

# CONTRIBUTED PAPERS PRESENTED AT THE 1978 MEETING

## FRESHWATER MUSSELS OF LAKE CORPUS CHRISTI, TEXAS

Harold D. Murray  
Dept. of Biology, Trinity University  
San Antonio, Texas

Lake Corpus Christi is located approximately 48 km from Corpus Christi, Texas on the lower portion of the Nueces River which is about 491 km in length. At normal level the lake is 28.7 m above sea level and has a surface area of 9.6 ha. The lake occupies portions of Jim Wells, Live Oak, and San Patricio counties and is the freshwater supply for Alice and Corpus Christi, Texas. A recent drought lowered the lake to 25 m above sea level and exposed large areas of the lake bed which were extensively collected at four sites on October 22, 1977. Location of collection sites are given as distance from the dam-site I, 3.2 km; site II, 7.2 km; site III, 11.3 km; site IV, 23.3 km. Habitats varied from the steep banks with hard substrate at site I near the dam to gently sloping lake bed of soft mud at site IV. All species were collected alive.

The most recent and complete study of naiads of Texas was by Strecker (1931) who listed nine species and subspecies for the Nueces River; however, none of his records includes the counties in which the lake occurs. The following list is the first published record of bivalves of the lower portion of the Nueces River.

*Anodonta grandis* forma *stewartiana* Lea, 1834. Specimens occurred at all collecting sites but were abundant in the upper portions of the lake.

*Anodonta grandis* forma *stewartiana* Lea, 1834. Valentine and Stansbery (1971) placed *stewartiana* as a form of *A. grandis*. This may be correct, but I observed no integrades of the form *grandis* with the form *stewartiana* in this lake. Murray (1972) reported the same situation in Lake LBJ, Texas and indicated that the presence of these two forms in the same localities of a lake with no integrades required further consideration of this taxonomic relationship. Both forms *grandis* and *stewartiana* are common in Lake Corpus Christi.

*Anodonta imbecilis* Say, 1829. *A. imbecilis* was common at sites I and IV and rare at sites II and III.

*Cyrtocentrus tampicoensis* (Lea, 1838). This is *Lampsilis tampicoensis* Lea as listed by Strecker (1931). In Texas, this species is highly variable in

shell size, color of nacre, and color of periostracum. The deep purple nacre of specimens from Lake Corpus Christi resembles specimens from Lake LBJ, Texas, but Lake Corpus Christi specimens have a light to dark brown periostracum unlike specimens from Lake LBJ which are black (Murray, 1972). This species was abundant at all sites except III where it was rare.

*Lampsilis anodontoides* (Lea, 1834). This species was rare at site III, common at sites I and II, and abundant at site IV.

*Lampsilis hydiana* (Lea, 1838). This species is judged as rare in Lake Corpus Christi as only one live animal and one valve were collected in the soft mud of site III.

*Quadrula aurea* (Lea, 1859). The author is unsure of this identification based on the one live specimen obtained. In general, it conforms to the descriptions by Strecker (1931) and Simpson (1914). Two specimens were obtained from the soft mud of site III.

*Quadrula quadrula* (Rafinesque, 1820). As was the case with this species from Lake LBJ (Murray, 1972), all *Q. quadrula* from Lake Corpus Christi are highly pustulose on the umbo and over the lateral, anterior, and posterior surfaces of the shells. Pustule formation ceases as the shell length reaches about 55mm, and as it continues to grow, the shell more closely resembles this species from the Mississippi drainage. *Q. quadrula* was common at all sites except III.

*Toxolasma* (= *Carunculina*) *parva* (Barnes, 1823). Numerous specimens measuring up to 55mm shell length occurred at all collecting sites except III. This population of large specimens having highly inflated umbos is probably what Strecker (1931) referred to as *C.p. mearnsi* (Simpson, 1900) which he recorded for south and west Texas.

*Corbicula manilensis* (Philippi, 1841). The first specimens of *C. manilensis* from Lake Corpus Christi (Lake Mathis) were obtained in August,

1969 (Murray, 1971). *C. manilensis* was rare in 1969 but occurred at all sites of this study. The presence of large members of living *C. manilensis* in the shallow water of site III where only 12 living unionids were obtained in association with hundreds of dead unionids suggests that *C. manilensis* is displacing the native unionids of the site.

