Heliamphora hispida (Sarraceniaceae), a New Species from Cerro Neblina, Brazil-Venezuela

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Introduction

Cerro Neblina is the southernmost tepui of the Guyana Highlands at the Brazil-Venezuela border. Recently discovered in 1954, surrounded by extensive rainforests and very difficult to reach, it remains one of the least explored regions in the world. Due to its isolation, it exhibits the highest degree of plant endemism of all the tepuis. In December 1998, a group of carnivorous plant enthusiasts (Fernando Rivadavia, Prof. José Maurício Valéria Piliackas, Ed Read, Gert Hoogenstrijd, Christoph Scherber, Dr. Kathrin Hinderhofer and the authors) began an expedition to study the carnivorous plants of Cerro Neblina (for details on this expedition see Rivadavia, 1999). Besides locating the previously known *Heliamphora tatei* var. *neblinae*, we also discovered a new *Heliamphora* species which is clearly different.

Heliamphora hispida Wistuba & Nerz *spec. nov.*

Caudex ramosus; foliis rosulatis; amphoris 15-20 (a. 25) cm longis, ventricosis; orificiis expansis infundibuliformibus; parallele plurinervibus et transversim reticulato-venosis, extus glabris, parte superiore interiore ciliata; appendice cucullato 1-1.5 cm longo, 1-1.5 cm lato, cordato, basi constricto; inflorescentiis 3-5-floris, racemosis, ad 50 cm longis; flores nutantes; pedicellis 5 cm longis; petalis 4 oblongo-lanceolatis, albidis val pallide-roseis, 5-6 cm longis; staminibus 10, 1-serialibus, filamentiis 7 mm longis; antheris oblongo-lanceolatis, ca. 7 mm longis; ovario valde tomentoso; stylo glabro; stigmate 3 lobato; seminibus fuscis, oblongis, ca. 2-3 mm longis, testa conspicue membranaceo-alata.

Rhizomes branching, plants forming dense clumps with age. Pitchers slightly ventricose in the lower half, broad-infundibulate and expanded in the upper part, 15-20 cm, occasionally up to 25 cm long, 5-8 cm wide in the upper part, pitchers greenish with red veins, in exposed habitats dark red; the upper half of the pitchers densely ciliate in their interior, cilia variable, occasionally up to 4 mm, middle part of pitcher glabrous, basal part coarsely ciliate; lid cordate, strongly narrowed at the base, 1-1.5 cm long, 1-1.5 cm wide, with an appendage, 1-1.5 mm long on the outside near the tip; inflorescence about 50 cm long, peduncle glabrous in the lower part, slightly pubescent in the upper part; pedicels 5 cm long; bracts ovate 4-5 cm long, bearing rudimentary pitchers; tepals, 4, oblong-lanceolate 5-6 cm long, 2-3 cm wide, white to whitish-pink; 10 stamens in 1 series, filaments 7 mm long, anthers oblong-lanceolate, approximately 7 mm long, 1.5 mm wide; ovary 3 celled, pubescent, style glabrous; seed approximately 2-3 mm long, compressed, ovate, irregularly winged.

Specimens Examined

Heliamphora hispida : Cerro Neblina 01/01/1999 Wistuba et Nerz No. Neb 01.01.99/1, holotype, flowering plant (VEN).

Heliamphora hispida : Cerro Neblina 01/01/1999 Wistuba et Nerz No. Neb 01.01.99/2, flowering plant (VEN).

Etymology

The name is derived from the Latin "hispidus" (bristly) after the coarse cilate hairs on the interior pitcher surface of some individuals.

