ON THE BIOTIC ZONATION OF BENTHIC OSTRACODES IN THE BIMILI, BALACHERUVU BACKWATERS AND VASISHTA GODAVARI ESTUARY

BIOFACIES analysis is a study of assemblages of organisms, their areal and chronologic distribution and environmental factors that affect them. The term biofacies has been defined and used in different ways[1–3]. A biofacies is a group of organisms found together and presumably adapted to environmental conditions in their place of occurrence, such groups differing from contemporary assemblages found in different environments[4].

The three habitats chosen for investigation, present three different types of environments in as much as their hydrography is concerned. The areas selected for study are the backwaters of Bimili, Balacheruvu tidal stream and the lower reaches of t e Vasishta Godhavari estuary. These areas provide an excellent substratum for the ostracodes to settle and thrive.

The different species in the three hydrographically different habitats in relation to the prevailing ranges of salinities and temperatures indicate that the ostracode fauna of Bimili and Balacheruvu exist as endemic species. A close examination of the data collected over a period of about two years in the three marginal bodies of water reveals that distinct biofacies could be made out based on the dominant species viewed against the background of some important parameters of the environment namely substratum, availability of food and lack of potential predators.

The pattern of distribution (Fig. 1) clearly indicates that the faunal distribution is not uniform either in respect of dominance of a species or numerical distribution of each species. The composition of the sp.cies assemblages varies from area to area. As such their overall composition for the whole period should be taken to establish the biofacies. King and Kornicker[5] made an identical attempt in Red fish Bay, Laguna Madre of Texas.

I. *Tanella-Phlyctenophora-Loxoconcha* biofacies:

This biofacies exists in the Bimili backwater. One or more of above genera were prominant in samples in live condition. *Paijenborchellina caudatum*; *P. reticulatum*; *Hemicytheridea truncatula*; *Palmenella mckenzii*; *Leptocythere andhraensis*, *Atjehella multicostatum*; *Neomonoceratina indica*; and *N. spinosa* occurred in limited numbers.

The various ecological parameters and their ranges of variation prevailing at the time of collection are: Water temperature 25·8° to 33·8 °C, salinity of the water 12·77 to 33·12‰, organic matter 0·1265 to 4·1238%, sand 67·45 to 95·27%, silt 0·00 to 19·08%, clay 3·05 to 13·57%.