At present, Lake Corpus Christi has nine species of the family Unionidae and one species of the family Corbiculidae. Surprisingly, there are no representatives of the genus *Amblema* in the lake. *Amblema* is a genus common to lakes and rivers in central and south Texas and was recorded in the Nueces River by Strecker (1931). Absence of *Amblema* from the lake is not due to the absence of host fish. Both the white crappie, *Pomoxis annularis*, and the black crappie, *P. nigromaculatus*, occur in the lake and both are recorded as hosts for *Amblema* glochidia (Baker, 1928). No explanations for the absence of *Amblema* is here offered. The other species record-

ed by Strecker (1931) in the Nueces River but absent from this study was *Ligumia subrostrata* (Say).

Baker, F.C. 1928. Fresh water Mollusca of Wisconsin, Pt. II, Pelecypoda. Wisconsin Geol. and Nat. Hist. Survey, Bull. 70, 495 pp., 26 pls., 96 figs.

Murray, Harold D. 1971. New records for *Corbicula manilensis* (Philippi) in Texas. Nautilus. 85(1):35-36.

— . 1972. Fresh water mussels of Lake LBJ, Texas. Bull. Amer. Malacol. Union. 36-37.

Simpson, C.T. 1914. A descriptive catalogue of the naiades, or pearly fresh-water mussels. Detroit, 1540 pp.

Strecker, J.K. 1931. The distribution of naiades or pearly fresh water mussels of Texas. Baylor Univ. Mus. Spec. Bull. 2:1-71.

Valentine, Barry D. and David Stansbery. 1971. An introduction to the naiads of Lake Texoma region, Oklahoma, with notes on the Red River fauna (Mollusca: Unionidae). Sterkiana 42:1-40.

## LARVAL GROWTH IN FINGERNAIL AND PILL CLAMS (BIVALVIA: SPHAERIIDAE)

G.L. Mackie

Department of Zoology, University of Guelph  
Guelph, Ontario, Canada N1G 2W1

### INTRODUCTION

The importance of sphaeriid clams as food items for many commercially and economically important species of fish and waterfowl and the use of some fingernail clams as test animals in toxicity bioassays has stimulated inquiries into the life histories of these ovoviviparous clams. However, in spite of the large amount of literature on various life history aspects of Sphaeriidae (see Heard, 1977 for a review of these life history studies), only a few examine development of larval stages and none examine larval growth dynamics.

The present study determines the growth of larvae in relation to that of parents in species of *Sphaerium* and *Musculium* that have several ontogenetic larval stages and in species of *Pisidium* that have only one ontogenetic larval stage in any one parent. The study also examines seasonal variations in the sizes of broods in different stages of development.

### MATERIALS AND METHODS

Five, locally abundant species were examined: *Sphaerium fabale* from the Eramosa River; *Musculi-*

*um lacustre* from a permanent pond on Waterloo Avenue in Guelph, Ontario, and from a permanent pond in Kortright Waterfowl Reserve near Guelph; *Musculium securis* from a temporary pond on Clair Road south of Guelph; *Pisidium casertanum* from a temporary roadside pond on Wellington Road 32, and a temporary pool off Hanlon Creek near Guelph; *Pisidium variabile* from a permanent pond in the Kortright Waterfowl Reserve. Data obtained for *M. securis* in Carp Pond, Greely Pond, Britannia Bay, and Lac Bourgeois (see Mackie, Qadri and Clarke 1976a, 1976b for life history aspects and descriptions of these habitats) were also used in this study.

Life history collections were made at least twice a month in the summer and once a month in the winter using a sieve with 0.32 mm openings. Usually 30-100 clams were collected and isolated into vials, to retain any extra-marsupial larvae that may have been aborted in transit to the laboratory, and preserved in 70% ethanol.

After measuring shell length of adults on a Wild Stereomicroscope equipped with an ocular vernier scale, each adult was dissected and the fetal larvae,