Accounting for the multiple kinds of human population dynamics.

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Description

Population dynamics is a study of how and why population size and structure change over time. A key component of population dynamics is reproduction, mortality, and migration. For example, the abundance of a particular species such as snails can be controlled by the abundance of organisms that adversely affect the species in question, such as competitors, predators, and illnesses. During the coronavirus era, much of the television and magazine news attempts to explain how the size of infected populations is evolving, showing exponential graphs of infected populations over time. These communications seek to predict the future evolution of the size of this population over time. Behind these predictions is always a differential equation model. These polynomial models have linear terms, but to accommodate more complex interactions, terms of higher order than more analytically complex functions, such as reduction of quadratic, cubic, or hyperbolic terms.

The problem of choosing a complex or simple model depends on the balance between expressing nature correctly and understanding the model's response. In many cases, the simplest model is sufficient to get a complete picture of the benchmark, but sometimes a more complex model is needed to represent the essential aspects of the problem. Therefore, a more complex and difficult model is needed. Population dynamics conceptually important for biological control of mosquitoes, significant impact on biological control of mosquito populations, as density-dependent population regulation between immature stages can lead to compensatory or over-compensatory mortality, primarily due to the addition of biocontrol agents. This can lead to management efforts that do not lead to changes in the target population or actual growth in the target population. Density-dependent effects and compensatory or excessive compensatory mortality rates appear to be most common in mosquitoes from containers or very short-lived habitats. In permanent groundwater habitats, common predators appear to limit mosquito populations, thereby increasing mortality.

Therefore, biological control in permanent groundwater habitats seems most likely to produce satisfactory results. The central premise of classical biological control is that the pest population is reduced by the enemy to a stable equilibrium level that is below the pre-control equilibrium level and well below the levels that have harmful effects. This premise is that for successful biological control, special enemies with shorter generation times, higher search success rates, higher rate of increase, and fewer victims ending the circulatory system. It leads to the prediction that parasitoids are likely to be involved. These predictions fail primarily in mosquito systems. There, successful biological control appears to be associated with generalist enemies that kill most of the target population, often cause local extinction, and may survive in the absence of the target organism. Mosquito biocontrol seems to be unstable in nature, in contrast to classical biocontrol.

Therefore, it suggests the need for better data on mosquito population density-dependent regulation. The causes and consequences of adaptive evolution in life story strategies shape reproductive success and thus long-term survival. Most large mammals, from whales and elephants to humans, are typical strategists, maximizing their fertility in life with low fertility and high survival. Nevertheless, the characteristics of life history can change spatiotemporally due to differences in social or cultural, ecological, and environmental factors. Ecosystems, especially the marine environment, change rapidly due to a wide range of natural and anthropogenic processes. As a result, marine mammals are increasingly exposed to a variety of stressors, including chemical pollutants and noise pollution.

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