$P < 0.05$), and more septa and filaments ($P < 0.01$) ... Sexual dimorphism was fully developed by the ... of growth. Both anal and branchial papillae in... numbers with age ($P < 0.001$) but were not signi... correlated with sex.

... research was supported in part by a grant from ... Coastal Carolina College Faculty Development ... by the Horry County Higher Education Commis-

...MPARISONS OF MORPHOMETRIC AND SOFT ANAT-... CHARACTERS BETWEEN TOPOTYPIC POPULA-...NS OF *ELLIPTIO LANCEOLATA* (LEA, 1828) AND *E. ...GUSTATA* (LEA, 1831). Richard H. Moore, C. Cliff ...ney, and **Michael R. Creitz**, University of South Carolina, ... Carolina College, Conway.

...ollections of 209 topotypic *Elliptio lanceolata* (Lea, ... from the Tar River, North Carolina, and 80 topotypic *E. ...ata* (Lea, 1831) from the Congaree River drainage, ... Carolina, were subjected to a multivariate analysis of ...morphometrics. Nine three-year-old females of each ... all eight three-year-old male *E. lanceolata,* and all ... three-year-old male *E. angustata* were used in an ...s of soft anatomical characters.

Fourteen measurements were made on each pair of ... Linear measurements were logarithmically trans... and principal components extracted from the correla... matrix. The two species separated almost completely in ...variate space defined by the first two principal com...ents. Examination of loading coefficients showed the two ...ies differed in the angle between the left pseudocardinal ... the angle between the right pseudocardinal teeth, the ... interdentum angle, and the anterior development paral... the hinge line. A multiple discriminant analysis of these ... assigned all but one *E. lanceolata* and all *E. angustata* ... correct taxon.

A number of obvious distinctions were noted in the soft ...omy. The mantle of *E. lanceolata* was plain and almost ...parent, while that of *E. angustata* was orange and darkly ...ed. The posterior gill ligament was short, thick, and ...us in *E. lanceolata,* but long, thin, and straight in *E. ...ustata*. Anal papillae were longer and spaced further ... in *E. angustata*. Branchial papillae in *E. lanceolata* were ... and almost pyramidal in shape, while in *E. angustata* ... were thin, and finger-like. *E. angustata* males typically ...ssessed dark pigmented areas at the bases and between ... branchial papillae. *E. lanceolata* possessed broad ...branchs, while *E. angustata* had narrower, elongated, ...ering demibranchs.

The species differed significantly in the number of ...anchial papillae, total gill filaments, and in the numbers of ...ccortive tissues in the gill. Total anal papillae and numbers ... septa did not differ.

In conclusion, *E. angustata* (Lea, 1831) should be re...rrected as distinct from *E. lanceolata*. Their forms are ...parable in their shell morphometrics; however, soft ana...my characters are more easily observed and quantified.

ECOLOGICAL RELATIONSHIPS OF SYMPATRIC SPECIES OF LAMPSILINAE (BIVALVIA: UNIONIDAE) IN THE WACCAMAW DRAINAGE OF EASTERN NORTH AND SOUTH CAROLINA. Hugh J. Porter University of North Carolina, Morehead City and **Karen J. Horn,** Marshall University, Huntington, West Virginia.

Paper on pages 61–66.

ALLOMETRIC GROWTH AND SEXUAL DIMORPHISM OF *VILLOSA VILLOSA* AND *ELLIPTIO ICTERINA* (PELECYPODA: UNIONIDAE) FROM LAKE TALQUIN, LEON CO., FLORIDA. M. Bowie Kotrla and **Frances C. James,** Department of Biological Science, Florida State University, Tallahassee.

The objectives of the study were 1) to find shape variables by which functional sex may be deduced from shell characters, and 2) to describe allometric growth. *Villosa villosa* (Wright, 1898) and *Elliptio icterina* (Conrad, 1834) were selected as examples of species having shells with obvious and cryptic sexual dimorphism, respectively. Measurements of the length, width, and distance from umbo to perimeter at various angles from the hinge line were taken. Maximum distance from umbo to perimeter, and angle at which it occurs were also measured.

Under the lognormal assumption, differences among shape variables, such as log x–log y, can be tested with parametric statistical tests. Of 13 shape variables, seven were found to be significantly different between males and females of *V. villosa* by T-tests, and 100% of these individuals were correctly classed as to sex by discriminant analysis. Linear regressions of shape on size reveal a trend from an ovate to an elliptical shape as size increases in *V. villosa*. The rate at which this occurs in the posterior region of the shell is greater in females than in males. The shape change in *E. icterina* during growth is more complex than that of *V. villosa*. Rate of change is greater in males than in females as measured by eight of 13 variables.

HISTOLOGY OF THE TESTIS OF *TAREBIA GRANIFERA* (LAMARCK). Harold D. Murray, Trinity University, San Antonio, Texas.

Males were unknown in North American *Tarebia granifera* until 1977 when spermatogenesis was observed in electron micrographs in association with the digestive gland. Later studies revealed motile eupyrene and oligopyrene sperm in 4.7% of the population. The histology of *T. granifera* testis is unreported.

Testis and associated digestive gland were fixed in Bouin's solution, dehydrated in a graded alcohol series, and paraffin embedded. Sections were cut at 7 μm and stained with Delafield's hematoxylin and eosin.

The testis lies on top of the digestive gland from which it is separated and is composed of numerous V-shaped folds with their apices facing the digestive gland. In females, the tubular, branched ovary is embedded in the digestive gland and typically follows the columellar aspect of the animal.

The testis grows from the first whorl of the animal