

TEPHROCACTUS

**Incl. Maihueniopsis, Punotia and related genera
plus other small Opuntias**



Pterocactus tuberosus HUN443 15km South-West of turn to Huaco on Route 491,
just North-East of gorge to Dique Los Cauquenes, San Juan, Argentina
(photo Cyril Hunkeler)

STUDY GROUP
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(Online pdf version)

SECRETARY'S PAGE

All articles and comments should be sent to the Editor.

Subscriptions from 2013 onwards were suspended.

All articles since this date are freely available on the Internet at:
www.tephro.com

If you write to any officer and expect an answer, please include a S.A.E.

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The TSG now operates as a mainly Internet-based organisation with an annual business and speaker meeting in May each year in addition to this Yearbook. You can find us on the Internet at www.tephro.com or search for Tephrocactus Study Group on Facebook.

All articles contained within this Yearbook are available on the website. Several of the articles contain more photographs on the website than space permits in this 'paper' Yearbook.

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Editorial

It seems a long time since the publication of the last journal in December 2012. You may remember that we were unable to produce a journal in 2013 due to a lack of copy. Thankfully, a successful AGM in May 2014 stimulated progress. It was decided to adopt a broader approach to solicit contributions to the TSG. We continue to encourage submission of articles for publication by post or by email. In addition, John Gander has set up a thriving Tephrocactus Study group Facebook page. At the time of writing this has 903 members and receives new contributions nearly every day. In 2014 we also had a Discussion Forum on our TSG website which has seen lively discussion on a couple of threads. This joint approach has enabled us to add two discussion articles during 2014 with contributions from 13 people, many of whom have never written for the TSG before.

However, we must never forget the wishes of our members. Many have commented that they have little or no access to the Internet or simply prefer to receive a printed journal. To this end, we have produced this journal in the form of a Yearbook. It contains all of the text of the articles added to the TSG website in 2014 as well as most of the photographs for each article. In some ways, the Internet makes editing easier as a web page can be re-edited and re-published immediately. There are also no space restraints, so articles can contain as many or as few photographs as required.

The list of preferred names has been included with a view to stimulate discussion. We do not want to discourage contributors from using alternative names. However, if using alternative names please try to include the author reference with the name wherever possible. We would also like to encourage discussion where people disagree with species concepts and boundaries or any other points of view.

Ivor Crook, March 2015

***Punotia lagopus* (K Schumann) Hunt 2011: A TSG Discussion**

This article is compiled from comments made to the TSG discussion page on the website during May and June 2014. It also makes reference to earlier articles on this species. Contributions to the website discussion were from:

Phil Crewe, Ivor Crook, Jiri Kolarik, Mike Partridge, Tony Roberts, Håkan Sönnemo and Ray Woodbridge.

Location

Most visits by Europeans to see *Punotia lagopus* in habitat inevitably centre around the town of Macusani in Puno province of Peru. The usual access to the town is along Route 30C, a left turn from the main Cuzco to Juliaca road. Until recently, the road to Rosario was tarmac. Then, the last 60km to Macusani used to be a narrow, bumpy track that took half a day to negotiate. Today, there is an excellent modern tarmac road all the way from the coast to Macusani. This makes visiting Macusani much easier than in the past and accounts, in part, for its increased visitor numbers in recent times. Even Google street view has managed to map some of the roads into and around the town.

Cultivation

Conventional wisdom in the cactus world used to say that *Punotia lagopus* would only grow on a graft. Various theories were put forward as to why this should be the case. Most concentrated on the long length of time that the particular clone had been in cultivation. Today it seems that people are growing this plant both on a graft and on its own roots with equal success. Common grafting stocks include *Austrocylindropuntia subulata* and *Opuntia humifusa*. Claims have been made on other websites suggesting plants grafted on *Opuntia humifusa* produce more normal growth. By contrast, growth on *Austrocylindropuntia* grafting stock appears to be more rapid. Experiences in cultivation suggest that *Punotia lagopus* on grafts grow upwards first then start to branch.

All contributors suggest that the plants grow best in Western Europe in our winter. The optimum time to water them is from October to April. Håkan Sönnemo comments that he keeps his plants outside the greenhouse the rest of the year, in full light and very dry with some water only twice a month and some natural early morning dew. Plants grown on *Opuntia humifusa* appear to need more water than on *Austrocylindropuntia subulata* to keep the stock turgid. With regard to temperature, a significant day to night difference in temperature, as in habitat is suggested. Winter temperatures of 0-10 degrees Celsius when the plants are wet are recommended. The plants do seem to tolerate slight occasional frost as low as minus 5 degrees Celsius in the winter as a minimum.

In common with seed of other Opuntias from Peru it is often slow to germinate. Germination of seed of related species may occur several years after sowing. Ray Woodbridge comments that although it is early days he seems to get better results by sowing seed in late March and early April.

