

TAGGING STUDIES ON THE RED ROCK CRAB,  
*CANCER ANTENNARIUS*, IN THE VICINITY OF  
 DIABLO COVE, CENTRAL CALIFORNIA.

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Over 9000 adult rock crabs in the vicinity of Pacific Gas and Electric Co.'s Diablo Canyon Power Plant were trapped and tagged during bi-monthly surveys from June 1976 to December 1980. Pre-operational data were obtained on their relative abundances, distribution, movement patterns, individual growth rates, male:female ratios, and seasonal molting and spawning periods. Incremental growth of recaptured adult crabs averaged 15.6% in carapace width and 54.7% in body weight. A fall increase in both the abundance of females and the percentage of recent molts coincided with peak annual water temperatures in Diablo Cove and was followed by a high proportion of ovigerous females in the winter months. Overall tag returns averaged 10% and tag loss was estimated at 12.7%. The greatest distance traveled by one individual, as indicated by tag returns, was 5 km., yet several crabs at liberty for 8-12 mo. did not move from their original release sites. An observed four-year decline in catch per unit effort was partially attributed to increased sea otter predation in the study area.

LARVAL KIDNEYS IN MARINE PROSOBRANCH  
 EMBRYOS: SPECIALIZED STRUCTURES FOR THE  
 UPTAKE OF EGG CAPSULE ALBUMEN. B.R.

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Larval kidneys in marine snail embryos are cells that protrude on both sides of the embryo. They have been traditionally considered to consist of one or a few vacuolated cells that accumulate waste produced during intracapsular development. In some species they supposedly detach and are left behind at hatching. The larval kidneys of *Searlesia dira* and *Thais canaliculata* were studied with light, electron and fluorescence microscopy. They consist of 1) a large external cell filled with heterophagosomes and possessing a phocytotically active external surface, 2) an internal cell with numerous electron-lucent multi-vesicular-like bodies and 3) a protonephridial-like cell suspended in the haemocoel. Studies with ferritin and fluorescein-labelled capsular albumen indicate that the external cells rapidly take up and store proteins. The fate of this material and the function of the other two cell types remain enigmatic. It is hypothesized that larval kidneys may be specialized structures for the uptake of capsular albumen prior to the functional differentiation of the gut.

FIRST INVESTIGATION OF ANATOMICAL STRUCTURE AND FUNCTION IN UNIONID GLOCHIDIA (MOLLUSCA) USING SCANNING ELECTRON MICROSCOPY (SEM). M. Wiles and T. G. Rand, Saint Mary's University, N. S.

Structure and function of shell valves, shell valve terminal plates, marginal and plate protuberances, sensory tufts and valvular pores were studied. Morphology was also investigated for usefulness in conspecific differentiations within the genus *Anadonta*. Investigation was with a Cambridge S150 SEM operated at 10 kv. Shell valves had strongly sculptured outer surfaces, terminal plates had protuberances and were ribbed, marginal and plate protuberances were tubercle-like, sensory tufts were inserted in the mantle and valvular pores penetrated mantle and valves completely. Protuberances help in attachment to fish hosts, sensory tufts detect host and environmental stimuli and valvular pores are implicated in nutrition and respiration. Terminal plates, plate protuberances and shell valve morphology can be used to distinguish two conspecifics of *Anadonta* in Nova Scotia.

INERACILIARY SCAFFOLDING NETWORK FOR THE SENSORY CILIA IN *HERMISSENDA* STATOCYSTS. A.M. Kuzirian and D.L. Aikou\*. Lab. of Biophysics, IRP, NINCDS, NIH, Marine Biological Lab., Woods Hole, MA.

Ultrastructural analysis of the statocyst, a primitive vestibular organ, of the nudibranch mollusc *Hermisenda crassicornis*, indicates that in addition to the centripetally directed basal foot there is a centrifugally directed infraciliary rootlet system which exists between basal bodies of adjacent sensory cilia. The rootlets project perpendicularly from the basal bodies just below and parallel to the cell surface. Distally they spread out in the form of an astral array covering an area of 80-150 $\mu^2$ . The sensory cilia are arranged in either concentric circles or an outwardly directed spiral and thus impart a multi-directional sensitivity to each of the 13 sensory cells. This rootlet system, in conjunction with the attachment system of the basal bodies to the cell membrane (button anchors) may serve an integrative function for the mechanical stimuli experienced by sensory cells and/or be involved with their transductive processes by maximizing the stress to and membrane distortion of the transductive site caused by weighting of the cilia.

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