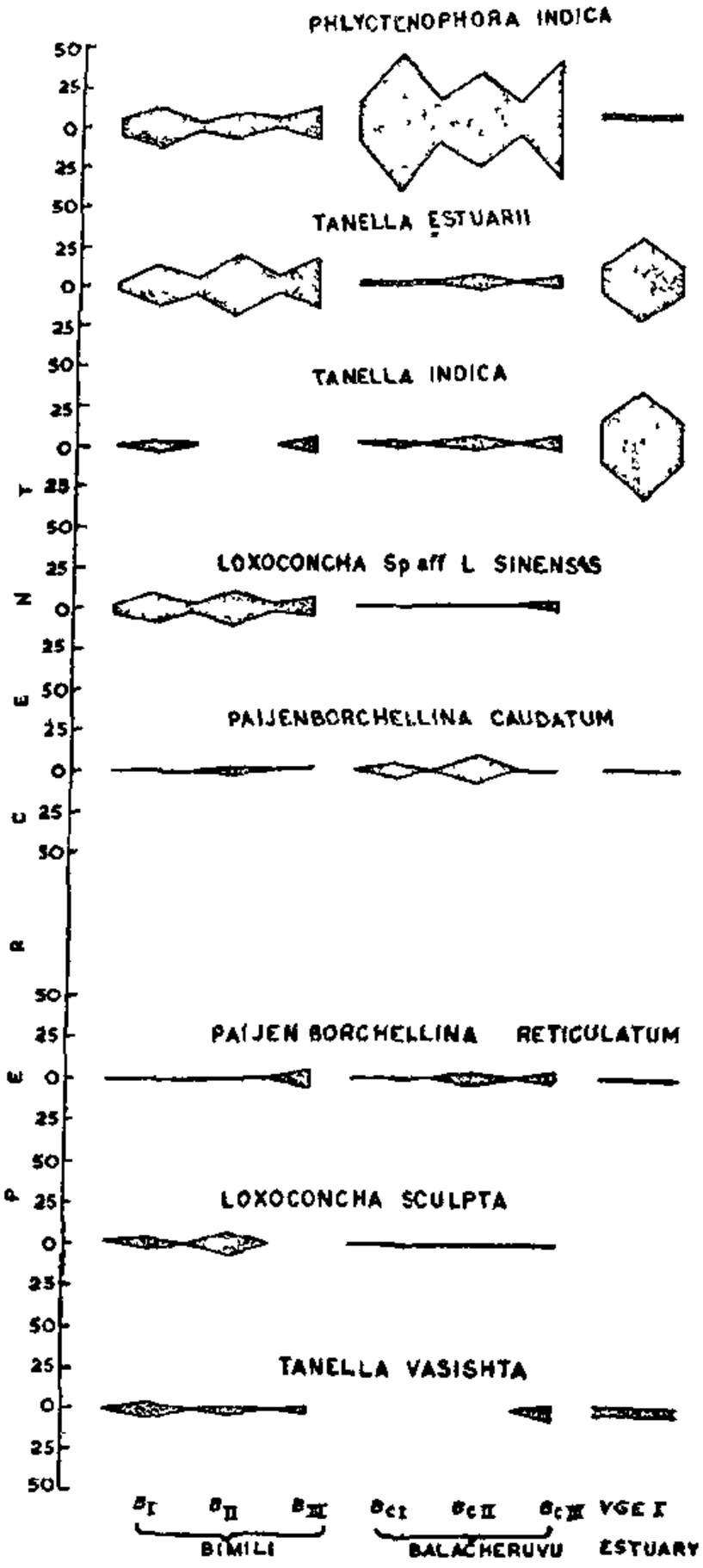

FIG. 1. Relative percentage of common ostracod genera and species at each station averaged over the entire period of collection.

II. *Phlyctenophora–Paijenborchellina* biofacies :

This biofacies occupies Balacheruvu tidal stream. Either *Phlyctenophora* or *Paijenborchellina* more usually the former dominated in the collection. The members of the genera *Tanella*; *Loxoconcha*; *Hemicytheridea truncatula* and *Palmenella mckenzii* occurred in limited numbers.

The various ecological parameters and their ranges of variation prevailing at the time of collection are: Water temperature 26·0° to 37·0° C, salinity of the water 22·02 to 44·35‰, organic matter 0·3868 to 3·5605%, sand 58·37 to 98·71%, silt 0·00 to 28·76%, clay 0·75 to 12·87%.

III. *Tanella-Sparse total population* biofacies:

This biofacies occupies the mouth of the Vasishta Godavari estuary. In general the total number of

ostracodes was sparse. The genus *Tanella* was fairly well represented in samples. Members of the genera *Phlyctenophora*; *Paijenborchellina*; *Loxoconcha*; *Atjehella*; *Palmenella* and *Hemicytheridea* occurred in limited numbers.

The various ecological parameters and their ranges of variation prevailing at the time of collection are: water temperature 28·6° to 40·0° C., salinity of the water nearly 0·00 to 34·0‰, organic matter 0·1622 to 2·5062%, sand 41·02 to 87·92%, silt 3·50 to 34·30%, clay 5·82 to 41·94%.

