

Compensation and density dependence.

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Compensatory mortality is a key concept in sustainable resource development and predator-prey theory. Two driving mechanisms underlie compensatory mortality: seasonality and density dependence. Indeed, density dependence is fundamental to being able to achieve a sustainable harvest policy and is also central to stabilizing predator-prey systems. An intuitive view of compensatory mortality promoted by Paul Errington is the notion of an annual doomed surplus of recruits produced each year that can be harvested or killed by predators with no consequence to the spring breeding densities. Details of seasonal timing of harvesting and predation can have substantial consequences to population dynamics and the magnitude of compensatory versus additive mortality. An interaction between density dependence and harvest or predation mortality can result in overcompensation or the Hydra Effect where survival and/or population size is actually increased by low to moderate removals.