernation because of too mild weather prior to this.

Our summers are also a cultivation challenge. Spring is usually quite cool, which is a problem especially for plants that come from a continental climate. The average summer temperature is around 15-16°C.

Lowest temperature measured in Denmark is minus 31.2°C, the highest is 36.4°C



Opuntia humifusa f. caespitosa, here from a seed collection in Georgia. The many smaller, southern versions of *O. humifusa* grows and flowers well in hanging baskets in the greenhouse.

The start of my passion for cacti

My own adventures in the world of plants started when I was 8 years old and began to take interest in various pot plants, succulents, climbing plants, tuberous plants and more. As a child I never had many cacti, but at age 18 I was at the Botanical Gardens of Copenhagen, where they had a couple of large prickly pear planted freely outside. They adamantly claimed they were from Canada. I stole a few fruits, which I very quickly regretted. Not because of bad conscience, but because I on that occasion found out what glochids are. The fruit is also difficult to get out of your pocket. I managed to get them to sprout and I still have a few clones from this planted out in the garden. Fabian Vanghele sent me at one point some *Opuntia* cuttings. That was before Romania joined the EU so these were confiscated. I am pretty sure that they ended up in the same botanical garden, so my karma debt is repaid with interest.

Focus on hardy plants

The cultivation of hardy cacti has interested me for almost twenty years, but I grow several other groups of plants that intrigue me. The main groups are cold hardy mesembs, hardy *Yucca*, hardy insect-eating plants, hardy *Kniphofia* and hardy

aquatic plants. As perhaps one thing has been already noticed, I prefer to grow plants outside. The only plants I have inside are my *Clivia* collection, where I only lack one single species.

I have always been most focused on starting my plants from seed. I soon found out that plants that have grown up in my own climate also were the hardiest. This means that at least 70% of all my species and forms are propagated by seed and since I usually keep several clones of the same seeding the number of individual plants in my collection is high.

Goals for my collection

Almost from the start I formulated some goals for my plant collection.

1. It should consist primarily of plants that can be grown outside or in an unheated greenhouse.
2. The plants should be well documented with location information.
3. To the extent that I was able get the seed I would prefer having more clones from the same area, partly to show a greater variation within the wild growing site, partly to be able to produce "clean" seed.
4. That I will work to produce new hybrids based on well-documented plants.



Twenty years later

And here, after twenty years, this is what I achieved: To produce new hybrids. Much of the time I have used partly to learn how I can use the Danish climate in relation to culture. Also to learn which plants can be grown outside and which plants should be grown in the greenhouse.

As you can probably sense in my introduction, the Danish climate is a challenge when growing cacti. Of course I could just have a large greenhouse with an appropriate winter heating, but this is almost too easy. I like to look at a shrunken cactus with hoarfrost in its spines! For me it has been about working with climate and not against it.

Most cacti don't have a long growing season. This is quite fortunate when you live in a temperature-wise slightly unfavourable climate, so the challenge is, among other things, to make plants grow at the time of year when conditions are optimal. For some species things become more complicated because of the relatively high night temperatures we have in the summer. From about the second week of June to mid/late August it is the

1 - *Delosperma* cv. "Silverhill". One of the very first plants from this genus I selected for outdoor culture. I have even seen it on ebay now. 2 - *Delosperma* cv. "Scotland". And old selection of mine. One of the most hardy plants. Sown here and with flowers to 50 mm or slightly more it worth growing. 3 - *Delosperma* cv. "Wedding Cake". A large flowered cultivar I have produced. 4 - *Delosperma* cv. "Wedding Ring". Another large flowered cultivar that flowered the first time here in 2013.

time for summer hibernation for a lot of ball cacti. They would prefer warm days and cold nights, but despite the fact that the day temperature is good, our night temperature is too high and the plants tend to rot if they are watered.

I grow my plants in an unheated greenhouse, under canopies, in pots along the south wall or directly in the beds in open air. Almost all plants are given a dry, cold wintering. This means no water from October to April. Only *Pediocactus* are watered before.

Unheated greenhouse:

Here I grow plants whose access to water I need to control 100% and species requiring high summer temperatures. This concerns all South American frost tolerant species from the genera *Maihueiopsis*, *Austrocactus*, *Pterocactus*. Likewise *Opuntia*, *Micropuntia*, *Corynopuntia* and *Cylindropuntia* from the southern United States, various ball cactus and above all the many seedlings. Door and roof windows are open all year round except when there is a storm or drifting snow.

This construction is for the most hardy of hardy cacti. They stand here summer and winter.

Canopies:

Here I cultivate plants that can thrive outside with minimal protection. The wind can enter from three sides and drifting snow can occur in the winter. In winter there is no extra protection from the cold and it is hotter in summer. Primarily *Opuntia* spp. from New Mexico and north on are grown in this way plus ball cacti like *Pediocactus*, northern forms of *Escobaria* and various varieties of *Echinocereus viridiflorus*. All plants are grown in unglazed clay pots, as the water can evaporate through the sides.



summary →

1 - *Escobaria* și *Echinocereus* along the southern wall of the house.

2 - *Echinocereus triglochidiatus* and *Penstemon cardinalis*. Red flowers are useless in Denmark. They are meant for birds and no Danish bird species find these attractive. In the background you can see the greenhouse.

summary →

Pots along the south wall:
Here I grow *Echinocereus coccineus* and *E. triglochidiatus* and all my many *Escobaria* species and types. All plants are grown in unglazed clay pots with soil of crushed rock, sand and lava. Growth is slow but very fine plants are resulting eventually.
The pots are placed on shelves under the tables in the greenhouse in winter.

Cacti and aquatic plants. Obviously two different hobbies that are easy to combine. Each pond contains around 500 liters of water and beside the plants in summer lives and breeds various rare fish from generas like Aphanis and Valencia. Each small Ikea box contains the collected eggs from the fish.

In open air:

I have tested hundreds of cactus plants unprotected outside, primarily from the genus *Opuntia*. Many are doing really well for a while. Suddenly they begin to rust or get other discoloration. Then they slowly either die or become uglier and uglier. A few years ago I took the consequence and restarted the entire collection from cuttings from the same year's new growth and burned all old, infected plant material. Individual clones were restarted a few times and several were completely discarded. I have about a dozen plants that seamlessly cope with our often wet winters. More will be added in the coming years, as it is part of my goal to produce new clones that can cope with our often challenging climate. It would have been easier if only we had a stable, very cold winter with a predictable snowpack.

I have a large collection of *Opuntia fragilis* clones and most would certainly thrive outside without major problems. However, it is not the kind I want to have in the open because the animal spread through the neighbourhood cats will be too large and I and the kids love to go barefoot all summer.



The garden bog. Filled with carnivorous plants, mainly from the genus Sarracenia but also Pinguicula and Drosera.

summary →



More than 250 different clones do well outside here. In the summer our bees drink from the acid, wet soil.

summary →



I have tested more than 75 species and cultivars of the genus Kniphofia outside in the garden. I now have around 22 different species and forms. Here is a very small poker from the high Drakensberg, bone hardy. My own sowing.



1



2



3

1 - From the greenhouse: *Opuntia pinkavae*. This particular form has also been known as *O. kaibabensis* in the past. 2 - *Opuntia fragilis*; The collection contains many rare forms, here from its location in Illinois, USA. All growing in unglazed clay pots with minimal protection. 3 - The garden contains many other dryland plants. Here a seedraised specimen of *Lewisia tweedyi*.

Seed propagation:

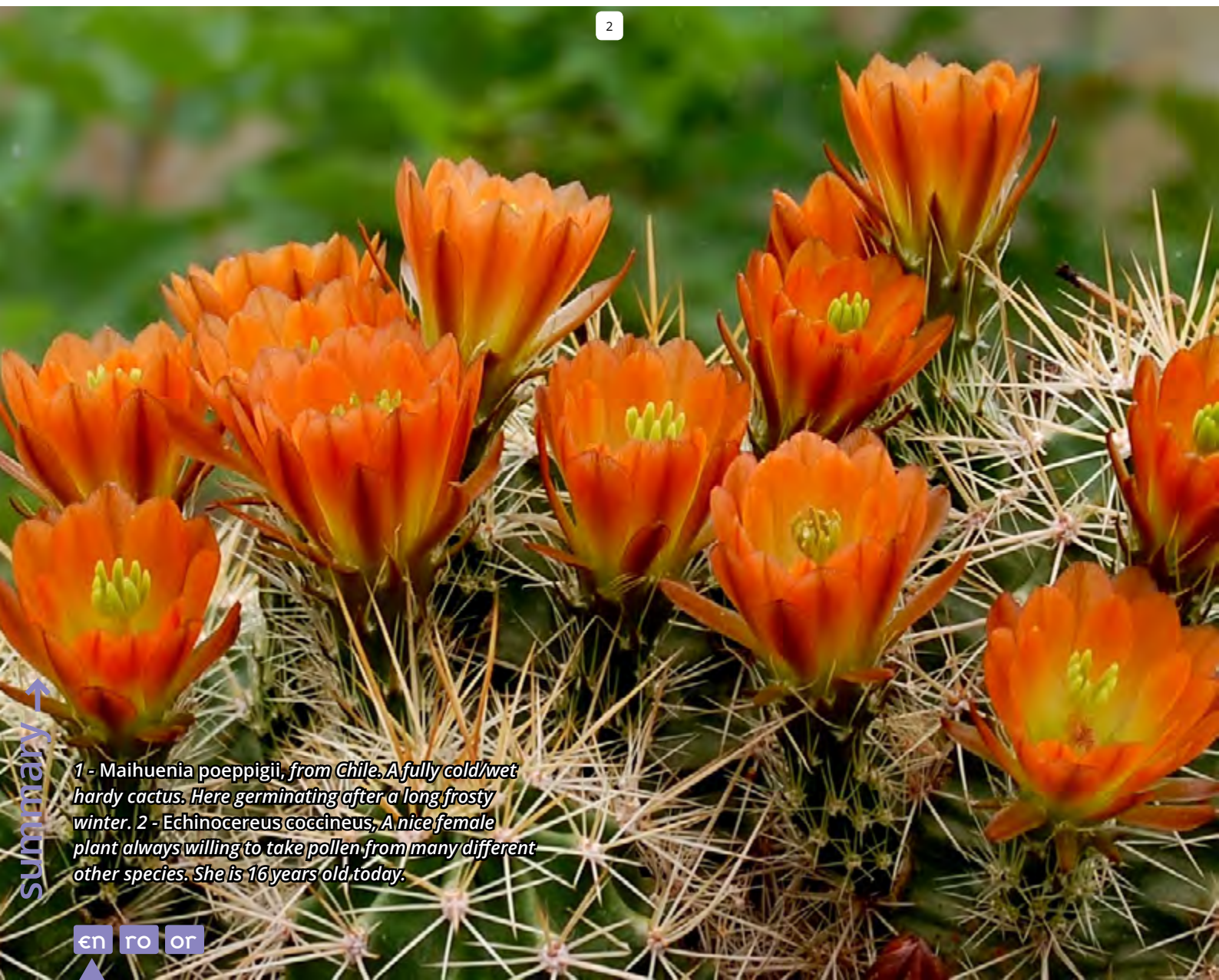
As mentioned earlier I start most plants from seed. I have planted over the years several thousand species, both cacti and species from many other plant families. All seeds are kept cool and dry. Species that need a period of stratification are sown in unheated greenhouse later in February. It is primarily prickly pear from the United States except *Micropuntia* and members of the *Opuntia basilaris* group which just need water and warmth to germinate. Additionally I have succeeded in seed propagating *Maihuenia*, *Maihueniopsis* and *Pediocactus*. They need a cold winter in the greenhouse before germinating. I start watering the species that need to be influenced by winter in March so that they experience periods of frost - thaw and simultaneously have been exposed to ice. Germination starts for *Opuntia* and *Maihueniopsis* in May under Danish conditions - *Maihuenia* already in April. *Maihuenia* seedlings also have no problem with light frost. Not all seeds germinate the first year. If nothing germinated in July I dry out the pots again and leave them in the greenhouse until the following spring. Sometimes I sow other species in the same pots and often I experience that the original seeds sprout a few years after they were sown. Never give up!

Many other cacti just need water and heat and they germinate in May. I don't protect my seedlings significantly. All are sown in the same soil mix that adult plants grow in. I primarily use inorganic material, but with the seedlings I sometimes mix in a little rotted turf until the plants have finished first or second growing season. I never cover my seed pots with plastic or glass, but keep them well moist, with good air circulation and out of direct sunlight. All species which I expect are frost tolerant in winter in unheated greenhouse or with minimal protection outside, depending on the species, from the first winter.

