

DEEP IN THE WEB, UP IN THE HILLS:
THE DISCOVERY OF *DROSERA MAGNIFICA*, THE “FACEBOOK SUNDEW”

PAULO MINATEL GONELLA • Lab. Sistemática Vegetal • Instituto de Biociências • Universidade de São Paulo • Brazil • paulogonella@uol.com.br

Social media are part of the daily life in the modern society: we follow the news on Twitter, share funny gifs on Tumblr, post selfies on Facebook, spread scientific papers on ResearchGate, and share experiences and trade plants in the discussion forums. Among all possible connections achieved by the social media, one that has always captivated me is the bridge they created to connect professional biologists to “citizen scientists”. From the age of the forums to Facebook, I’ve been following with keen interest posts with photos of carnivorous plants in their natural habitats in Brazil and abroad, and many new regional records were found that way, and even species discoveries and re-discoveries.

The long-lost *Drosera ascendens* A.St.-Hil. was rediscovered thanks to social media, as it was the discovery of the peculiar *D. chimaera* Gonella & Rivadavia. Both findings were made possible thanks to photos posted by the carnivorous plant enthusiast Adilson Peres in the Brazilian carnivorous plant forum back in 2010. His photos and the information he provided on the location of his encounters enabled us to collect and study these plants, and finally solve the taxonomy of the group (see Gonella *et al.* 2014). Cases of discoveries of new species thanks to social media are not restricted to carnivorous plants, though. The enormous palm *Tahina spectabilis* J.Dransf. & Rakotoarinivo from Madagascar was also discovered through photos posted on an online palm discussion forum (Dransfield *et al.* 2008). And new species of the parasitic *Amyema* (Loranthaceae) and *Rafflesia* (Rafflesiaceae), were discovered thanks to photos posted in the online image database “Co’s Digital Flora of the Philippines”, and in the Facebook discussion group of the said project, respectively (Pelser & Barcelona 2013; Barcelona *et al.* 2014).

The discovery of the “magnificent sundew” starts in a somewhat similar way, in an ordinary day in early September 2013. I was scrolling down my Facebook feed when I came across this post by a friend of mine who was sharing a photograph of a large clump of *Drosera* in its habitat, inquiring for its identification. The photo was originally taken and posted by Reginaldo Vasconcelos, a plant enthusiast and skilled orchid grower from Governador Valadares, eastern Minas Gerais state, Southeast Brazil.

The long and broad, seemingly sessile leaves, and the long scapes with multiple flowers of the plants in the photograph immediately caught my attention, and I started to wonder where those plants were found. At a first glance, the plants were a little reminiscent of the South African *Drosera regia* Stephens, but they were certainly not any South American *Drosera* known so far. My first reaction was to call Fernando Rivadavia’s attention to that picture. Fernando is a well-known carnivorous plant specialist; he discovered many new species during more than 2 decades exploring the most remote areas of Brazil, many of those species we published together in the last 5 years. He got really excited and curious with the picture as well, so we decided to contact Reginaldo, the photographer, to get more information about where and when those plants were found.

Reginaldo kindly provided all information necessary plus a few more pictures, which got us even more excited. For our surprise, those pictures were taken at the top of a mountain in a remote area that neither of us had ever been before, as we would never expect to find something new there. In fact, we later learned that practically no botanist had ever been there before us. With all information we needed gathered, thanks to Reginaldo, we immediately started planning a trip to the area

so we could properly study this potential new species. Less than 3 months after first seeing the pictures, there we were, climbing the mountain (Fig. 1).

It was late November 2013 when we got to this little town in eastern Minas Gerais, called Conselheiro Pena. It was mid rainy season, so the sky was quite cloudy and drizzling, and the dirt roads were specially muddy and slippery from the heavy rains in the previous days. Although it delayed us for some hours, the slippery road didn't stopped us to reach the mountain base, even though we had to leave our car behind after we reached a huge slippery slope, and walk for a few kilometers under rain. Finally, we reached the mountain base and met Ednilson and his family. Ednilson is a local resident that guided us to the mountain peak, where the plants were photographed by Reginaldo.

