

Some critical comments about the IOS Cactaceae Consensus Group's concept of *Rebutia*

GÜNTHER FRITZ

It has never been my intention to condemn *Rebutia* sensu Hunt and to consider it an error *per se*, as I am not a specialist in *Rebutia* Schum. emend. Buining and Donald. I therefore will try to avoid discussing morphological criteria as far as possible. Such criteria should be discussed by a scientist like Günter Hentzschel, who just recently published a new emendation of *Sulcorebutia* (Hentzschel, 1999).

However, it is my intention to inform others about the conclusions of the IOS Cactaceae Working Party (now known as the International Cactaceae Systematics Group and no longer part of the IOS) and some of its evident errors and absurdities from the point of view of a cactus collector specializing in *Sulcorebutia*.

There have long been different opinions as to the justification for Backeberg's genus *Sulcorebutia* (Backeberg, 1951). It is well known that this genus was never accepted by Martín Cárdenas, botanist at the University of Cochabamba, Bolivia, an outstanding specialist on Bolivian cacti. Hence he described as *rebutias* all the plants that we believe belong in *Sulcorebutia*, as well as one of the "northern weingartias" (*Rebutia corroana*). But, as far as I know, he never published any serious discussions for or against *Sulcorebutia*.

On the other hand, John Donald (Donald, 1971), Walter Rausch, and even Friedrich Ritter (Ritter, 1961) did not agree with Cárdenas' opinion. They accepted *Sulcorebutia*, transferred his *rebutias* to that genus and described many *sulcorebutias* themselves.

Arguments for and against *Sulcorebutia* appeared again when the IOS Cactaceae Consensus committee declared *Sulcorebutia* to be superfluous and to be part of the genus *Rebutia*, presumably on a scientific basis and by democratic means—by vote of the committee members. In earlier articles (i.e., Bregman, 1988; Theunissen, 1994; Köllner, 1996), these decisions had been criticized partly because specialists of South American globular cacti had been completely unrepresented, with consequent effect on the discussions and their conclusions

(there was only one specialist of Andean cacti taking part at one of the two decisive meetings—Roberto Kiesling from Argentina).

In retrospect, another major error was committed by botanists who were obviously not familiar with the plants yet tried to establish a new classification for them. It's true that they said specialists in these plants would be invited to take part in the discussions—but I do not know one who was actually asked to participate, even though there were a number of IOS members specializing in these controversial genera. Who then would not wonder about the decisions of such a committee?

The IOS Cactaceae Consensus group, led by Hunt, Taylor, and Barthlott, decided that *Rebutia* would be the new "supergenus" to hold the old genus *Rebutia* (i.e., including *Mediolobivia*, *Digitorebutia*, *Cylindrorebutia* and *Aylostera*), *Sulcorebutia*, and *Weingartia*, and, last but not least, *Lobivia famatinensis* (Hunt & Taylor, 1987). Considering this, I asked myself, "what is the relationship between *Rebutia minuscula*, *Sulcorebutia steinbachii* and *Weingartia fidaiana*, the type species of the three genera, and between them and *Lobivia famatinensis*? I myself did not know, and none of the IOS group members gave an explanation.

There is another detail which obviously has not been considered. The old genus *Weingartia* is polyphyletic, consisting of two genera, as pointed out by W. Simon (Simon, 1977). There are the true, southern *weingartias* such as *W. fidaiana*, *W. neumanniana* and *W. kargiana*, and the so called "northern *weingartias*", such as *W. neocumingii*. Oddly enough, Hunt and Taylor (1987) saw links between the "northern *weingartias*" and *Sulcorebutia* while putting the "southern *weingartias*" close to "*Echinopsis* sensu lato". On the very next page are the combinations *Rebutia fidaiana* (Back.) Hunt, *Rebutia neocumingii* (Back.) Hunt, and *Rebutia neumanniana* (Werd.) Hunt—no need for any comment. Up to this day the "*Weingartia* problem" has yet to be solved by specialists of this genus (Augustin, 2000; Oeser and Köllner, 2000). In this article by Hunt and Taylor (1987), the only valid combinations in this complex made at that time are found on page 93—*Rebutia mentosa* (Ritter) Donald

and *Rebutia cylindrica* (Donald & Lau) Donald, combinations made by the late John Donald.

