LABORATORY ANALOGUES OF ESTUARINE PLANKTON SYSTEMS

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Estuarine ecosystems show regulatory feedback at different levels. Ordinary cultures do not help much in the understanding of the problems of regulation, but continuous flow cultures are a stimulating experimental device. A culture vessel receives a constant input of fresh medium; growth of the population, of one or more species, is balanced by loss through the outflow. A row or any complex pattern of such culture vessels, or chemostats, connected in the way that the outflow of one container is the inflow of another, is an excellent analogue of an estuary.

Simplification of structure (= drop in the diversity) of populations is easily demonstrated when flow (= exploitation) is increased and sustained. Species able to remain attached to the walls of the containers, even with a lower ratio production/biomass , are successful in competition with unattached species. The result of such competition makes losses of the whole population, through the outflows, less density dependent. A positive correlation has been found between the ratio production/biomass and the average probability of being carried away by the flow. Both parameters are negatively correlated with the ratio D_{430}/D_{665} of the absorbancies, at the stated wavelengths, of acetonic extracts of plant pigments, and also with species diversity, when available.