Escobaria RP33, a small miniature from the E. missouriensis complex, here growing in pure mineral soil.



1



2

1 - *Maihuenia poeppigii*, from Chile. A fully cold/wet hardy cactus. Here germinating after a long frosty winter. 2 - *Echinocereus coccineus*, A nice female plant always willing to take pollen from many different other species. She is 16 years old today.


summary →

summary →

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Opuntia arenaria, Many consider this a subspecies of *O. polyacantha* but there are many differences.



A close-up photograph of two large, vibrant pink cactus flowers in black plastic pots. The flowers are fully open, showing numerous petals and a bright yellow center with stamens. The background is slightly blurred, showing other cacti and greenery. A small white tag is visible on the right side of the upper flower.

Opuntia cv. "Alma". The unlikely result of the love affair between *O. brachyclada* and *O. arenaria*. . The seedlings were all unstable and most died only one plant survived. Not the prettiest of plants but the flowers are spectacular. It will be distributed to a few friends in 2015 and hopefully gets a wider distribution. Not tested for cold/wet hardiness yet but the flowers are certainly worth keeping a space in the greenhouse for this one.



summary →

summary →

Yucca nana from the Mill Creek area in Utah. One of the first locations of this species introduced in Europe. Sown by me and flowered for the first time in 2010 as one of the first *Y. nana* in Europe. I manage to created hybrids with *Y. flaccida*.



Seed breeding:

A natural consequence of having achieved a certain expertise in cultivation and seed propagation is the development of new varieties. There are many different criteria you can use when you decide to breed and evolve plants. A general rule for me has been to create new varieties that can be grown outside in the garden. In addition they should have new and different qualities than already existing species or varieties. This applies regardless of whether I have tried to make new *Sarcocolla*, *Yucca* or cacti. You must know plants and know when they bloom. The wanted parent plants should preferably bloom at the same time. If you want to cross for example *Echinocereus davisii* with *E. coccineus* it is no use if they stand in the greenhouse next to each other in the same circumstances. You risk that *E. davisii* has finished blooming when *E. coccineus* starts its flowering. However, if you keep *E. davisii* outside where it is cooler, while the other is in the greenhouse where it is warmer, their flowering can be synchronized and then love

Yucca flaccida x nana. Winter 2015. Huge variation among the seedlings but the result is promising. A small, cold/wet hardy *Yucca*. The result of 15 years of work, but not the end goal.

can happen. It is slightly more difficult with *Yucca*. They do not flower every year and often you have to use whatever pollen that is now available. I have tried with pollen sent to me, but without success.

Future projects:

I am setting up a large *Echinocereus* collection. At some point I want to make some hybrids within this genus. I will continue with my *Opuntia* and their hybrids. Originally I had intended to work intensively with *Yucca*, but do not have much room or time for this, but I grow the most interesting wild plants and hybrids and I will cross them when I get old.

spring hunting: *turbinicarpus valdezianus*

Habitat Pictorials



Manuel "Melo" Salazar González



summary →



summary →



summary →



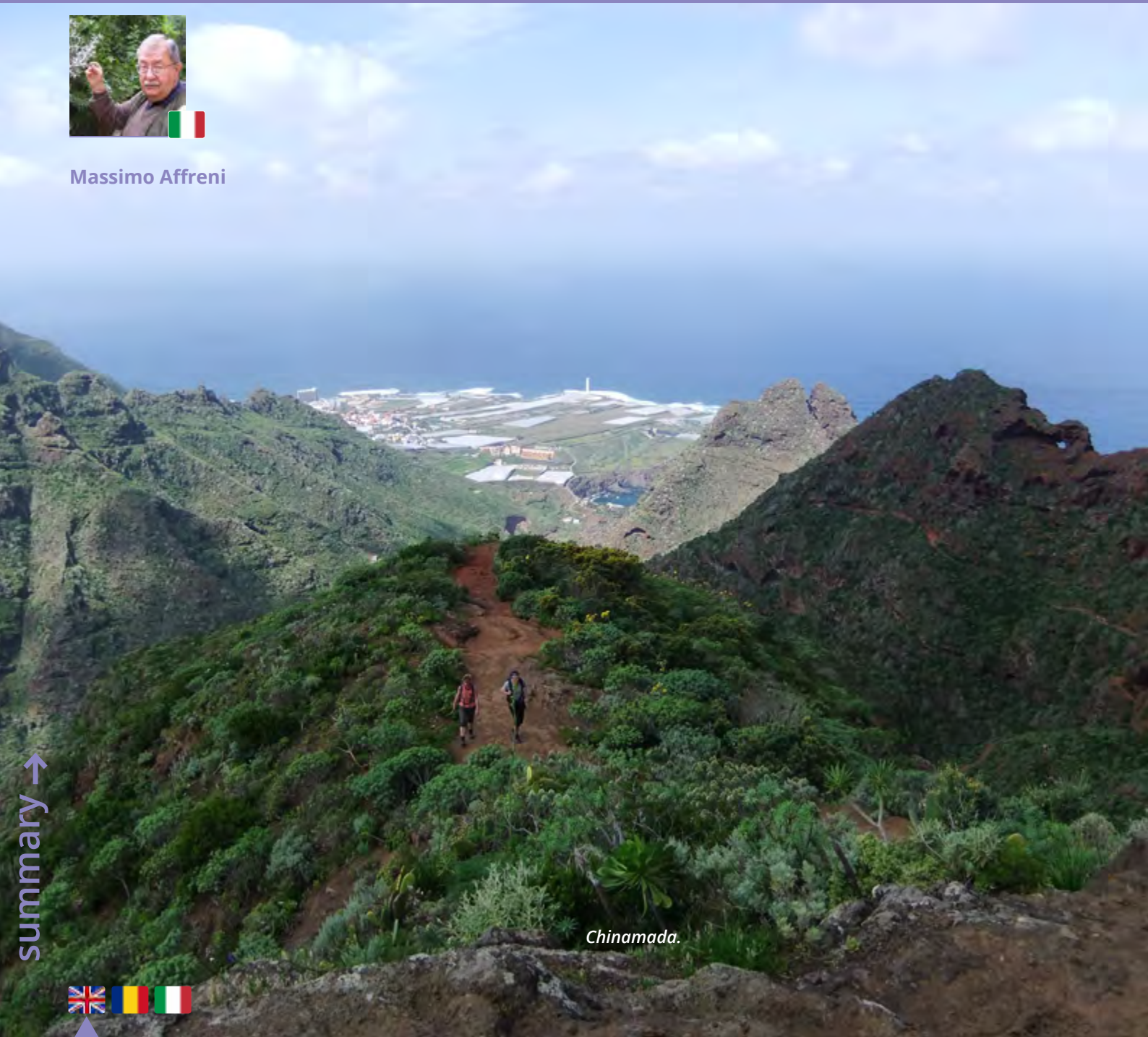
botanical excursion to monte de las mercedes in chinamada and taganana

tenerife & canary island

Travelogue



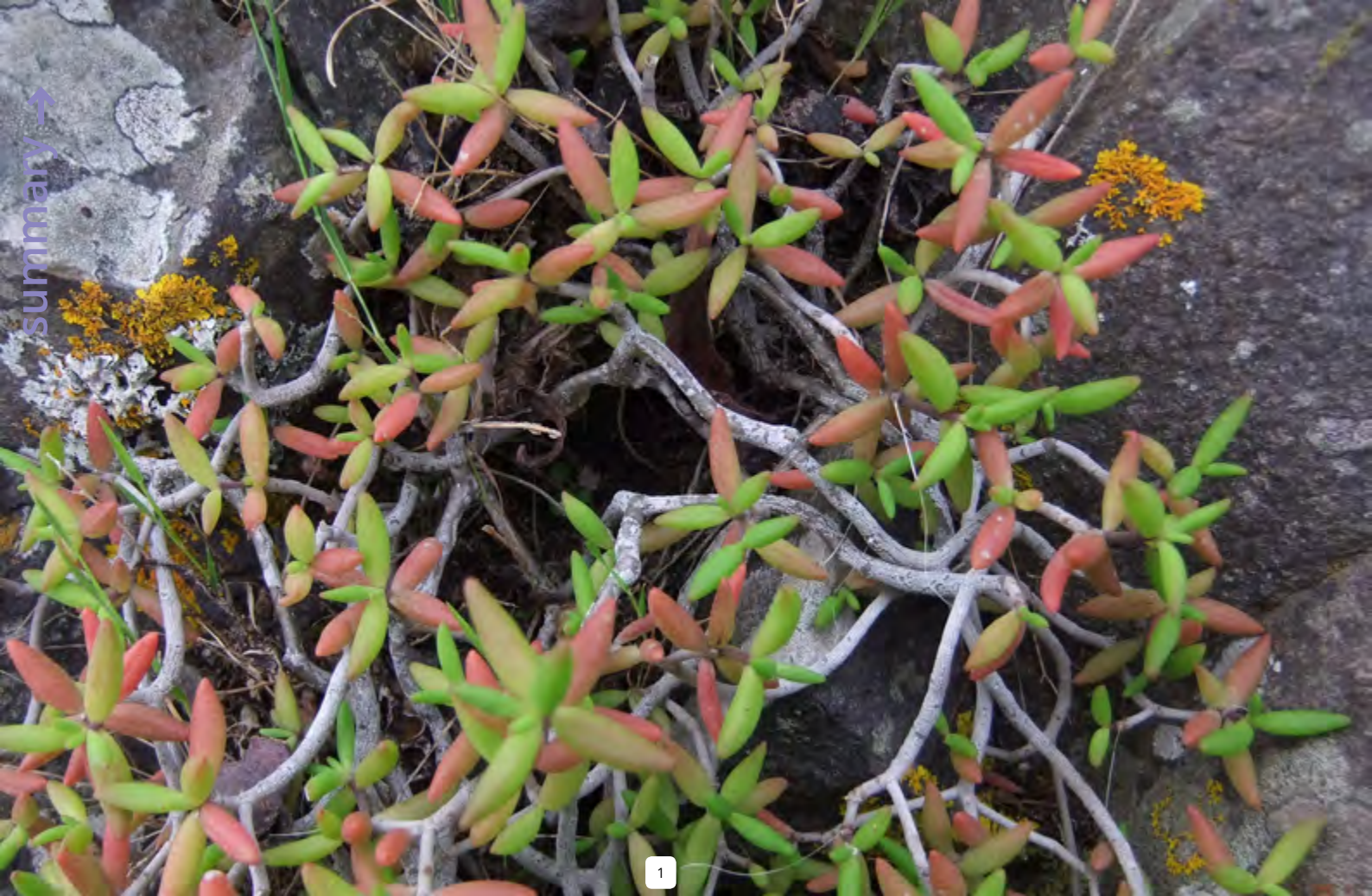
Massimo Affreni



summary →

Chinamada.





had already done a tour in the north-east of the Tenerife Island, in the Anaga mountains, two years ago, in 2012, only to admire the exceptional and breathtaking views of volcanic mountains covered by *Pinus canariensis* C. Sm. ex Dc in Buch and to photograph some succulent plants native to the Canary Islands, such as *Monanthes anagensis* Praeger, *Monanthes laxiflora* (DC.) Bolle ex Börnm, including some Aeoniums, such as *Aeonium canariense* (L.) Webb & Berthel., or *Aichryson*, etc.

After two years, during the same time of the year

1 & 2 - *Monanthes anagensis*. 3 - *Monanthes laxiflora*.

more or less the, in early March, Roberto Mangani and I, along with another friend Giancarlo, decided to make an excursion covering areas of the Monte de Las Mercedes in the northwest of Tenerife resort, famous for the beautiful views of the volcanic spires covered with pine trees, from where you can admire some incredible panoramas of the Atlantic Ocean, trying to find and photograph two



1, 2 - *Aichryson laxum*. 3 - *Aeonium canariense*.

succulent plants that Lodé (2010) has shown to be rare and localized, that is *Euphorbia mellifera* Aiton and *Monanthes wildpretii* Bañares & Scholz.

To be honest I was very sceptical of being able to locate them, especially *Monanthes wildpretii* which is a small plant consisting of a leafy rosette of 1-2 cm in diameter. As for *Euphorbia mellifera* I had instead some hope as the case with most tree-like plants is, which, although rare, localized and en-

dangered species, however, can grow more than 10 meters high and are therefore more easily to spot, I was hoping, especially if in its suitable habitat, according to Lodé (2010), should be clearings of the laurel forest, covering the area targeted by our hike, including Chinamada and Taganana.

