



The Consumer-Resource Relationship: Mathematical Modeling

Claude Lobry

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DESCRIPTION

Better known as the "predator-prey relationship," the consumer-resource relationship means the situation where a single species of organisms consumes for survival and reproduction. For example, *Escherichia coli* consumes glucose, cows consume grass, cheetahs consume baboons; these three very different situations, the first concerns the world of bacteria and the resource is a chemical species, the second concerns mammals and the resource is a plant, and in the final case the consumer and the resource are mammals, have in common the fact of consuming.

In a chemostat, microorganisms generally consume (abiotic) minerals, but not always, bacteriophages consume bacteria that constitute a biotic resource. 'The Chemostat' book dealt only with the case of abiotic resources. Mathematically this amounts to replacing in the two equation system of the chemostat the decreasing function by a general increasing then decreasing function. This simple change has greatly enriched the theory. This book shows in this new framework the problem of competition for the same resource.

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