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## Tidal Flat Ecology: An Experimental Approach to Species Interactions by K. Riess

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Tidal Flat Ecology: An Experimental Approach to Species Interactions  
By Karsten Reise. Springer-Verlag, New York 1985. 191 pages.  
ISBN: 3-540-15447-7

A periodic pause to intensely observe a singularly unique ecosystem sharpens one's awareness of this diverse world of ours, especially, as the author notes, if one observes a transitional ecosystem whose ecological treasures are hidden or maybe obscured by a tidal sediment's resemblance to a large, rotten cheese! "It smells, is slimy and sticky, is punched with holes and crowded with various worms." Sounds good to me! Reise's "pause" encompasses 10 years in which he investigated the Wadden Sea mudflats near the border between West Germany and Denmark. He uses this site to discuss the biotic and abiotic interactions within tidal flats in consummate detail.

The text is divided into two major sections: one covering the biogeochemical characteristics of tidal flats and one exploring a series of field experiments at various levels in this ecosystem. The references are sufficient, and I was impressed with the visuals (both sketches and photos); they were detailed, clear, and effectively descriptive of the interactive phenomena between organisms and their substrate.

Reise's introduction to this text makes it clear that the ecological literature is replete with "definitives" derived from laboratory experimentation alone. These definitives fade or pale once they are moved into the "natural complexity" of in situ characterization. This is our hint at our host's years of experimentation that reveal the highly interactive results that may sometimes go unnoted in the ecological literature.

The first section of the text, "The Tidal Flat Ecotone," covers the present state of knowledge regarding physical, biogeochemical, and biological characteristics of tidal mudflats, with a particular emphasis on the flats of Konigshafen surrounding the island of Sylt, on the European continental shelf in the northeastern Atlantic. Reise's descriptions of the physical setting are akin to those of an investigative reporter describing the primordial landscape. For example, "In stable sediments, interstices are filled with flocculent organomineral aggregates. In mud, the clay and silt-size particles are embedded in organic matrices and the mucus produced by organisms intensifies the slippery consistency." Even if you have never conducted any research in mudflats (I have), Reise's descriptions are quite explicit. In my estimation, such sharp descriptions contribute to the ease with which one can read this text even with little direct personal or professional interest in this natural community. Reise's detailed review

of species interaction, diversity, and uniqueness reveals the significance of this ecotone in coastal ecology and should be illustrative of the level of intensity necessary in carrying out ecological inventories. One must keep in mind that this entire text and all of Reise's work cover a single tidal flat ecosystem (Konigshafen), comprising an area of approximately 12 square kilometers.

The second section explores methodology and results arising from the "Experiments on Tidal Flats." Reise takes meticulous care in each section to expose the pitfalls and obstacles to the experimental processes carried out in this system. The methodology of caging was noteworthy; techniques to exclude crab, small fish, and other macropredators from experimental enclosures or exclosures were covered in great detail. Years of experimental results are provided and a wealth of predator-prey dynamics research topics is suggested for future researchers. Reise notes that interactions between species where there are mutual benefits (promotional processes) are not often emphasized in investigations of population dynamics. A series of chapters highlighting the effects of prey and predators on species interactions in mudflats was the most interesting to me.

The final two chapters focus on the micro- and meiofaunal arrangements and interactions of tidal flat communities and magnify the intense biological interactions there for the reader. The only negative point about the text is the lax editorial review that resulted in numerous typographical errors and omissions. With only this minor detraction from an otherwise excellent presentation, I highly recommend this work for graduate students in marine science studies and to researchers of estuarine areas who may not have conducted investigations in mudflats. Joh