Habitat information

Several habitat photographs have been submitted which show areas of dieback within the plants. The phenomenon has been noted on at least three trips to the area around Macusani. In the main, these photographs appear to show segments of dieback within the plants rather than from the edges. The paper in Bradleya talks of an upturned old hemispherical plant found in habitat with radiating branches spreading out on the ground from a single central stem. This suggests that damage to a radial branch from the main stem is the cause of the problem. Lizards and rabbits have been noted upon and within larger plants. It therefore seems possible that it may be damage by lizards, rabbits or rodents to a radial stem that causes this problem in habitat.



Punotia lagopus near Macusani (photo Håkan Sönnermo)



Punotia lagopus near Macusani (Håkan Sönnermo)



Punotia lagopus to show scale (photo Håkan Sönnermo)



Punotia lagopus at the mountain pass (photo Håkan Sönnermo)



Punotia lagopus (photo Håkan Sönnermo)



Punotia lagopus with flower (photo Håkan Sönnemo)



Austrocylindropuntia floccosa, left and *Punotia lagopus*, right growing together
(photo Håkan Sönnemo)



Punotia lagopus in flower (photo Håkan Sönnermo)



Punotia lagopus in cultivation (photo Tony Roberts)



Punotia lagopus in cultivation (photo Tony Roberts)



Punotia lagopus in cultivation (photo Tony Roberts)



Punotia lagopus in cultivation (photo Phil Crewe)



Punotia lagopus in cultivation (photo Phil Crewe)



Punotia lagopus in cultivation (photo Phil Crewe)



Punotia lagopus in cultivation (photo Jiri Kolarik)

The Genus *Pterocactus* Schumann 1897: A TSG Discussion

July 2014 was designated '*Pterocactus* July' by the TSG. This article gives a brief overview of the genus and includes illustrations that were submitted.

The origins of the genus *Pterocactus* are still somewhat confused. The plant *Opuntia tuberosa* was first described by Ludwig Pfeiffer in 1837 from material collected near Mendoza in Argentina. Following this, in 1897, the genus *Pterocactus* and the species *Pterocactus kuntzii* were described in the same publication by Karl Schumann in 1897 citing material collected in the same area. Extensive research by James Iliff and Nigel Taylor suggest it is highly likely the material both Pfeiffer and Schumann described was the same. The word *Pterocactus* is derived in part from the Greek word pteron meaning wing. This refers to the distinctive shaped seed with its broad, papery wing. *Pterocactus* is one of the few genera which, on the whole, has avoided the wholesale loss of names to synonymy in recent times. Only *skottsbergii*, which has been sunk into synonymy with *hickenii* and *kuntzei* and *decipiens* which have been sunk into synonymy with *tuberosus* are the only names that are no longer considered good species in their own right.

Today, nine species are recognised. They all grow in Argentina, throughout Patagonia and into the northwest of the country to Salta. They are characterised not only by their odd shaped winged seed but also by their thin, usually short, semi-erect stems. When they flower there is only a single flower at the very tip of each flowering stem. In habitat, the plants develop a large underground tuber and the stems are usually deciduous, being shed during the cold winter months.

Photographs by Pete Arthurs, Carolina González, Cyrill Hunkeler, Jiri Kolarik, Norbert Sarnes and Håkan Sönnemo. Text by Ivor Crook.



An open seedpod on *Pterocactus tuberosus* HUN352 (photo Cyrill Hunkeler)



Pterocactus tuberosus showing underground root system (photo Cyril Hunkeler)



A variety of vegetative stems of *Pterocacti*. 1 - spec. Paso San Francisco 2 - *tuberosus* (thin segments) 3 - *valentinii* (*pumilus* form Peninsula Valdez) 4 - *migliolii* 5 - *tuberosus* (thick segments) 6 - *gonjianii* (Tocota) 7 - *valentinii* (border Mendoza/Neuquen) (photo Norbert Sarnes)



Pterocactus australis, Road from Comodora Rivadavia to Sarmiento (photo Håkan Sonnermo)



Pterocactus australis, Route Rio Gallegos to Calafate (photo Håkan Sönnermo)



Pterocactus fischeri HUN382 South of Buta Ranquil, 1068m, on Route 40, Neuquén, Argentina (photo Cyril Hunkeler)



Pterocactus fischeri HUN382 South of Buta Ranquil, 1068m, on Route 40,
Neuquen, Argentina (photo Cyrill Hunkeler)



Pterocactus fischeri HUN382 South of Buta Ranquil, 1068m, on Route 40,
Neuquén, Argentina (photo Cyril Hunkeler)



Pterocactus gonjianii SAR 161, Tocota, San Juan (photo Norbert Sarnes)