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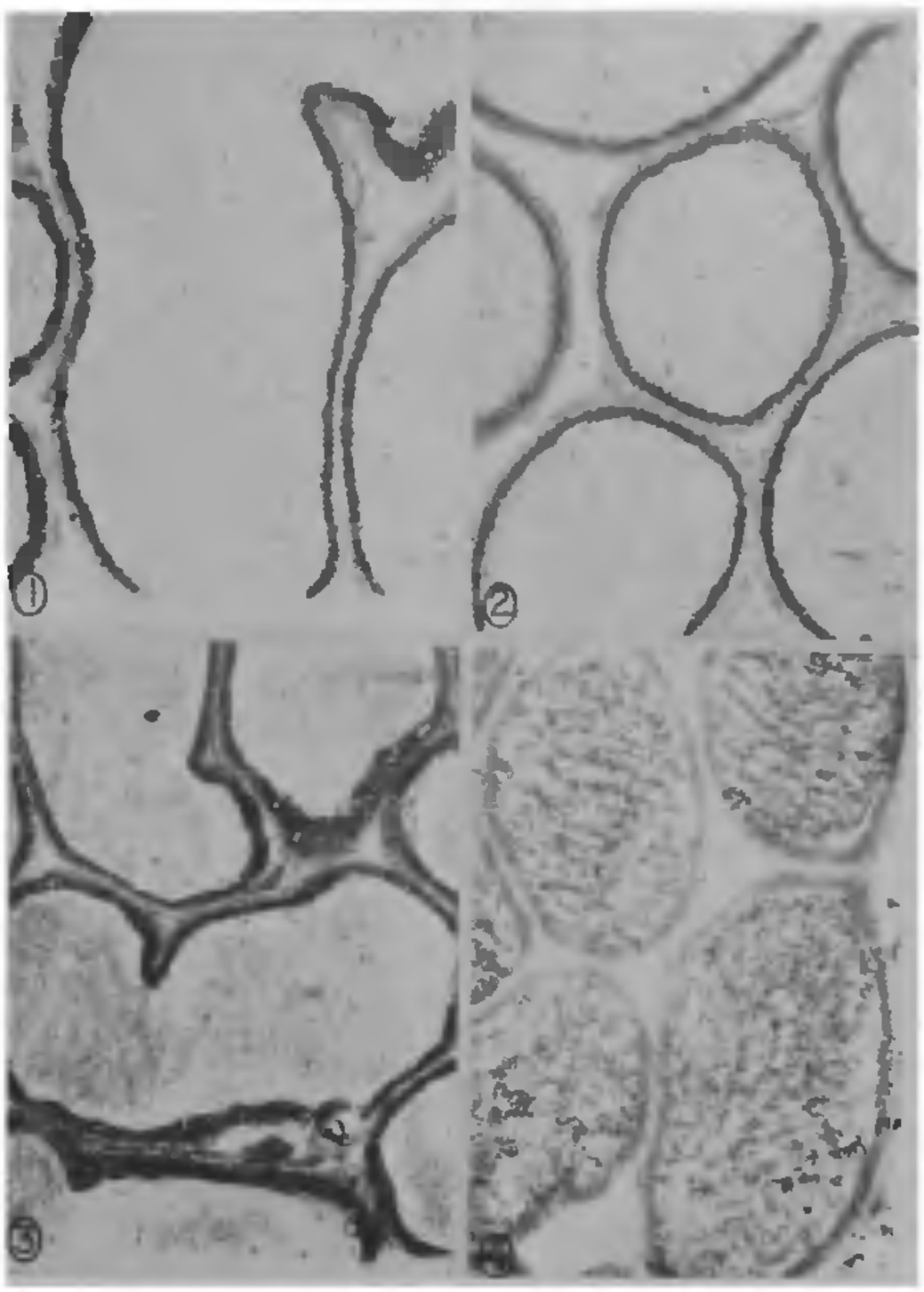
HISTOCHEMICAL DEMONSTRATION OF STEROID METABOLISM IN THE EPIDIDYMIS OF *CHAMELEON CALCARATUS* (BOULENGER)

REPTILES are the first to become completely terrestrial and to acquire internal fertilisation and accessory sex organs. The epididymis is one male sex accessory to appear for the first time in reptiles. It is made up of contorted tubules, their lumen being lined by single layered columnar epithelium and as is the case with mammals, it serves in the storage and physiological maturation of spermatozoa. Histochemical and biochemical studies have shown the occurrence of steroid metabolism enzymes in the mammalian epididymis[1,2]. Several hydroxysteroid dehydrogenases have been localized in the epididymis of mammals[3–5]. The lizard epididymis also seems to possess the capacity for steroid metabolism. Steroid dehydrogenases involved in steroid metabolism have been demonstrated histochemically both in the epithelium and spermatozoa of the epididymis of a few lizards[6,7]. The present report describes the localization of Δ^5-3β-hydroxysteroid dehydrogenase (Δ^5-3β-HSDH), 17β-hydroxysteroid dehydrogenase (17β-HSDH), glucose-6-phosphate dehydrogenase (G-6-PDH), reduced nicotinamide adeninedinucleotide ($NADH_2$) diaphorase and lipids in the epididymis of *Chameleon calcaratus*.



FIGS. 1–4. Cryostat section of the epididymis $NADH_2$ Δ^5-3β-HSDH (Fig. 1), 17β–HSDH (Fig. 2), showing diaphorase (Fig. 3) activities and lipids (Fig. 4) in the epithelium and lumen, × 80.

Sexually mature male *Chameleon* were collected during the breeding season. These animals were decapitated, the epididymis were removed and immediately frozen at — 20° C. Air-dried cryostat sections were incubated in serological water bath at 37° C for one hour in appropriate incubation media containing different substrates, co-factors and tetrazolium salt. Δ^5-3β-HSDH (substrates; pregnenolone and dehydroepiandrosterone) and 17β-HSDH (substrates; estradiol-17β and testosterone) were localized according to the method of Baillie *et al.*[8]. Similarly G-6-PDH and $NADH_2$ diaphorase were demonstrated as per the method of Altman[9] and Chayen[10]. Lipids were localized using sudan black B method of Pearse[11]. Suitable control sections were also incubated in appropriate incubation media without the substrate or adenine-dinucleotide/adeninedinucleotide phosphate (NAD/NADP). After incubation sections were washed, fixed in 10% neutral formalin and mounted in glycerol jelly or PVP mounting medium.

Intense positive reaction for Δ^5-3β- and 17β HSDHs was seen in epididymal epithelium (Figs. 1 and 2) and weak reaction was noticed in the luminal contents.