Dr. Julian Smith, III Abstract

Research interests: Ecology and Systematics of Marine Meiofauna: Although the meiofauna--tiny animals living between sand grains--are usually overlooked (even by scientists), these animals can be profoundly affected by changes in the physical structure of the outer-beach ecosystem.

The Barrier Islands along the Southeastern coast of the United States are some of the most heavily used tourist beaches in the country, and have, accordingly, undergone extensive development over the past 40 years. Our research focuses on documenting the community composition the meiofauna at four beaches in North Carolina, and comparing these changes to a historical data set developed by the Rieger lab at UNC over the years 1970-1980. (In collaboration with Dr. Stephen Fegley, UNC Institute of Marine Sciences & Dr. Marianne Litvaitis, University of New Hampshire).

Evolution of Epidermal Replacement in Lower Bilaterians: Most free-living flatworms are unusual in lacking any sort of stem-cell population in epidermis. Accordingly, they replace their epidermal cells by immigration of new cells from the parenchyma. Using a new and simplified technique for labeling proliferating cells, combined with confocal laser-scanning microscopy, we have recently examined replacement of epidermal cells in several groups of primitive flatworms, and have turned to an examination of epidermal replacement in annelids and nemertines.