Carnivorous Plants of the Brasilian Cerrado

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During my winter vacations of July 1991, I visited two areas of Brasil where savanna-type vegetation, called cerrado, predominates. It consists mainly of grasses and stocky, fire-resistant trees (which are more or less numerous, depending on the area), but along rivers, the vegetation is similar to rainforest. Winter is the dry season and is characterized by hot, dry, sunny days and cool, moist nights. Termite mounds are very common in cerrados and in some places become quite crowded.

I first went to the city of Cuiabá (Mato Grosso state), in the northern Pantanal Basin. I would be staying 5 days with a CP collector I contacted 2 weeks before, Marcos Cardoso. I was anxious to explore that area for CPs, especially the Chapada dos Guimarães, a vast, cerrado-covered, tepui-like formation which rises around 700 meters from the Pantanal Basin to an altitude of 850 m. Chapada is the Portuguese word for tepui. This chapada is located around 60 km east of Cuiabá and as you approach it by car, you notice the true dimensions of the rock wall extending along the horizon. A magnificent view! We went twice to the Chapada dos Guimarães and found lots of CPs.

At the first stream we stopped by, we found yellow-flowered Utricularia nana, lavender U. costata (both with flower scapes only a few centimeters tall), and also an *Utricularia* with round leaves (which, weeks later, we figured out was a*Genlisea*, either*G.repens* or *G. pygmaea*) all growing on the sandy stream banks. A yellow-flowered, semi-aquatic *Utricularia* grew affixed to rocks in shallow, running water. All these CPs were found in an open area of the stream, without the shade of trees. The following day, we explored an area of the stream shaded by thick vegetation, where we found *U. pusilla* and *U. amethystina* or *tricolor* growing on semi-shaded, mossy stream banks.

At the second stream we stopped by on the first day, we found more *U. neottiodes* and *U. nana*. There were also red-leaved *D. communis* growing in sandy-clayish soil on the stream banks. These reached 2 cm across and scapes were found, shedding fusiform seeds. In cultivation they produced white flowers.

Our next stop was a magnificent waterfall which drops 70 m into a forest-covered valley surrounded by the cerrado-covered chapada. We climbed down to its base and found U. *subulata* among mosses on the cliff, receiving spray from the falls, next to a curled-up, poisonous snake we call "surucucu". We returned here the next day and headed for what looked like stream beds in nearby grassy hills. No streams were found (though they probably do form in the rainy season) but depressions were more humid and we soon found *Drosera* up to 2.5 cm in diameter growing under the semi-shade of grasses in soil consisting of broken bits of rock plus sand. In fact, it was so rocky that we had difficulty digging into it to remove a few plants. At first we thought they were *D. communis*, but then we came upon plants in bloom. The pink flowers were up to 1.2 cm across, borne on extremely hairy, yellow-greenish scapes up to 18.5 cm high. All this matches up with the *D. pumila* collected in the state of Mato Grosso and described by E. Santos in Bradea magazine. The only difference is that she describes scapes only 4.5 cm tall. Flowers were not described well and seeds not even mentioned. I heard that few plants were analyzed, and badly too. In Schlauer's nomenclatural synopsis

of CPs, *D. pumila* is considered a synonym of *D. colombiana*. I have not read anything by anyone invalidating *D. pumila*, but I'm sure this species I found must be the same one Santos studied. Anyway, with this *Drosera* we found *Utricularia* peduncles reaching 15 cm in height bearing tiny, white flowers with a yellow blotch at the base of the lower lip. I have not been able to identify this species yet through Taylor's monograph. Further study is needed to determine if this is a new species or not. These two species were seen again near a cave we visited, growing in a similar habitat, but spread all over the hillside and not only along water depressions. My guess is that they depend heavily on condensation as a water supply during the dry season. On the way to this cave, we stopped by wet slopes on the roadside and found *Drosera* without flowers (might be *D. communis*), leaves of *U. hispida*(?), and more *U. subulata*.

