

Predation on *Rana* and *Bufo* tadpoles: predator species and tadpole size effects

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Prey species preference (tadpoles of *Rana temporaria* vs. *Bufo bufo*) and prey size preference was tested for a number of aquatic invertebrate and vertebrate predators. Predators were allowed to forage for three days in 80 l containers, each containing 10 *Rana* + 10 *Bufo* tadpoles at the start of the experiment. Predators were tested with larvae of different size classes, where sizes of *Rana* and *Bufo* were correlated within each treatment (i.e. small *Rana* with small *Bufo*; medium *Rana* with medium *Bufo*, etc.). The results were tested with one three-way ANCOVA, accounting simultaneously for predator, prey species and prey size. The predators differed significantly in the number of tadpoles captured ($p < 0.001$). There was no general trend for one prey species to be more vulnerable to predation ($p = 0.395$). However, predators differed significantly in preference (interaction PREDATOR \times PREY SPECIES; $p = 0.002$; Fig. 1). There was a strong negative correlation ($p < 0.001$) between tadpole size and predation risk (Fig. 2). The results suggest that crucian carp avoids larvae of *Bufo*, possibly due to toxic skin secretions, while other predators accept any of the species. Actually, some insect predators seemed to prefer *Bufo* tadpoles. This preference might be due to differences in encounter rate, since the activity level of the two species clearly differed.

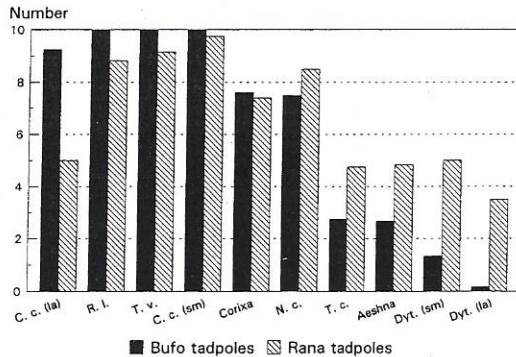


Fig. 1. Tadpoles surviving predation. Average of four or six tests, with ten tadpoles of each species. The predators used are (from the left): *Carassius carassius* (crucian carp, large size), *Ranatra linearis*, *Triturus vulgaris*, *Carassius carassius* (small size), *Corixa* sp., *Notonecta cinerea*, *Triturus cristatus*, *Aeshna* sp. (late instar nymph), *Dytiscus marginalis* (larvae, intermediate size), *Dytiscus marginalis* (larvae, large size).

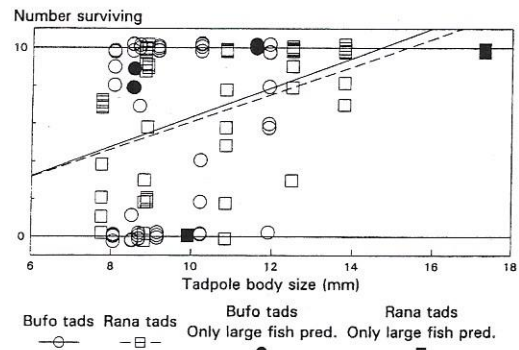


Fig. 2. Effect of tadpole size on predation survival. Ten tadpoles of each species per test. Note that large *Carassius* ate all *Rana* tadpoles if sufficiently small, while rejecting *Bufo* tadpoles of similar size.