Answering to the consensus group, John Donald wrote: "If *Lobivia* is *Echinopsis*, then so is *Rebutia*. *Rebutia sensu lato* is a mixture of convergent forms and not monophyletic. If *Sulcorebutia* is subsumed, then it is the *Lobivia* group within *Echinopsis* that would best accommodate it. Not *Rebutia* if the latter is retained. *Mediolobivia* and *Weingartia* also should be subsumed into *Echinopsis* rather than *Rebutia*."

Rebutia sensu lato is not monophyletic but polyphyletic, meaning that they come from different lines of evolution. So I must ask the question, "what is the value of this 'supergen' *Rebutia sensu lato*?"

It is well known that the problems of determining genera for the globular Andean cacti arise from the fact that all these populations are still undergoing rapid evolution. One might see links suggesting some kind of relationship between these genera, but we should not fool ourselves: if indeed "fewer genera" might be required by "modern botanical science", one must remember the attempt by Paul Hutchison to combine *Weingartia* with *Gymnocylindrium*—this was never accepted. A relationship similar to Hutchison's concept has been published by Hentschel in his revision of *Sulcorebutia* (Hentschel, 1999). The "results" of the discussions of the IOS consensus group have been published in *European Garden Flora*, Vol. 3. On pages 243-247 one can find a diagnosis worked out by Hunt under "47. *Rebutia* Schumann". There is no reference to the original one by Karl Schumann or the emended diagnosis by Buining and Donald. One can read, for instance, "flowers.....usually arising near the stem-base". Should I not mention that this is "a bad fault" if they include *Weingartia* s.l.—how could this have been published?

There is also a key to the species accepted by Hunt, and, finally the presentation of 25 *Rebutia* species, including 10 former taxa of *Sulcorebutia* (*S. vizcarrae*, *cylindrica*, *glomeriseta*, *candiae*, *arenacea*, *canigeralii*, *rauschii*, *taratensis*, *steinbachii*, and *mentosa*). Some species obviously did not fit well into his key, or perhaps Hunt did not know where to put them - i.e., *S. menesesii*, *krugerae*, and *tiraquensis*. It would be interesting to know more about the decision to retain *Rebutia vizcarrae* Cárđ. (= *S. vizcarrae* (Cárđ.) Donald, in which Hunt includes *S. purpurea* and *S. torotorensis*. *S. vizcarrae* is not known at all: the plants labeled *S. vizcarrae* in every European collection are Rausch plants (WR-464 or WR-464a), erroneously so-named in Rausch's field numbers

(some other plants named *S. vizcarrae* are L-337, but this is a violet-flowered form of *S. cylindrica*.) As far as we know, there is no original material of *S. vizcarrae* extant, and it has not been recollected since the days of Cárđenas. We are not able to identify any of the new plants collected in the Mizque region as being *S. vizcarrae* (it would have been helpful if Hunt had informed us of his concept of *S. vizcarrae*). In any case we have to state that all of these transfers to *Rebutia* are invalid, because no basionyms have been cited.

It is important to state here that Hunt is the only one responsible for this chapter in *European Garden Flora* and also for his *CITES Caetaceae Checklist* (Hunt, 1992), although he did indicate that his views had been supported by some plant specialists (John Donald, in the case of *Sulcorebutia*).

On page 181 of the *Checklist* there are only six accepted species of the former genus *Sulcorebutia*—*S. arenacea*, *caineana*, *canigeralii*, *cylindrica*, *mentosa*, and *steinbachii*. There is no statement as to how they correspond to the taxa cited in *European Garden Flora*! Coordination of validly described or combined taxa to these six species is listed by Hunt on pages 133-134. On the whole, this is a very superficial compilation of geographic groups without any presentation of details.

