

## BATCH SPAWNING ON LARVAL SURVIVAL IN *MACROBRACHIUM LANCHESTERI*

P. MARIA CHARLES

School of Energy, Environment and Natural Resources,  
Madurai Kamaraj University, Madurai 625 021, India.

STUDIES on the egg production and larval energetics of decapod crustaceans are scattered in literature<sup>1-4</sup>. However, information on natantians deals mainly with the energy cost and survival rate of the larva hatched in different batches of the same brood<sup>4,5</sup> and no report is available on these aspects of the eggs spawned in clutch I and II of the same mother. Hence, in the present study egg and larval energetics of *Macrobrachium lanchesteri*, a repetitive breeding caridian prawn, has been made to compare the survival rate of the larvae of the two successive spawns.

Eggs and larvae collected from I and II spawn of the same female prawn were used in this study. The calorific value of the eggs and larvae were determined using a calorimeter (Parr 1412 semi-micro-bomb). To assess the larval survival time, larvae raised from the eggs of I and II spawn were maintained separately in a series of 6 glass tanks containing filtered and aerated freshwater. Water was changed everyday and care was taken not to miss any larva from the tank. The larvae were held at 27.8°C temperature; dead larvae were removed and counted.

Data presented in table 1 indicate that the freshly laid egg and larva of the first spawn hold 0.4078 and 0.4471 calories of energy respectively more than the egg and larva of the second spawn. Data shown in table 2 represent that on completion of egg development, the larva of the first spawn that carries an additional amount of 0.4471 calories of energy survives 4 days more than the larva of second clutch which lives for 9 days.

**Table 1** Energy value of eggs and larvae of the first and second spawn in *M. lanchesteri*

Spawn	Number of observations	Energy value	
		(cal/egg dry wt)	(cal/larva dry wt)
I	20	2.2950 ± 0.0056	1.7872 ± 0.0082
II	17	1.8872 ± 0.0016	1.3401 ± 0.0006

It is therefore clear that 0.1489 calories of energy are required for a larva to survive one day. Thus, the larva of the first spawn carrying 1.7872 calories of energy could survive 12 days whereas the larva of the second spawn lives only 9 days as it possesses 1.3401 calories of energy at hatching. This condition in *M. lanchesteri* compares well with another natantian, *Macrobrachium idea* in which the larva hatched in the second batch of the same brood holds less energy compared to that of the first batch and lives shorter<sup>5</sup>. The present investigation, the first report of this kind, shows that among repetitive breeders like *M. lanchesteri*, multiple spawning is associated with varying egg and larval energy levels. This difference in the larval energy contents has significant bearing on their survival. Hence, among repetitive breeding species, it is recommended that broods of the first spawn have extensive aquacultural importance than the subsequent spawns.

The author thanks Prof. T. J. Pandian and Prof. T. M. Haridasan for encouragement, and the Madurai Kamaraj University, Madurai for financial assistance.

18 March 1987

- Balasundaram, C. and Pandian, T. J., *J. Exp. Mar. Biol. Ecol.*, 1982, **61**, 125.
- Charles, P. M., Ph.D. thesis, Madras, 1984.

**Table 2** Survivability of the first and second spawn larvae of *M. lanchesteri*

Spawn	Number of observations	Number of larvae survived in different days												
		1	2	3	4	5	6	7	8	9	10	11	12	13
I	6	140	140	135	130	121	119	91	64	61	53	31	9	0
		±	±	±	±	±	±	±	±	±	±	±	±	
		2.60	2.60	2.28	2.12	2.08	2.18	3.00	2.22	2.00	1.80	1.80	1.2	
II	6	120	112	111	104	96	80	42	9	4	0	-	-	-
		±	±	±	±	±	±	±	±	±				
		2.00	2.88	2.64	2.22	2.12	1.98	1.4	1.88	1.88				

3. Pandian, T. J. and Schumann, K. H. *Helgolander Wiss. Meeresunters.*, 1967, 16, 225.
4. Pandian, T. J., *Mar. Biol.*, 1970, 5, 154.
5. Pandian, T. J. and Katre, S., *Mar. Biol.*, 1972, 13, 330.

**PHOMOPSIS ICHNOCARPI SP. NOV. ON ICHNOCARPUS FRUTESCENS\***

K. YESODHARAN and J. K. SHARMA

*Division of Forest Pathology, Kerala Forest Research Institute, Peechi 680 653, India.*

WHILE studying the diseases of understorey plants in a mixed plantation of deciduous tree species in the campus of this Institute, a severe leaf spot disease of *Ichnocarpus frutescens* (L.) R. Br., belonging to family Apocynaceae, was recorded during December 1985. Leaf spots, initially appeared as minute dots, enlarged gradually to light brown amphigenous, irregular necrotic areas with a distinct outline (figure 1). The necrotic leaf spots, measuring 5–12 mm in diameter, were observed

only on mature leaves. Consistent isolations from the infected leaves yielded a *Phomopsis* sp. on potato dextrose agar medium (PDA). Pathogenicity of the isolate was confirmed on leaves of *I. frutescens* inoculated on the abaxial and adaxial surfaces with a homogeneous spore suspension. Characteristic leaf spot symptoms developed after 10 days of inoculation. Since no *Phomopsis* sp. has earlier been reported either on *I. frutescens* or on any other plant of Apocynaceae<sup>1-3</sup> and as this isolate differs in taxonomical characters from the species reported earlier, it is described as a new species of *Phomopsis* viz *Phomopsis ichnocarpi*. The most important characters of *P. ichnocarpi* are the production of irregular multilocular conidiomata, which are occasionally unilocular and in most cases localization of  $\beta$ -conidia at the base and  $\alpha$ -conidia on the upper side of the pycnidial cavity.

