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IDENTIFYING FRESHWATER MUSSELS (UNIONIDAE) IN FLORIDA

The freshwater mussel fauna of Florida is very poorly known. To complicate matters, the taxonomy of this group is chaotic. Species descriptions, mostly dating prior to 1900, were based solely on shell characters - literally a non-living secretion of the animal within. Shell varieties, which may oftentimes be attributed to ecophenotypic variation, led to the description of hundreds of species. Isaac Lea of Philadelphia personally described several hundred North American species in the mid 1800's (one species, Elliptio complanata (Lightfoot, 1786), has about 100 synonyms, 77 described by Lea). Due to the tremendous inherent variation in shell morphology, workable keys based on shell characters are all but impossible to assemble. With these thoughts in mind, it is small wonder that mussels as a group lend themselves poorly to inventory checklists.

Students of mussels must rely on a variety of aids in an attempt to learn species identification. An extensive literature collection is imperative (see selected bibliography). Most helpful are those studies with detailed illustrations or, better yet, photographs displaying both internal and external shell features. Details of the umbonal (or beak) sculpturing are very useful in differentiating genera. Most recent species descriptions, monographs, surveys and zoogeographic papers include photographs. Information on species distribution is also important in attempting to determine Florida mussel ranges. Several easily confused species have allopatric distributions, thus facilitating identification.

The Department of Malacology at the Florida Museum of Natural History in Gainesville has an extensive collection of unionids with which to compare unidentified material. The Museum is an excellent depository for well curated material as well. Many investigators find it useful to maintain a voucher collection. Considering the complexity of morphotypes commonly found in Florida waters, it is wise to include fairly large series from different drainages in a voucher collection. Retaining voucher material is extremely important, particularly when specimens are live-collected. Make an attempt to secure specimens of varying sizes, morphotypes and sexes. For ease in processing, the mussels can be forced open, pegged and dropped in 10% buffered formalin. A better but more time consuming method of processing live material is to relax the animals in a chemical solution. Relaxing allows for the preservation of mussels with their soft mantle margins and apertures expanded. Soft anatomy is critical in the identification of numerous genera and, with future studies, may yield characters to differentiate between species in certain genera (e.g., Villosa and Lampsilis). Miller and Nelson (1983) offers information on relaxants, preservation, collecting techniques and a great deal of other useful material for the study of mussels.

There is no substitute for getting out in the field and collecting mussels first hand. Exposure to populations throughout the state will quickly give one a better feel for geographic variation thus facilitating species identification. With more thorough collections, detailed soft anatomy studies, and identification tools (such as electrophoresis and mitochondrial DNA studies) the state of mussel identification will improve immensely in the future.

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Division of Fisheries, FGFWFC
207 West Carroll Street
Kissimmee FL 32741

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