INFLUENCE OF SUBSTRATUM ON PREDOMINANTLY PHYSICALLY CONTROLLED COMMUNITIES

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In predominantly physically controlled communities, a physical factor,concerning the nature of the bottom loses more and more its influence on the distribution of Polychaets and no longer has that fundamental importance which is ascribed to it as a limiting factor in biologically accomodated communities.

Dans les communautés controllées surtout par des facteurs physiques, un de ces facteurs, celui qui concerne la nature du fond, voit diminuer de plus en plus sa valeur dans la distribution des Polychètes et n'a plus l'importance fondamentale qu'on lui attache en tant que facteur limitatif dans les communautés biologiquement adaptées. Il s'agit d'un exemple extrême de stratégie adaptative des espèces par rapport aux difficultés du milieu.

The stability time hypothesis(Sanders,1968) suggests a gradual and continuous change from a biologically adapted community to one predominantly controlled by physical factors following a gradient of physiological stress. However the nature of the substratum, which is of fundamental importance in biologically adapted communities,loses its importance in polluted environments, where the communities are controlled mainly by other physical factors.This fact concerns various opportunistic species(Capitella capitata,Staurocephalus rudolphii,Nereis caudata,Scolelepis fuliginosa,etc.) as well as other Polychaets which,although never catalogued as opportunistic species,are nevertheless able to colonize the most unpredictable environments.They may be successful only if in the genic pool of the various populations,favourable genotypes

susceptibles to be influenced by selection already exist(Cognetti,1978). In the brackish lagoon of Orbetello(Toscana), more than 70 species of Polychaets were collected. In the most vivified zones they live on specific types of substrata, as it occurs in the sea. In the inner areas of the lagoon instead,where the physico-chemical conditions are extremely unstable and where a strong eutrophication occurs,only few species as Platynereis dumerilii,Exogone gemmifera,Eulalia sanguifera, E.punctifera, Phyllodoce rubiginosa, P.vittata, Eteone picta, are able to survive. They spread indifferently on each type of bottom: hard artificial bottoms, muddy bottom, decaying vegetation etc. In clean sea waters these species live among the bottom weeds. All these species are well represented and live together with other as Capitella capitata and Scolelepis fuliginosa, which are typically opportunistic and more adaptable in lagoon to saprobic environments.

In predominantly physically controlled communities of Polychaets, therefore, the bottom loses more and more of its foundamental importance, as a limiting factor, that it on the contrary has in biologically accomodated communities(Cognetti,1978). These data represent an extreme example of the adaptive strategy of the species with respect to the environmental difficulties and confirm what Sanders suggests, that is when there is a large temporal variation, the effects of the spacial variation are masked. The phenomenon may be related to Mc Arthur's observation (1960) during the initial stages in the colonization of an island by birds, where only a few species are present but distributed through a number of habitats.

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