

Source-sink impulsive bioeconomic models: Seasonal closures with fixed length

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The dynamics of four source-sink models for an exploited resource under a constant fishing effort are here presented. Two models are described by ordinary differential equations; the other two are expressed by impulsive differential equations systems. A continuous time growth function for the resource is assumed for each of the four model. The impulsiveness in the harvest activity among fixed seasonal closures were considered in the models expressed by impulsive differential equations. We note that all our models show the possibility of getting a sustainable resource exploitation. The results obtained using both techniques are compared. These metapopulation models suggest the convenience of considering the source patches as marine reserves, in order to preserve the renewable resources. © 2011 Taylor & Francis.