

PYRAMIDELLID SYSTEMATICS

Robert Robertson
Academy of Natural Sciences of Philadelphia,
Philadelphia, Pennsylvania

Abstract

The supraspecific classification of pyramidellids is based wholly on subjective estimates of overall shell similarities. This assumes that there have been no evolutionary convergences and divergences in shell

characters. These are shown to exist among five of the east North American "*Odostomia*" species. A hypothesis to explain the results is given.

TOWARD A DEFINITIVE HIGHER CLASSIFICATION
OF NORTH AMERICAN UNIONACEA

George M. Davis, Samuel L.H. Fuller, and Caryl Hesterman
Academy of Natural Sciences
Philadelphia, Pennsylvania

Abstract

Multivariate analysis of the genetic relationships among 52 species of North American Unionacea has been completed. The data matrix involved 52 species x 21 sets of antisera, where the data elements were the percentage difference among taxa involving 10 to 12 proteins (antigens). Results of ordination, coupled with an assessment of morphological data, support the following classification: Family

Unionidae; subfamilies Margaritiferinae, Anodontinae, Lampsilinae; tribes of the Lampsilinae are the Gonideini, Elliptionini, Amblemini, and Lampsilini. There is an assumption that *Unio* of Europe is divergent from North American Unionacea. It is clear that the tetragenous condition, as well as the length of breeding season, has undergone parallel evolution.

SOME CONSIDERATIONS AND IMPLICATIONS OF HOST-SPECIFICITY STUDIES
OF UNIONICOLID MITE PARASITES ON THE SYSTEMATICS OF SOME GROUPS
OF NORTH AMERICAN UNIONACEAN FRESH-WATER MUSSELS

Malcolm F. Vidrine and Daniel J. Bereza
Department of Biology, University of Southwestern Louisiana, Lafayette, Louisiana;
Malacology, Academy of Natural Sciences of Philadelphia, Philadelphia, Pennsylvania

Abstract

Eastern North American (east of the Pacific drainage) anodontine mussels (Bivalvia: Unionacea: Unionidae: Anodontinae) are parasitized by a unique mite fauna (Acarina: Unionicolidae) consisting of 4 species of anodontine-specific mites: *Unionicola formosa* (Dana and Whelpley) (in 15 species of 7 genera of mussels), *U. arcuata* (Wolcott) (in 9 species of 6 genera), *U. tumida* (Wolcott) (in 7 species or 4 genera), and *U. wolcottii* (Piersig) a mite infesting the mantle and the foot in 12 species of 7 genera). The first three nominal species are exobranchial (infesting the outer surfaces of all demibranchs) mites of the nominal subgenus *Parasitatax* (Viets, 1949), where exobranchial lampsiline-specific

mites are of the nominal subgenus *Pentatax* (Thor, 1922). The anodontine-specificity and the homogenous subgeneric position of these mites as well as the marked similarities of *U. formosa* and *U. wolcottii* to those respective Palearctic anodontine-specific mites [*U. ypsilophora* (Bonz) and *U. intermedia* (Koenike)] support the recent biochemical evidence that the anodontines are a genetically discrete and ancient clade. Nine nominal general of eastern North American anodontines have been found parasitized by one or more species of these mites: *Anodonta*, *Anodontoides*, *Arcidens*, *Arkansia*, *Alasmidonta*, *Prolasmidonta*, *Strophitus*, and *Lasmigona*. The monotypic genus *Simpsoniconcha* has not been examined. Three

other nominal mite species have been reported from other specific locations inside anodontines: *U. aculeata* (Koenike) in the siphonal mantle, *U. serrata* (Wolcott) between the labial palps, and *Najadicola ingens* (Koenike) inside the water tubules of the gills. These three nominal species of mites, infesting a broader genetic spectrum of mussel hosts (both anodontines and lampsilines), may represent a more loosely coevolved unionicolid group toward the unionaceans than the exobranchial anodontine-specific mite taxa noted above; these data may also imply that the selective forces exerted by the microhabitats at the sites of infestation are not unique to any presently recognized suprageneric group of unionaceans infested by these mites. No unionicolids were found in any of the four presently recognized species of margaritiferines in North America; no unionicolids have been reported from the Palearctic margaritiferines. Although all margaritiferines in question are

generally restricted to very unique habitats, at present, insufficient data do not permit a generalization to be made regarding the absence of unionicolid parasitism in margaritiferines. A conjecture may be made that when an ancient unionicolid assemblage had begun to coevolve with an ancestral unionacean genetic stock, the margaritiferine clade may already have been genetically discrete enough to have been unamenable to a coevolution with the ancestral unionicolids. All suprageneric unionacean taxa noted above are *sensu* Davis and Fuller, AMU Bulletin for 1977.

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REPRODUCTION OF UNIONIDAE:
ELLIPTIO IN NORTHERN FLORIDA

William H. Heard

Department of Biological Science, Florida State University,
Tallahassee, Florida

Abstract

Northern *Elliptio complanata* and *E. dilatata* brood larvae during 2-3 months, whereas Floridian *E. arcata*, *E. complanata*, and *E. icterina* contain gravid animals for 6-8 months a year. In the latter,

sex ratios can be biased by general size dimorphism between males and females; rare male-hermaphrodites are also present.

THE BIOCHEMISTRY OF HATCHING IN *BUSYCON*

M.G. Harasewych

College of Marine Studies, University of Delaware
Newark, Delaware

Abstract

Of the three molluscan hatching mechanisms—mechanical, osmotic, and enzymatic—neogastropods are limited to enzymatic because of the nature of their egg cases. In *Busycon*, the species-specific

enzyme exhibited proteolytic and chymotrypic activity. The plug (substrate for this enzyme) differed in amino-acide composition from the rest of the capsule.