

QUEST FOR THE ORIGIN OF *HELIAMPHORA HETERODOXA*.
REPORT OF MAY 2018 EXPEDITION TO VENEZUELA WITH
CARNIVOROUS FLORA OCCURRENCES IN THE BASE AREAS OF PTARI-TEPUI

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Introduction

In May 2018 I had the opportunity to co-organize an independent expedition to the areas surrounding the massif of Ptari-tepui and Sororopan-tepui in Estado Bolívar, Venezuela. My group led by a team of Pemón guides from the community of Santa Teresita de Kavanayen succeeded in reaching the location of the first scientific expeditions to the massif of Ptari-tepui led by W. Phelps in February 1944 and J. A. Steyermark in November 1944, including re-discovering the locus classicus of *Heliamphora heterodoxa* which had not been accurately located ever since the original publication of the taxon in 1951 (McPherson *et al.* 2011).

Report of the expedition

The expedition started in the town of Santa Elena de Uairen in Estado Bolívar, Venezuela where our group assembled on May 2nd, 2018. The following day on May 3rd we drove north on the Troncal 10 Road, carried out observations of *Heliamphora* and other carnivorous plant populations in the savannas by the roadside, around the marshlands in close vicinities of Rio Apongao, and then continued southwest to the Pemón village of Santa Teresita de Kavanayen. Along the way we made short stops to visit the most popular touristic highlights of the Gran Sabana, such as the Jasper Creek (*Quebrada de Jaspe*), Salto Kama Meru, and the famous tepui viewpoint, *Mirador el Oso*. After reaching Kavanayen a short meeting was organized with the leader of the village and members of the Parupa scientific station and plans were discussed for the upcoming days.

In the following morning on May 4th the team, led by guides from Kavanayen, advanced westwards and started the approach towards the southwestern slopes of Ptari-tepui. The first day of trekking was spent on crossing the savanna to a lower forest campsite called Kavanaru (being an Amerindian name of the cock-of-the-rock bird, *Rupicola rupicola*). The savanna had a notable presence of carnivorous flora typical to the Gran Sabana region, including populations of *Drosera felix*, *Drosera roraimae*, *Catopsis berteroniana*, *Utricularia subulata*, *Utricularia hispida*, and *Brocchinia reducta*. In addition, *Utricularia olivacea*, *Drosera kaieteurensis*, and *Genlisea* sp. plants were found around a rest spot by a waterfall called Iwarakaru Meru approximately halfway through the trail (Fig. 1). Within the perimeter of camp Kavanaru, several *Utricularia jamesoniana* plants were spotted growing on mossy tree trunks.

The objective on May 5th was to reach Punto Phelps – a small cave campsite on the southwestern foothill of Ptari-tepui, named after the American ornithologist William H. Phelps who was the first to lead a scientific expedition in that area in February 1944 (Zimmer & Phelps 1944). The trail became significantly steeper and more difficult. Before reaching the campsite, the group traversed an elevated plateau area connecting the slopes of Ptari-tepui and Sororopan-tepui and passed by a number of scattered patches of typical, highland moist savanna vegetation divided by *Clusia* sp. and *Bonnetia sessilis* shrublands and savanna-forest mosaic vegetation (Fig. 2). This particular location

