

Kitchel

The genus *Panacca* in the North Atlantic consists of two species, *P. africana* Fischer and *P. locardi* Dall, off the coast of North Africa, and two off the coast of North America, *P. arata* Verrill and Smith and *P. fragilis* Grieg. All four species are rare and poorly known. Three are found at depths of more than a thousand meters, but *P. arata* lives at the edge of the continental shelf at depths of 130 to 245 m. A new record for *P. arata* now increases the range for this species about 2100 km to the south off Miami. This range extension is surprising since the previously known range occupies a small area south of Cape Cod.

**PHOTORECEPTORS OF THE BIVALVE *LYONSIA HYALINA*: THE EYES HAVE IT!** Robert S. Prezant, Department of Biological Sciences, University of Southern Mississippi, Hattiesburg.

The siphons of the marine bivalve *Lyonsia hyalina* Conrad are often the only portion of the animal exposed to the outside world. As such they are well endowed with sensitive tentacles for tactile reception and also numerous small photoreceptors densely packed along a band on the exhalant siphon. These "eyes" are composed of large, single celled vitreous lenses that are individually capped by an apical dome-shaped nucleus. The lenses, directed into the siphonal lumen, taper into a pigmented receptor portion that in turn is bound by five melanic pigment cells. The photoreceptors show common microstructural features of light gathering organs (i.e. numerous mitochondria, high glycogen concentrations) that includes an expanded photon-receptor region composed of elaborate cell membranes. In many protostomes this receptor region is typically composed of expanded microvillar membranes (i.e. rhabdomeric) but in *L. hyalina* the receptor is composed of whirls of ciliary membranes that form concentric rings in the proximal region of the tapered receptor zone. These flared, concentric membranes are unusual and found only in very few organisms. The ciliary basis of this bivalve's eyes may offer insight into their evolutionary status. *Laternula truncata* (Lamarck), another pandoracean bivalve, also possesses similar receptor structures (Adal and Morton, 1973; *J. Zool., Lond.* 171: 533-556). This common feature, in eyes that otherwise have different macrostructures, may reveal a lineage that is closer than previously suggested.

**NEW FAMILIES OF ARCHAEOGASTROPOD LIMPETS IN THE HYDROTHERMAL VENT COMMUNITY.** James H. McLean, Los Angeles County Museum of Natural History, California.

Four new limpet families (three of which have two or more species), are variously represented from seven, widely scattered, deep sea sites having the hydrothermal vent community. Gill, radular, and kidney characters are those of archaeogastropods but the families can not even be assigned to living superfamilies. Of these, only the Neomphalidae, represented by *Neomphalus fretterae* McLean, 1981, has yet been described; anatomy has been detailed by Fretter, Graham, and McLean (1981). Fretter and McLean

are collaborating on the descriptions of the remaining families. Each new family differs from the others and from Trochacea at the superfamily level, which implies that they have common ancestry with trochaceans. It further suggests that the ancestors of the hydrothermal vent limpets, whether limpets or coiled gastropods, entered this community by the early Mesozoic, the time of origin of other living archaeogastropod superfamilies, a time at which archaeogastropods were the dominant gastropods in shallow seas. Basic anatomical and radular characters of the hydrothermal vent limpets are considered to be those of unrecognized archaeogastropod clades that otherwise suffered extinction in the Paleozoic or early Mesozoic.

**DISTRIBUTION PATTERNS OF FRESHWATER MUSSELS AT NORTH HOLSTON FORD, NORTH FORK HOLSTON RIVER, VIRGINIA.** Helen E. Kitchel, Virginia Cooperative Research Unit, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University, Blacksburg.

During 1981 and 1982, 16 species of freshwater mussels were collected at North Holston Ford, North Fork Holston River. A mean density of 10.6 mussels/m<sup>2</sup> was estimated from sixty random 0.5m<sup>2</sup> quadrat samples, indicating a population of roughly 31,000 adult mussels for the study area. Quadrat samples contained 10 mussel species: *Actinonaias pectorosa*, *Fusconaia edgariana*, *Lampsilis fasciata*, *Lexingtonia dolabelliformis*, *Medionidus conradicus*, *Pleurobema oviforme*, *Ptychobranthus fasciolaris*, *P. subtenellus*, *Villosa nebulosa*, *V. vanuxemi*. Six additional species were collected in muskrat middens or by handpicking: *Alasmidonta marginata*, *A. minor*, *Fusconaia barnesiana*, *Lampsilis ovata*, *Lasmigona costata*, *Toxolasma lividus*. Mussel densities varied according to location at the site. Water depth, current velocity, and substrate composition followed a consistent longitudinal zonation throughout the study area. Shallow water and low velocity were associated with the left ascending bank, whereas deep water and high velocity were associated with the right ascending bank. Substrate samples exhibited similar zonation patterns, and increased in particle size from left to right ascending bank. The distribution of mussels appeared to be most closely correlated with substrate composition, and high species densities were associated with mixed sand, gravel, and pebble substrates. Habitat of the endangered *F. edgariana* was associated with areas of high mussel density and diversity, along the left ascending bank and around seasonally vegetated areas.

**FRESHWATER MOLLUSCAN SURVEY OF THE ROANOKE, TAR AND NEUSE RIVER SYSTEMS, N.C.** Arthur H. Clarke, Ecosearch, Inc. Mattapoisett, Massachusetts

Systematic surveys of freshwater mollusks in northeastern North Carolina, sponsored by the Smithsonian Institution and the U.S. Department of the Interior, Fish and Wildlife Service, were carried out from 1977 to 1983. The Tar River System received special attention (72 study sites) because it contains *Elliptio (Canthyria) steinstansana* Johns

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