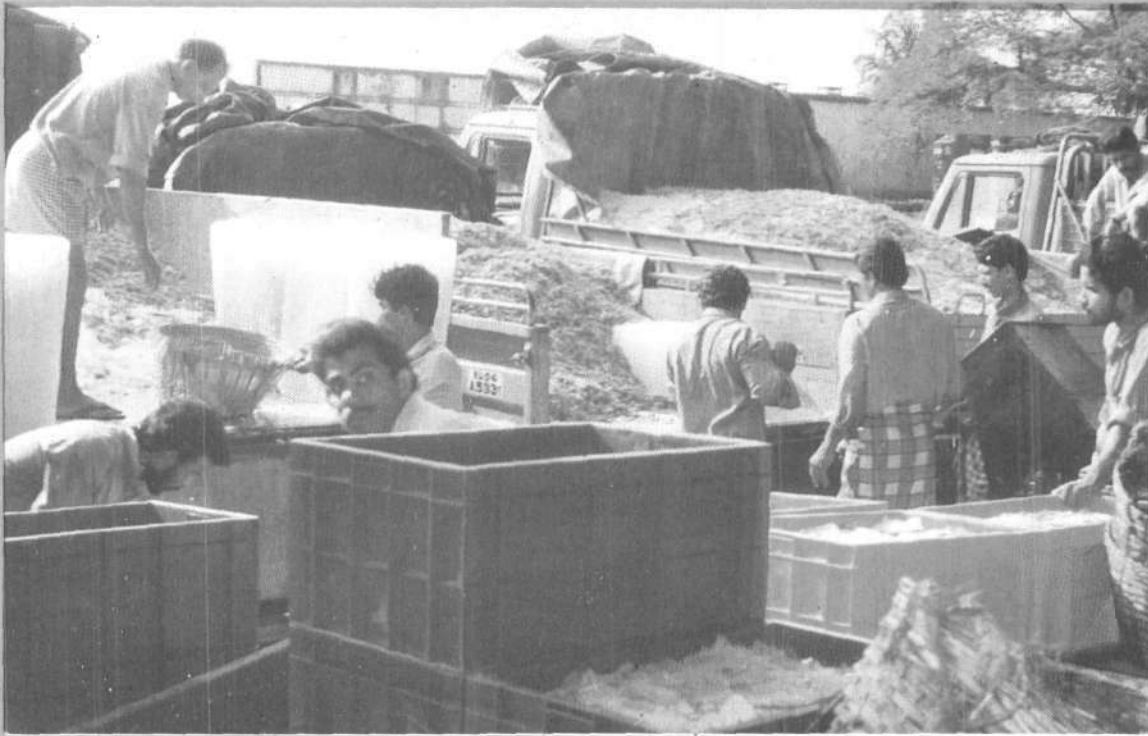




समुद्री मात्स्यकी सूचना सेवा MARINE FISHERIES INFORMATION SERVICE

No. 168

April, May, June 2001



तकनीकी एवं
विस्तार अंकावली

TECHNICAL AND
EXTENSION SERIES

केन्द्रीय समुद्री मात्स्यकी
अनुसंधान संस्थान
कोचिन, भारत

CENTRAL MARINE FISHERIES
RESEARCH INSTITUTE
COCHIN, INDIA

भारतीय कृषि अनुसंधान परिषद
INDIAN COUNCIL OF AGRICULTURAL RESEARCH

961 ON THE DISTRIBUTION OF SEXUAL AND PARTHENOGENETIC ARTEMIA IN THE SALT PANS AROUND TUTICORIN

M. Rajamani, S. Lakshmi Pillai and N. Retnaswamy

Tuticorin Research Centre of C.M.F.R. Institute, Tuticorin

Introduction

In India, the occurrence of the sexual strain of the brine shrimp, *Artemia franciscana* in the natural ecosystem was reported for the first time from the salt pans of Karapad at Tuticorin recently by Rajamani *et al* (*Mar. Fish. Infor. Serv. T & E. Ser. 152* 1998.). Following this discovery an intensive survey of the salt pans at selected places in and around Tuticorin was conducted during the period from October 97 to March 99 to study the distribution of this exotic species in the natural ecosystem. Also, the hydrographical conditions in the natural ecosystem were studied and the results are presented in this article.

