

SECOND BRIEF PIECE OF INFORMATION ABOUT THE SPECIES STATUS OF
UTRICULARIA CORNIGERA STUDNIČKA

MILOSLAV STUDNIČKA • Liberec Botanic Gardens • Purkyňova 630/1 • CZ-460 01 • Liberec • Czech Republic • botangarden@volny.cz

Keywords: *Utricularia cornigera*, bladderwort, hybrids, bladders, traps.

Abstract: Hybrids of *Utricularia nelumbifolia* × *U. reniformis* (and vice versa) were raised, and the bladders of adult individuals taken out of the soil were observed. With their long antennae they resemble their parents, yet they differ noticeably from the identically situated bladders of *U. cornigera* that has characteristic short antennae. Therefore, the morphology of the bladders does not support the hypothesis of a hybrid origin of *U. cornigera*.

Introduction

The seedlings from the artificial cross-breeding of *Utricularia reniformis* × *U. nelumbifolia* (and vice versa) documented in CPN 2 years ago (Studnička 2013) have become adult plants, and thus it was possible to document the traps of the hybrids. In this study, a comparison is made with both the parental species and with *U. cornigera*, for it is a species related to both cross-bred species. The species *U. cornigera* and *U. reniformis* are similar to each other with their kidney-shaped leaves. The species *U. cornigera* and *U. nelumbifolia* have symbiotic relationships to host rosette-forming plants (Studnička 2011). All the three species are endemic to south-eastern Brazil.

Material and Methods

The hybrids described in the previous brief information (Studnička 2013) were investigated. These plants have been raised and continue to be kept in the Liberec Botanic Garden. Stolons with bladders were removed from the soil and placed into a small bowl with water. The live material was observed and photographed with a microscope at 16-times magnification. The mounts were made in such a way that the antennae were as visible as possible. In the case of *U. nelumbifolia*, traps from an aquatic environment were observed as this species does not grow in soil. Traps from a soil environment were documented and compared in the case of all the other species and hybrids. In each case, 10 mounts were observed and as no significant variability was ascertained, one representative photograph at a time is included in this article.

Results and Discussion

Protrusions growing out of the throat towards the front of the trap mouth, referred to as antennae (Taylor 1989), are usually considered (*inter alia*) to be a characteristic feature of each species of the genus *Utricularia*. Their shape is apparently associated with the strategy of hunting microscopically small prey and with some specialization (Lloyd 1942). Soil traps specialize in soil microfauna of various composition, whereas water traps are adapted to hunting zooplankton. With respect to the

species *U. reniformis*, the difference between soil and water traps (if they are created at all) is more in the size of the bladder than in the shape and proportionate length of the antennae. By contrast, *U. cornigera* is characterised by marked dimorphism of the traps: water traps (Studnička 2009) have relatively long antennae; soil traps, by contrast, also displayed herein (Fig. 1), have very short ones, reduced to small “horns” (*cornigera* = horned).

In the species *U. reniformis* and *U. nelumbifolia* no traps with short antennae are known at all, and the antennae always go beyond the stalk of the bladder (Fig. 2). It is also the same case with their F1 hybrids created by reciprocal cross-breeding (Fig. 3).

Conclusion

The soil traps of the hybrids created by the artificial cross-breeding of *U. nelumbifolia* and *U. reniformis* do not resemble the soil traps of the relative *U. cornigera* at all. There is no predisposition towards short antennae either in the hybrids or in the parental species. This implies that this