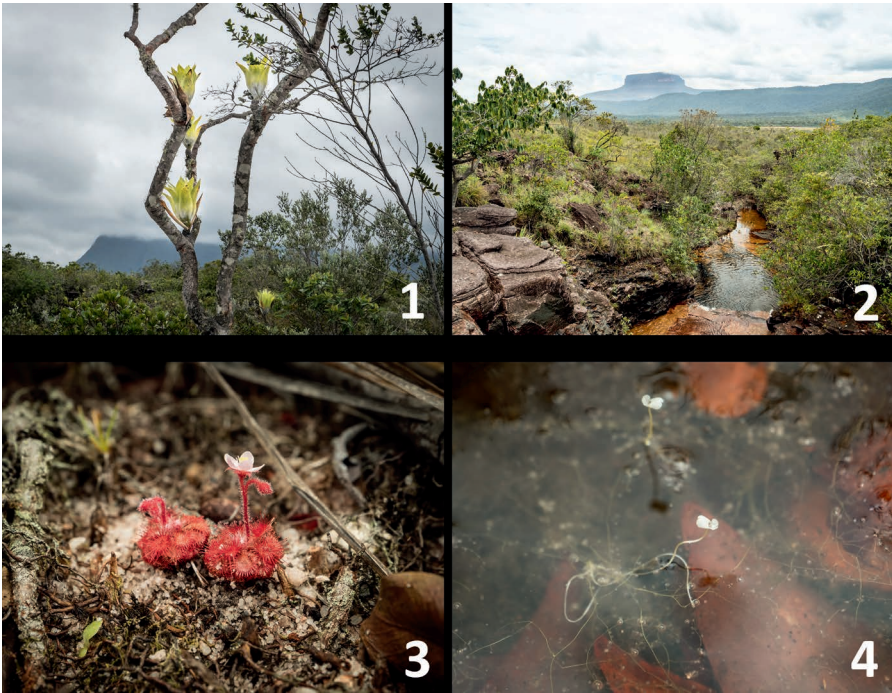


Figure 1: Highlights of the trail to camp Kavanaru: 1) *Catopsis berteroniana*; 2) View over Ptari-tepui from Iwarakaru Meru; 3) *Drosera kaieteurensis*; 4) *Utricularia olivacea*.

reminded of the areas where some of *Heliamphora heterodoxa* collections had been made in November 1944 and described by J. A. Steyermark in his 1951 *Fieldiana* record (Steyermark 1951). No *Heliamphora* plants were spotted, yet the climb provided the first encounters with members of flora typical to higher elevations in the *Pantepui* – plants such as *Brocchinia acuminata*, *Oreocanthus scepstrum*, or *Stegolepis ptaritepuiensis*.

A particularly interesting area was found around a rest spot by the Iwore Meru waterfall, where the vegetation became a lower cloud forest characterized by the presence of a significant number of Bromeliads, Orchids, Aroids, and members of the *Rapateaceae* family, such as *Saxofridericia regalis*.

After reaching Punto Phelps, a memorial plaque was found left by W. Phelps inside the cave campsite commemorating his visit to the spot in February 1944. I noticed an inscription on the plaque made probably with a nail or some other impro-

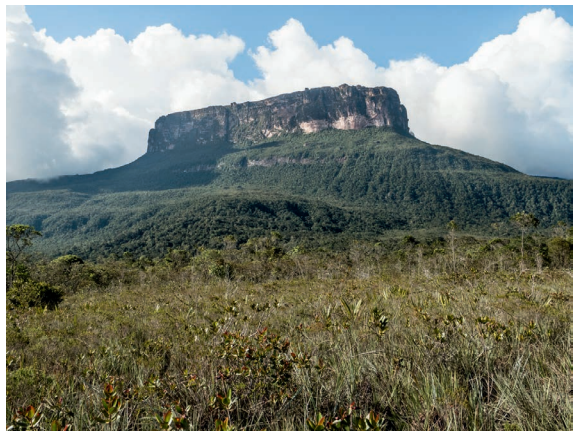


Figure 2: Ptari-tepui seen from one of the savanna patches on the plateau area interlinking to the slopes of Sororopan-tepui.

