RESEARCH ABSTRACT

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Study Title: Ecology of the tadpoles of the tailed frog (Ascaphus truei)

Key Words:	amphibian	aquatic	animal	vertebrate	tailed frog
tadpole	stream	algae	flow rates	microhabitat	
blowdown zone	archives				

Abstract: Data on the microhabitat parameters, especially pertaining to flow rate and substrate characteristics, of the stream-inhabiting tadpoles of the tailed frog (Ascaphus truei) were collected at two tributaries of Clearwater Creek at Mount St. Helens, Washington and at Parker Creek on Mary's Peak, Benton County, Oregon. This is the only tadpole in North America that is highly specialized for maintaining position and feeding from algae while attached to rocks via an enlarged oral disc with many rows of labial teeth. Positions of tadpoles in the streams were correlated with oral morphology and associated anatomy. Because of the length of the larval period of Ascaphus, there are usually 2 to 3 yearly cohorts in the streams at one time. We hypothesized that the interaction of the abilities of the tadpoles to adhere to rocky substrates and the size of the tadpole would result in microhabitat segregation. Whether small or large tadpoles occupied fast versus slow water would depend on the growth pattern of the tadpole (drag) versus the changes of the adhesive abilities with size.

Our data show that none of the parameters that were measured, including flow rate at the site of each tadpole, were significantly different between size classes. We concluded that the growth pattern of the body (which is probably isometric based on analyses of tadpoles of other shapes) and of the oral disc are such that tadpoles of all sizes can occupy any usable microhabitat. This commonly includes moving onto usually vertical, wet surfaces out of water at night.

The manuscript that resulted from this study included comparisons of tadpoles of Ascaphus and Heleophryne purcelli, a morphologically and ecologically similar tadpole from South Africa. Based on differences between selected oral and abdominal musculature and video tapes of the two species moving via their enlarged oral discs, we concluded that the two tadpoles feed in different fashions even though their gross morphology is similar.

Type of Measurement(s):
- stream slope
- stream flow
- flow at exact site of tadpole
- attached algae at exact site of tadpole

Frequency of Measurement(s): 2 nights, 7-8 June 1989 at Mount St. Helens.

Data Storage: Data are stored in IBM Lotus 1-2-3 files.

Long-term plans, Data available for collaborative efforts: No long-term research at Mount St. Helens is expected at present. The study site at St. Helens was chosen because previous research showed Ascaphus tadpoles common. All data are available through R. Altig.