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corn Islands, the small round race is indicated, but not until Townsville, Queensland is reached does the race become separable enough to warrant a subspecific name.

The writer wishes at this time to express his appreciation to the various private collectors, museums, and universities in Australia, Indonesia, Malaya, and the United States for furnishing material and field information pertaining to this study. Thanks are also given to Stanford University and to the California Academy of Sciences for the use of their research libraries. In case others may have pertinent data, my address is: Willow Creek, California.

ELLIPTIO COMPLANATUS ROANOKENSIS IN THE NEUSE RIVER

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In 1950 and 1951 the Neuse River Basin in North Carolina was studied to determine the mollusks present and their distribution (Walter, 1956). Among those collected were 32 shells of *Elliptio complanatus roanokensis* (Lea, 1836).

Empty shells of *E. complanatus roanokensis* were taken from six Neuse River stations, one in the Coastal Plain, five in the Fall Zone. Three of the latter group of stations yielded live specimens. Prior to their collection from the bedrock of the river bottom, they were seen lying on their sides in fast-flowing waters from two to five feet deep. At least 100 live specimens were readily available, but most were left, to conserve what appeared to be a locally distributed, small population. At one of the three stations supporting live *E. complanatus roanokensis*, about four feet of fast, turbid water prevented visual determination of their attitude before removal. However, the shells were acquired here by lightly scraping the even, firm bottom with a scraper net. Since almost nothing but shells was brought up, there can be little doubt that here, too, the big mussels were lying on their sides.

Athearn (1954) reports this form from packed sand and gravel in fairly rapid current, but says nothing of mussel position relative to substrate; since he describes the substrate as

packed, a partly buried position seems unlikely. If the usual position of *E. complanatus roanokensis* in the Neuse River is also characteristic of other drainages, then this naiad occupies a distinctive habitat. Other Neuse Basin species were found in the usually described position of freshwater mussels, i.e., partly embedded in the bottom with the posterior exposed.

The dorsal muscle scars of *E. complanatus roanokensis*, as noted by Simpson (1914), form a row extending backwards through the beak cavity from about the posterior edge of the pseudocardinal tooth, whereas the dorsal muscle scars of Neuse Basin *E. complanatus* occupy only a small depression.

In addition to the differing habitat and arrangement of the dorsal muscle scars, there is a commonometric difference, the

TABLE I

A SUMMARY OF SOME COMPONENTS USED IN THE MULTIPLE REGRESSION ANALYSES

Group	D (mm.)	L (mm.)	H (mm.)	Regression D.L b	D.L r	D.H b	D.H r	H.L b	H.L r
E. complanatus roanokensis				0.272	0.927	0.480	0.926	0.555	0.983
N: 32									
Mean	34.6	138.0	71.1						
Range	13–42	56–165	28–87						
E. complanatus				0.353	0.951	0.629	0.971	0.562	0.979
N: 117									
Mean	23.9	71.1	39.9						
Range	3–46	9–118	5–68						

reality of which was tested as follows. The greatest diameter, height and length of 117 *E. complanatus* and 32 *E. complanatus roanokensis* shells were measured to the nearest millimeter. Multiple regression analyses of these data gave an objective comparison of the two groups. Excellent simple correlations (r) exist among the various dimensions, and there is good agreement between the estimated slopes (b) of the bivariate regressions (Table I) and the ratios (D/H, D/L, H/L) of the appropriate mean values.

Diameter was chosen arbitrarily as the dependent variable. Since some error was inevitable in measuring height and length, the analytical method used here is inexact; however, the reliability of the results obtained seems sufficient to validate the con-

clusion reached. The equations arrived at for *E. complanatus* (1) and *E. complanatus roanokensis* (2) are:

$$(1)\ \hat{D} = -1.3 + 0.005L + 0.621H$$
$$(2)\ \hat{D} = -1.3 + 0.147L + 0.219H$$

An analysis of the errors of estimate from a common regression plane and from the two individual regression planes shows there is a highly significant difference between the two shell forms (Table II), thus substantiating the previously noted differences.

The data so far presented appear adequate to permit restoration of the specific rank given the form *roanokensis* by Isaac Lea.

TABLE II

ANALYSIS OF THE ERRORS OF ESTIMATE FROM A COMMON REGRESSION AND INDIVIDUAL SUBSPECIES REGRESSIONS

Source of Variation	d.f.	Sum of Squares	Mean Square
Deviations from a common regression (0.1027) (12221)	146	1255	
Deviations from individual subspecies regressions (0.1450) (2010) + (0.0728) (7325)	143	824	5.76
Difference between a common regression and subspecies regressions	3	431	143.7

$$F = \frac{143.7}{5.76} = 24.9$$

$$F_{3,\ 143\ (.99)} = 3.9$$

However, such a move would be of dubious validity, if for no other reason than the small number of *E. complanatus roanokensis* shells studied. A second reason for feeling so is that six intergrades had the shell shape and proportions of *E. complanatus*, but had the dorsal muscle scars of *E. complanatus roanokensis*. Finally, seven dead shells were taken from a pile of dried mud on the base of a midstream bridge support in the lower Neuse, four of which were *E. complanatus*, three, *E. complanatus roanokensis*.

The latter three specimens were noteworthy in two ways. First, they were among the smallest encountered, the range of diameter being 13–21 mm., of height, 28–46 mm., and of length, 56–93 mm. Second, these were the only *E. complanatus roanokensis* shells seen, alive or dead, partly buried in such a way as to make it appear they might have been living there before exposure and killing by drouth. Also possibly, of course, the entire situation at the bridge was an artifact of flood, of animals, or other agency. The existence of these three and of two others less than 100 mm. long argues against the possibility that the large ones, of which most were 145–155 mm. long, are a gerontic variant of *E. complanatus*.

A question raised by the "bridge shells" is that of the habitat occupied by the smaller, younger ones. Where do they occur? The question is implicit in the fact that the only living specimens found reclining in strong currents were large adults, although two empty shells less than 100 mm. long were found in such a place.

As Ortmann (1919) and Athearn (1954) have concluded, *E. complanatus roanokensis* may prove to be but a variety of *E. complanatus* when critically studied over its whole range. But, the population in the Neuse River, as presently known, is of subspecific rank.

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CATALOGUE OF THE LAND MOLLUSCA OF ARGENTINA

BY J. J. PARODIZ

(Concluded from July number)

Streptaxidae

Streptaxis regius Lobbecke, 1881, p. 49. Type loc.: "Brazil." Distr.: S. Brazil; Misiones, (probably N. Corrientes).