FECUNDITY AND REPRODUCTIVE PERIOD OF PARADELLA DIANAE AND UROMUNNA SP. (PERACARIDA, ISOPODA) ASSOCIATED WITH PROP ROOTS OF RHIZOPHORA MANGLE IN A TROPICAL COASTAL LAGOON, SE GULF OF CALIFORNIA, MEXICO

BY

MARCELO GARCÍA-GUERRERO and MICHEL E. HENDRICKX1

Unidad Académica Mazatlán, Instituto de Ciencias del Mar y Limnología, UNAM, P.O. Box 811, Mazatlán, Sinaloa 82000, Mexico

ABSTRACT

Specimens of the estuarine isopods, Uromunna sp. and Paradella dianae living among Rhizophora mangle prop roots in a SE Gulf of California coastal lagoon system were collected from 11 stations, from October 1997 to September 1998. Among the ovigerous females, there was a positive, significant relationship between clutch size and TL for both species. The average size at first sexual maturity was estimated to be 1.54 mm with an average fecundity of 11 eggs for Uromunna sp. In the case of P. dianae, the average size at first sexual maturity was estimated to be 4.81 mm with an average fecundity of 19 eggs. On the basis of proportion and frequency of appearance of ovigerous females, prop roots in Urías seem more suitable as a reproductive habitat for Uromunna sp. than for P. dianae.

RÉSUMÉ

Des exemplaires de deux espèces d’isopodes d’estuaires, Uromunna sp. et Paradella dianae, associées aux racines aériennes de Rhizophora mangle dans une lagune côtière localisée au SE du golfe de Californie, on été récoltés dans 11 stations, entre octobre 1997 et septembre 1998. Une corrélation significative et positive a été obtenue entre la taille de la couvée et la longueur totale (TL) de la femelle dans le cas des deux espèces. La taille moyenne estimée à la première maturité sexuelle est de 1,54 mm, correspondant à une fécondité moyenne de 11 oeufs chez Uromunna sp. Dans le cas de P. dianae, la taille moyenne estimée à la première maturité sexuelle est de 4,81 mm et la fécondité moyenne de 19 oeufs. Prenant en considération la proportion et la fréquence d’apparition des femelles ovidées, les racines aériennes du système Urias semblent plus favorables comme habitat reproductif pour Uromunna sp. que pour P. dianae.

1) e-mail: michel@ola.icmyl.unam.mx

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INTRODUCTION

Coastal lagoons represent a dominant morphological feature of the tropical and subtropical west coast of Mexico and mangrove forests are often well developed in these lagoons (Day et al., 1989; Agraz, 1999). Isopods are an important component of the invertebrate fauna that lives associated with the sessile species (e.g., algae, sponges, mussels, oysters, barnacles, and bryozoans) that are attached to prop roots of *Rhizophora mangle* Linnaeus (cf. Ellison & Farnsworth, 1990; García-Guerrero & Hendrickx, 2004). As in other habitats, isopods play a fundamental role in this ecosystem. They are recognized as voracious detritus-feeders and as prey for many species of invertebrates and fish (Guarino et al., 1993). Although the presence of isopods is probably a general feature on these prop root communities (Salgado & Hendrickx, 2002), there is surprisingly little information available on species composition, abundance, and life cycle (García-Guerrero & Hendrickx, 2004).

To our knowledge, there is not a single comprehensive study available dealing with reproductive aspects of isopod species associated with *R. mangle* prop roots. There is a wide variety of studies dealing with reproductive biology, particularly fecundity, of isopods living in habitats such as kelp beds (Shafir & Field, 1980), shallow water rocky crevices (Kroer, 1989), filamentous algae (Guarino et al., 1993), sponges (Shuster, 1995), sandy beaches (Fonseca et al., 2000), rocky shores (Tsai & Dai, 2001), or intertidal sandstone zones (Murata & Wada, 2002). From these studies, it is known that isopod breeding begins with a pre-copula, followed by copulation. After successful mating, the eggs are deposited in a brood pouch (Kroer, 1989). There are no planktonic larval stages, and isopods brood their young in the pouch until they are released directly into the ecosystem (Brusca, 1980; Shafir & Field, 1980). Egg retention in a pouch during development facilitates direct study of female fecundity and egg development from field samples.

During a survey of macrofauna associated with *Rhizophora mangle* prop roots in the southeastern Gulf of California, populations of four species of isopods were sampled. Distribution, ecology, and population composition for these species were reported previously (see García-Guerrero & Hendrickx, 2004). The purpose of this paper is to report on the mean size at maturity, fecundity, and reproductive period of the two most abundant species: an undescribed species of *Uromunna* and *Paradella diana* (Menzies, 1962).

METHODS

The Estero de Urías coastal lagoon (23°10′36″-23°23′00″N 106°20′00″-106°25′35″W) is a tropical, shallow body of water located in the SE Gulf of California, Pacific coast of Mexico (fig. 1). The lagoon is partly bordered by mangrove