The Beverton–Holt Model and some of its modifications

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Abstract

This presentation gives an overview of models in the continuous and discrete time domain, as well as on arbitrary isolated time scales, that are related to the Beverton–Holt recurrence. While the classical Beverton–Holt equation describes populations under the assumption of constant growth and constant environmental conditions, it is reasonable to consider time-dependent model parameters. This extension leads to the discussion of the effect of a seasonally forced environment, originally formulated as Cushing–Henson Conjectures. For the introduced discrete modifications of the Beverton–Holt model, a periodic environment is deleterious for the population under the assumption of a constant growth rate. However, applying a new formulation of periodicity on arbitrary isolated time scales [1] reveals that a periodic environment is only deleterious for a population with constant growth rate and certain underlying time structures.

References

[1] M. Bohner; J. Mesquita; S. Streipert, Periodic functions on isolated Time Scales, *Mathematische Nachrichten*, 2020, To appear.

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