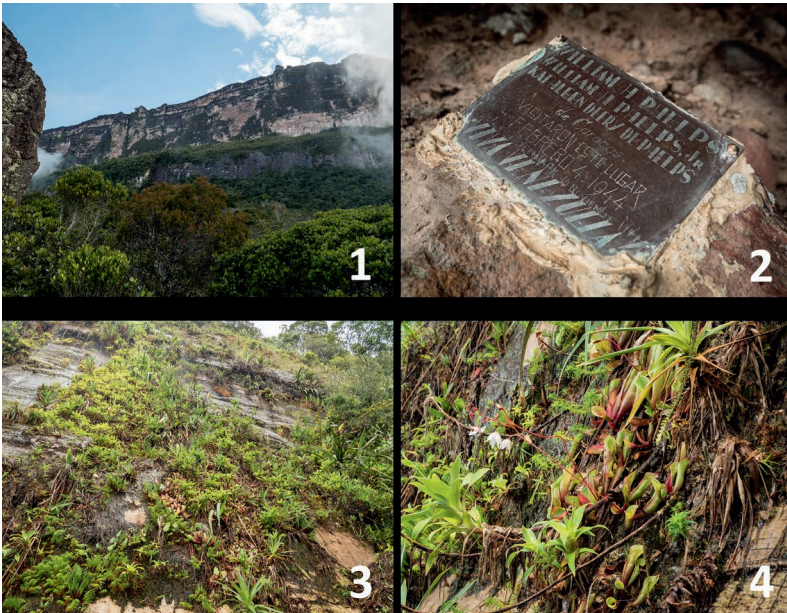


Figure 3: Highlights of the upper part of the Ptari-tepui trail: 1) Southwestern wall of Ptari-tepui seen from Punto Phelps camp; 2) Memorial plaque left in the cave at Punto Phelps camp, with J. A. Steyermark's "vandalized" inscription; 3) Sandstone wall habitat with *H. collina*; 4) *H. collina* population growing on the rock wall.

vised tool, saying: "Julian Steyermark, 10 Noviembre 1944". That inscription served as a clear evidence that the area was indeed the location of Steyermark's original *Heliampora heterodoxa* collections as it corresponded to the dates put in the herbarium specimens (Fig. 3).

May 6th was spent on a strenuous climb of the southwestern slope of Ptari-tepui with the objective of reaching as high as possible, making observations focused on carnivorous plant populations encountered along the way. The trail became increasingly steep, muddy and difficult to cross. Several parts required nearly vertical climbing using tree branches and roots to get around steep rocky surfaces and narrow, muddy ridges. When an exposed portion of the sandstone wall was reached at approx. 1800 m a.s.l., a large population of *Heliampora collina* was found growing attached to the rock wall accompanied by *Utricularia alpina* and *Drosera roraimae* plants (Fig. 3). This observation confirmed that *Heliampora collina* is indeed present on the cliffs of Ptari-tepui, as it had been suspected by some other researchers (McPherson *et al.* 2011).



Figure 4: *Heliampora collina* found among shrub vegetation on the slopes of Ptari-tepui. Note the close morphological similarity to *Heliampora folliculata* leaves.

Advancing further up the trail several other species of carnivorous plants were encountered, namely *Drosera arenicola*, *Utricularia quelchii*, *Utricularia amethystina*, and *Brocchinia reducta*. More high-tepui species were becoming present, such as *Maguireothamnus speciosus*, *Brocchinia tatei*, *Brocchinia steyermarkii*, *Pterozonium* ferns, *Elaphoglossum wurdackii*, *Ledothamnus* sp. or *Connellia* sp. More *Heliamphora collina* plants could be found growing around small patches of vegetation on exposed rock faces and around shrubs (Fig. 4).

The trail ended on the surface of one of the large sandstone boulders which were common in the slope areas. The summit of the boulder was partially bare rock, and in some parts thick shrub vegetation growing all around the slopes (Fig. 5), which directly matched the description of the location left by J. A. Steyermark on his *Heliamphora heterodoxa* type collections: “matted on mossy exposed top of big boulder; (...), Ptari-tepui, *Bonnetia roraimae* forest on southwest-facing shoulder, altitude 2000-2200 meters” (Steyermark 1951). Among the shrubs a significant amount of *Heliamphora* plants were found, which after closer observations were identified as a hybrid swarm of two species, *Heliamphora collina* and *Heliamphora purpurascens*.

Due to deteriorating weather conditions the group retreated back to Punto Phelps after spending less than an hour on the top of the boulder and continued down to Kavanaru camp the same day.

The expedition to Ptari-tepui slopes ended on May 7th when the group returned from camp Kavanaru to Kavanayen. Following days were dedicated to exploring various locations in the Gran Sa-



Figure 5: Vegetation on the top of the sandstone boulder location: 1) *Bonnetia roraimae* shrub vegetation with *Stegolepis*, with Mona-tepui visible in the background; 2) Sandstone boulders on the southwestern talus slope of Ptari-tepui, looking SE; 3) Shrub vegetation on the boulder, looking NW; 4) *Heliamphora collina* x *purpurascens* growing among shrubs on the top of the boulder.

bana, in the vicinities of Kavanayen and Parupa scientific station. Various locations were visited, for instance forests and savannas around Salto Aponguaou and Toron Meru. The expedition concluded with a trekking from Uroy-Uaray to the community of Wuarpata, near the base of Tramen-tepui.

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