Carnivorous Plants Of Caraça, South America

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In 1708, explorers seeking gold and precious stones in the inhospitable highlands and forests of Minas Gerais (present-day Brazil) came across a mountain with the contour of a human face which they called " Caraça", (pronounced "Kahrahssah") or "Big Face" in Portuguese. In 1820, 11,200 hectares of land, named after the face-shaped mountain, were donated to the Lazarists priests, together with a sanctuary which had been built in the region in 1774 by a hermit priest. Today, the sanctuary works as a small, very simple hotel run by a couple of priests.

My high school has been organizing trips to Caraça for the senior class for many years now, and from the 14th to the 19th of May, 1990, it was my turn to go. It took us about 10 hours to go by bus from São Paulo to Caraça, and we arrived on Monday night. We walked between 10 and 15 kilometers each day, visiting waterfalls, climbing mountains, and even walking inside a small mountain river for 3 kilometers, against the current, with freezing water up to our chests in some areas! We left on Saturday morning.

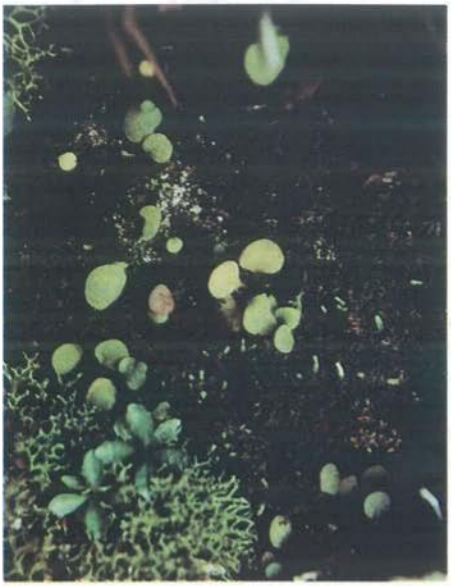
In late July, a friend of mine called Maurício, who also collects CPs, went to Caraça too. In total, we were able to find 11 species of CPs: *Drosera graminifolia*, *D. montana* "pink flower", one species of *Genlisea*, *Utricularia subulata*, and 7 other species of Utricularia which we have not been able to identify for sure yet. Maurício is going back to Caraça in November when they will be flowering and should help us identify these species.

Caraça is a paradise for botanists. Varying in height from 750 to 2100 meters, Caraça is located in a transition area between tropical rain forests typical of the coastal areas of Brazil and the savanna vegetation typical of central Brazil. Thus, the area permits a large diversity of fauna and flora to emerge in a relatively small area. In fact, Auguste Saint-Hilaire in 1816 and Von Martius in 1818 came to Caraça to collect specimens of local flora and fauna during their travels around Brazil and South America.

So here are some descriptions of the habitats where we found each species:

Drosera graminifolia—was found in one location, at around 1900 meters near the summit of a mountain, where water from natural springs ran down over rock walls and sphagnum moss formed spreading carpets. Large specimens of *D. graminifolia* were observed here, growing rather scattered, with leaves up to 25cm in length. The pH of the water was 6.5 while the sphagnum had a pH of 4.5. A few meters farther up, there was a terrace-like formation in the mountain. Large quantities of this species grew here, forming a mat of dead leaves between 5 and 10 cm high on top of sandy soil. These plants were growing closer together than the ones growing on sphagnum and they had flowered between 3 and 4 months before I observed them in May. The flower stalks were rather strong and woody, up to 35cm tall. Most seeds had already been shed by the time I saw the plants in bloom, but Maurício has seen this species flowering at a site in Diamantina which is about 200km north of Caraça. He said the flowers are light-pink colored and very large. On top of this mountain where we found *D. graminifolia*, the summer temperatures range between 20 and 40 degrees Celsius and the winter temperatures range between 0 and 18 degrees C, in the sunlight.