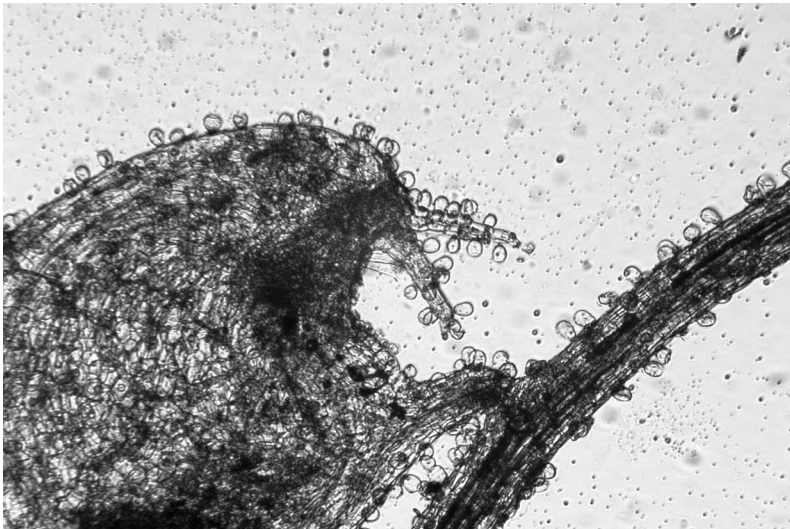


Figure 1: Very short antennae on the soil vesicle of *Utricularia cornigera*.

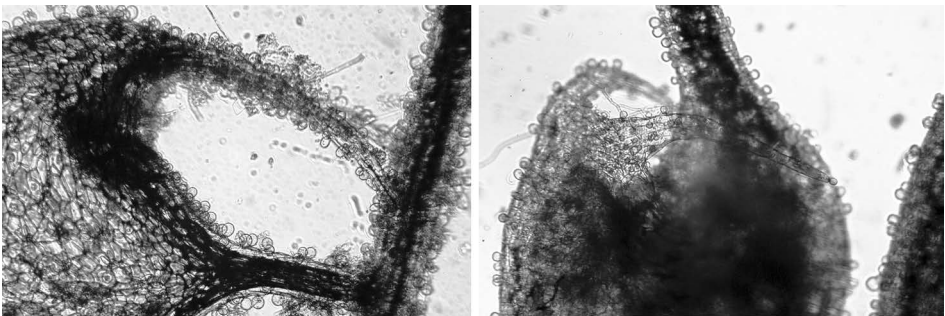


Figure 2: Very long antennae on the bladder of *Utricularia nelumbifolia* (left); and a soil vesicle of *Utricularia reniformis*, where the antennae extend to the stem (right).

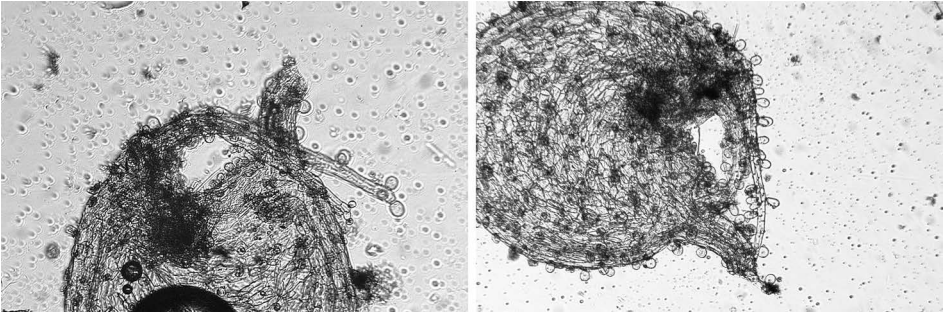


Figure 3: Very long antennae on the soil vesicle of *Utricularia nelumbifolia* ♀ × *U. reniformis* (left); and very long antennae on the soil vesicle of *Utricularia reniformis* ♀ × *U. nelumbifolia* (right).

characteristic feature present in the species *U. cornigera* has apparently developed by evolution. It is not possible for the difference between the hybrids and *U. cornigera* to have been caused by environmental effects because all the plants had identical conditions. The above investigation again refutes the hypothesis of a possible hybrid origin of *U. cornigera*, which was a stimulus for creating the hybrids documented herein.

References

- Lloyd, F.E. 1942. *The Carnivorous Plants*. Reimpr. 1976, Dover Publications, Inc., New York.
- Studnička, M. 2009. Brazilian bladderwort *Utricularia reniformis* is a blend of two species. *Thaiszia, Košice* 19: 131-143.
- Studnička, M. 2011. Surprising phenomena in the life strategy of *Utricularia cornigera* in Brazil. *Thaiszia, Košice* 21: 37-43.
- Studnička, M. 2013. Brief information about the species status of *Utricularia cornigera* Studnička. *Carniv. Pl. Newsletter* 42: 15-18.
- Taylor P. 1989. The genus *Utricularia* – a taxonomic monograph. *Kew Bull. Additional Ser. XIV*, Royal Bot. Gardens, Kew.