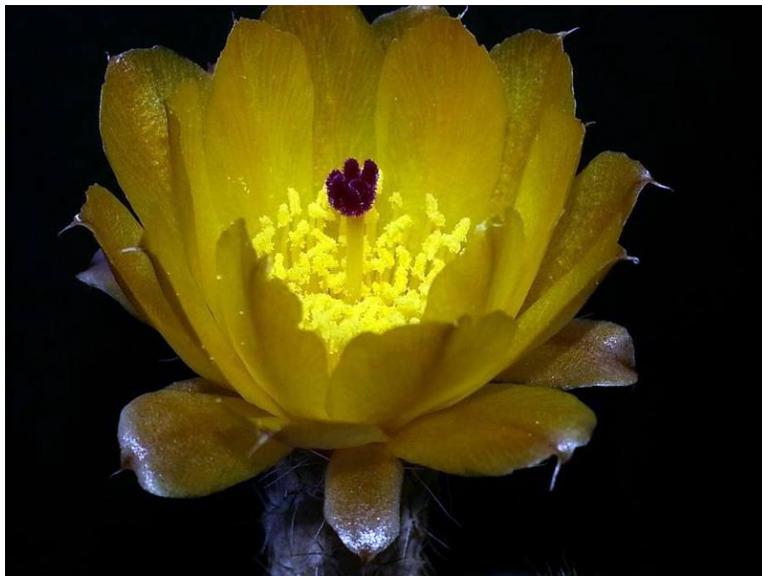
Pterocactus gonjianii DJF319 Cuesta Loro Huasi, west of Fiambala, Catamarca, Argentina (photo Cyril Hunkeler)



Pterocactus gonjianii DJF319 Cuesta Loro Huasi, west of Fiambala, Catamarca, Argentina (photo Cyril Hunkeler)



Pterocactus megliolii CJH376 (photo Håkan Sönnermo)



Pterocactus megliolii HUN408 North of Thermas La Laja, 680m, San Juan, Argentina (photo Cyrilli Hunkeler)



Pterocactus megliolii HUN408 North of Thermas La Laja, 680m, San Juan,
Argentina (photo Cyril Hunkeler)



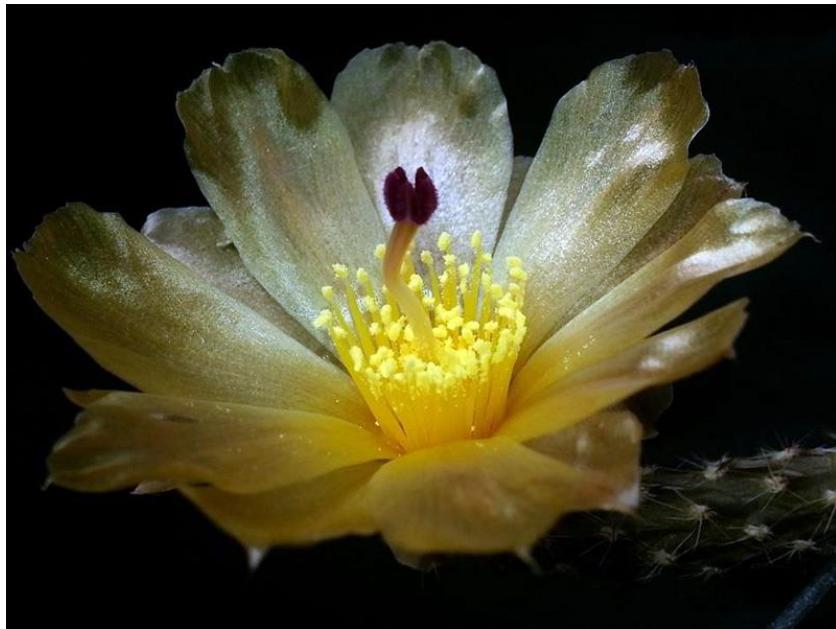
Pterocactus reticulatus TG68 Ruta 412; near Tocota, San Juan, Argentina (photo Cyril Hunkeler)



Pterocactus reticulatus TG68 Ruta 412; near Tocota, San Juan, Argentina (photo Cyril Hunkeler)