After four hours of hiking and climbing the mountain under light rain and strong cold winds, we finally reached the mountaintop, at an elevation of 1500 meters. It was a nice view: small shrubs covered with lichens, orchids, and bromeliads among rocks, and large tree-like *Vellozia* plants, with beautiful lily-like purple flowers. Inside the water tank formed by the leaf bases of large bromeliads we found *Utricularia nelumbifolia* Gardner (Fig. 2), with deep violet, large orchid-like flowers. Growing in a humid hill with dripping water, over mosses, we also found pale lilac-flowered *U. nephrophylla* Benj. and a beautiful dwarf form of *U. reniformis* A.St.Hil. (Fig. 3). But the best was still to come.

Júlio César, Ednilson's son that was also accompanying us in the mountain trip, pointed, excited, to some reddish bushes in the distance – “there it is!” We couldn't believe our eyes... Those plants were huge! We were clearly in front of one of the greatest botanical discoveries of the decade. We got close to the plants and many more started to appear. They were growing by hundreds in this very narrow habitat in the hillside (Fig. 4). And, for our surprise, they had really long stems, usually sprawling all around, but also erect, supported by the surrounding vegetation.



Figure 1: The mountain where *Drosera magnifica* grows, in Southeast Brazil.



Figure 2: A Large bromeliad (*Vriesea sanctaparecidae*) hosting *Utricularia nelumbifolia* (left) and flower of *U. nelumbifolia* (right).

We started taking pictures and measurements, as it was already quite late in the afternoon. We also collected some plants for herbarium studies, so we could properly describe it for science and compare to previously known species. Unfortunately, it was too soon for seeds, which were all still unripe, but we could get enough material for the botanical description.

The size of this new species is impressive. The numerous leaves that can be up to 18 active leaves in a single rosette can reach up to 24 cm long. They lack an obvious petiole, as the tentacles start to appear from the very base and cover the entire upper leaf surface, except for a small triangular-shaped area at the very base, which is covered by simple hairs. The stipules are large, triangular-shaped, and golden colored (Fig. 5). The inflorescences can reach up to 35 cm long and present a very characteristic candelabra shape, with many branches in the upper part that can bear as many as 190 flowers, each 2 cm in diameter with light pink petals (Fig. 6 and Back Cover). But, the most impressive part of the plants is the stem, which is densely covered by dead leaves and can reach up to 123.5 cm long. In total, including stem, leaves, and flower scape, the largest plant seen was more than 150 cm long! The stem is usually prostrated on the ground, but often ascending on the apex, using the surrounding vegetation as support and reaching up to 30–40 cm above the ground level. We found a few plants with bifurcated stems, and many plants with small plantlets



Figure 3: *Utricularia nephrophylla* (lower left) and dwarf form of *Utricularia reniformis*.



Figure 4: The gigantic *Drosera magnifica* forming a large clump among grasses and bushes.



Figure 5: *Drosera magnifica*, with its characteristic sessile leaves, golden stipules and circinate-involute leaf vernation.

emerging from the stem base, and a few also from the roots. Although it produces numerous flowers and copious seeds per fruit, we saw no seedling in the area, which made us believe that asexual reproduction may be the main reproduction strategy of this new species. The way the immature leaves are folded is very unique among the South American *Drosera* as well: it is coiled along its length, but also has the margins folded inwards, in a fashion similar to that of the unrelated South African *D. regia* and the Australian *D. adelsae* F.Muell., both with similarly shaped leaves. This new species is by far the largest *Drosera* in the American continent and one of the three largest of the world, together with *D. regia* and the tuberous *D. gigantea* Lindl., the latter from Australia. With such unique and majestic appearance, we decided to call it *Drosera magnifica* Rivadavia & Gonella, a name that requires no explanation.

Although it presents very unique features, *D. magnifica* is clearly closely related



Figure 6: *Drosera magnifica* in habitat. Notice the single candelabra-shaped inflorescence per plant, with multiple flowers (left) and flower covered by rain drops (right).



Figure 7: *Drosera tomentosa* var. *tomentosa* (left) and *Genlisea violacea* (right) found on one of the nearby peaks.

to the two long-leaved Brazilian species: *D. graminifolia* A.St.Hil. and *D. spiralis* A.St.Hil., both of which grow more than 200 km apart, in the Espinhaço Range (Gonella *et al.* 2012). The habitat preferences of *D. magnifica* are very similar to those of *D. graminifolia*: both species grow in high-altitude rock outcrops, with high humidity throughout the year and cooler temperatures, but also with lots of direct sunlight. Such habitat preferences make the cultivation of *D. magnifica* quite tricky, as one would have to imitate such conditions to grow it well.