The road from La Laguna (which can be considered as a suburb of the capital Santa Cruz de Tenerife) to Chinamada is quite narrow, winding, with vertical walls of volcanic rock cliffs on the left and on the right, allowing for beautiful views and landscapes.



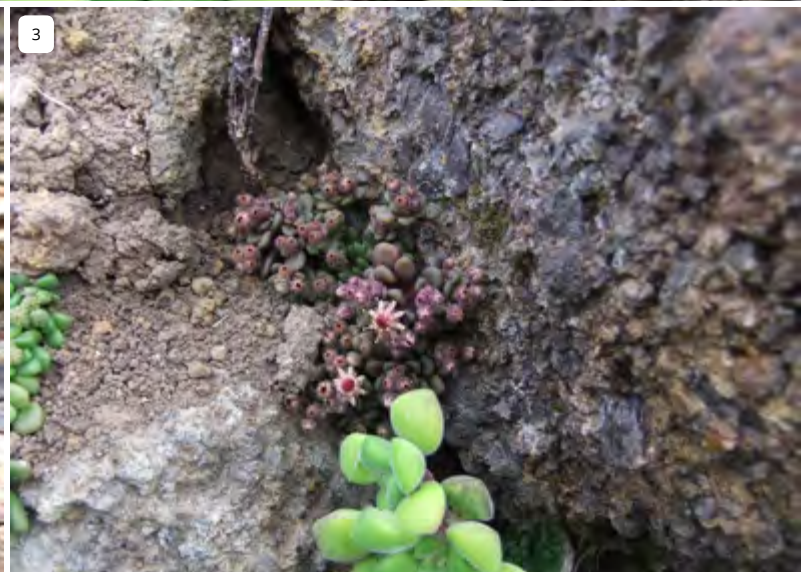
summary →

summary →

1 2



1 - *Chinamada*. 2 - *Aeonium canariense*.



On these walls, almost all in shade and moist conditions due to the recent rains, there was an incredible amount of *Monanthes laxiflora* with some specimens in bloom. There were also other species to be found, such as *Aichryson laxum* (Haworth) Bramwell, *Monanthes anagensis*, *Aeonium canariense* and the beautiful *Aeonium lindleyi* Webb & Berthelot I had never seen until then.

Little by little we approach Chinamada, we are now at about 700 masl and we noticed on the rocky walls two other *Monanthes* species, very similar at first sight, that could be either *Monanthes brachycaulon* (Webb & Berthelot) A. Lowe or simply just *Monanthes wildpretii*, we photographed them re-

1 - *Monanthes wildpretii* & *Monanthes brachycaulon*.
2 - *Monanthes wildpretii*. 3 - *Monanthes brachycaulon*

peatedly to be able to compare the images when convenient. Together with them we also found, in the more humid spots *Aichryson pachycaulon* ssp. *immaculatum* (Webb ex Christ) Bramw.

Arriving in Chinamada the road ends. This is a place with three or four houses, a church and a place for refreshments. You see a beautiful panorama with the coast of the Atlantic Ocean in the distance, with sharp volcanic peaks scattered, however, no high vegetation. Up to this point we



have not seen any plant of *Euphorbia mellifera*, perhaps we would have to climb a steep slope beside woodland paths along the way but we better skip it!

In Chinamada the wind was blowing very strong so we needed to put the windbreakers on; we immediately notice of well-marked trail on the left, coming into this locality, a path partially carved into the rocks, which was descending rather steeply towards the sea. This trail is very popular with tourists and hikers also of advanced age, if properly equipped.

So we decided to walk a section of that path and, right from the beginning, along a drywall delimiting cultivated land, we have been able to photograph other beautiful plants such as *Monanthes laxiflora*, *Monanthes anagensis*, but especially *Monanthes brachycaulon* in full flowering and, next to it, another one that surely can only be *Monanthes wildpretii*.

Among other things, this habitat coincides perfectly with the one indicated by Lodé (2010), who reports that "*Monanthes wildpretii* grows at 700 mt

Monanthes brachycaulon.

in alt., in cracks of rocks, on dry cliffs or walls of terraces for cultivation", and with the description thereof given by Bañares Baudet & Scholz (1990).

Along that same path, among many other plants that are not succulent, I also had the pleasure of photographing, for the first time, the succulent *Policarpea latifolia* Willd. in bloom.

After about a half hour of walking we decided to turn back, however, only after taking a large number of photos of the magnificent scenery, and returned to the village of Chinamada. Here we had lunch in the dining room therein, full of tourists and hikers, serving local dishes based on chickpeas (the first) and meat (for the second). After lunch we got back in the car and we headed to Taganana.

Along the way, besides the usual *Monanthes anagensis* and *Monanthes laxiflora* we found, and then photographed, *Aichrison laxum* and *Aichyson*



summary →

pachycaulon ssp. *immaculatum* in bloom, but no trace of *Euphorbia mellifera*, despite of a careful surveillance of the way. Obviously, it is necessary to climb the steep paths through the thickets of the forest to have a chance to find it, but we did not do this. In Taganana we found again only a population of *Crassula multicava* Lem. in bloom, a naturalized species of South African origin.

1 & 2 - *Aichryson pachycaulon* ssp. *immaculatum*. 3 - *Policarpea latifolia*. 4 - *Crassula multicava*.

Being now late we took the road back but through a different route from the first leg, via Mirador Pico del Ingles to the beaches north of Santa Cruz de Tenerife.



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Roberto Mangani on the path between the sea and Chinamada

calibanus 'wilson'



Eduart Zimer



1 - Strong offshoots on Calibanus 'Wilson'.
2 - Calibanus 'Wilson' at Auckland Show 2014.



summary →

It is said that every plants has its own story... this couldn't be anything but true for one of Maribel & Martin Walker's *Calibanus hookeri* displayed at the CSSNZ Auckland Show 2014. They have plenty of plants grown directly in the ground at the nursery (Coromandel Cacti) and ... weeding is necessary from time to time. One day, it happened that one of the nursery workers inadvertently split the plant with a spade ... and what could have been a fatality became an exquisite survivor specimen. Martin named it after the Wilson volleyball, the only friend of the





1 - Calibanus 'Wilson' at Auckland Show 2014. 2 - The plant was almost completely cut. 3 - "Split Apple Rock" on Tasman Bay.

main character from the "Cast Away" movie played by Tom Hanks. I guess the incident caused a real heartbreak for Martin. Martin entered the plant in the competition just for fun. I don't know what the judges thought about it (for sure there are no

points for surviving skills) but I love the plant so disfigured as it is, and it seems that I wasn't the only one. Surprisingly (or maybe not) *Calibanus* ... 'Wilson' came up 5th (out of almost 800 plants!) in a visitor's poll! We also don't know if *Calibanus* ... 'Wilson' has any brothers or sisters at the nursery (Martin was very discreet about this) but concentrated investigations of the editorial team led to the discovery of a possible more distant relative: the Split Apple Rock in Tasman Bay.

why cacti?



Zsolt Mihail Demeter

I loved plants since I was a child, especially those with large leaves. I got the first cactus from a neighbour when I was about 6-7 years old, an *Echinopsis* hybrid, with long spines, which proved to be a real survivor.

At that time I had many and varied plants, but it was only the cactus that managed to survive and even thrive; the rest simply dried out, or did not grow properly, or as I would have liked. In summer they all did very well but, having no experience and no conditions for wintering, they all perished ... didn't make it until the arrival of spring. However, when growing up I have become more responsible and I started doing some research about how to grow the plants I had, and I came to the conclusion that I could not provide the adequate condi-

tions (warmth and light in particular), and that the only plant suitable for the conditions I could offer was the cactus, and so I started to gather especially cacti.

The real collection was started in 1992-93, during this period I met two cactus collectors in my town, and I started to buy named plants from them (until then I had no idea of their scientific names), starting afterwards to label all my plants and proceeded to a more in-depth research (knowing this time what kind of plants I had), or trying to identify the plants I had for a long time but remained unidentified. That's how my collection was started and how the "pursuit of cacti" began. I collected in time all the cacti I liked, the aesthetics being an essential criterion (spination, shape, and colour).



On the previous page Mammillaria luethyi, Let me introduce some of my old cacti (now aged over 20 years): 1, 2 - Mammillaria karwinskiana . 3, 4 - Mammillaria haageana. 5, 6 - Frailea sp. 7 - Mammillaria surculosa.



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4



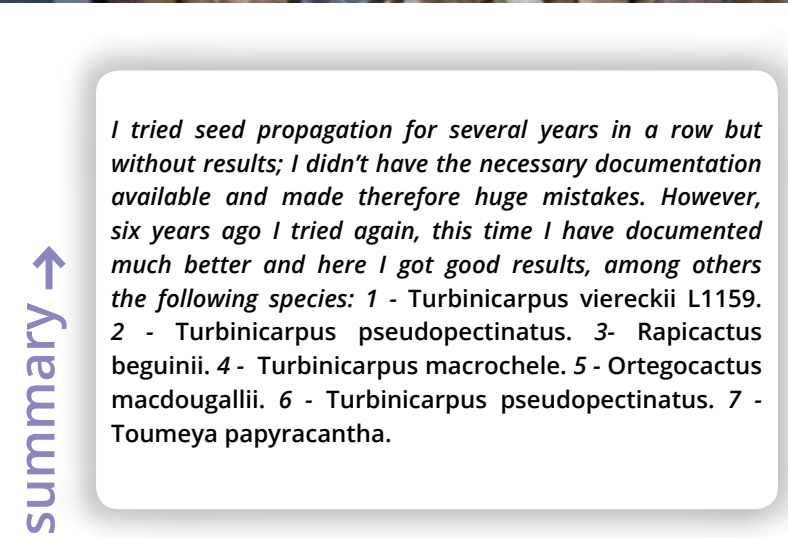
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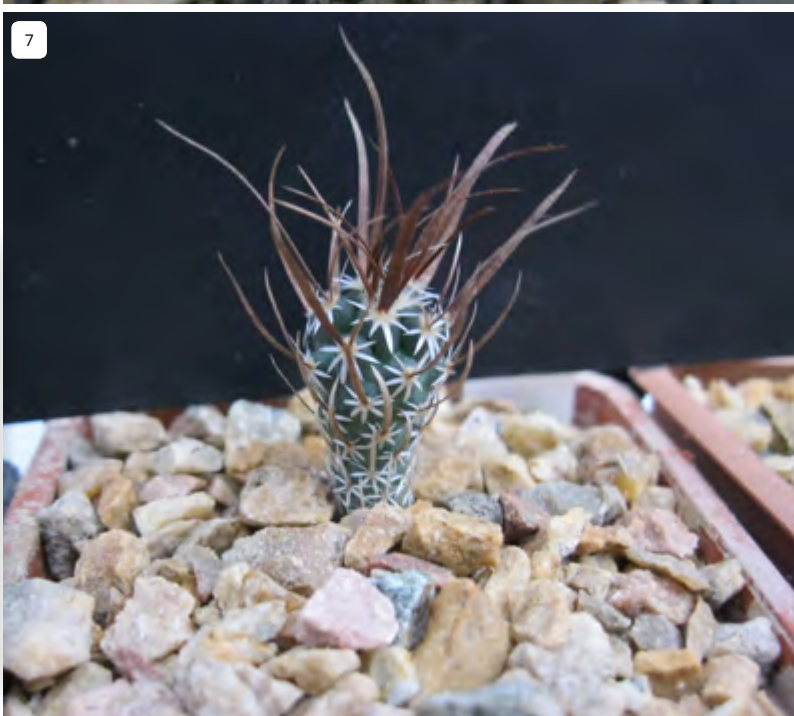


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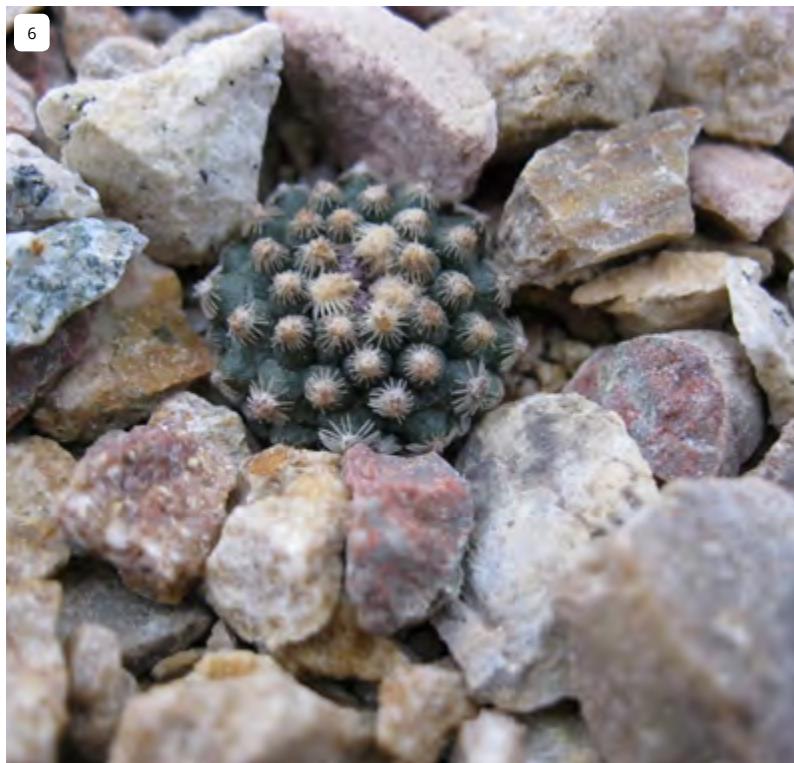