Drosera montana "pink flower"—is very common in the area. We found 7 different locations varying in altitude between 1250 and 1400 meters, always growing on stream banks, in sand and clay mixtures with varying proportions of each. In some places, there was ash mixed with the sand and clay; a result of brushfires which are



There are three *Utricularia* species here. *U. pubescens* can be seen in the bottom center. The leaves are round. The *U. tricolor* leaves can be seen in the center of the slide. The last species is *U. subulata* with thin leaves seen mainly in the top center.



Leaves of *U. nephrophylla* with the smallest leaves, growing in this location.



Leaves of *U. neprophylla* up to 4cm in diameter and 12cm high. The plants grow near *D. graminifolia* on spagnum moss around 1900m.



Closeup leaves of *D. graminifolia*. This plant was growing on sandy soil on a terrace-like formation.

very common and normal in the region. *D. montana* has bright red leaves when fully exposed to the sun and may form thick rosettes up to 4 centimeters across. In most locations the plants were producing flower stalks, but had not opened the first flowers. This species was always found growing together with one or more species of *Utricularia*. For *D. montana*, *Genlisea*, and the other utricularias, the following conditions were found: the pH varied between 5 and 6.5, while the temperatures may vary between 20-45 degrees Celsius in the summer and between 5 and 20 degrees C in the winter under full sunlight, unless stated otherwise like when *D. graminifolia* is growing between 1900 and 1955m. The elevations are nearly the same varying between 1250 and 1400m.

Genlisea sp. (probably *G. violacea*)—Maurício located a single, small plant which was growing along with *U. subulata* and mosses on top of pure sand next to a small pool formed by a stream.

Utricularia subulata—can be found on almost every stream bank at Caraça, growing on any moist soil mixture or together with mosses on bare rocks. Wherever *D. montana* was found, *U. subulata* was always present. We found the cleistogamous form of *U. subulata* growing in one location on almost pure sand, along with *D. montana*, next to a stream.

Utricularia sp. (aquatic)—I found submerged in water, clinging to rocks in 2 mountain streams where small pools formed or where the highly oxygenated water didn't flow too fast. The yellow flowers were scattered along the flower stalk, each a few millimeters above the other. The length of the peduncle always depended on the water level rising above it up to 15cm in total. Growing from the base of the flower stalks were feathery leaves which flowed with the current. Runners fastened the plants to the rocks, spreading in web-like formations with peduncles rising here and there.

Utricularia sp. (probably *U. nephrophylla*)—We came across 3 locations. The length of the kidney-shaped leaves varied much between these three places, so we are not sure if they are the same species. At one site, it was found growing in partial shade near *D. graminifolia* at 1900m, on sphagnum moss at pH 4.5. Here the petioles were up to 12 cm high and the leaf blades up to 4 cm in diameter. At another site, it was found growing with common moss on top of rocks, at the base of a waterfall. The petioles were around 6cm high and the blades up to 2.5cm in diameter. At the last location this species was growing on a stream bank in a sand-clay mixture. The leaves were even smaller here with petioles around 2cm long and blades up to 1.5cm in diameter.

Utricularia sp. (probably *U. pubescens*)—it was only seen in one place, on a shady stream bank along with common moss on top of sandy soil. The round leaves were between 3 and 5mm in diameter. The temperatures were somewhat lower here due to the constant shade over the stream bank.

Utricularia sp. (probably *U. tricolor*)—we found one location together with *D. montana* and *U. subulata* growing on sand-clay mix next to a stream. The leaves were around 5mm in diameter.

Utricularia sp. "purple flower"—was observed at 3 sites growing in sphagnum moss between 1900m and 1955m (pH 4.5) and in sand, clay and ash mixes together with *D. montana* and *U. subulata*. Its leaves are elliptic (normally around 2mm in diameter) and the flower is somewhat similar to that of *U. tricolor* but smaller.

Utricularia sp. "yellow flower" - was located growing in pure sand next to a stream. Its leaves are similar to those of *U. subulata* but it has a long, climbing flower stalk.

Utricularia sp.—was growing near *D. montana* and a few *Utricularia* near a stream. The leaves are very similar to *U. subulata* but there were no flowers when Maurício found this species. It was growing in a semi-shady area, farther away from the stream than the other CPs in this location. Thus, the sandy soil in which it was growing was also somewhat drier.

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