

ABSTRACT

A study was made of the lower salinity tolerance limits of a few common marine invertebrates living under estuarine conditions in Trinidad. In addition a preliminary investigation of the mode of ionic and osmo-regulation was carried out. Experiments were carried out on five animals - the echinoderms *Lytechinus variegatus* and *Echinaster sentus*; the ascidian *Herdmania momus*; the polychaete *Chaetopterus* spp. and the crustacean *Panopeus herbstii* - all of which are regarded as belonging to generally stenohaline groups of animals. Hydrographic studies carried out at three areas along the North-west peninsula of Trinidad indicate that conditions in the close inshore waters, especially during the rainy season, are estuarine and similar to that described generally for the Gulf of Paria. The results indicate that these animals were able to tolerate salinities of 20⁰/oo - 14⁰/oo for prolonged exposures (7 days) and much lower salinities, in some cases even freshwater (0⁰/ooS), for brief periods (40 mins. - 2 hrs.): The ability to survive under such hyposmotic conditions appears to be due to a combination of factors. Acclimatisation was very important in enhancing survival to both short and prolonged exposures in all animals, with the possible exception of the ascidian and to a lesser degree in *Echinaster* than in *Lytechinus*. Some degree of osmo- and ionic hyper-regulation,

especially towards the lower salinity limits, is another mechanism employed, despite the fact that some of them lack any differential excretory organs eg. *Echinaster*. Ability to survive low salinities by entering a state of stupor is shown by *Echinaster*. Migration in *Lytechinus*, closure of the siphons in *Herdmania* and cessation of irrigation movements of the fans of *Chaetopterus* also serve to reduce contact with unfavourable conditions and hence, assist in their survival.

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