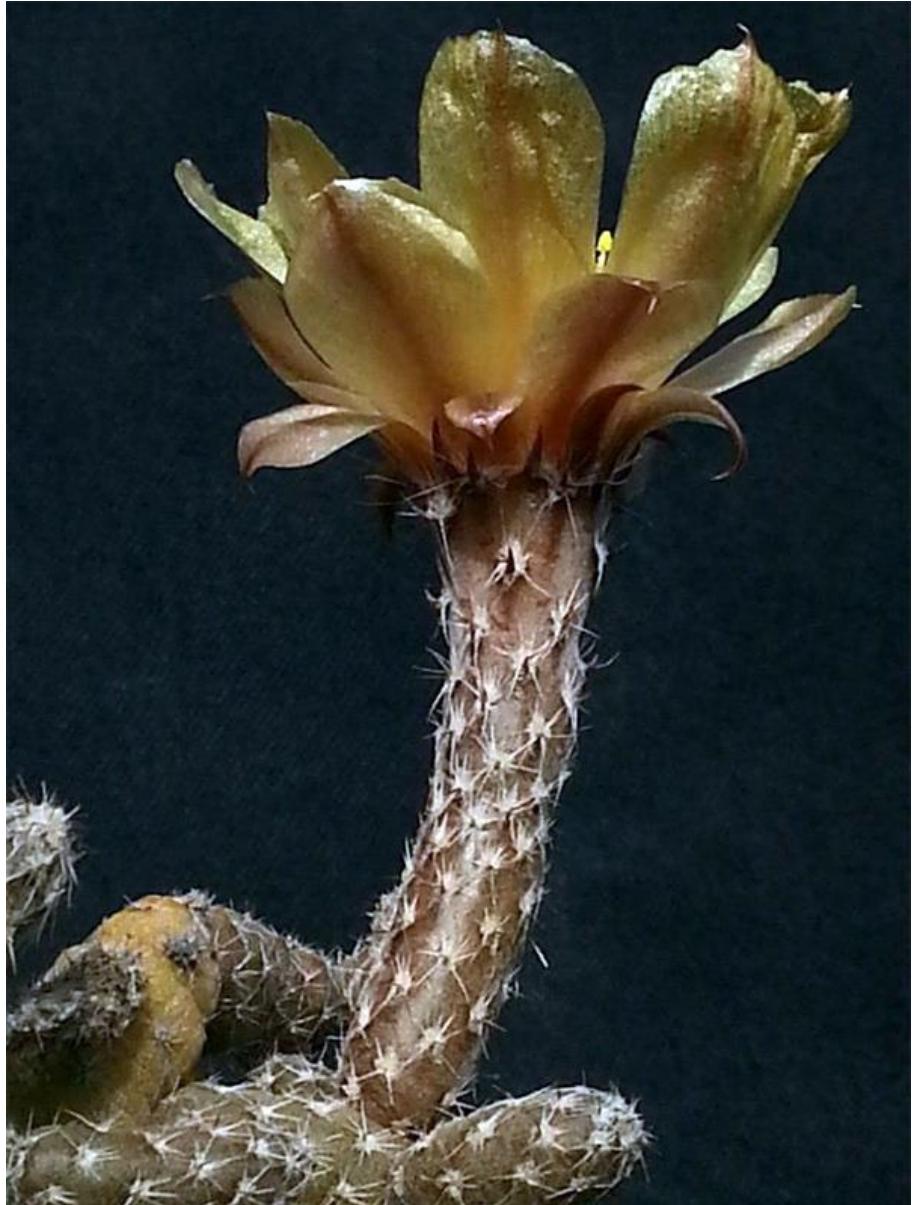
Pterocactus reticulatus TG68 Ruta 412; near Tocota, San Juan, Argentina (photo Cyril Hunkeler)



Pterocactus tuberosus DL219 (RH668) East of Uspallata, 1500m, Mendoza,
Argentina (photo Cyril Hunkeler)



Pterocactus tuberosus DL219 (RH668) East of Uspallata, 1500m, Mendoza,
Argentina (photo Cyril Hunkeler)



Pterocactus tuberosus HUN443 15km South-West of turn to Huaco on Route 491, just North-East of gorge to Dique Los Cauquenes, San Juan, Argentina
(photo Cyrill Hunkeler)



Pterocactus tuberosus, North of La Rioja, Argentina. (photo Pete Arthurs)



Pterocactus tuberosus, North of La Rioja, Argentina. (photo Pete Arthurs)



Pterocactus tuberosus, North of La Rioja, Argentina. (photo Pete Arthurs)



Pterocactus valentinii - 50 km NE from Zapala (photo Carolina González)



Pterocactus valentinii (photo Jiri Kolarik)



Pterocactus valentinii HUN379 South of El Zampal, 1432m, Mendoza, Argentina
(photo Cyrill Hunkeler)



Pterocactus valentini JGK 131, Barrancas, Mendoza (photo Jiri Kolarik)



Pterocactus valentini HUN379 South of El Zampal, 1432m, Mendoza, Argentina
(photo Cyrill Hunkeler)



Pterocactus spec. HUN252 West of Fiambalá, 2933m, Catamarca, Argentina.
Difficult to say which species is related to this plant (photo Cyrill Hunkeler)



Pterocactus valentinii HUN379 South of El Zampal, 1432m, Mendoza, Argentina
(photo Cyrill Hunkeler)



Pterocactus spec. HUN252 West of Fiambalá, 2933m, Catamarca, Argentina.
Difficult to say which species is related to this plant (photo Cyril Hunkeler)



Pterocactus spec. HUN252 West of Fiambalá, 2933m, Catamarca, Argentina.
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Pterocactus spec. HUN252 West of Fiambalá, 2933m, Catamarca, Argentina.
Difficult to say which species is related to this plant (photo Cyrill Hunkeler)

