Population Dynamics: Alternative Models. Bertram G. Murray, Jr. Physiological Ecology. 212 pp. Academic Press, 1979. $21.

Murray returns to "the central ecological problem of the 1950s," population dynamics. His purpose is to develop a theoretical alternative to explanations based on "density-dependent regulation."

He emphasizes the influence of the size of a study area on the interpretation of its population dynamics and urges ecologists to shift attention from population numbers to age-specific birth and death rates. He proposes that these rates are controlled by four components of the environment: space (especially for territorial species), time (in species with a limited breeding period), food (more generally, mass and energy input), and predation (mass and energy output).

Of the earlier proponents and antagonists of "density-dependent" and "density-independent" models, Murray observes astutely that "words failed them." An ornithologist, he is strongest in reviewing empirical ecological papers that favor or argue against previous models. The book presents a fine discussion of the competitive exclusion principle.

Unfortunately, the author has not applied the same critical standards he uses for the theories of others to the theories he suggests. The book is weakened by a considerable number of statements that are unsubstantiated, contrary to fact, or self-contradictory.—*Joel E. Cohen, Populations, The Rockefeller University, and International Institute for Applied Systems Analysis, Laxenburg, Austria*

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