*Phomopsis ichnocarpi* sp. nov. (figures 2 and 3).

Colony on PDA light pinkish, reverse yellowish brown, mycelium appressed, conidioma pycnidial, produced after one month of incubation, irregular with hyphal projections, multilocular, occasionally unilocular composed of thin-walled angular cells,



Figure 1. Leaf spots of *Ichnocarpus frutescens* caused by *Phomopsis ichnocarpi*.

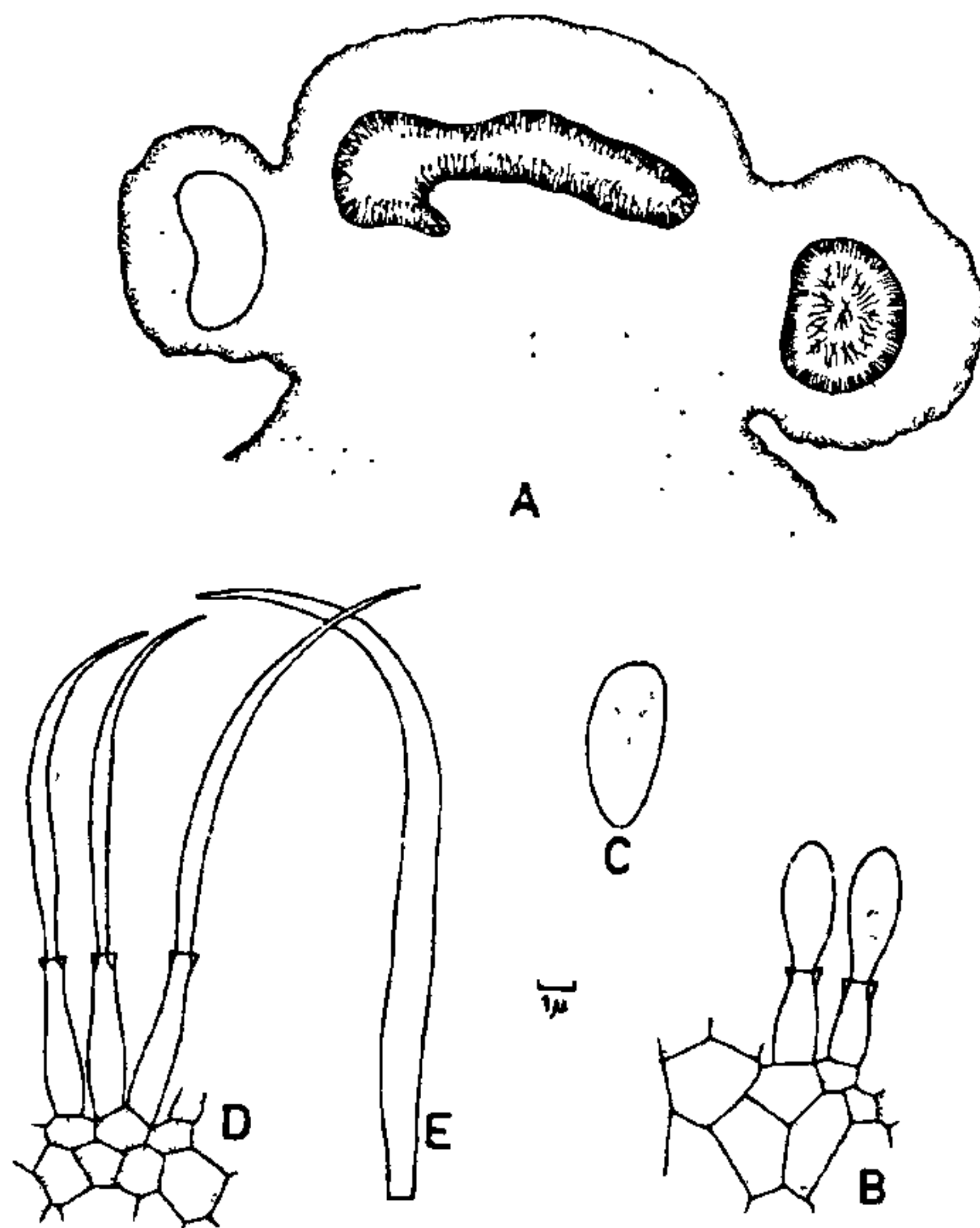


Figure 2A–E. A. A vertical section (v.s.) of conidioma; B, C.  $\alpha$ -conidia and phialides, D, E.  $\beta$ -conidia and phialides.

\* KFR I Paper No. 129.