Table 1. Structural blocks identified from gravity trends and their trend directions

Block number	Name of the block	Major trend direction	Major rock type/ structure
1	Southern granulite terrain	N–S	Granulites
2	Palghat–Cauvery shear zone	ENE	Shear zone
3	Coastal Tamil Nadu *(Cauvery) terrane*	ENE	Sediment cover
4	Dharwar craton and a part of the Deccan volcanics	NNW, NW–SE	Schist belts, Closepet granite, granite-gneiss
5	Eastern Ghats	NNE, NE–SW	Khondalites, alkaline magmatism
6	Bhandara craton	N–S, NNW	Granite-gneiss
7	Singhbhum craton	N–S, ENE	Ultramafic suites with granite intrusives
8	West Rajasthan block	NNW	Sediments and trap cover
9	Bundelkhand craton	ENE	Reworked gneisses and granitic rocks
10	North Aravalli craton	N–S	Rhyolitic rocks, granites, migmatites
11	Shillong plateau	E–W	Granites, gneisses, and metamorphics
12	Himalayan fold belt	NW to NE	

the formation of the boundary while those parallel to the boundary are likely to post-date it[1]. The following relative ages of the gravity trend areas are found by applying these rules to the gravity trend patterns shown in Figure 1. In the south Indian shield, the areas with the oldest trends are inferred to be the blocks 1 (the southern granulite terrain) and 4 (the Dharwar craton). Adjacent blocks 2, 3, and 5 appear to have younger trends. Amongst these three, the block 2 appears to be older than blocks 3 and 5. The blocks 4 (Dharwar craton), 6 (Bhandara craton) and 7 (Singbhum craton) are separated from each other by the Godavari and the Mahanadi rifts respectively. Gravity trend patterns suggest that the Bhandara and the Singbhum cratons might be older than the Eastern Ghats (block 5). In the northern part, the Bundelkhand block (block 9) appears to be older than the west Rajasthan block (block 8) and the Himalayan fold belt (block 12).

The study of gravity trend patterns helped to identify twelve structural provinces (terranes) and their relative ages in the Indian shield. The terranes identified in the present study are almost identical to those identified from geological studies by Radhakrishna[5], thereby providing a geophysical support to the geological findings.

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Effect of abrupt salinity changes on survival of *Artemia parthenogenetica*

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A sudden decrease in salinity from 130 to 20 ppt resulted in the death of 96% adults, 78% subadults and 30% nauplii of *Artemia parthenogenetica*. Thus the tolerance level of the nauplius to changing salinity was greater than other stages.

DUE to precipitation and flooding, *Artemia* populations flourishing in the saltpans are subjected to wide and abrupt changes in salinity[1–4]. von Hentig[5] made a detailed study on survival of *A. salina* nauplius exposed to different salinity–temperature combinations. An equally detailed study was also undertaken on the hatching efficiency of cryptobiotic cysts[6] as a function of salinity. We report here survival of selected life stages of *A. parthenogenetica*, which were exposed to abrupt changes in salinity.

Populations containing nauplius, subadult, and adult stages of *A. parthenogenetica* were collected from saltpans at Kelambakkam, Madras, South India. They were quickly transported to the laboratory, where each of the selected stages (50 each) were separated and abruptly exposed to different salinities (20–130 ppt) in beakers (1000 ml). They were fed on rice bran twice a day and the water in the beakers was changed once a day. Five replicates were maintained for each stage at the tested salinities. The 130 ppt salinity was considered as the control and the duration of the experiment was restricted to five days.

The adults were most susceptible to sudden salinity changes, when they were transferred from 130 to any lower salinity down to 20 ppt (Figure 1); the mortality was also high, as much as 96%. The subadults were also severely affected, suffering a mortality of 78% compared to nauplii (30%). Hence the nauplius was the most tolerant stage to sudden salinity changes.

A sudden decrease of 10 ppt (130–120 ppt) in salinity resulted in less than 10% mortality in adults and

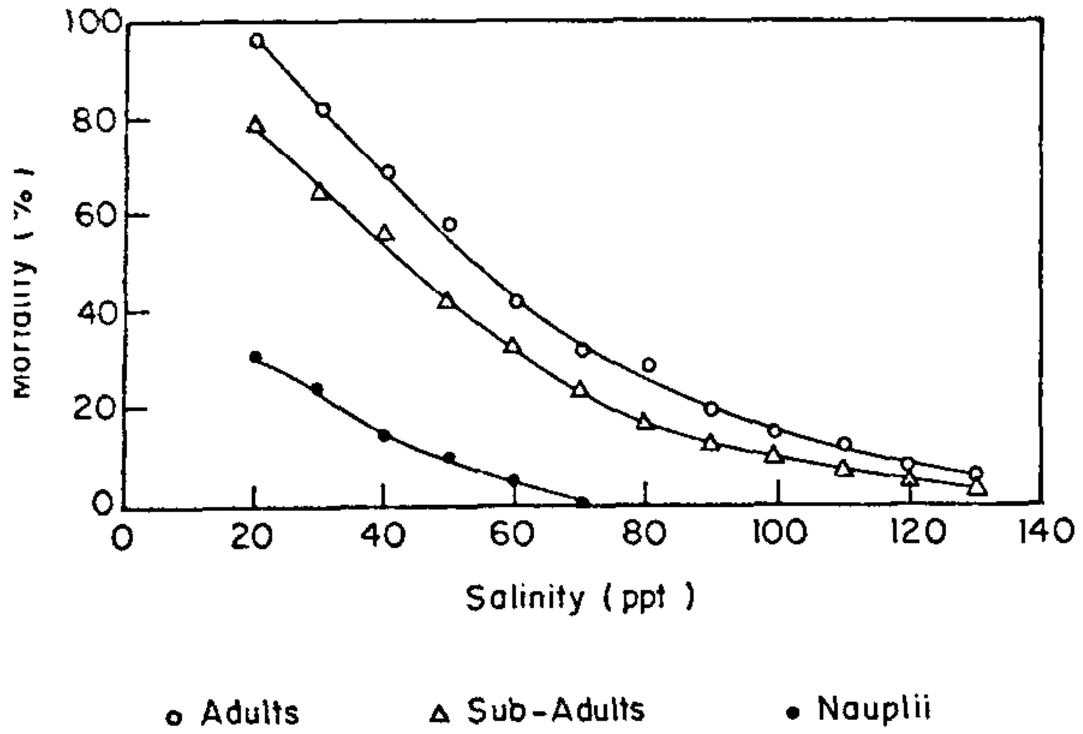

Figure 1. Mortality rates of different stages of *A. parthenogenetica* exposed to various salinity ranges.

subadults, while a decrease to 90 ppt caused a mortality of 19% and 12% in adults and subadults respectively. However, the nauplii suffered only a less mortality of 9% and 5%, owing to the decreases in salinity from 130 to 50 ppt, or to 60 ppt.

Two-way analysis of variance was used to test the variations among the developmental stages with reference to salinity tolerance. The analysis revealed that salinity did not significantly influence the larval survival ($P < 0.05$). However, the effect of changes in salinity on the survival of the subadults and adults is not pronounced. Naupliar capacity for tolerance of wide fluctuation to salinity is reported, perhaps for the first time, and further work is in progress.

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