Prey selection in three species of the carnivorous aquatic plant *Utricularia* (bladderwort)

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With 6 figures and 5 tables

Abstract: Carnivorous plants supplement normal photosynthetic nutrition with sit-and-wait predation, killing and ingesting prey. I investigated and compared the diets of three sympatric species of the aquatic plant *Utricularia* (bladderwort). All three species caught planktonic prey taxa in lower proportions than available, whereas they captured prey living on or among plants and in or on the sediment in proportion to availability. A planktonic lifestyle, therefore, reduced a prey’s risk of being captured by bladderworts. The diet of *U. minor* differed from that of *U. intermedia/stygia*, whereas the diet of *U. vulgaris* overlapped the other two species. Differences were explained by the relation between prey size and bladderwort trap size. *U. minor*, with small traps, caught mainly prey under 1 mm, *U. intermedia/stygia*, with mainly medium sized traps, caught mainly prey sized 1–4 mm and *U. vulgaris*, with equal proportions of both trap sizes, caught prey of both size classes. *U. vulgaris* also grew in deeper water than the other species. Thus, *U. minor* and *U. intermedia/stygia* both grew in shallow water, but captured different prey sizes, whereas *U. vulgaris*, that overlapped the other bladderworts in their diet, grew in deeper water than these.

Introduction

When foraging, a predator makes a number of decisions, e.g. when to forage, where to forage, what to prey on and how to handle captured prey (LIMA & DILL 1990). The order of these decisions is hierarchical, each decision reducing the number of alternatives available to the predator at the next lower level (JOHNSON 1980). Many true predators forage on a broad range of prey types (BEGON et al. 1990), not all of which are used proportionate to their availabil-