Tephrocactus alexanderi* ssp. *bruchii

Elton Roberts

Many years ago, I received a box in the mail. When I opened it there was a *Tephrocactus* joint larger than a tennis ball. As I was going to the Oakland Cactus and Succulent show and sale as a vendor I took the box and contents along to the show. I got there and opened the box and everyone that saw the joint of *Tephrocactus alexanderi* ssp. *bruchii* DJF 316 wanted to be the first on the list to receive the first off set. In less than an hour I had about 60 people that wanted the first off set that I removed. Over the years I have only taken a few off sets and I have kept them to make more plants. At the time I was used to *Tephrocactus articulatus* and its upward growth and so I potted my new plant in a 5.5 inch [14 cm] diameter pot that was 4 $\frac{1}{4}$ [12 cm] inches deep. At the time I figured that would be the perfect pot for a plant that grows a ball on top of a ball. That head was almost exactly 4 inches [10 cm] in diameter so it was a perfect fit in the pot. I have re-measured the heads on the two plants and they are between 3.5 and 4 [9-10 cm] inches in diameter. Somehow, I have always thought that a tennis ball was larger than the 2.5 [6.4 cm] inches that they are.

I took the photographs for Fig. 1 and Fig. 2 with the tennis ball showing the size compared to the *Tephrocactus* joints and I sent them to several people that I thought would comment on their size. I thought they would know the different sizes that the plant joints grow. Maybe I was wrong, but I have *Tephrocactus bruchii* with joints only about the size of a Ping-Pong ball and smaller. They are the ones that are seen most often. The NCL in the description says that the joints of *T. bruchii* are to 9 cm long and 3 to 5.5 cm in diameter. The NCL does not recognize any sub species of *Tephrocactus alexanderi*. So, they are all grouped together there and that is a shame. All the *T. alexanderi* and ssp. *bruchii* that I own have joints that are almost round like a ball not oblong as the NCL is indicating. As the plants do not have a growing point they break through the skin of the parent joint all folded with deep grooves. In essence they are full blown joints but have not been filled with fluid as yet. It is like a balloon, it is small when empty of air but fill it and it is round.

I had one person that had plants that looked like a hoe handle in shape. The plants are about 3 to 4 cm in diameter and 13 to 15 cm tall. She gave me one of them, so I could see that the plants she has are not round jointed. With the light I gave it, the joint was round like a ball in only about a month and half. When I showed her, she got upset and said that she gave her plants plenty of light. That was several years ago and hers are still elongated. I have seen several people that grow *T. alexanderi* var. *geometricus* and others under too much shading and the plants grow hoe handle shaped. They start out round and before long they are about 3 times taller than they are in diameter. The plants in habitat grow at a high elevation and so have much less atmosphere to cut out the UV rays than at much lower elevations. I have fished a lake at just under 8000 feet elevation and the sun felt like it was about 110 degrees. There were some stunted willow trees there that are about six feet tall at the most. I would sit in the

shade of them and then I would become cool and have to go out in the sun to warm up again. The UV makes it feel very hot. Before I figured out what was going on I became sunburned several times. Yet I worked outside here at home all the time and did not get sunburnt. It is in that high elevation strong UV light that the plants grow. They need strong light but not the really hot temperatures.

Photos for Figs. 3 – 5 are of plant 1, Fig. 3 is before the plant was cleaned up. It is in a 14 cm diameter pot that is 12 cm deep. It has been in that pot since I received the head. I had to stand the plant in another pot to keep it upright for it was heavy on the one side and would not stand up. I carefully removed the plant from the pot trying not to break any joints off. One did drop off, that one is a medium sized head. Removing a lot of the old soil was not too hard but then I had to plant the plant. That had to be done with care so as not to break off the entire left hand chain of joints. As it was I had to remove the lowest joint or the rest would have snapped off. I was lucky for I did not quite break it off. To keep the lowest joint from rooting into the soil I put a rock under it. Fig. 4 is of the front of the plant after being re-potted; it is 45 cm wide. Fig. 5 is a side shot of the plant and that is 28 cm. and the plant is 20.3 cm tall.

Figs. 6 and 7 are plants I am calling plant 2. Again, it is before and after cleaning up and re-potting. This plant is 25.5 x 15 cm wide and deep and it is 20 cm tall. I have another plant of *T. bruchii* DJF 316 that is in the shape of a Y. I took all the soil off the roots and I potted it in mineral soil to see how it grows compared to plants potted in my regular soil. Figs. 8 and 9 are another *Tephrocactus alexanderi* ssp. *bruchii* but it is DJF 318. Notice how different looking it is from plants 1 and 2. The spines on DJF 316 mainly hug the plant on this plant they are sticking out at all directions. If you had to go by the spines and its flowers [Fig. 10] you could very easily believe it is a different plant. This plant is 28 cm in diameter and 25.5 cm tall. Its flowers are 5 cm in diameter and white in colour [Fig. 10]. Its filaments are white, the style has a touch of pink in it and the stigmas are sparkling white. Fig. 11 is the flower of *T. bruchii* DJF 316; it is pink with darker mid-stripes up the petals. The style is about the same colour as the petals and the filaments are a bit different colour of pink. The stigma is also a sparkling white and it has 3 to 4 lobes more than the flowers of DJF 318.