7

I tried seed propagation for several years in a row but without results; I didn't have the necessary documentation available and made therefore huge mistakes. However, six years ago I tried again, this time I have documented much better and here I got good results, among others the following species: 1 - Turbinicarpus viereckii L1159. 2 - Turbinicarpus pseudopectinatus. 3- Rhipicactus beguinii. 4 - Turbinicarpus macrochele. 5 - Ortegocactus macdougallii. 6 - Turbinicarpus pseudopectinatus. 7 - Toumeyia papyracantha.



summary →



1 - *Ariocarpus kotschoubeianus*. 2 - *Ariocarpus agavoides*.
3 - *Sclerocactus mesae-verdae*. 4 - *Sclerocactus glaucus*.
5 - *Pediocactus simpsonii*. 6 - *Pediocactus knowltonii*. 7 -
Turbinicarpus pseudopectinatus

summary →



1



2



4



3

Gaining more experience in potting mix preparation and a bit of courage, I also started collecting more difficult plants:

Pygmaeocereus bylessianus, *Aztekium ritteri*, *Escobaria abdita*, *Mammillaria saboae* ssp. *haudeana*, *Rapicactus subterraneus*, *Mammillaria luethyi*, *Puna subterranea* ssp. *incahuasi*, *Mammillaria theresae*.

Now, a few words and advices on potting mix preparation. First, it may pay off to study the soils and mineral components that we have available, in order to learn what kind of elements they contain. Have they everything our plants need? Which are the rocks that contain the necessary elements for our plants? Where can we acquire them?

Also, very important – and this should actually be the starting point – we just need to know ex-

1 - *Aztekium ritteri*. 2 - *Puna subterranea* ssp. *incahuasi*. 3 & 4 - *Rapicactus subterraneus*.

actly which are the needs of the plants we wish to grow. On this basis we chose the appropriate type of potting mix, which we will have to prepare ourselves, mindful considering the growing conditions (greenhouse, outdoors, in full sun, shaded, etc.).

We must take care to prepare the potting mix open enough, so it should contain coarse components (5-10 mm stone chips) because these prevent soil compaction, but also plenty of fine components (0.2-4 mm), and porous components having the capacity of storing water which will be



1



2



3

1 - *Mammillaria theresae*. 2 - *M. saboae* ssp. *haudeana*. 3 - *Pediocactus knowltonii*.

gradually released or, rather, from where it can be easily extracted by the plant (this could be 2-5 mm crushed brick, 2-5 mm volcanic tuff, 2-5 mm marls, 2-5 mm petrified clays, etc.).

A well-balanced mineral potting mix does wonders in most cases, but do not forget that there are many plants that require a more or less organic soil. From my own experience all I can say is that all young plants (0-5 years) need in order to achieve a harmonious development an organic intake of at least 15-20%. In time, we can gradually

reduce the weight of the organic components with every repotting, or get rid of it entirely from case to case.

I have never been a supporter of using fertilizers, I preferred to change the potting mix (repotting) every 2-3 years. However, I concluded that no matter how hard we try to produce a good potting mix we cannot provide all the microelements necessary for good and healthy development of our plants; it does not hurt if we use, in moderate dosage, a fertilizer being rich in micronutrients and, if possible, with as little nitrogen content (used 2-3 times a year, especially in spring, after the plants have resumed growth).

the ideal cactus substrate



Javier Mera Rangel, *El Suculento Mundo de las Suculentas*

Most of succulent plants types have evolved and adapted to arid or semi-arid areas, this is why these have the ability to survive in a xeric environment. Their roots, their anatomical forms are generally designed to allow their survival in a semi-dry environment; these take into consideration the type of soil and the natural surroundings. Their roots cannot stand excess moisture for a long time because they are prone to rot in such circumstances.

In this kind of natural habitat where xerophytes grow, some nutrients are found in low concentrations, so that over millions of years, these plants have adapted to the low availability of the resources and have developed special features to capture and use all existing traces of nutrient substances.



1 - *Echinocereus pulchellus*.



1

2 - *Astrophytum myriostygm*.



2

4

3

4 - *Thelocactus rinconensis*.



3 - *Mammillaria theresae*.



The substrate

The substrate is a set of solid materials placed into a pot allowing the plant to fix itself to and promote root development. From the substrate plants get the moisture and nutrients necessary for growth and development.

The choice of this solid material to be used as a substrate may depend on its availability, cost and local experience.

Which is the ideal substrate?

It is said that there is no ideal substrate as such, but may vary depending on the manufacturer's formula, collector, plant genus, climate or region, but still there are some physical and chemical characteristics that must be found in a good substrate.

- Physical characteristics: appropriate porosity, good drainage, proper internal aeration, low density and stable structure (should not compact or expand).
- Chemical characteristics: zero or very low salinity, stable pH, good cation exchange capacity, should contain elements that provide adequate nutrients on short and long term, and various supplements.

- Other characteristics: should be pest free, with no seeds or toxic substances, to be widely available and have a proper cost-benefit ratio.

A good substrate is essential for the production of quality pot plants because the pot's volume is limited, and the substrate and its components must possess physical and chemical qualities which, combined with a comprehensive program of management and fertilization, allowing optimum plant development (Cabrera, 1995).

A good substrate facilitates air circulation, good drainage and allows anchoring of the root system thus ensuring a good support for the plant. It acts as a reserve of nutrients supplied when fertilizing.

There could be some variability in the elements forming the substrate and, if necessary, we can have:

- Seed raising substrate
- Substrate for epiphytic cacti
- Substrate for xerophyllous cacti

In this paper we will focus on the substrate for the succulent xerophytes.

To understand how you can structure an ideal substrate for succ plants, you need first to know few basic facts.

Plant nutrition

Plant nutrition is composed of a set of processes by which plants absorb substances from the exterior and transform them into their own materials and energy.

How do the plants feed? Roots, stems, leaves, these are all vascular plant nutrition organs. Plants take in nutrients from through the many fine hairy absorbent roots that are shed continuously because they have a life of only a few days. The hairy roots secrete acidic substances that contribute to the solubilisation of the poorly soluble compounds such as phosphates and carbonates. In this action CO₂ is also involved, which is a by-product of root respiration. The plants bodies expend three essential elements, which are: carbon (C), hydrogen (H), and oxygen (O).

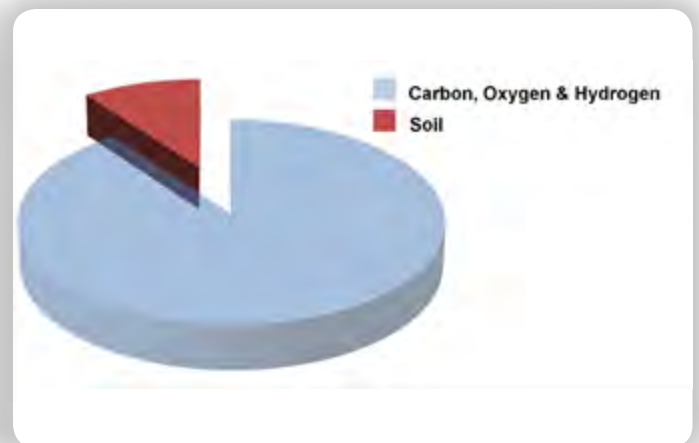
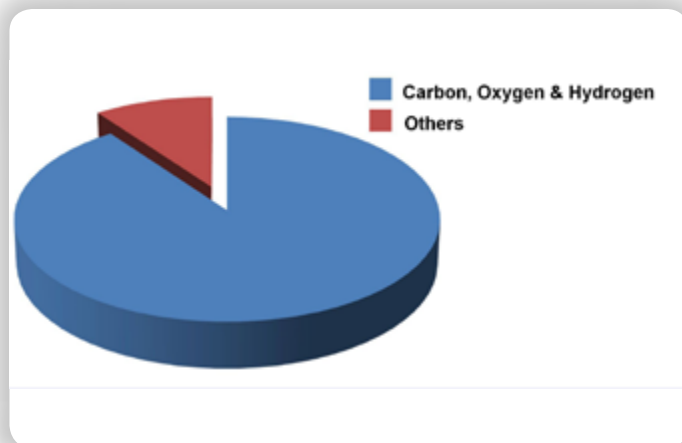
Plants can have their carbon and oxygen intake directly from the air through photosynthesis, while hydrogen derives directly or indirectly from moisture absorbed from the soil.

The key nutrients involved in feeding plants are carbon (C), carbon dioxide extracted from the air by the autotrophic* plants through photosynthesis. Carbon is an essential component for the plants and is assimilated in form of CO₂ (carbon dioxide), as found in the atmosphere.

The graph shows a higher percentage of consumption for the three major elements (carbon, hydrogen and oxygen) than all other which nutrients are obtained through the substrate.

There are plants that can take in up to 60 different elements, of which 16 are considered essential

1	Carbon	C	From air and water as CO ₂ and H ₂ O	Are used in great quantities and very frequently
2	Oxygen	O		
3	Hydrogen	H		
4	Nitrogen	N	From the soil	Are used in less quantities and for some plant less frequently
5	Phosphorus	P		
6	Potassium	K		
7	Calcium	Ca		
8	Magnesium	Mg		
9	Sulfur	S		
10	Iron	Fe		
11	Manganese	Mn		
12	Boron	B		
13	Molybdenum	Mo		
14	Copper	Cu		
15	Zinc	Zn		
16	Chlorine	Cl		
17	Sodium	Na		
18	Silicon	Si		
19	Cobalt	Co		
20	Vanadium	V		



for their proper development, while others, such as sodium (Na), silicon (Si), cobalt (Co) and vanadium (V) are considered essential only for some plants.

All these elements play important roles for the plants and when a basic nutrient is absent or, on the contrary, present in small quantities, severe disorders may appear and subsequently a signifi-

cant reduction in their development.

We know that as a matter of fact the plants' body is composed of carbon, hydrogen and oxygen, but besides this, the plant is formed and other chemical elements present in the soil in a diluted state, which are absorbed by the roots. These elements are divided into two groups, macroelements and microelements.

Macroelements

Primary nutrients - are those nutrients that are frequently needed in large quantities. Examples: nitrogen (N), phosphorus (P) and potassium (K).

Secondary nutrients - are needed in smaller amounts than the primary. Examples: calcium (Ca), magnesium (Mg) and sulphur (S).

Only a small fraction of these nutrients from the soil are available to plants, the rest appear in forms that cannot be assimilated by the latter.

In most of the crops, the plants' needs are higher than the sources of elements present in a form directly assimilable from the soil, making it necessary to supplement the intake resources by using organic manure and chemical fertilizers on a regular basis (2-6 times year).

When buying chemical fertilizer, buy actually the primary macroelements, needed by plants in large quantities, such as nitrogen (N), phosphorus (P) and potassium (K), hence the name of NPK fertilizer; however, these fertilizers are usually accompanied by secondary macroelements and microelements, in sorts of full and complex formulations. It is however important to note that one should not use them in excess because otherwise we do a disservice to our own plants, as they tend to become more sensitive (and growing smaller roots), and there is also a tendency for various salts to accumulate in the soil and in pots.

For commercial fertilizers there is a formula based evaluation of the percentage, e.g. 20% nitrogen, 20% phosphorus and 20% potassium - this is the formula 20-20-20 - but it is not desirable such a high intake of nitrogen for cacti as this element accelerates plant growth with the result that the cuticle remains thinner and more susceptible to insect attacks or to extreme sunburn. This is why we recommend a low nitrogen formula and with higher phosphorus and potassium content. For example 9-45-15 formula is low in nitrogen but high in phosphorus and moderate in potassium, contributing to a better development of roots. Another formula widely used for cacti is 4-25-35.



Microelements

Are needed in very small quantities and less frequently, but nevertheless play an important role in plant growth.