Following Hunt, all *sulcorebutias* growing south of Puente Arce near the Rio Mizque (*S. fischeriana* as the most northern taxon there, as well as *S. alba*, *frankiana*, *vasqueziana*, *losenickyana*, *tarabucoensis*, *pulchra*, *rauschii*, and even *S. crispata*) must be assigned to *Rebutia canigeralii*, with the exception of *S. tarijensis*, which is now named *Weingartia oligacantha* Brandt—thus we have a miraculous resurrection of the genus *Weingartia*! I suppose *Sulcorebutia tarijensis* and *Weingartia tarijensis* have priority over *Weingartia oligacantha* but not over *Rebutia tarijensis*, so that he provisionally chose *Weingartia oligacantha*?

There is also the problem of *S. alba* and *S. frankiana*, which both grow on the same hills north of Sucre. There are no intermediate forms or hybrids known between these two species and thus we have believed until now that both could not be closely related. Nevertheless, Hunt puts both of them into *Rebutia canigeralii* with all the other species south of Puente Arce and without retaining any of them as subspecies, varieties or forms. According to Hunt, *Sulcorebutia krugerae*, *tiraquensis*, *lepida*, and *totorensis* belong to *Rebutia steinbachii*. Even *S. mariana* is included, perhaps because it is

more or less identical with *S. steinbachii* var. *australis*, but without questioning whether this plant really is *S. steinbachii*. He also includes *S. vizcarrae*, which in *European Garden Flora* was considered a good species.

In contrast to *S. mizquensis*, which is supposed to be part of the *S. steinbachii* population, *S. markusii*—from north of Vila Vila—is now said to belong to *R. mentosa*, which includes *S. purpurea*, *S. torotorensis*, and *S. augustinii*, the latter coming from north of Omereque. All of this shows a grave lack of knowledge of these populations, because *S. augustinii* is the southern end of an ecocline beginning with *S. tiraquensis*, continuing with *S. totorensis* and several well-known intermediate forms, and ending with the first-mentioned species.

All of these combinations and supplements to *Rebutia* done in the *CITES Cactaceae Checklist* are nomina nuda and therefore completely superfluous!

Unfortunately, Hunt's proposals have been misunderstood to be hard facts by many in the cactus world. For many years, in some of the European cactus journals, it was almost impossible to publish articles that were not in agreement with Hunt's ideas. If published, these articles would have a supplemental note like, "Hunt believes this plant to belong to....". No one even realized that up to 1993 none of these combinations were valid.

In spite of Hunt's revision, the genus *Sulcorebutia* could still exist as a monotypic genus, because of the fact that *S. cardenasiana* Vásquez did not fit into the simple distributional scheme of David Hunt (or perhaps he simply forgot it). It was Gonzalo Navarro (1996), not really known as a specialist of *Sulcorebutia* (or *Rebutia*), who published *R. cardenasiana* as *Rebutia*, but again of course without any explanation.

S. langeri was not included then because it was still undescribed, the description finally being published in 1999 by Augustin and Hentzschel. This immediately led Hunt (1999) to the idea that the three taxa, *S. augustinii*, *S. cardenasiana*, and *S. langeri* might be different populations of a single species, referring to the late John Donald. The question must be asked: did David Hunt ever see these different plants and does he know where they come from? Formerly, in his *CITES Cactaceae Checklist*, Second Edition (Hunt, 1999), *S. augustinii* was part of *R. mentosa*; however, *R. cardenasiana* was accepted as a good species on its own.

During the last several years all of these problems have hardly been discussed. There was a

discrepancy between scientists on one side believing Hunt to be right *per se*, with most of the cactus lovers on the other side not agreeing with him. But there was always the question whether *Sulcorebutia* and *Weingartia* should be synonymous with *Rebutia* and whether all combinations had been done correctly, and if yes, where? For many years I was never able to find such a publication. Finally I was informed by Detlev Metzger, scientific editor of *Kakteen und andere Sukkulente*, that the formal synonymy was published in *The families and genera of flowering plants* (Ed. Kubitzki; Barthlott and Hunt, 1993).

