
Spatial property-rights fisheries with potential regime shift

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Abstract

We address the non-cooperative exploitation of a migratory renewable resource in the presence of possible regime shift affecting the spatial movement of the resource. At an unknown date in the future, environmental conditions may abruptly and irreversibly shift, thus altering the spatial movement patterns of the resource. We design a stochastic spatial bioeconomic model to address the effects of these types of shifts on non-cooperative harvest decisions made by decentralized owners. We find that the threat of a future shift modifies the standard golden rule and may induce larger harvest rate everywhere, irrespective of the initial stock and whether the owner will be advantaged or disadvantaged by the shift. We also identify conditions under which the threat of regime shift induces owners to reduce harvest rates in advance of the threat. Our theoretical results are illustrated with a numerical example.

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