Examples: boron (B), chlorine (Cl), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo) and zinc (Zn). The lack of any of these elements can be determined by the appearance of deficiency diseases.

These are called "microelements" because, although present only in very small quantities, they are required, they are even essential elements and the plants are likely not to complete their life cycle in their absence.

For example, molybdenum is an element of plants need only, but is an essential component of the enzyme that catalyzes the reduction of nitrates and therefore molybdenum deficient plants continue to accumulate nitrates and become very frail - noticeable is the discoloration of green leaves. Therefore, plants need molybdenum in order to be able to synthesize and activate the nitrates reducing enzyme.

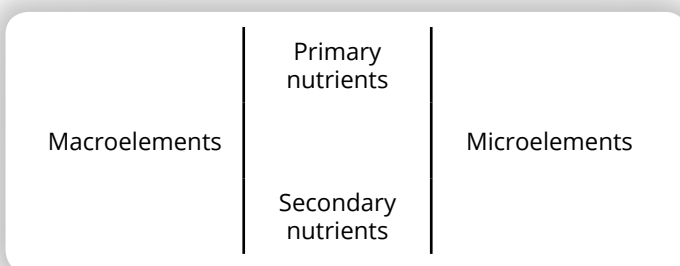
Molybdenum is found in soil in various organic compounds, which are part of the plant residues and microbial cells. Molybdenum is accessible for plants but only after the organic matter mineralization.

Copper and zinc, along with some organic acids, strengthens the self-defence of plants and offers a high resistance to attacking pathogens and a higher tolerance to various types of stress.

The pH is an important factor in managing the availability and absorption of nutrients. For instance, lower pH values decreases availability of calcium, magnesium and molybdenum, while higher values limits the absorption of iron, magnesium and zinc.

Some microelements can be administered only once in the life of the plant and this may be enough.

In this case, the plants should be grown several generations deprived of these microelements, until signs of the deficiency set in.





1 - *Turbinicarpus alonsoi*.

1



2 - *Obregonia denegrii*.

2



3 - *Geohintonia mexicana*.

3



4 - *Astrophytum myriostigma*.

4



5 - *Turbinicarpus pseudopectinatus*.

5

The rocks

Some mineral nutrients are derived from rocks, which can be classed into two groups:

- Felsic
- Mafic

Felsic - is the name given minerals, rocks and magmas rich in light elements such as silicon, oxygen, aluminium, sodium and potassium. The word is a combination of two other terms: feldspat and silica. These minerals are usually light coloured.

Mafic - mafic rocks are rich in magnesium and

iron. Most minerals of this type are reddish or dark coloured.

The substrate

"An ideal substrate for cacti is one that allows a good internal aeration, has a structure allowing good drainage, is sandy, from which water can easily escape, but must include elements able to store nutrients and moisture at an optimum level. In addition, it must meet all basic nutritional requirements of the plants (long term and short term)."

Mammillaria luethyi



April 28, 2014



November 7, 2014

Mammillaria luethyi, same plant, same substrat, different dates.

Our formula

The mixing percentages may vary depending on the species, climate, geographical area and location (exterior / interior).

Our nursery is located in a semi-humid area, with tropical climate and an average temperature of 32°C and, to meet the requirements optimum, we use these types of substrate mixtures:

Mineral substrate (between 60% and 70%)

- volcanic rocks (white, yellow and red) or limestone
- gravel (for construction, sifted and without dust particles)

Due to the properties of the individual rock groups, we use a higher percentage of felsic rocks than mafic rocks, we also add sand and limestone used in construction, with low salt content, in order to extend the range of minerals and sustain a slight increase of the pH, with a particle size of 2 mm on average (and without dust particles).

Organic substrate (between 30% and 40%)

- black earth
- humus
- organic compost

We use a mixture of 10 or 15% black earth, 10% well matured organic compost (*Moringa oleifera* or *Equisetum arvense* leaves, well broken or grinded), organic matter from the soil, disinfected, and active humus 10 or 15% (this one not disinfected because disinfection would kill the beneficial bacteria).

The elements and percentages may change depending on the climate in your region. For example, in a hot climate (40°C) and dry, we can increase the weight of black soil in order to optimize the moisture retention. In very humid climates we can reduce, on the contrary, ingredients that retain moisture and also increase the average size of 3 mm grain size.

See above about the mineral substrate. The grain size is important as it represents the trap for the organic nutrients in the substrate, preventing them being removed when watering. The wanted grain size is obtained by a double sifting – first to get the desired maximum grain size, and then to remove the fine dust particles.

To sterilize black soil and generally organic matter, it must be maintained at high temperatures (over 80°C) for a few minutes. After this, the mixture should be well aired in order to prevent the formation of nitrites which are toxic for plants. It should be also noted that organic matter must be well matured (well composted) and in very small pieces (almost in powder form) to accelerate the process of decomposition. Avoid large leaves

summary →

summary →



and pieces of wood. Remember that it should be well sterilized. Some sterilize it also because sometimes mineral substrate may become contaminated, especially when stored too long or reused. We recommend to select materials for their pH stable and able to ensure the necessary nutrients both short term and long term.

By integrating the use of organic matter and disinfection of the substrate, the pH tends to become too acidic, so that we can balance out with limestone.

The particle size (grain size) is important to get good results in culture. Smaller grain sizes are recommended for seed raising, while the bigger grain sizes should be used for plants older than one year grown in a moist environment.

It is noteworthy that nutrient deficiencies and excesses can affect generations of plants, i.e., if the plant is deprived of any macro or microelements, or whether it is fertilized in excess, maybe it will not immediately reveal its shortcomings, but these are likely to obviously occur in its offspring.

"If we keep our plants in one type of rock and

Discocactus sp., two plants, same species, same sowing date, but different soils. The plant in the left is growing on our substrate formula.

100% mineral, we provide a poor substrate with no organic acids and macro and microelements deficient."

We recommend that you add a small amount of soil mixed with organic fertilizer (composted organic and matter disinfection) every year, on top of the substrate at a very fine grain so it can descend in the pot when watering. Since the substrates are washed by irrigation, these natural nutrients are lost and must be periodically replaced.

The offspring of the cacti grown by us in pots may present changes, weakness, increased susceptibility to disease and stress, if not minimum amounts of macro and micronutrients are ensured for a good substrate must meet the nutritional needs and support the good development of the of plants.

Note

* They are called autotrophic because are preparing the their own nourishment from inorganic substances, carbon dioxide and water through their metabolic processes.

Echinocereus viereckii ssp. *moricali*

snakes and succulents in habitat



Ricardo Ramirez Chaparro



Crotalus molossus & *Agave lechuguilla*.

summary →





summary →

summary →

Crotalus molossus & *Agave lechuguilla*.

Pantherophis emoryi & *Grusonia vilis*.



summary →

Masticophis taeniatus & *Escobaria chihuahuensis*.



summary →

Trimorphodon vilkinsonii & Echinocactus
horizonthalonius.



Crotalus pricei & Mammillaria senilis

nopal

the great cultural pillar of méxico



Leo Rodriguez



At first Copil's heart was thrown in the middle of Lake Texcoco. Many years later, Huitzilopochtli ordered the Aztecs to search for Copil's heart and build their city over it. The sign would be an eagle perched on a cactus, eating a precious serpent, and the place would become their permanent home. (Wikipedia)

summary →





photo Cristian Perez Badillo

Few plants enter so deeply in mythology, in mysticism and on cultural identity of a country in such a solid way as prickly pear has done. The humble prickly pear (Nopal in Spanish), with roots that religiously drinks water from all over the national territory, is without a doubt one of the cacti that often portrayed in the vast Mexican imagery because of its unique qualities. This reflection not only rests over its edible uses, although myths are coated with it, but even patriotic symbolism bears its shapes evincing the local identity.

Prickly pear (*Opuntia* spp.) is a large genus with over 300 species, of which more than 100 exists in México, and over 50 of them are endemic to the country, most of them edible, while others are even poisonous. This present article, short but frank, is a small review of traditional uses of prickly pear in México, a required review for a country that harbor most of the endemic cacti.

While cacti have been used as food since pre-Hispanic times, their medicinal qualities have long

transcended the purely culinary use, so to speak; for example the slime “baba” was used in open wounds to help stop bleeding and start the healing process. A drink, made of grinded prickly pear mixed with water, was used for gastrointestinal diseases, for women in childbirth and for children with gastric problems. Prickly pear was a good remedy as well for people suffering from ulcers, hernias, muscle aches and even dehydration and diabetes. It is a powerful natural antibiotic, inhibits the growth of bacterial species. It is applied to wounds, in cases of fungal infections or fungal skin as well as problems of infections of all kinds, it is a source of dietary fiber, contains many minerals, helps to regenerate tissue, and their anticancer properties have been studied among many other things.

In Mexico, the culinary qualities of cacti have been appreciated for more than 6000 years ago. In Mesoamerica, where many cacti are endemic, the humble and resistant cactus provided in addition for the first settlers a sublime nutritional quality, securing the basis for the flourishing of a culture



[summary →](#)

[summary →](#)



photo Eduart Zimer



photo Eduart Zimer



photo Pedro Nájera Quezada



photo Pedro Nájera Quezada

and an empire of great social and political importance at that time. Opuntia meals survive to this day, in a collection of dishes that are hardly found in other countries: roasts, broth, cooked, raw, baked, salted, and even sweets and candies. The prickly pear still persists in the likings of the Mexicans who have adapted their traditional forms of production to modern times, and these processes and, equally, their recipes have evolved in time. Prickly pear, corn, squash, agave, chili and beans, are some of the pre-Hispanic foods that currently remain part of the cultural and gastronomic iden-

tity of Mexico, and these not simply ingredients of the kitchen, but many of them have a sacred character and are ritually consumed in some ethnic groups in the country. Indeed it is a cultural achievement because this type of food is part of a complex anthropological structure and stands far from western food alienation.

Throughout history, the prickly pear has been a source of inspiration for Mexican artists, it is found in aesthetic forms and expressions, a niche to accommodate a unique fine art. The great muralists like Siqueiros, Orozco, Diego Rivera, left evidence



Dactylopius sp.

in their mural work of the importance of their surreal ground for cultural leadership of the country, and with a little research you can draw a map of uses and customs through the plastic work of the first half of the twentieth century. Its importance was remarkable even for the techniques used for cochineal (*Dactylopius sp.*) farming. This scale insect attacks the genus *Opuntia* and has a very deep vermilion color, which was used since ancient times to produce pigments used in frescoes and encaustic paintings.

In pre-Hispanic mythology, the prickly pear accompanied the Mexican people in their imagination, as in the narration of Copil's journeys, Huitzilopochtli's (1) son who tried to kill his father for leaving his mother and himself. Upon discovering

Copil's intention, Huitzilopochtli had him killed and ordered his army to take out his heart (2), and in the very place where the heart of this God was buried, sprouted copious cactus plants, representing the strength and temperance of their God.

Perhaps the best known of Mexica cosmogony myth, is the fact that under the orders of the god Huitzilopochtli, the Mexica people migrated to southern lands to found Tenochtitlan. The Nahuatl tribes from Aztlán, (a mythical place in the north of the country), were entrusted to by Huitzilopochtli to find a place where they founded the city of the people of the sun, and the symbolic place should be where they would found an eagle devouring a snake. This scene was seen at Lake Texcoco, where they founded the city which would

summary →



photo Eduart Zimer



photo Sandy Neri Cardona



photo Eduart Zimer



summary →



photo Pedro Nájera Quezada



later become the Mecca of commerce, politics and economics of Mesoamerica. Currently, the national emblem bears the symbolic image of that event and it became emblematic for all Mexicans.

The hundreds of known *Opuntia* species come in all shapes and sizes. They have sweet and sour tasting fruits, edible tender stems and there are also species containing alkaloids; they come with long, thick spines, or only millimeters long, but very stinging. Cacti are exceptional, tremendously evolved plants that can grow at all latitudes of the American continent except for the extremities, there are even escaped *Opuntia* species, arriving and forming colonies in Europe and Africa, which have thrived so well, to the extent that may threaten the native flora, like any other case of in-

roduced species. They are plants that survive with a minimum of resources, are humble and resilient, productive and full of qualities that hardly may be reviewed in an article. Not for nothing it is named the heart of the desert, providing for humans since immemorial times.

(1) In the Aztec religion, Huitzilopochtli is a Mesoamerican deity of war, sun, human sacrifice and the patron of the city of Tenochtitlan. (Wikipedia)

4^a. El Tunal con el Aguila q' Sallax on en la laguna



tubifex!



