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DIMOCK, RONALD V., JR.,[1] NANCY A. MACLAURIN,[1] and MALCOLM F. VIDRINE.[2] Wake Forest University[1] and Louisiana State University at Eunice[2]--Genetic data for symbiotic water mites support original species descriptions and not a host-induced morphology hypothesis.

The water mite genus Unionicola contains over 200 species, the majority of which occur as symbionts of freshwater unionid mussels. Species descriptions in this taxon traditionally have been based on often subtle morphological criteria. While such designations may suggest taxonomic splitting based on seemingly minor morphological evidence, the morphology has for the most part been viewed in a broader context including the pattern of host associations of the species, as well as what few data may exist on the ecology or behavior of the respective mite. The subgenus Unionicolides is especially species-rich, with many highly host-specific species. Recently, Unionicola poundsi from the mussel Villosa villosa and U. lasallei from Uniomerus declivis have been challenged as constituting single-species morphs. Anatomical dissimilarity between these nominal species is claimed to derive from association with a particular mussel host. To test this host-induced morphology hypothesis, we used cellulose acetate electrophoresis to examine 5 enzyme loci with a minimum of 20 adult female mites of U. poundsi and U. lasallei from northern Florida, together with the con-subgener U. hoesii from Lampsilis hydiana from two locales in Louisiana. The results revealed fixed allelic differences among all three species for the enzymes PGI, PGM, 6PGDH and MPI. All three species shared one allele for the enzyme APK. It is concluded that the three species are valid biological species whose morphology cannot be ascribed to some inductive influence of a host mussel during some unknown stage in the mite's life cycle.

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POLHILL, JAMES B., V AND RONALD V. DIMOCK, JR. Wake Forest University--Effects of temperature and oxygen tension on the heart rate of juvenile and adult *Utterbackia imbecillis*.

The limited evidence available proposes that juvenile freshwater mussels are especially sensitive to changes in the environment. The physiological responses of juvenile and adult mussels were compared by monitoring heart rate during experimental manipulation of temperature and Po_2. Animals were acclimated to 15 and 25°C for one week prior to experiments that exposed mussels to an ascending series of temperatures (10, 15, 20, 25, and 30°C). The effects of oxygen tension on the heart rate of animals was assessed by subjecting mussels to a descending series of oxygen tensions (100, 75, 50, 25, 5, and 0% air saturation). Results indicate the heart rate of both juvenile and adult mussels to be a function of environmental temperature. Acclimation had no effect on the response of adult mussels. However, juveniles show inverse acclimation, with cold acclimated animals having lower heart rates at all exposure temperatures. During manipulation of Po_2 adults maintained a constant heart rate until a significant increase in heart rate was observed at 25% air saturation which suggests oxyregulation by adult mussels. This increase in heart rate was followed by a significant decrease at 5 and 0% air saturation. When exposed to a descending series of oxygen tensions juveniles maintained their heart rates until presented with Po_2's of 5 and 0% air saturation. The response of juvenile mussels to acclimation and their inability to oxyregulate suggest juveniles do not utilize the same physiological mechanisms that adults employ to contend with changes in the environment.

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WRIGHT, ANDREW H. AND RONALD V. DIMOCK, JR. Wake Forest University--Particle selectivity of in vitro and in vivo transformed juvenile Utterbackia imbecillis.

The mechanisms of feeding by juvenile freshwater mussels are almost completely unknown. In vitro culturing techniques have promoted the experimental study of juveniles less than 1 month old. However, questions remain about whether these in vitro transformed juveniles are as competent as juveniles that have metamorphosed during their normal parasitism on fish (i.e., in vivo transformed). This study compared aspects of the morphology and feeding biology of 1 week old juvenile Utterbackia imbecillis obtained by both in vitro and in vivo techniques. Juveniles were presented with 2 and 10 µm polystyrene beads in procedures that would test whether (1) they are deposit or filter feeders, (2) they exhibit a preference for either size class of particles, and (3) beads 'flavored' with algal exudates are selected differentially. Gill morphology was examined using SEM. The SEM data indicate that the gills of juveniles are not well suited to particle filtration. Although the capture of particles was highly variable, the results of the bead ingestion trials indicate that in vivo juveniles are deposit feeding, but are unable to select particles according to their size. The separation of feeding modes was inconclusive for in vitro transformed mussels although they ingested more 2 than 10 µm beads. No juveniles preferentially ingested algal-flavored beads. It is hypothesized that 1 week old U. imbecillis live in a 3 dimensional space composed of a silt/ interstitial water slurry that enters the mantle cavity whenever the valves gape. Particles which then impinge on the palp are ingested. Thus, juvenile freshwater mussels do not possess an elaborate particle capture system, but simply deposit feed on the surrounding silt slurry.