

ABSTRACT

The distribution, reproductive and larval biology, general anatomy and biotic relationships of Brachidontes modiolus in Barbados were studied, and a note made on the systematics of this species. In addition, the population structure, morphometrics and selected life history traits of mussels from three sites were investigated.

The specific name B. modiolus Linne 1767, is used in this thesis.

B. modiolus occurs mainly along the south coast of the island, with isolated populations in the north and east. The distribution of the mussel appears to be related to the presence of suitable substrates for settlement and growth of the larvae.

An extended breeding season (May - December), with synchronous spawning occurring more than once during the period August - December, is characteristic of B. modiolus. Fertilization is external, and the larvae remain planktonic for 11 days, settling at lengths of 180 - 221 μ . The larvae are capable of delaying metamorphosis. Recruitment is continuous throughout the year, with maxima occurring after synchronous spawning in the adults.

The population structure is similar at the three sites, with a major component comprising several year classes, and a minor element representing juvenile recruitment. The latter appear to merge into the adult population within one year. Densities of the mussel are low at Bath and Brighton (5.49 & 3.43 dm^{-2}) when compared to Pistins Bay (25.1 dm^{-2}).

B. mediolus is the dominant member of the macro-fauna in the areas studied. Its enemies include the parasite Pinnotheres sp., crabs, and at one site, a gastropod drill.

The shape of the shell, and of certain life history traits are related to life habit differences, with the shells of epifaunal mussels (from Bath and Oistins) being wider and higher than those of their infaunal conspecifics at Brighton.

Potential areas of future research are suggested.