Fig 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.



Fig. 10.



Fig. 11.

The TSG preferred list of names for small South American Opuntioids

To make discussions within the TSG easier to follow it has been suggested that we adopt a standardized set of names. This list should have several features. It needs to be up-to-date and represent, as far as possible, the latest thinking in the scientific world of professional taxonomy as well as names accepted by the plant hobby. This is not an exclusive list of accepted names. However, it is suggested that if people use alternative names these should be clarified further. This list includes the Linnaean binomial for each taxon followed by the name of the person who published the binomial and the year of publication. Where taxonomic amendments have been made, the name of the person publishing the original description appears first in brackets, followed by the person publishing an amendment to the name and the date of the amendment. This list is proposed both for clarity and in the hope that it will stimulate further discussion.

***Austrocylindropuntia* Backeberg 1938**

- cylindrica* (Lamarck) Backeberg 1941
- floccosa* (Wfeld) Ritter 1981
- pachypus* (K Schumann) Backeberg 1941
- shaferi* (Britton & Rose) Backeberg 1951
- subulata* (Mühlenpfordt) Backeberg 1941
 - subulata* ssp *subulata*
 - subulata* ssp *exaltata* (Backeberg) Hunt 2002
- vestita* (Salm-Dyck) Backeberg 1939

***Cumulopuntia* Ritter 1980**

- boliviiana* (Salm-Dyck) Ritter 1980
 - boliviiana* ssp *boliviiana*
 - boliviiana* ssp *dactylifera* (Vaupel) Hunt 2002
 - boliviiana* ssp *echinacea* (Ritter) Hunt 2002
 - boliviiana* ssp *ignescens* (Vaupel) Hunt 2002
- chichensis* (Cárdenas) Anderson 1999
- corotilla* (Vaupel) Anderson 1999
- ignota* (Britton & Rose) Ritter 1981
- iturbicola* (Charles) 2011
- leucophaea* (R Philippi) Hoxey 2009
- rossiana* (Heinrich & Backeberg) Ritter 1980
- sphaerica* (Förster) Anderson 1999
- subterranea* (Fries) Ritter 1980
 - subterraneana* ssp *subterranea*
 - subterranea* ssp *pulcherrima* (Halsa & Horácek) Charles 2011
- zehnderi* (Britton & Rose) Ritter 1981

***Maihueniopsis* Spegazzini 1925**

- archiconoidea* Ritter 1980
- clavarioides* (Pfeiffer) Anderson 1999
- conoidea* Ritter 1980
- darwinii* (Henslow) Ritter 1980
- glochidiata* Charles 2011
- glomerata* (Haworth) Kiesling 1984
- hickenii* (Britton & Rose) Hunt 2011
- minuta* (Backeberg) Kiesling 1984
- molfinoi* Spegazzini 1925
- ovata* (Pfeiffer) Ritter 1980
- platyacantha* (Pfeiffer) Hunt 2011

***Pterocactus* K Schumann 1897**

- araucanus* Castellanos 1964
- australis* (Weber) Backeberg 1950
- fischeri* Britton & Rose 1919
- gonjianii* Kiesling 1982
- hickenii* Britton & Rose 1919
- megliolii* Kiesling 1971
- reticulatus* Kiesling 1971
- tuberosus* (Pfeiffer) Britton & Rose 1919
- valentinii* Spegazzini 1899

***Punotia* Hunt 2011**

- lagopus* (K Schumann) Hunt 2011

***Tephrocactus* Lemaire 1868**

- alexanderi* (Britton & Rose) Backeberg 1953
- aoracanthus* (Lemaire) Lemaire 1868
- articulatus* (Pfeiffer) Backeberg 1953
- bonnieae* (Ferguson & Kiesling) Stuppy 2001
- halophilus* (Spegazzini) Backeberg 1934
- molinensis* (Spegazzini) Backeberg 1953
- nigrispinus* (K Schumann) Backeberg 1936
- recurvatus* (Gilmer & Thomas) Hunt & Ritz 2011
- verschaffeltii* (Weber) Hunt & Ritz 2011
- weberi* (Spegazzini) Backeberg 1936

***Tunilla* Hunt & Iliff 2000**

- corrugata* (Salm-Dyck) Hunt & Iliff 2000
- erectoclada* (Backeberg) Hunt & Iliff 2000
- microdisca* (Weber) Hunt & Iliff 2000
- soehrensi* (Britton & Rose) Hunt & Iliff 2000
- tilcarensis* (Backeberg) Hunt & Iliff 2000

