OBSERVATIONS ON MARKING PRAWNS WITH VITAL STAINS

WHILE investigating the prawn fisheries in the Gautami Godavari estuary, it was noticed that prawns of different size groups were moving in and out of the estuary (Subrahamanyam, 1965). It could not be distinguished whether the same prawns moving into the sea were re-entering the estuary. It has, however, been believed that only a few individuals would re-enter the estuary while the others remain at sea. This phenomenon of immigration and emigration could be established by releasing marked individuals at the mouth region of the estuary. The marking method is simple and involves the application of vital dyes to develop abnormal colour on the branchiae. Three methods of marking viz., immersion, injection and feeding are well-known and have been elaborately described by Dawson (1957) and Costello (1964). The present note summarises the results obtained by marking individuals of *Metapenaeus monoceros* (Fabricius) by the above methods under laboratory conditions during the period February 1962 to March 1963.

The experiments were conducted with eight B.D.H. stains and all the three known methods of marking were followed. For injection and immersion methods 0.25%–1.0% solution in distilled or filtered estuarine water was used and for the feeding method bits of mullet muscle and small shrimp were used. The experiments were conducted on 173 specimens of *Metapenaeus monoceros* (Fabricius) which is numerically abundant in the estuary. Glass-sided aquarium tanks ($2' \times 1' \times 1'$) were found suitable for the present experiments. The results are summarised in the Table.

No success was achieved with Alizarine and Nigrosin by all the three methods. Mortality rate was high by the injection method in some cases. It was observed that the stain remained on the branchiae of the individuals after the first moult when stained with Methyl Green, Methyl Violet and Neutral Red, but was lost after a second moult. In case of Trypan blue, however, the stain retention was long and permanent by injection and feeding methods but slight paling was noticed by the immersion method after the first moult.

Dawson (1957) conducted experiments with all these stains except Methyl violet and found that the stain retention was long with trypan blue. Racek (1959) carried out his staining experiments by the immersion method and achieved commendable results with Trypan blue. For the purpose of studying the immigration and emigration of small prawns at tidal inlets feeding method also seems suitable due to low mortality. The experimental specimens may be collected and kept in small enclosures near the tidal inlets and starved for a day. Stained muscle tissue of fish or prawn cut into bits may be fed to the starved individuals. After a day or two the individuals develop the colour on the branchiae. The stained specimens may be measured and released at the tidal inlets noting the condition of the tide and other relevant information required in the experimental study.

TABLE

Stain	Method of staining	Number stained	Percentage survival	Period of stain retention (No. of days)	Colour on the branchiae
Alizarine ..	Immersion	35	100	..	Deep red
	Injection	10	..	..	Deep red
	Feeding	6	100	..	Deep red
Bismarck brown ..	Injection	7	57	3	Brownish-yellow
Methyl green ..	Immersion	6	100	12 hours	Bluish-green
	Injection	10	30	10	Bluish-green
	Feeding	4	100	..	Bluish-green
Methyl violet ..	Immersion	7	100	8	Deep violet
	Injection	12	100	2	Deep violet
	Feeding	1	100	1	Deep violet
Methylene blue ..	Injection	20	..	..	Bluish
	Feeding	1	100	3	Bluish
Neutral red ..	Injection	14	7	12	Deep red
	Feeding	6	100	1	Deep red
Nigrosin ..	Immersion	5	100	..	Purple black
	Injection	10	..	..	Purple black
	Feeding	4	100	..	Purple black
Trypan blue ..	Immersion	3	100	1	Bluish
	Injection	10	10	55*	Bluish
	Feeding	2	100	33	Bluish

*Only one specimen survived the period but jumped out of the tank the previous night and died ; otherwise the stain retention would have been much longer.

The present study is only of a preliminary nature. Experiments with several other vital dyes are highly desirable in the light of the success achieved in the present experiments.

The author is indebted to Prof. P. N. Ganapati, Department of Zoology, Andhra University, Waltair, for his constant guidance. He thanks the I.C.A.R. (Government of India) for the financial assistance.

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