THE DIURNAL REPRODUCTIVE CYCLE OF \textit{EVADNE TERGESTINA} CLAUS (CLADOCERA, PODONIDAE) IN CHESAPEAKE BAY, U.S.A. 1)

BY

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INTRODUCTION

\textit{Evadne tergestina} Claus, a marine cladoceran, is a widespread and seasonally abundant zooplankter in the warmer neritic waters of the world (Bosch & Taylor, 1968; Della Croce & Venugopal, 1972; Onbé, 1974). When abundant, it may be an important item in the diet of planktivorous fishes (Selvakumar, 1970).

In any study of the population structure of an organism, it is desirable to be able to count easily the number of young produced per female, to have an idea of the size at emergence or hatching, and to estimate the growth rates of individuals. The embryos of cladocerans are most readily seen and counted just before release from the brood pouch and the initial size of the organisms can be best determined just before or after emergence. Since emergence occurs only when the parent molts, knowledge of the time of molting would be desirable. Recent reports have placed this time between midnight and sunrise for Caspian Sea podonids (Mordukhai-Boltovskoi & Rivier, 1971) and for \textit{Evadne nordmanni} and \textit{Evadne tergestina} in the Inland Sea of Japan (Onbé, 1974).

Information on the biology of \textit{E. tergestina} is sparse. In common with other cladocerans, they alternate between parthenogenetic and sexual reproduction, the former method providing rapid population increases during favorable periods, the latter producing resting eggs which remain dormant until conditions are again favorable for hatching. Some details of reproductive processes have been reported by Jorgensen (1933), Cheng (1947), and Bainbridge (1958) for \textit{Evadne nordmanni} Lovén, by Mordukhai-Boltovskoi & Rivier (1971) for \textit{Evadne anonyx} G. O. Sars, and by Onbé (1974) for \textit{Evadne nordmanni} and \textit{Evadne tergestina}.

In the parthenogenetic mode considered in this paper, the eggs are produced in an ovary at the front of the brood pouch (fig. 2), then are released into the brood pouch itself, where the embryos grow until they fill the entire cavity. The embryos are released with the molting of the parent, and a new brood of eggs is released into the new brood pouch. Development is direct, the newly released young resembling miniature adults.

1) Contribution No. 902 from the Virginia Institute of Marine Science. This paper is based on part of a dissertation presented to the Department of Marine Science, University of Virginia, in partial fulfillment of the requirements for the Ph.D. degree.
This study reports on the time of release of young of *E. tergestina*, as determined by the development stage of young within the brood pouches of females, and on a size-frequency analysis of samples of *Evadne tergestina* from day and night samples at scattered locations in southern Chesapeake Bay, Virginia, U.S.A., in August 1975 and from a 24-hour station at the mouth of the York River, a Bay tributary, in August.