Distribution

So far, *Heliamphora hispid*a is only known from the southeast end of Cerro Neblina. It is remarkable that *Heliamphora tatei* var. *neblinae* is found very scarcely in this area, probably due to different habitat requirements. In the northeast part of Cerro Neblina, *Heliamphora tatei* var. *neblinae* grows in huge highland meadows associated with *Brocchinia reducta*. *Heliamphora hispida* is the only *Heliamphora* that grows in meadows around Pico Phelps. According to one reference this species has been seen once before in an adjacent area: Charles Brewer-Carias (1987) shows several photos of such plants (pages 209 and 210) without any explanations in the text. Brewer-Carias mentions that the plants had been photographed at the Titirico River, approximately 7-8 km northeast of Pico Phelps. It seems that *Heliamphora hispida* is the dominant species in the southeastern part of Cerro Neblina.

Ecology

Heliamphora hispida grows at Cerro Neblina, usually in bogs and highland meadows. It is quite common on highland meadows below Pico Phelps, and even at the very top of Pico Phelps (3014 m) some clumps of *Heliamphora hispida* can be found. Usually it is not associated with *Heliamphora tatei* var. *neblinae*, which we have found only in an open meadow east of Pico Phelps. Here, *Heliamphora tatei* var. *neblinae* was found growing closely with but clearly separated from *Heliamphora hispida*, which grows in shady spots on open shrubby bogs. It is remarkable that plants frequently grow partially submerged in these habitats, so that the water level inside of the pitchers is approximately the same as in the surrounding substrate. In that area, we also found another curiosity: a cluster of debris (consisting partially of decayed leaves and rhizomes of *H. hispida*) fully 1.80 m in height and totally overgrown with *H. hispida* plants. The southeastern end of Cerro Neblina is mostly covered in low forests, or swampy areas with low shrubs and dominated by *Bonnetia* and other montane shrubs and treelets. Other areas are dominated by *Brocchinia tatei*. These areas are not suitable for *Heliamphora tatei* var. *neblinae*, which prefers flat open meadows at altitudes of 1800-2000 m. It seems that *Heliamphora hispida* is better adapted to grow in the shrubby areas in the southeastern part of Neblina and at higher altitudes (1800-3014 m) with their colder and harsher conditions.

Hybrids

We found one small population of hybrids, possibly consisting of stabilized hybrids between *Heliamphora hispida* and *Heliamphora tatei* var. *neblinae*. The pitchers of these plants were quite long and tubular, almost as in *Heliamphora tatei* var. *neblinae*, but the lid was small and round as in *Heliamphora hispida*. Just a few of these plants were found growing between dense shrubs. It is interesting that neither *Heliamphora tatei* var. *neblinae* nor *Heliamphora hispida* were growing close to this population.

Relation to Other Species

Heliamphora hispida is clearly distinct from all other known *Heliamphora* species (*Heliamphora tatei*, *Heliamphora nutans*, *Heliamphora heterodoxa*,

Heliamphora minor and *Heliamphora ionasii*; Bentham, 1840; Gleason, 1931; Maguire, 1978; Steyermark, 1984). Apparently it has closest affinities to *Heliamphora minor* and *Heliamphora ionasii*. *Heliamphora hispida* shows distinct differences in the shape of pitchers, the lid, and in details of the flowers compared to *Heliamphora minor*. *Heliamphora minor* is usually somewhat smaller than *Heliamphora hispida*. *Heliamphora ionasii* is different because of its huge dimensions in all parts of the plant, besides differences in the shape of pitchers and details in flowers as can be seen in Table 1.

	Heliamphora hispida	*Heliamphora minor*	*Heliamphora ionasii*
Pitcher			
Dimensions	15-25 cm long 5-8 cm wide	8-20 cm long 3-8 cm wide	40-50 cm long 10-15 cm wide
Shape	Slightly ventricose in the lower part, broad-infundibulate and expanded in the upper part	Slightly ventricose in the lower part, narrowly expanded to tubular in the upper part	Ventricose in the lower part, highly expanded in the upper part
Lid			
Dimensions	1-1.5 cm long 1-1.5 cm wide	0.5-1 cm long 0.3-0.5 cm wide	2-3 cm long 2-3 cm wide
Shape	Cordate, curved	Strongly "helmet"-shaped	Cordate, curved
Inflorescence			
Dimensions	Peduncle 50 cm long pedicels 5 cm long	Peduncle 20-40 cm long pedicels 3-4 cm long	Peduncle 100 cm long pedicels 12 cm long
Tepals			
Dimensions	5-6 cm long 2-3 cm wide	4-5 cm long 1.5-2.5 cm wide	3.5-6 cm long 2-3.5 cm wide
Shape	Oblong-lanceolate, narrowing near the base	Lanceolate, broad base	Lanceolate, broad base
Anthers/Stamens			
Dimensions	7 mm long	4 mm long	3.5 mm long
Number	10	15	15