Dag Panco

As almost everyone knows, tubifex worms colonize the muddy bottoms of sludge waters, living in large colonies formed of many individuals. These thin creatures constantly fret, exposing themselves by their undulations, but disappear when feeling the slightest vibration. They remain stealth until they think the danger is over, and then they start over. You will ask, of course, what's the link between this worm used by aquarists to feed their fish, and a magazine for xerophilous plants or a section within supporting compliance and respect for the law. The answer is as simple as it is unpleasant for some.

Partly because and following the alarm signals raised in Xerophilia, the individuals named in my previous article "wormhead mouths" start to mutate: they become more and more alike the tubifex worms. Noticing that if they expose themselves they become a subject to public disapproval, on a wall of shame, they now raise their heads and undulate almost exclusively among them, avoiding even to advertise on social networks. On one hand it's good; on the other hand it could be worse. Good is for sure because their desire to own special items / beings comes mainly for the need to boast about them and the attention they get because they have been able to obtain them (a demonstration of wealth, relationships and ingenuity); yes, there are people who need to put on display their possessions, only because they cannot be admired for what they really are. Their transformation in tubifex, makes them

not so keen to spend a lot of money on "products" they cannot blow their own horn with. It could be worse because they are forced into discretion, throwing all this swarming into a protective shadow where it can replicate, apparently unabated. However, overall I believe the beneficial effect overcomes the undesirable one because in any way their practice is forbidden and therefore takes place largely underground.

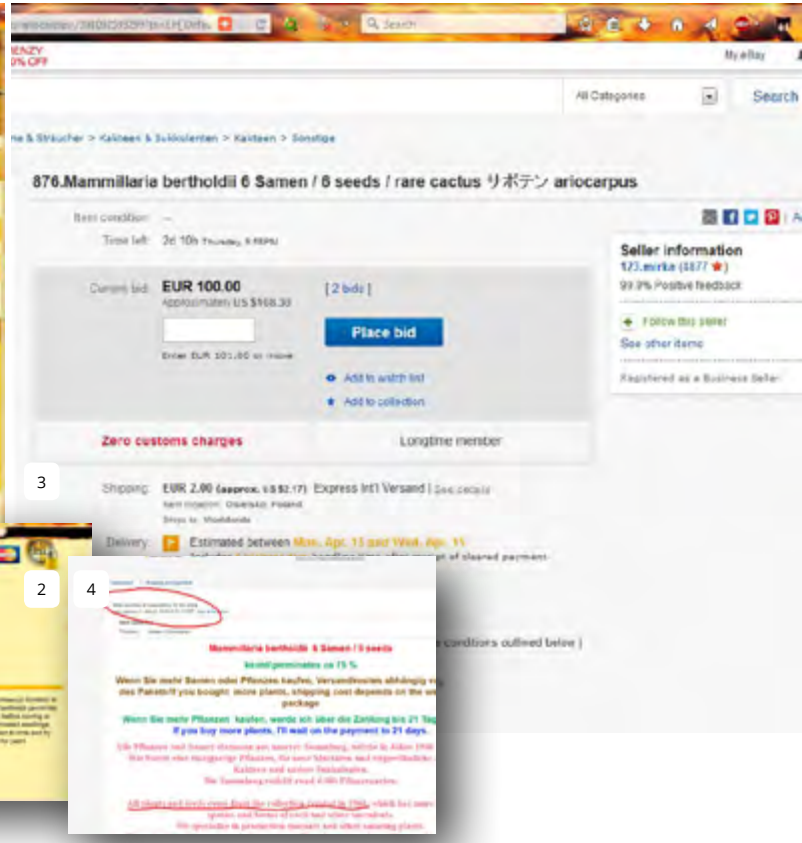
I will post only two pictures, without pointing fingers to anyone: they are the same, they know who they are, and you know them as well; shame does not operate in what concerns them.

But I will point out two things. The first one is related to one of the above mentioned figures for whom the sense of danger creates paradoxes: since we raised questions on his activities, one of the most famous habitat looters, has recently joined social networks, adopting such a conservationist tone and becoming worried and almost militant in regards to the protection of rare species. Apparently, his approach is just ridiculous: who the hell has seen a coyote dressed in a goat's fur?!

The second remark is related to the fact that, first on a site in the Czech Republic and then in late March 2015 on e-Bay by a Poland based account holder, *Mammillaria bertholdii* seeds were offered for sale. I do not want to point out that saying "*Mammillaria bertholdii* seeds are illegal in Europe" is a truism. On the contrary, I will not argue the legality, but reach instead for another very serious aspect, which is passing almost unnoticed: the implications of seeds being offered for sale.



summary →



1 & 2 - Screenshots with offers on a Czech Republic site. 3 & 4 - Screenshots with an e-Bay page; "seller assumes all responsibilities".

The first who put them on sale on his website is one of the much discussed individuals, linked with piracy acts carried out in the habitat of this species. We knew since last year that they have smuggled some plants into the Czech Republic (the discoverers were accused on the social networks; however, none of them has never denied anything). We learned at the same time, that these were first grafted, that they have flowered and will produce seed. Therefore, we can pretend to believe the Czech website owner when he maintains his seeds are obtained from the first harvest in the greenhouse. However, showing up in Poland and, more, being sold by one who also sold *Aztekium valdezii* seeds and plants in the past, synchronizing with the Czech, sheds light on the actual size of the mystification.

How many seeds can be produced by two plants...? Because even if you can accelerate and obtain sexual maturity within one season, even if you can induce a very abundant flowering (compromising on the amount of seeds / fruit and germination quality), the maturation time of the fruit stays the same, no matter if a grafted plant or growing on its own roots and therefore the propagator has to wait until the fruits are getting ripe.

The arising question is purely rhetoric: how many fruits can be produced by two plants, so there are enough seeds for (1) the producer, for his own breeding plants; (2) friends, collaborators, commitments, etc. (commitments towards those who share novelties, when they have); and (3) to meet sales demand ... in two different countries. On e-bay they are sold in 6 seeds packs! The fact that the starting price is 100 € for 6 seeds, implying that the *Digitostigma* record of 20 € / 1 seed could be exceeded, does not mean there are only very few seeds for sale, but rather that there is enough stock intended for hugely profitable transactions. Therefore we suspect that the overwhelming majority of these seeds originate from habitat extract-

ed plants or simply massacred on the spot. *Mammillaria bertholdii* is a species having the fruit concealed in the plant's body, like all mammillarias of the Saboae group, *M. theresae*, *M. luethy*, etc. More than all the aforesaid, *M. bertholdii* is a plant whose body stays buried in the ground! Now, imagine a carefully conducted harvesting of the seeds, lying down on the belly, with the magnifying glass, tweezers, and the seed sucker in your hands, gently hollowing a tiny plant in search of the concealed fruit... but being always on the rush, anxious that someone stumbles upon you and sees what you do. Well, such an image is purely fantasy! Or come and dig up the soil in a jumble, decapitating plants, and picking the later on when you have the shelter and conditions; or ... most likely the seeds do not originate from plants are removed from the ground, roots and all, sent to Europe, on safe and long used routes so that when the feds stop them, they share jokes and there was nothing found on them. Home, they can have the time and the conditions, and the plants are carefully stripped of seeds. Of course the extra genetic material, plants, seedlings and seeds, can now be sold at exorbitant prices, worth all the trouble, recover the travelling cost, to justify keeping plants for themselves or friends or for other commitments and, especially to secure the expected return on investment.

Finally, we note the irony of the fact that while the Polish dealer declares that he "is assuming the entire responsibility for his listing" the local law enforcement agencies and CITES officers are busy waiting for the spring to arrive, watching movies, having a beer and enjoying society games ... in the happy case they are not sleeping on taxpayers money!

summary →

an intractable problem:

echinocereus ortegae



Michael Lange & Werner Rischer; German Echinocereus Society - michael.lange@ag-echinocereus.de

E *chinocereus ortegae* Rose - in G. Ortega, Apuntes Fl. Indig. Sinaloa, Fam. Cact. O. [No. 3] (1929) [Apuntes para la Flora Indigena de Sinaloa: Cactaceas de Sinaloa. In: Boletin de Pro-cultura Regional Bd. 1, No. 3, 1929, unpagued]

In 1929, when the Mexican botanist Jesús González Ortega (1876–1936) published his notes on the Flora of Sinaloa, he included a description of an *Echinocereus* from Durango. The protologue of this plant named *E. ortegae* was contributed by the corresponding Dr. Rose from Washington DC, who had received photographs and living plant material collected by Ortega at Siánori/Rio Tamazula/800 m above sea level. Consequently, the plant produced flowers in Washington and a herbarium voucher was prepared at US National Herbarium (US). Accordingly, the plant was designated as the type and later the specific photographs were designed as the Lectotype by N.P. Taylor. We can easily have a look on these pictures attached to the herbarium voucher.



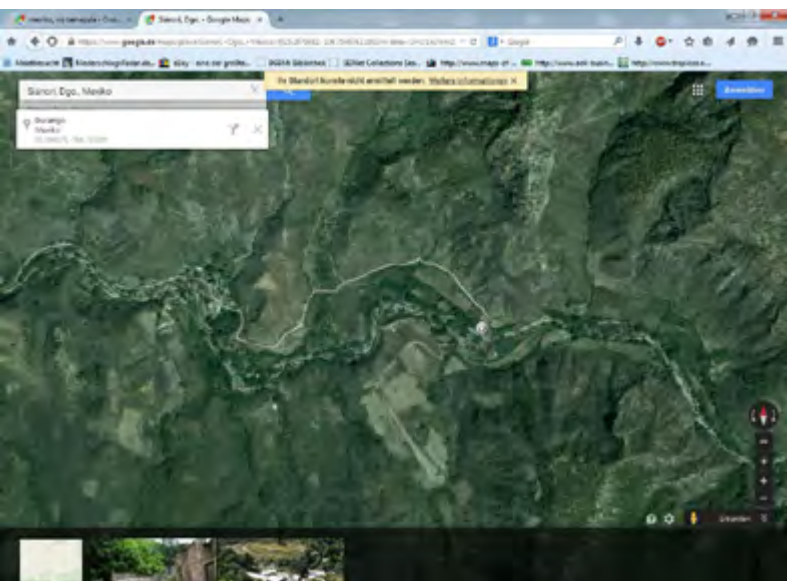
summary →



In the 1970es a plant was collected at Hwy. Federal 40 `Mazatlan-Durango´ (Lau 1143), and was named in the first instance *E. scheeri* var. *koehresianus* (Frank 1988). In the 1990es close related plants were discovered in the Santa Ana area in the triangle border region where Sinaloa-Durango-Chihuahua meet. They have been considered to be close to *E. ortegae*. As a result a name change was published *E. ortegae* ssp. *koehresianus* (Frank & Rischer 1996).

However, after several times seeds of this group, from different origins, were investigated, it turned out that obviously tetraploid and diploid strains of both plant taxa are co-existing! Based at this knowledge and some morphological differences between the two, both taxa are now accepted as distinct species (Rischer 2009): the diploid *E. koehresianus* and the tetraploid *E. ortegae*.

Unfortunately there is absolute no possibility to investigate the ploidy-level from the original Lectotype´s herbarium voucher plant. So some doubts are still remaining: if the tetraploid entity we call *E. ortegae* really identical with the *Echinocereus* population at the type location Siánori at River Tamazula in Durango is! See the map.



This is a call, primary to all Mexican cactus enthusiast, botanist and students of biology: The German Echinocereus Society will support projects investigating *Echinocereus* especially even in their native countryside Mexico. Precisely this present publication is created to force the investigation into the identity of *E. ortegae* at its type location; we are offering a grant on informal request by e-mail. Naturally we will support only activities in consensus with international law (CITES) and the recommendations of IOS. In addition, a summarizing report must be contributed to our printed magazine „Der Echinocereenfreund“. We will sup-



port any applicant with digital information. We are asking for a floristic documentation of the local succulent community in context of a GPS-supported mapping at Siánori, documentation by digital photographs and if possible the preparation of herbarium vouchers for a Mexican scientific institution such as a Botanical Garden or a University.

As a second step we will even support a cytological investigation or other studies with financial means or/ and logistics.

In cultivation in Central Europe these plants are among those who flower late in spring, buds develop late and almost only after water supply. In the field they will very probably not come into flower before May.

From this point of view a visit from May onwards would be preferable. To identify the plants in the field accurately, some pictures from already known locations with growth forms and microhabitats are presented below. The plants have a stoloniferous habit and usually form larger patches or loose mats and are rooted in raw humus or moss covered substrate or decayed leaves from pine trees, or hanging from steep cliffs as an alternative growth prospect.