Corynopuntia aggeria (Ralston & Hilsenbeck) P. Griffith

2002

Elton Roberts

Corynopuntia aggeria (Ralston & Hilsenbeck) P. Griffith 2002
Grusonia aggeria (Ralston & Hilsenbeck) E. F. Anderson 1999
Opuntia aggeria Ralston & Hilsenbeck 1989

I was not aware that *Opuntia aggeria* was a fairly recently described plant. Ralston and Hilsenbeck named it in 1989. Anderson came along and moved it from *Opuntia* to *Grusonia* in 1999 and P. Griffith moved it to *Corynopuntia* it in 2002. I have not heard any common names for it nor did I find any synonyms. I have not had my plants too long maybe six years so I am not sure how they will do in cultivation in the long run. So far they seem to be doing very good.

Here is the description:

Plants, forming clumps to about 9 cm tall, roots tuberous, stems segments are short cylindrical to clavate, about 3.5 cm long to as much as 9 cm long and 1.5 to 3 cm in diameter, tubercles to 22 mm long mostly shorter to about 18 mm long. Glochids yellow, to about 3 mm long, spines mostly in distal areoles, 5 – 15 but sometimes only one, 3 – 5 cm long. Principal apical spines 0 – 5, ascending, diverging, reddish brown to gray, bulbous basally, round in cross section. Principal basal spines chalky white, bend downwards, flattened, twisted or curved. Flowers bright yellow and to 2.5 cm long. Habitat is South east Texas and into Mexico.

Above is the name of the genus that Anderson placed the plant in and that is *Grusonia*. So I looked in the Anderson book and he has the same term as in the description above; ‘distal areoles.’ So I looked in the NCL and it says the same thing. There is no photo of the plant in the Anderson book but there is in the NCL. That photo is useless for trying to see what the plant really looks like; much less seeing what distal areoles look like. That photo shows a plant in habitat and from over head with three flowers in bloom.

Fig. 1 shows the plant from the side, it is in a 15 cm pot and the plant is 24 cm in diameter. I have another that is not quite that wide. I have the plants in regular pots and not pans as they do have a tuberous root system. The deeper pots will allow the roots to grow to a better size. I do not know how large of a plant they become in habitat. Some of the plants in the genus can grow into a clump that can be several meters across. If *C. aggeria* remains as an individual plant of about 30 to 40 cm across or if the stems root down and make a train of plants I do not know. Neither the NCL nor Anderson mentioned the size of the plants. I went on the web and I also struck out in finding much useful information. Maybe it is because it is in the *Opuntia* group that no one pays much attention to the plant so there is little information out there.

Fig. 2 is the plant from more or less over head; I removed all the dead flower remains except one. Except for the spine shape the stems are much like those of *C. bulbispina*. Fig. 3 shows one of these distal areoles with spines growing out of it. A close look reveals the glochids sticking straight up from the top of the areole. Also almost invisible are a few long fine hair like spines that grow from the area of the glochids but hang down the stem to about the middle of the chalk white divergent spines. Growing below those are some other short spines; they grow more or less sideways. In the description above and in Anderson's book there is no mention of radial or centrals spines. The NCL says there are from 1 – 15 spines and then says there are 1 – 3 central spines under 3 to 5 cm long. The way it is worded it sounds like there are 1 – 15 spines and also 1-3 centrals. Anderson says there are 1- 15 spines and he says that the principal spines number 0 – 5. To me those 0 – 5 principal spines are part of the 1 – 15 spines. I have to assume that the principal are all spines that are long and show up as light gray to chalky white. In that areole there are the three divergent spines.

Fig. 4 is another areole and from what I can see there are 7 of what I would call principal divergent spines. If comparing the spines on each areole it looks like each areole differs somewhat from the nearby areoles. This can be seen in photo 1. Each seems to grow the spine number, shape and how they stick out of the areole on their own. On many cactus plants each spine cluster will be exactly like the one next to it, above it, below it and on the whole plant. The spines grow out of a wooly pad on the areole and that wool seems to persist even at the lowest areoles on the stems. This can also be seen in photo 1.

Fig. 5 shows the leaves on the areoles on the flower buds. The stems also have leaves but they dry and fall out quite soon. In photo 6 the new stem growth to the right of the base of the flower tube has leaves on it. Just below the base of the flower tube can be seen a leaf that is all shriveled up and will soon fall out. The leaves start out being greenish red but soon turn brown and drop. In the description it says that the flowers are to 2.5 cm long. In Fig. 6 that is talking about the part from the flower down to where it grows out of the plant. In photo 5 are several flower buds that have flowers encased in their outer petals. It is from the bottom of the encased flowers that is measured. Every bud on this plant that I measured was 3.5 to 4 cm from plant to base of the flower. The thing I do not understand is why the diameter of the flower is not included in the description. I do not know many people that measure the length of the flower and never its diameter. To me the diameter is more important than the length.