Seven months after the first visit to the area, we planned another trip, in July 2014, to collect more information about the species, but also to search for it in other mountains of the region. This time we had Reginaldo, the discoverer, with us, and also Carlos Rohrbacher, skilled carnivorous plant grower. We climbed two nearby peaks of similar elevation hoping to find more *D. magnifica* populations, but couldn't locate any, unfortunately. However, we did find *Genlisea violacea* A.St.-Hil. and *Drosera tomentosa* A.St.-Hil. var. *tomentosa* growing together in a small seepage in one of the peaks (Fig. 7). These other peaks were too dry compared to the one where *D. magnifica* grows, which reinforces that it requires very specific growing conditions. It seems to be very endemic to this singular mountaintop, where it is quite abundant, but severely threatened with extinction by invasive grasses that compete for light and space, and habitat destruction for coffee and eucalyptus plantations. For that reason, this newly discovered species is already considered Critically Endangered, the most severe category of threat, following the IUCN Red List categories and criteria, an international organization for the conservation of biodiversity.

It is astonishing that such a large and conspicuous plant species remained undiscovered until now in a country that has been historically very well botanized. This is an example of how little is still known about the Brazilian biodiversity, the largest in the world, and raises the question: what else is still out there, waiting to be discovered?

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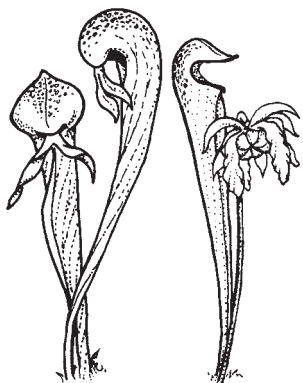
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CARNIVOROUS PLANT NEWSLETTER



Journal of the International
Carnivorous Plant Society
www.carnivorousplants.org

Volume 45, Number 3
September 2016



Front Cover: Two lower pitchers of the recently rediscovered and critically endangered *Nepenthes thorelii* at its only known location in Lo Go-Xa Mat National Park on the Vietnam-Cambodia border. Photo by Richard Nunn. Article on page 93.

Back Cover: Paulo Gonella holding a large specimen of *Drosera magnifica* collected for botanical studies. Notice the long stem, the bifurcated apex, and the plantlet emerging from the base of the stem. Also notice the single candelabra-shaped inflorescence per plant, with multiple flowers. Photo Fernando Rivadavia. Article on page 107.

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International Carnivorous Plant Society, Inc.
2121 N. California Blvd., Suite 290
Walnut Creek, CA 94596-7351, USA
icps@carnivorousplants.org

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Marcel van den Broek, marcel@carnivorousplants.org
Richard Nunn, richardnunn@carnivorousplants.org
Keith Becker, keith@carnivorousplants.org
Ryan Ward, ryan@carnivorousplants.org
Alex Eilts, Conservation Director, alex@carnivorousplants.org
Jan Schlauer, Cultivar Registrar, jan@carnivorousplants.org
Bob Ziemer, bob@carnivorousplants.org
Sheila Stewart, sheila@carnivorousplants.org
John Brittnacher, john@carnivorousplants.org
Joe Griffin, joe@carnivorousplants.org
editor@carnivorousplants.org
Bob Ziemer
Barry Rice
Djoni Crawford
John Brittnacher
Fernando Rivadavia
Jan Schlauer

Date of effective publication of the June 2016 issue of Carnivorous Plant Newsletter: 3 June 2016.

The ICPS is the International Cultivar Registration Authority (ICRA) for the names of cultivated carnivorous plants according to the International Code of Nomenclature for Cultivated Plants. Send relevant correspondence to the ICPS, Inc.

Carnivorous Plant Newsletter is published quarterly in March, June, September, and December by the ICPS, Inc., 2121 N. California Blvd., Suite 290, Walnut Creek, CA 94596, USA. Periodicals postage paid at Walnut Creek, CA and additional mailing offices. Postmaster: Send address changes to ICPS, Inc., 2121 N. California Blvd., Suite 290, Walnut Creek, CA 94596, USA. Printed by Allen Press, Inc., 810 E. 10th Street, Lawrence, KS 66044. Logo and masthead art: Paul Milauskas. © 2016 International Carnivorous Plant Society. All rights reserved. ISSN #0190-9215