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Acknowledgement:

- Dr. J.-M. Chalet who is kindly supporting our studies with pictures and field data.
- Editorial team 'Xerophilia' for improving our English and translation into further languages.



Note

1. *protolog* = In the nomenclature of natural history, the original verbal description of a species, genus, or higher group.
2. *lectotyp* - a specimen designated as the type of a species or subspecies when no holotype was designated by the original author of the name.

peperomia tetraphylla



Noelene Tomlinson

summary →

The succulent *Peperomia tetraphylla*, known as the four-leaved *Peperomia*, is a small plant in the *Piperaceae* (Pepper) family. It grows in Australia, Asia, Africa, New Zealand, Lord Howe Island, and other islands in the Pacific Ocean. In New South Wales, it is often seen as an epiphyte, or growing on rocks in rainforests. Tiny yellow-green flowers form on a spike at the end of the branchlets. The name of the genus *Peperomia* is from the Greek words "peperi" (meaning pepper) and "homios" (meaning resembling), as these plants are closely related and somewhat resembling to the pepper plant, *Piper nigrum*. The specific epithet *tetraphylla* is from the Ancient Greek language, meaning "four leaves". Leaves grow in whorls of

4, opposite.

It grows well in pots for me in semi-shade here in my Melbourne backyard, and bloomed in January. Its height to the top of the inflorescences was 420 mm. However, in nature the plants are mostly low growing.

The flowers are said to be terminal (monocarpic), so I have snipped them off, rather than wait for seeds to develop. Small offsets have appeared from underground, and I have also propagated it from cuttings.

In his book "Australian Succulent Plants" (2007), Attila Kapitany describes *Peperomia tetraphylla* on pages 160 and 161, in the chapter on Rock and Tree Dwellers. I have yet to discover whether other peperomias presented in his book are suited to pot culture or even gardens in Victoria.

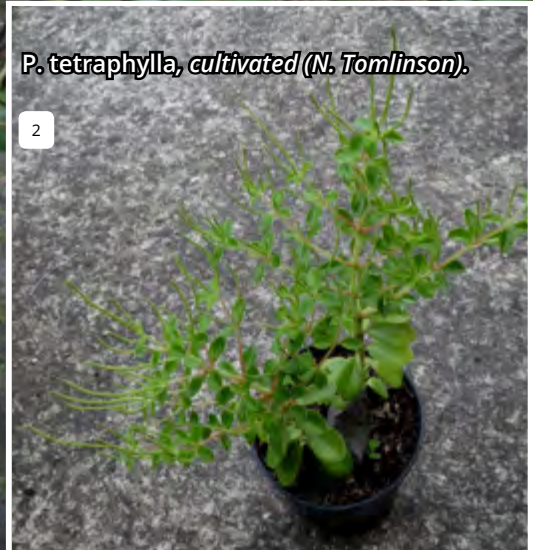


1, 3 & 4 - *Peperomia tetraphylla* (A. Kapitany).

summary →



summary →



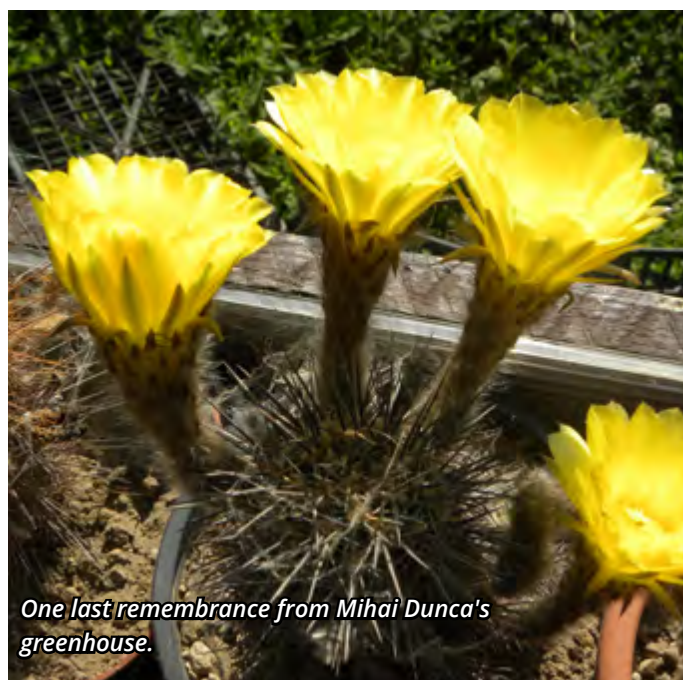
a dane visiting românia a story about friendship and cacti third part



Erik Holm, *Chairman of Nordisk Kaktus Selskab*

summary →

Next morning we got up a bit late. I tiptoed out into Mihai Dunca's greenhouse and enjoyed the collection once more. Later the rest of the house woke up and it was time for some coffee and for me to receive gift plants again. I was beginning to get worried about how to bring all these plants home. Saying goodbye to such good company isn't easy, but I was beginning to enjoy the Romanian way to do it with a lot of hugs and cheek kisses.

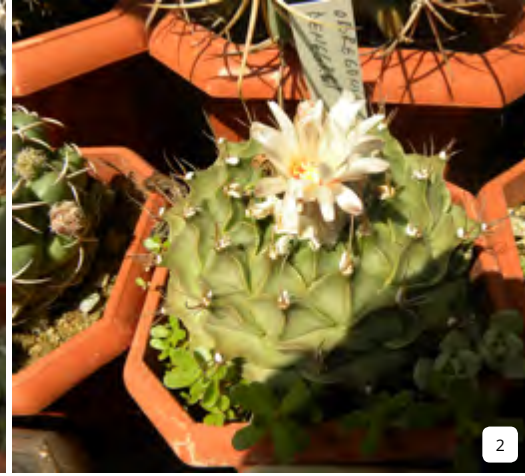


One last remembrance from Mihai Dunca's greenhouse.

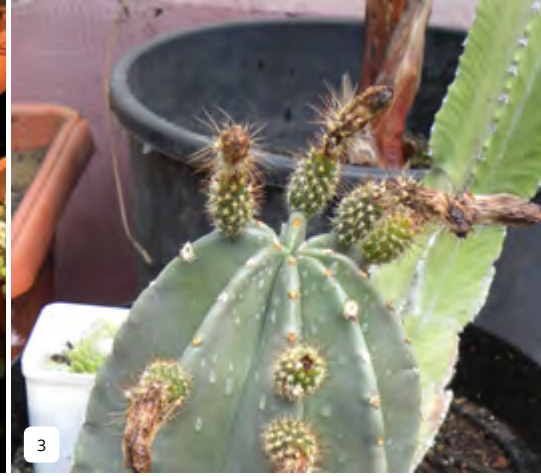




1



2



3



6

6 - With Gicu.



5

1-5 - Gicu's wonderful plants.



4



7



8



9



12



7-12 - George Nițu's very special plants.



10

Days 3 and 4

We were going for a long ride to Craiova to see three different collections. First stop was at Gicu Maiuru. He already had a visitor, a young new collector, who was eager to join in on my stay in Craiova to learn more about cactus growing. His name is Radu Mantale and his good English came in handy several times during this day. Gicu Maiuru's collection is not exactly large. He has a small

house in a small garden and plants are scattered everywhere it becomes possible. He is a wise man with whom it's easy to have good talks on many subjects. Like everybody else, he's generous and not afraid to give away good plants. We sat in the shade under his bamboos (he has several species) having refreshments, packing and labelling plants, exchanging email addresses and in general having a good time.



1



1, 2 & 3 - Belu's succulent jungle.

2

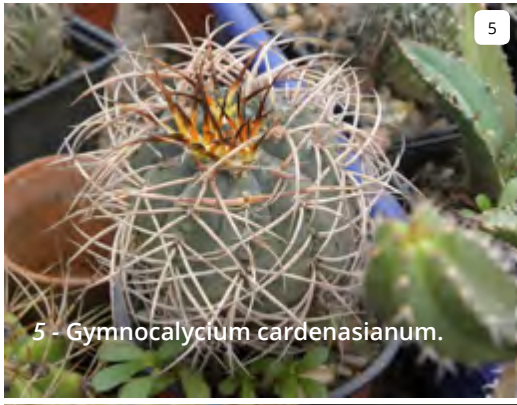


3



6

6 - Plants everywhere even on the... roof!



5

5 - Gymnocalycium cardenasianum.



4

4 - Gymnocalycium spegazzinii.



7

7 - Lophophora williamsii



8

8 - Belu's work zone.



9

9 - Belu arranging his gifts.



12

12 - Not just cacti, but succulents too.



11

11 - Hoodia gordonii.



10

Belu preparing the barbecue.

We all left to go to Eugen Belu and his family. Before going into that I have to throw in an interval. George Nitu came to visit and he invited Radu and me to go and see his collection 10 minutes away, so we left and arrived at his house. On the way to his greenhouse we saw his dog a very nice albino. George is an expert in sowing and grafting on *PereSKIOPSIS* and later re-grafting to other stocks. Again I was given a lot of gift plants and a refreshment.

Once arrived at Belu's house it was time to eat and have beer. We also found time to go to the

greenhouse and select plants for me, but it was growing dark and we may have had a bit too much of the good beer, so we called it a night and returned the next day.

Belu's collection is big and he is very much out of space, so it was no wonder that he had plants everywhere, even on the roof.

It was a real pleasure visiting Belu. He is a very kind man and a skilled cactus grower. We left for Bucharest and a good night's rest.



1



2



4



3



5



5

5 & 6 - Enjoying Fabian's hospitality.

Day 5

For once we were having a day not too packed and with only a little driving. We spent some of the day organizing photos and looking into how to send plants from Romania to Denmark. Dag prepared a very good pork meal and it was so tasty.

In the afternoon we took off to visit Fabian Vanghele. Fabian is a man with many interesting hobbies. He keeps snakes, fish and turtles and he knows how to give them all good conditions. He even does a lot of good work of preserving species in nature. His turtles breed well and once they're big enough they are put back into nature. So interesting! When it comes to cacti, Fabian specializes

in hardy plants. He knows a lot about them and he keeps record of their places of origin. Again I was impressed.

We shared a couple of melons with the turtles and later the usual food and beer. While we were at that, Ionut Floca and his girlfriend arrived. Ionut and I have spent hours chatting via Facebook. We share other interests beyond cacti, and not the least of them rock bands of the 70's and 80's. Again, I was given plants and while we were packing the rain came. This gave me the opportunity to see more fish and snakes. Great afternoon that ended my cactus safari in Romania.



I keep in my mind Belu's columnar cacti.

Starting preparations

We left for home to pack my suitcase, eat a bit and grab a few hours of sleep. In the middle of the night we had to get up and go to the airport. It was hard to say goodbye to Romania. I had the tour of my life here. I was always met with generosity and kindness. Especially Dag Panco did so much for me and I hope to return soon to meet him and all my other new friends. I miss you all so much and I just can't thank you enough.

Postscript

Even though I had enjoyed my journey very much it was good to come home again. I still had a week

of vacation to enjoy and I was looking very much forward to receiving a parcel from Romania containing all my gift plants. The day it arrived I got busy. Very busy and it continued for a week or more. The package was almost 12 kilos. There were a few casualties, but the vast majority of plants had been doing well and I began to pot, mix soil (pure mineral of course), pot, mix soil ... phew! It was a lot of work indeed, but very satisfying.

I have a lot of photos from Romania not published in this article. A lot of them have been published on <https://www.facebook.com/Nordisk.Kaktus.Selskab> during September to October last year.

dawson dawson-watson the opuntia impressionist

Xero-Arts



Eduart Zimer

Dawson Dawson-Watson (1864-1939) is mostly known for the beautiful mid-west prairie landscapes and Opuntia paintings he created relatively late in life, when living first in St. Louis, Missouri, and later in San Antonio, Texas. So intense is the affinity with the landscape that one cannot even suspect that in fact he was born, grew up and lived for many years in the Old World.

Dawson-Watson was born in St. Johns, Middlesex County, only few miles out of London and came from an artistic family. His grandfather Dawson Watson and his uncle Thomas J. Watson (1847-1912), who was actually married to the well-



Photo of Dawson Dawson-Watson, shortly after settling in San Antonio.





1



2



3

1 & 5 - *Cleaning Day and The Mean Estate the Happiest*, by John Dawson Watson (his father). 2 - *Harvest Time (Giverny period)*. 3 - *Springtime in Giverny (c. 1893)*. 4 - *Light Breeze (c. 1917)*.



4



5

and mastering various techniques and media. Yes ... Paris, the artistic capital of the World ... and this was probably a life changing move.