Leaving the cave, we found a muddy area on the roadside where there were reddish *Drosera* resembling small *D. intermedia* with fewer leaves growing on "islands" slightly above the water-drenched muddy sand. They might be *D. communis* under different conditions, but we are not sure. Around them, grew *U. simulans* (with fringed calyx lobes which reminded me of a VFT) bearing 1-3 flowers clustered at the top of scapes up to 10 cm tall. Near these CPs, on higher, drier but not rocky ground we found more *D. colombiana* with typical hairy scapes.

So these were the CPs found at C. dos Guimarães on July 12 and 13, 1991. On July 25, I left S. Paulo for the Parque Nacional das Emas in southern Goiás state, bordering the states of M. Grosso and M. Grosso do Sul where I stayed 5 days, until the night of the 31st. This national park got its name because of the abundance of *Rhea americana* which we call emas found in the area. The terrain varies between 800 and 1000 m, and the park is famous for its fauna, which includes rheas, giant anteaters, capybaras, deer, macaws, toucans, tapirs, foxes, plus many others which can be seen while travelling on the dirt roads which cross the park. It was created as a park in 1961 but reduced by 500 km^2 in 1972 and the present 1318 km^2 are nearly abandoned by our government even though it is our largest and most important reserve. Cerrados used to cover around 25% the area of Brasil but are now restricted to 4 semi-protected parks which represent only 0.01% of the original range, thus being more endangered than the Amazon rainforest. The rest has nearly all been cleared for cattle ranches or soybean farms. A barbed-wire fence financed by the WWF in the 1970's encloses the park but isn't enough to hold in animals which seek food in surrounding farms and are thus often killed. These farms cause various problems such as pesticide contamination, erosion, and fires.

We arrived after sixteen bus hours, at 6 AM on the 26th. When the unloading was done, we went to see the sunrise at a nearby river. I soon saw U. *nigrescens* with yellow flowers on long scapes and *U. subulata* growing in sandy-clayish soil in a treeless area next to the river. While having breakfast, I found a few reddish *Drosera* growing among the Utrics. I collected and then discovered that *U. subulata* was really *Genlisea*! I ran back to the river site and to my surprise found *Genlisea* and *Drosera* nearly covering the ground, which I did not see earlier due to the diffuse sunlight. They seemed to have no preference for the higher, drier ground or the lower, wetter areas as some *Genlisea* even grew underwater! The *Genlisea* had leaves up to 1.5 cm long and 5 mm wide at the tip, while their flower scapes reached 8 cm in height and each had a yellow flower around 6 mm long and 4 mm wide but as many as 3 seed pods. The largest *Drosera* were 3 cm across and most were beginning to flower. The flower scapes were up to 6 cm in height and had white flowers around 8 mm in diameter. Fusiform seeds were shed from this round-leaved species which is probably *D. communis*. Two more Utrics were found here: yellow-flowered, aquatic *U. gibba* growing in a muddy puddle and *U. tricolor* with dark-green, rounded leaves. That afternoon, while walking through flooded grasslands next to forests bordering another river, I saw more *U. tricolor, U. gibba* and large *Genlisea* (*G. aurea*?) with strap-shaped leaves up to 2.6 cm long and 5 mm wide.