In this study, seemingly known to only a few botanists, one can find a key to the subfamily Cactoideae that recognizes 11 groups. It is interesting to note that not only one but two of these groups (H and L) do indeed lead to *Rebutia* sensu Hunt.

Under "42. *Rebutia* Schumann" there are now five genera listed belonging to *Rebutia* sensu Hunt and Barthlott, i.e., *Rebutia*, *Aylosteria*, *Mediolobivia*, *Weingartia*, and *Sulcorebutia*. And there I found a "diagnosis" which, when compared to the one published in *European Garden Flora*, seems very similar:

"Low-growing; stems single or more often freely clustering; small, globose to shortly cylindric, tuberculate or weakly ribbed; areoles circular or oval to elliptic-linear; spines relatively weak, often scarcely differentiated into radial and central. Flowers diurnal, freely produced, usually arising towards the stem base, funnel-form, comparatively small (less than 5 cm), variously colored; pericarpel and tube with small scales naked or with hairs and sometimes bristles in their axils: tube short or elongate, often slender, often curved, sometimes occluded ("fused with the style"); stamens usually in a single series. Fruits small, subglobose; pericarps juicy at first, drying papery; withered perianth persistent. Seeds oval; testa relief flat to high-conical, especially at distal end; strophilar pad present in some species. Thirty to 40 species. E. Cordilleras of the Andes, from Bolivia (Cochabamba to Tarija) to NW Argentina (Jujuy to Tucumán). It consists of five intergrading groups, corresponding to the genera listed as synonyms".

Pardon me, but is most of this information worthwhile? What about these many "X as well as Y characteristics"? The example of the forms

of the areoles is extremely revealing. This means all or nothing! And what is a small plant? There are *sulcorebutias* known which in habitat grow more than 30 cm high or more than 20 cm in diameter. Do Hunt and Barthlott know of them? Or what do they understand to be "tall"?-perhaps a plant is only large if it is over one meter in height?

Again, they say that the flowers arise from the base of the stem. But in the keys on pp. 176 and 177 one can read, "Flowers borne on the 'shoulder' of the stem or below". What does this mean? I also did not know that the stamens of *Sulcorebutia* usually arise in a single series. As far as *Sulcorebutia* fruits are concerned, one can say that many of them do not dry "papery", especially not those of the *S. steinbachii* group. And of course there is no information given by Hunt and Barthlott about the way the fruits of the different plants dehisce. I must confess, Detlev is right- these synonymies are only "formally valid".

Results of investigations: it is correct that John Donald tried to tell us that we should not look at differences but at the common ground. We learned to agree. But *Rebutia* sensu Hunt et al. is an *omnium gatherum* - *polyphyletic*, a conglomerate of many different plants from different evolutionary lines, and with very different characteristics. Just imagine the international screams of anger if all of this mentioned above would have happened to *Mammillaria*, *Coryphantha*, *Escobaria*, etc.! It has to be pointed out that the description of the *Rebutia* of Hunt and Barthlott has almost nothing to do with the original diagnosis by Karl Schumann and not very much to do with the emended one by Buining and Donald. So I would like to propose to publish a new emendation of *Rebutia* sensu Hunt, if that is possible. A clearly-stated emendation of the genus *Sulcorebutia* by Hentzschel might be a good example to follow.

Until then, for me at least, *rebutias* will be *rebutias*, *sulcorebutias* will be *sulcorebutias*, and *weingartias* will be *weingartias*.

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References

- AUGUSTIN, K. 2000. *Weingartia* Werdermann-bekannt aber auch verkannt. *Kaktusy XXXVI* (Special 2000/1).
AUGUSTIN, K., W. GERTEL, & G. HENTZSCHEL. 2000. *Sulcorebutia*-Kakteenzwerge der Bolivianischen

Anden. Ulmer-Verlag, Stuttgart.