In Paris he met and married Mary Hoyt Sellar, an American traveling in France. Through his wife he became closer to several American artists living in France, amongst them John Leslie Breck (1860–1899), who persuaded Dawson-Watson to visit the famous Giverny art colony. An intended two weeks stay extended to five years and becoming a central figure of its early history.

Another American painter, James Carroll

known Victorian painter Myles Birket Foster (1825–1899), were well established amateur artists, albeit not very successful.

His father, John Dawson-Watson (1832–1892), became even a professional; he was a famous illustrator who produced illustrations for well-selling editions of *Robinson Crusoe*, *Pilgrim's Progress*, *Floral Songs* and *Arabian Nights*, and also turns out to be a relatively successful painter and water-colourist as well. As a painter he used to create mainly small panel board paintings. He exhibited his works for nearly four decades at the Royal Academy and some of his works are still available for

the public in Victoria and Albert Museum, and permanent art galleries from Norwich and Liverpool. Dawson Dawson-Watson grew surrounded by artists, writers and enthusiasts of the Aesthetic Movement. He seemed to be well set on his career path since aged 16 his work was accepted by the Royal Academy, while his father and the expatriate American artist Mark Fisher (1841–1923) were his first art teachers. At some stage a wealthy Manchester business man (a brewer!) paid for his art studies in Paris, where he stayed for three years, studying with prodigious art teachers of the time



1 - Cactus in Bloom (1937. 2 - Cactus Flowers (1929). 3 - Texas Ranch (c. 1929). 4 - Flowers of Silk (1928).

1

2



4

3



1 2

1 - Jewel of the Hills (1927). 2 - Hermann Dudley Murphy - Portrait of the painter Dawson Dawson-Watson.

Beckwith (1852-1917) urged Dawson-Watson to move in 1893 to the United States where he worked for several years in New York, Boston, and Hartford, Connecticut (always on the move!), before

returning briefly to England. However, he couldn't re-adapt to his old life and moved once again across the Atlantic, this time to Canada, again, only for three years.



1



2

3

1 - Spring (1927). 2 - Self-Portrait (Giverny period). 3 - The Bouquet (1929)



Biographic information derived mainly from Wikipedia and Texas State Historical Association

1 - *Passing Storm* (1927). 2 - *The Glory of the Morning* (1926) - prize winner.



2



Next, he returned to the United States first teaching at the Byrdcliffe art colony in Woodstock, New York, then, in 1910, at the Washington University in St. Louis, Missouri until 1915. Since moving to St. Louis Dawson-Watson became interested in painting landscapes as he used to take time off during summer. By 1918 he was appointed director of the San Antonio Art Guild and in 1920 he also became director of the St. Louis Industrial Exhibition and in 1921 of the Missouri Centennial. As a result he divided his time for several years between St. Louis and San Antonio, before moving for good to San Antonio in 1926. Especially after this moment he focused on landscapes and the iconic cacti paintings that made him notorious. This final career change was driven by the oilman Edgar B. Davis, who announced in 1926 he would sponsor an art competition in order to attract at-

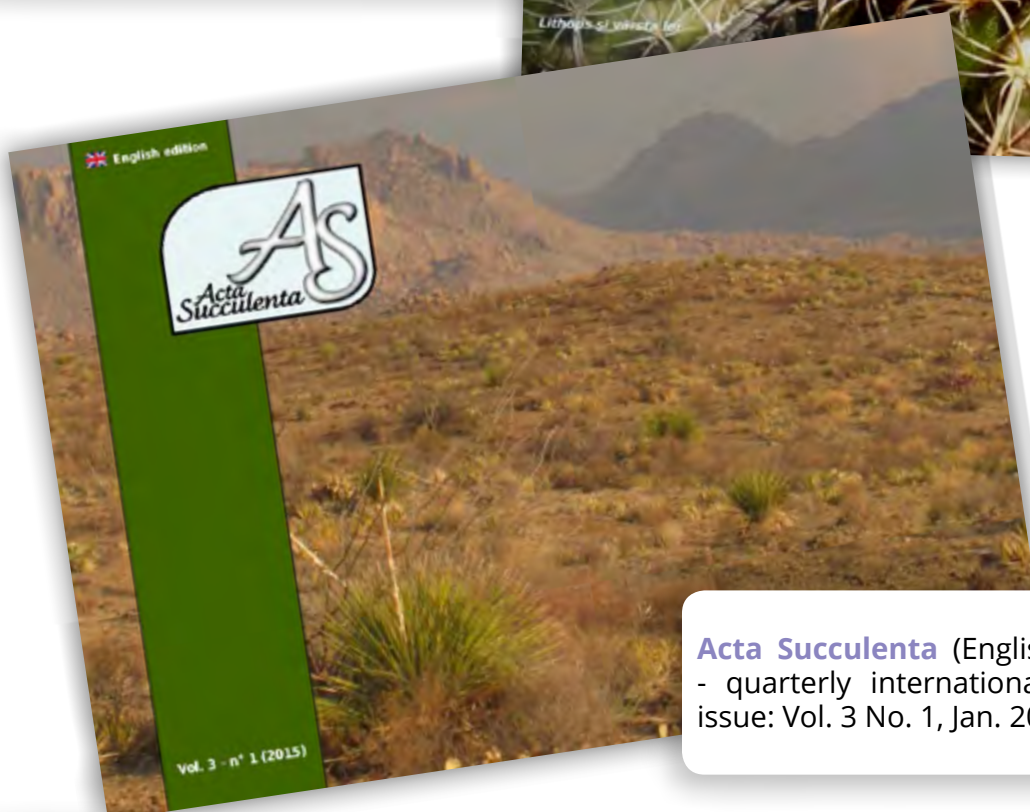
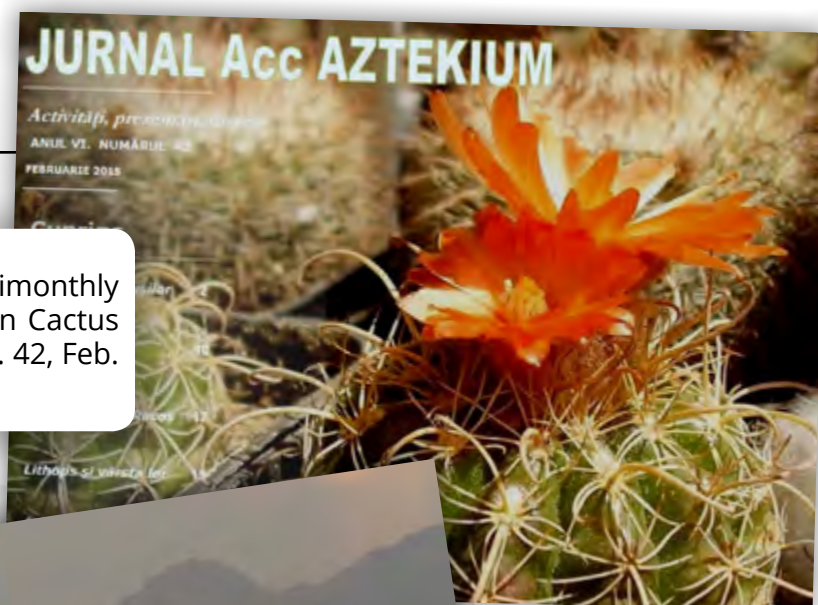
tention (and of course business) to San Antonio, with two categories: artists living in Texas and artists from outside Texas. The contest was baptized The Texas Wildflower Competitive Exhibition and Dawson-Watson won the \$5,000 first prize for artists from outside Texas (he was still spending a lot of time in St. Louis) for his painting *Glory of the Morning*. This unexpected success and possibly the financial boost determined Dawson-Watson to move for the last time to San Antonio, where he spent the rest of his artistic life painting the Texan landscapes and the beautiful cacti. He could finally rest, enjoy a quiet life painting cacti and raise his children.

Artistically Dawson-Watson is considered to be America's strongest connection generally to the French Impressionism and the turn of the century European art.

online magazines

Xerophilia

Acc Aztekium Journal (Romanian) - bimonthly publication of the homonym Romanian Cactus and Succulent Society. Latest issue: No. 42, Feb. 2015.2014.



Acta Succulenta (English, Italian and French) - quarterly international C&S journal. Latest issue: Vol. 3 No. 1, Jan. 2015.

summary →



Succulentopi@ (French) - Quarterly online magazine of the Cactus Francophone. Latest issue: No 13, Aps. 2015.



Sukkulenten (German) - Monthly free online journal of the FGaS - Fachgesellschaft andere Sukkulenten (formerly Avonia-News). Latest issue: Vol. 8, No 4, Apr. 2015.



The Cactus Explorer (English) - the first free online C&S journal. Latest issue: No 14, Apr. 2015.



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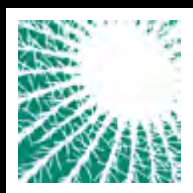
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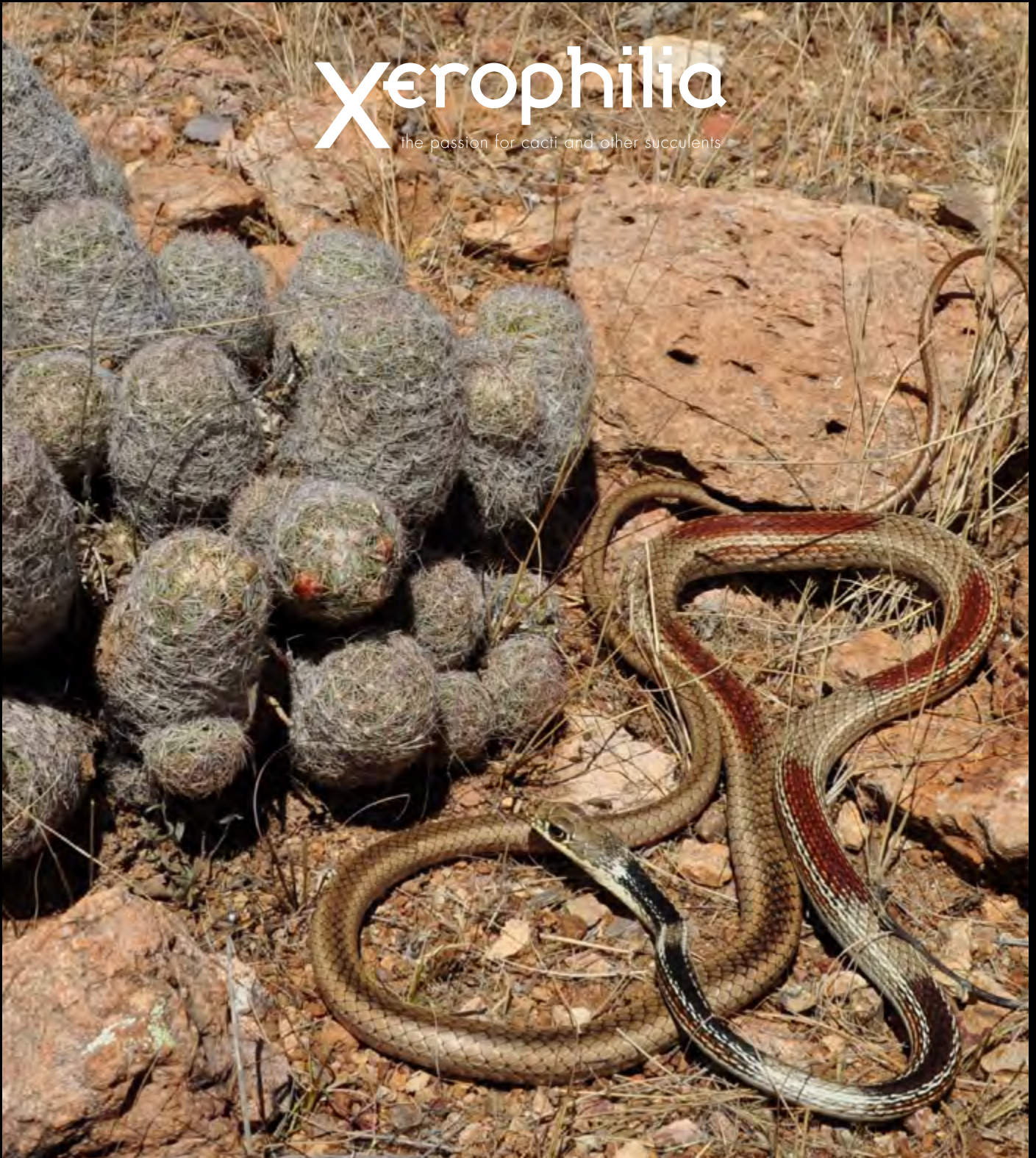
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