The second day, we went to the source of the most important river in Brasil; the Araguaia, which flows north all the way to the Amazon Basin. Returning early that day, I went CP hunting with a friend . We wanted to search a forest-covered riverside for Utrics. On the way, my friend pointed out some Dro*sera* which I was nearly stepping on (I have the bad luck of being a bit color-blind for red!). My eyes almost jumped out as they set on the weird sundews! I froze, speechless, as I noticed we discovered a NEW SPECIES OF *DROSERA* !! It is a miniature of another Brasilian sundew, *D. chrysolepsis*, or like the pygmy, *D. scorpoides*. With this *Drosera*, grew the yellow-flowered *Genlisea* and *D. communis*. I found one other place where the new *Drosera* grew, at a river source we visited the next day where I also saw *U. nana*, *U. nigrescens*, *U. subulata*, and *Genlisea*. This new *Drosera* was very abundant locally at both sites and grew in sandy soil mixed in with some clay. Like *D. chrysolepis*, it also forms stems which hold the plant erect or become prostrate, though *D. chrysolepsis* is 10 times larger. The longest stems were 3.5 cm in length, but it was obvious that the old end of the stem rots away as the plant grows. The greenish-red leaves reached 1.6 cm in length with lamina 7 mm long and 1 mm wide. The flower scapes are up to 12.5 cm tall and bear white flowers around 8 mm in diameter. As many as 4 flower buds are produced on each scape and seeds are fusiform. Both sites faced east and received no sunlight after 2 or 3 PM (July is winter when the sun was low). Taxonomists at my university (University of São Paulo) also believe it is a new species, though it might have really been discovered 40 years ago! There are 2 badly-preserved, unidentified *Drosera* without flowers in the university's herbarium which were collected in the early 1950's near Goiânia, around 400 km NE of the P.N. das Emas. I believe they are the same species as the one I found.

On the 3rd day, we visited the source of the two rivers. I saw the new species at both rivers growing in sandy soil under the heavy shade of grasses between 60-80 cm tall. Also, I saw *D. communis* growing in the fluffy, broom-like grasses in a wet area where it is commonly found. These sundews are mostly greenish in color, with rosettes up to 2 cm across. They have not yet flowered in cultivation. The last two days here were not very successful and I found the new species with *U. subulata*. I did find extensions to the original *U. gibba* and *U. tricolor* sites in floodplains next to the river. This wraps up my trip to the P.N. das Emas!

Adding up all the CPs seen in the Brasilian cerrados on these two trips, at least 17 species were found and maybe lots more. This was surely the most fruitful winter vacation I ever had! A few days after I returned to S. Paulo, a friend told me he collected a *Drosera* species in another cerrado area in the state of Goiás. They ended up being a species I was expecting and hoping to find on my trips that winter: *D. sessilifolia*! They had leaves around 1.5 cm long and 1 cm wide. One had a flower scape 26 cm tall with 15 flower buds and sepals covered with red hairs. Along with *D. sessilifolia* were a few *D. communis* (?) with leaves 1.8 cm long (1 cm petiole), plus 1 or 2 species of Utrics. Unfortunately, they arrived in bad conditions and none survived. Soon after receiving these plants, I got a box from Marcos with 2 yellow-flowered *Genlisea* species he found at the Chapada, growing in a muddy area by a stream. I identified them as *G. aurea* and *G. repens*, and I noticed that some *Genlisea* from P.N. das Emas had hairy flower scapes while others had smooth scapes. I found out that there were 2 species: *G. repens* and *G. pygmaea*! They grew together on the riverside and all I noticed was a slight difference in leaf size! So *G. pygmaea*, with smaller leaves, grew on higher ground and *G. repens*, with larger leaves, grew in wetter ground, even underwater. Six months have now passed and Marcos found more interesting CPs on other trips to the Chapada, maybe another new *Drosera* species. But these things will come out in a future article, after careful observations in cultivation and maybe after I return to the Chapada. So to end this article, I would like to thank friends who helped me find CPs at the P.N. das Emas and Marcos and his family for the hospitality during my stay at Cuiabá and for the confidence in inviting a total stranger to stay with them.

