



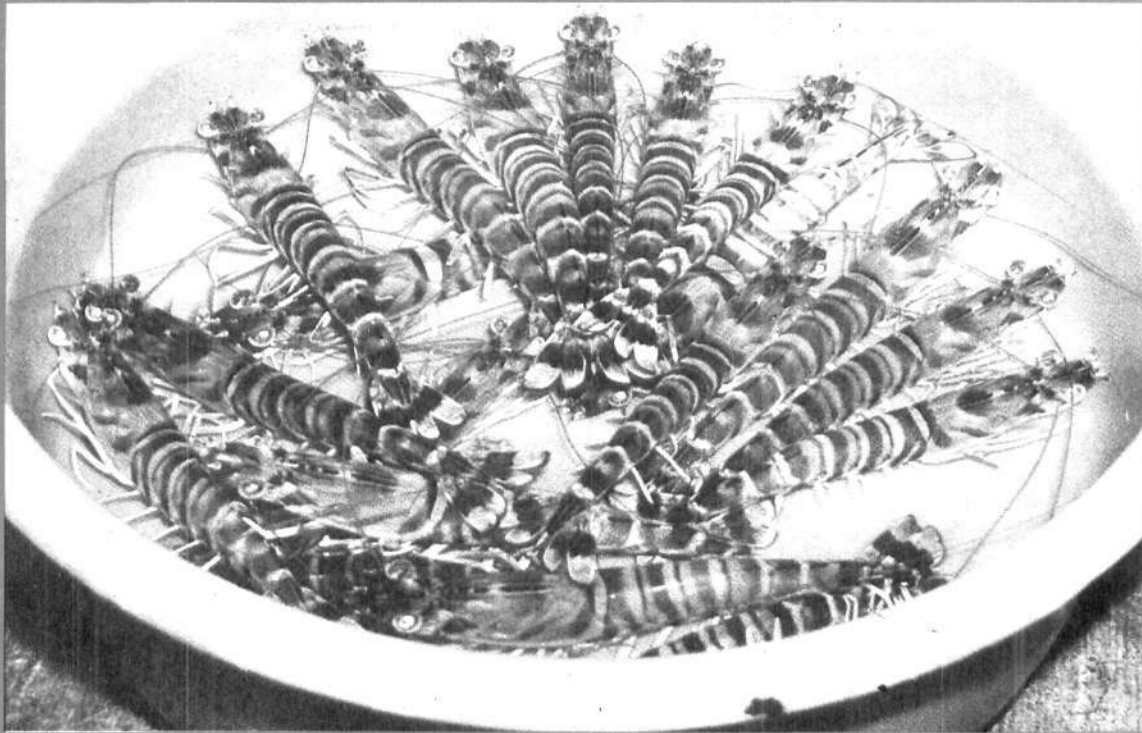
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825 On the occurrence of a bisexual strain of the Brine shrimp *Artemia* in the salt pans at Tuticorin

The importance of the brine shrimp, *Artemia* in larviculture was recognised for the first time when Seale (1933, *Trans. Am. Fish. Soc.*, **63** : 129-130) described the value of the nauplii of *Artemia* as an ideal food for fish fry. Later several investigators found that the freshly hatched nauplii of the brine shrimp are the most suitable and also very convenient food for the early larval stages of various species of fishes and crustaceans. As the nauplii can be obtained as and when required in

the form of dry cysts, the attention of aquaculturists all over the world was drawn towards this larval food resource which resulted in intensive research activities on various aspects of the cysts and nauplii of the brine shrimp. After 1970 the use of brine shrimp cysts in crustacean hatcheries assumed great importance and at present the success of shrimp hatcheries the world over depends upon the availability of quality *Artemia* cysts to a very great extent.

In *Artemia*, both parthenogenetic and bisexual strains have been recorded from several parts of the world. Bisexual strains have been reported from England, South America, USA, Argentina and Iran whereas parthenogenetic strain has been reported mostly from Europe and Asia. In India, *Artemia* has been reported to occur in the solar salt pans at Tuticorin, Vedaranyam, Madras, Bombay and Gulf of Kutch. It has also been recorded from the inland salt lakes in Rajasthan viz. Sambhar lake and Didwana lake. In all these places only parthenogenetic strain has been recorded so far (Kulasekarapandian *et al.*, 1995, *CIBA Bulletin*, No. 4). The present article reports on the occurrence of bisexual strain of brine shrimp in the solar salt pans at Tuticorin for the first time.

Parthenogenetic and bisexual strains of brine shrimp in the salt pans at Tuticorin

At Tuticorin, brine shrimp population is distributed in most of the salt pans and salt pools. During one of the collection trips to the salt pans at Karapad in February '97 the authors noticed a large number of *Artemia* couples in riding position. In some cases two males were found to ride on a single female. The brine shrimps thus collected from the salt pans were maintained in 1 t cement tank constructed under open sunlight at Karapad Field laboratory and were fed with ragi bran extract squeezed through 40 μ bolting silk cloth. Following the discovery of the bisexual strain in the natural salt pans at Karapad, survey of the salt pans at a few other places in and around Tuticorin also was carried out during February - March '97. Out of the seven places surveyed viz. Karapad, Muthiapuram, Thermal Nagar area, Urani extension, Alangarithtu east, Thalamuthu Nagar and Kalavasal, the population of *Artemia* was recorded only in three places namely Karapad, Urani extension and Alangarithtu east. The bisexual strain of the brine shrimp was recorded in the salt pans at Karapad whereas in the remaining two places only parthenogenetic strain of *Artemia* was found to be present.

Preliminary studies on the production potential of parthenogenetic and bisexual strain of brine shrimp

In order to understand the production potential of the parthenogenetic and bisexual strains of the brine shrimp obtained from different salt pans, preliminary experiments were conducted at Karapad Field Laboratory. On 18-2-'97 a total of 100 numbers of females of the parthenogenetic strain and 100 pairs of the bise-

xual strain (ie. 100 female with males in riding position) were collected from the stock maintained in the laboratory and released into two different cement tanks of 1 t capacity under direct sunlight outside the laboratory and the production of nauplii in both the strains was studied. Both the populations were fed with ragi bran extract squeezed through 40 μ bolting silk cloth. When the population was estimated by random sampling method on 5th March '97 ie., on 15th day, the production of young ones (both nauplii and juveniles) by the bisexual strain was three fold with an estimated number of 31,598 as against only 9,840 young ones produced by the parthenogenetic strain. During the period of the experiment the salinity ranged from 60.3 to 68.1 ppt., the pH from 8.4 to 8.6 and the ambient temperature from 27° to 30° C.

Probable mode of entry of the bisexual strain of the brine shrimp into the salt pans at Tuticorin

During the past one decade a number of shrimp hatcheries were established around Tuticorin. These hatcheries import brine shrimp cysts from different foreign agencies through Indian dealers. It is believed that either some cysts or larvae might have escaped from such hatcheries and entered the salt pans. But it may be noted here that all these private hatcheries are located about 10 km away from the site where the bisexual strain has been recorded. This clearly indicates that the cysts might have been dispersed either by wind or by water birds, particularly flamingoes as these birds have been observed occasionally in certain parts of the salt pans at Tuticorin.

The bisexual strain is tentatively identified as *Artemia franciscana* as most of the shrimp hatcheries in India import the cysts of this species (Sorgeloos, 1997, personal communication). *A. franciscana* is widely distributed in North, Central and South America and its entry into the solar salt pans at Tuticorin is expected to bring about a major change in the population characteristics of the native parthenogenetic strain sooner or later not only at Tuticorin but also in the other parts of the country.

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