Places surveyed

The salt pans located in three different places around Tuticorin namely, Veppalodai, Alangarathittu (Tuticorin- North) and Urani extension (Tuticorin-South) were selected for the survey. Each place was normally visited monthly once and one litre of brine containing the animals was collected and brought to the laboratory and the salinity and pH of the medium were estimated. As the sexual population can be recognized only by the presence of male the samples collected were carefully observed for the presence of any

males. In order to study the percentage composition of various stages of the brine shrimps viz. nauplius, juvenile and adult the numbers present in the sample were counted and the percentages of various stages were worked out. Measurement of adult females collected from the three places was taken at every sampling in order to find out the variations in the size ranges in different populations.

Occurrence of sexual and asexual strains

Out of the three places surveyed the sexual strain *A. franciscana* was recorded only from Veppalodai. In the other two places only the asexual strain viz. *A. parthenoenetica* was recorded. In the samples collected from Veppalodai good number of males and also riding couples (males mating with females) were observed whereas in the samples collected from the salt pans of Alangarathittu and Urani extension not even a single male was observed during the entire period of observation.

Size ranges in sexual and asexual strains

From the samples collected the adult females were measured for total length. The minimum and maximum sizes recorded in the females collected from the three places are given in Table 1. It can be seen from the Table

that the size of the adult female in the sexual strain collected from the salt pans of Veppalodai ranged from 7.2 to 11.2 mm only whereas in the case of the asexual strain the size ranged from 7.7 to 12.9 mm and from 7.3 to 11.7 mm in the samples collected from the salt pans of Alangarathittu and Urani extension respectively.

TABLE 1. Size ranges in the females of *A. franciscana* and *A. parthenogenetica*

| Name of the place and strain | Total No. of females measured | Size range (mm) | |
|--|-------------------------------|-----------------|------|
| | | Min | Max |
| Veppalodai (<i>A. franciscana</i>) | 30 | 7.2 | 11.2 |
| Alangarathittu (<i>A. parthenogenetica</i>) | 24 | 7.7 | 12.9 |
| Urani extension (<i>A. parthenogenetica</i>) | 36 | 7.3 | 11.7 |

Composition of various stages

The overall composition of various stages of brine shrimp namely, nauplius, juvenile and adult are given in Table 2. It can be seen from the Table that the composition of nauplii was high in all the three places with an overall composition of 50.0%, 43.5% and 58.4% in the samples collected from the salt pans of Veppalodai, Alangarathittu and Urani extension respectively indicating that the environment is quite favourable for the survival and multiplication of the animal.

TABLE 2. Composition of various stages of brine shrimp in three different places in percentages (Actual No. of animals are given in parenthesis)

| Name of the Place | Total Nos. sampled | Nauplius | Juvenile | Adult |
|-------------------|--------------------|---------------|---------------|---------------|
| Veppalodai | 502 | 60.0 (301) | 21.7 (109) | 18.3 (92) |
| Alangarathittu | 361 | 43.5 (157) | 27.7 (100) | 28.8 (104) |
| Urani extension | 320 | 58.4 (187) | 17.8 (57) | 23.8 (76) |

Hydrographical conditions in the salt pans

The overall hydrographical conditions

namely, salinity and pH recorded in the salt pans at the above mentioned three different places during the period of observation are given in Table 3. It can be seen from the Table that the salinity ranged from 84.9 to 163ppt, from 24.3 to 118ppt and from 26.0 to 166.0ppt in the salt pans at Veppalodai, Alangarathittu and Urani extension respectively. The pH recorded in the three places were in the order of 7.1 to 8.5, 7.2 to 8.7 and 7.5 to 8.3.

TABLE 3. Hydrographical conditions in various salt pans during the period of observation

| Name of Place | Salinity (ppt) | | pH | |
|-----------------|----------------|-------|-----|-----|
| | Min | Max | Min | Max |
| Veppalodai | 84.0 | 163.0 | 7.1 | 8.5 |
| Alangarathittu | 24.3 | 118.0 | 7.2 | 8.7 |
| Urani extension | 26.0 | 166.0 | 7.5 | 8.3 |

The survey of the salt pans carried out in three different places around Tuticorin for a period of eighteen months thus clearly indicates that the sexual strain of brine shrimp, *A. franciscana* occurs in the salt pans at Veppalodai also in addition to its occurrence in the salt pans at Karapad as reported earlier by Rajamani *et al* (*loc. cit*). On the other hand, in the salt pans at Alangarathittu and Urani extension only *A. parthenogenetica* occurs.