Fig. 7 is of a flower and Fig. 8 is of 3 flowers even though there are 4 in the photo. I did not think to measure the flowers when open, and when I thought of it they all had faded. There is no indication that the plant will bloom again very soon. All the plants of this genus only bloom one time a year for me. Most of these flowers opened at about the same time. I am going to guess that the flowers when open wide were about 7 cm across. The filaments are quite large compared to a lot of flowers that size or even larger. They are cream color as is the pollen but both lean towards the very light yellow side. The style is the same color as the

filaments but the stigma is a pale green. The center of the flower is darker and it looks as it is the green like the outer petals.

C. aggeria comes from Brewster County Texas and south to central Coahuila so it can take quite hot summers and temperatures down into the low 20s F. They grow fine in my regular soil mix and I give them a very bright place on my covered outside tables where they stay all year around.

I don't know how many people have this plant but I have never seen it on a show table or on a sale table.



Fig. 1.



Fig. 2.

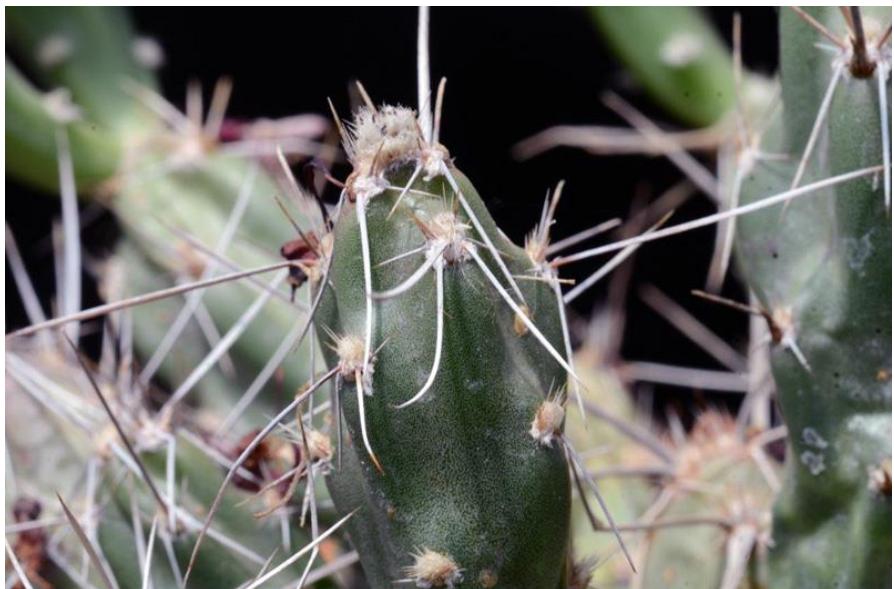


Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



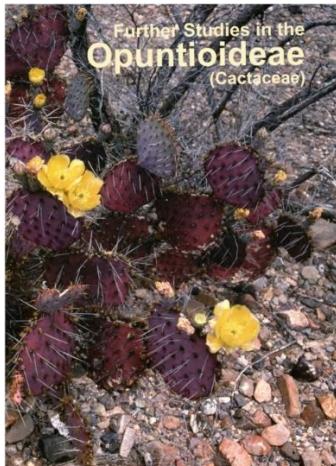
Fig. 7.



Fig. 8.

Book Review - Further Studies in the *Opuntioideae* (Cactaceae) Hunt, D.

Gordon D Rowley



**Succulent Plant Research Volume VIII. B5 224pp Softback
dh Books, Milborne Port 2014, mid-November.**

Succulent Plant Research is the most substantial of several intermittently self-published emanations from the ever-prolific David Hunt. Most of them are back-up publications aimed at updating the New Cactus Lexicon of 2006. In 2002 we had Volume VI of the present series, co-authored with Nigel Taylor, a 255-page symposium of articles reviewing the *Opuntioideae* from differing angles, including DNA sequencing and seed characters. Now we are offered a further nine papers focusing largely on South American species, plus a checklist of North and Central American species and a general introduction to the latest DNA revelations from Majure and Puente. Finally, David Hunt provides a summing up of species in the format as recognised for a Newer-than-New Cactus Lexicon. There are abundant maps and fine colour plates, and some new cladograms to provide endless debate over the level at which to recognise genera, subgenera and other categories. Here the maximum split of 14 genera has been adopted, 11 of them with 10 or fewer species and two monotypic (*Miqueliopuntia* and *Punotia*). This would carry more conviction if supported by, say, a key to identify the different segregates. Until then I think the adoption of subgenera is a more attractive option.

This handsome volume is dedicated to James Iliff who died aged 91 on July 11 and is best remembered as co-author with Gilbert Leighton-Boyce of the Subgenus *Tephrocactus* in 1973.



TSG Annual Meeting on 11th May 2014