BRASIL

MATO GROSSO

Chapada dos Guimarães

GOIÁS

Cuiabá

Guiânia

MINAS GERAIS

Parque Nacional das Emas

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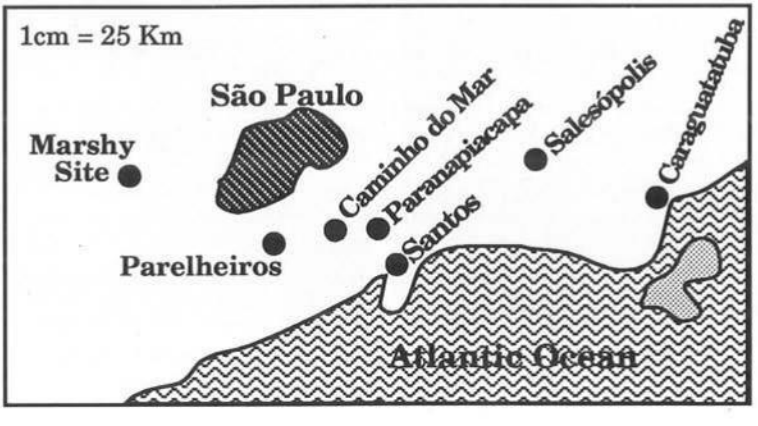
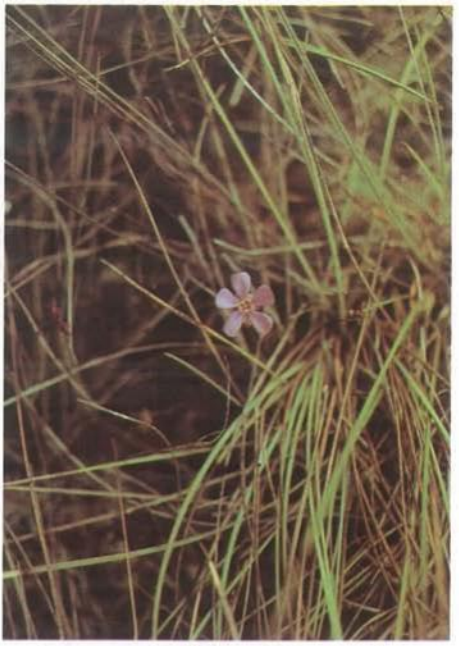
SÃO PAULO

São Paulo

São Paulo City Area

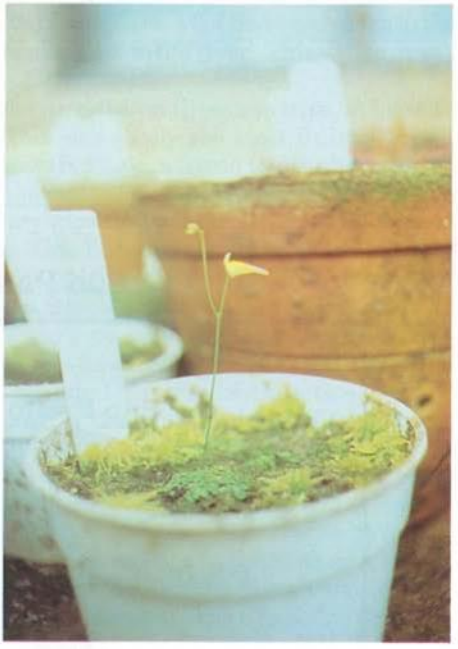


D. colombiana. Chapada dos Guimapães



Drosera colombiana. Chapada dos Guimapães

U. nigrescens. P.N. das Emas



Genlisea repens. P. Nacional das Emas

Genlisea pygmaea. P. Nacional das Emas

D. communis. P.N. das Emas

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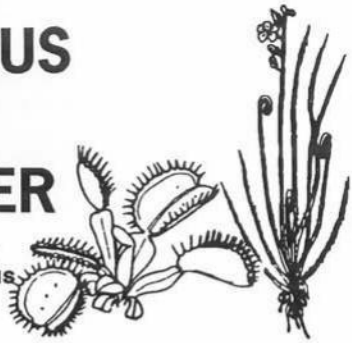

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Front cover: *Drosera* sp. "white flower." A new species from Parque Nacional das Ewas, Brazil. Photo by Fervando Rivadavia. Please see article beginning on page 14.

Rear cover: *Drosera villosa* along the Caminho do mar, Brazil. Photo by Randy Lamb. Please see article beginning on page 20.

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