

Staging of the channeled whelk (*Busycotypus canaliculatus*) female gonads using gross and histological evaluations

Hannah T. Cameron¹, Abigail K. Scro¹, Thomas E. Angell² & Roxanna Smolowitz¹

¹Roger Williams University

²RI Department of Environmental Management

Busycotypus canalilatus are the largest marine gastropods, accounting for 98% of the annual whelk landings. The economic worth of channeled whelk has increased due to redirection of lobster fishermen to the whelk fishery. As a result, whelk populations have markedly decreased. The RI department of Environmental Management needs reproductive data in order to develop fishing regulations. Consistent estimates for age, growth, and reproductive capacity are critical for accurate characterization of population age, structure, for comparing current and future stock assessments and for development of appropriate fishing regulations.

The objectives of this research were to correlate histological gonad examination to the macroscopic appearance of the gonad in order to determine a more accurate macroscopic estimation of gonadal maturity. Olympus cellSens Standard 2 software and Olympus BX52[®] microscope were used to determine a quantitative measurement (area) of follicle development. Ten follicles per animal, were measured using arbitrary line and rotated ellipse tools (μm^2) on each egg. Results identified the ellipse tool was the best method for follicle measurements. The area calculated by the ellipse function was significantly smaller and more accurate than the area calculated by the rectangle function. Using this data, macroscopic staging was compared to microscopic analysis and w assessed for concordance. There was excellent correlation between macroscopic and microscopic determination of gonadal development. Next steps will examine the potential microscopic data as an approximation of the sex-distribution by size of the whelks present in the population in Rhode Island state waters.