

Culturing cave mollusks in the laboratory: strategies and troubleshooting

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Abstract

Objective obstacles such as high water levels that prevent access to caves at certain times of the year or the need to use complex tools and skills such as cave diving make biological research in caves extremely complex and occasionally dangerous. Moreover, to study physiological and behavioral adaptations of cave animals, they must be kept under controlled laboratory conditions. For this reason, we have established an animal facility in our laboratory. The available literature on invertebrate setup, operation, and care was sparse and unsuitable for the species we were studying. Fortunately, many cave biologists provided us with advice and support during the initial phase. Here we present our experiences to provide some guidelines for other researchers undertaking similar efforts. Among other animal groups, we are culturing several morphotypes of the cave snail *Physella* sp. and two cave and one surface species pair of bivalves: *Congeria* spp. and *Dreissena polymorpha*. We discuss good and bad practices in mollusk care - housing, water treatment, different types of food, and small aquarium design. Special attention is given to problems we have encountered with our colonies and changes we have made to address these problems, both successful and unsuccessful. We also address the general protocols required for keeping multiple species in a single facility, including procedures for decontamination of equipment and tools, and quarantine.

Keywords

Dreissenids, cave bivalve, Physidae, stygobiotic snails, invertebrate laboratory colonies, experimental animals, animal care

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