- AUGUSTIN, K., & G. HENTZSCHEL. 1999. *Sulcorebutia langeri* spec. nova. *Kakt. Sukk.* 50(8): 199-204.
BARTHOLOTT, W. & D.R. HUNT. 1993. Cactaceae. In: KUBITZKI, K. (Ed.): *The families and genera of vascular plants, Vol. II-flowering plants*. SpringerVerlag, Berlin/Heidelberg, pp.161-197.
BREGMAN, S. 1988. Waar is du I.O.S. mee bezig? *Succulenta* 67(5): 110.
DONALD, J.D. 1971. In defense of *Sulcorebutia* Backeberg. *Cact. Succ. J. (US)* 41(1): 36-40.
FRITZ, G. 1995. Nog enkele kritische opmerkingen bij de resultaten van de 'IOS Consensus Group', hier b.v. betreffende het geslacht *Rebutia* sensu Hunt (Einige weitere kritische Bemerkungen zu den Ergebnissen der 'IOS Consensus Group', hier am Beispiel der Gattung *Rebutia* sensu Hunt). *Tijdschrift voor Liefhebbers van Cactussen, Vetplanten, Kamerplanten* (Belgium) 8(8): 125-128.
HENTZSCHEL, G. 1999. Het geslacht *Sulcorebutia* Backeberg emend. Hentzschel. *Succulenta* 78(3): 131-142.
HUNT, D. 1992. *CITES Cactaceae Checklist*. Kew. pp.124-126.
HUNT, D. 1999. *CITES Cactaceae Checklist, Second Edition*. Kew. pp.136-137,262-270.
HUNT, D. 1999. Update-*Sulcorebutia langeri*. *Cactaceae Consensus Initiatives* 8: 31.
HUNT, D., ET AL. 1989. In: WALTERS, S.M. ET AL. (Eds.). *The European Garden Flora Vol. 3*. Cambridge University Press, Cambridge.
HUNT, D., & N. TAYLOR (Eds.). 1986. The genera of the Cactaceae: towards a new consensus. *Bradleya*, 4, 65-78.
HUNT, D., & N. TAYLOR (Eds.). 1987. New and unfamiliar names of Cactaceae to be used in the European Garden Flora. *Bradleya* 5: 91-94.
HUNT, D., & N. TAYLOR (Eds.). 1990. The genera of Cactaceae: progress towards Consensus. *Bradleya* 8: 85-107.
HUNT, D., & N. TAYLOR (Eds.). 1991. Notes on miscellaneous genera of Cactaceae. *Bradleya* 9: 81-92.
KÖLLNER, G. 1996. *Sulcorebutia*-eine nunmehr monotypische Gattung? *Informationsbrief des Freundeskreises Echinopse* 14(22): 3-5.
NAVARRO, G. 1996. Catálogo ecológica preliminar de las cactáceas de Bolivia. *Lazaroa (Spain)* 17: 33-84.
OESER, R., & G. KÖLLNER. 2000. *Weingartia (Cumingia) torotorensis?* *Informationsbrief des Freundeskreises Echinopse* 18(29): 13-15.
OESER, R., & G. KÖLLNER. 2000. *Weingartia (Cumingia) torotorensis?* *Informationsbrief des Freundeskreises Echinopse* 18(30): 49-54.
RITTER, F. 1961. *Sulcorebutia*. *Nat. Cact. Succ. J.* 16(4): 79-81.
SIMON, W. 1977. *Bemerkungen zur Gattung Sulcorebutia*. Self-published.
THEUNISSEN, J. 1994. Enkele kritische noten bij de Consensus van Hunt en Taylor. *Succulenta* 73(5): 219-223.

Contact details:

Günther Fritz, Burg-Windeck Str. 17, Schladern,
51570 Windeck, Germany.
E-mail: Fritz-Windeck@online.de

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