Table 1: Comparison between *Heliamphora hispida*, *Heliamphora minor* and *Heliamphora ionasii*.

Discussion

Until now, only one *Heliamphora* species with long, tubular pitchers was known from the southern tepuis (*Heliamphora tatei* var. *tatei* from Cerro Duida, Cerro Huachamachari and Cerro Marahuaca; *Heliamphora tatei* var. *neblinae* from Cerro Neblina and Cerro Aracamuni). Species with more compact or short pitchers (*Heliamphora nutans*, *Heliamphora minor*, *Heliamphora heterodoxa* and *Heliamphora ionasii*) were only known from the eastern tepuis (e.g. Roraima Tepui, Auyan Tepui, Ptari Tepui or Ilu Tepui), which are separated by a distance of some 600 km from the western tepuis. *Heliamphora* is not known to occur between these areas. Therefore, it was thought that this division into tubular pitchered "western species" and compact pitchered "eastern species" was due to geographic isolation because of long distances between these areas. Now for the first time it can be seen that this separation is not valid. *Heliamphora hispida* clearly has morphological affinities to the "eastern species" such as *Heliamphora minor* or *Heliamphora ionasii*, and is clearly different from the known "western species."



Figure 1: *Heliamphora hispida* flower. Photograph by J. Nerz.



Figure 2: *Heliamphora hispida*. Photograph by A. Wistuba.



Figure 3: *Heliamphora hispida* habitat. Photograph by A. Wistuba.

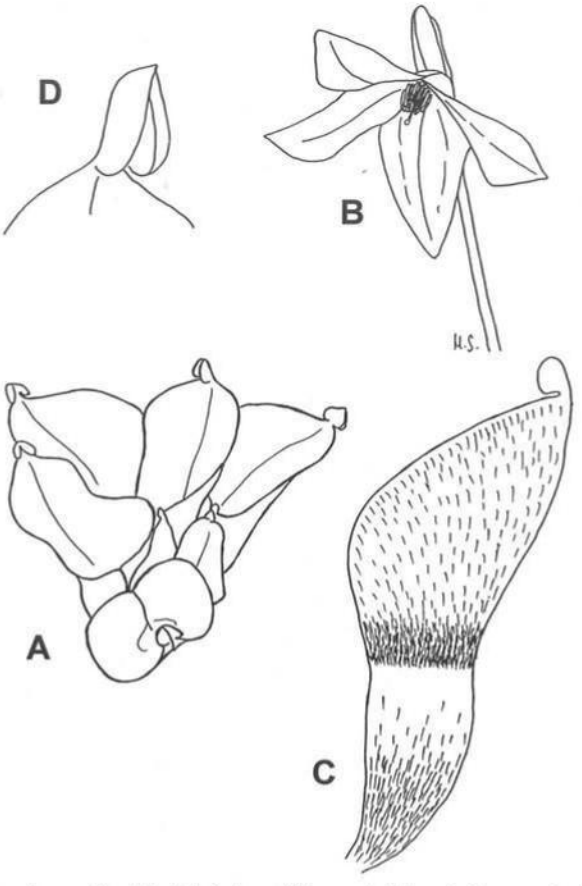

Figure 4: *Heliamphora hispida* Wistuba et Nerz; A. Vegetative part of plant (×1/2); B. Flower (×1); C. Trichomes on the inner pitcher surface (×1); D. Lid (×3). Drawing by Matthias Schmidt.

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