



Hamilton Institute

Using Optimal Control Theory to Design Sustainable Harvesting Policies for Renewable Resources

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Abstract:

The design of harvesting policies for renewable natural resources, such as fish stocks and forestry, can be considered as a non-linear, optimal control problem. This talk focuses on the design of a harvesting policy for fish stocks, which converges to the case where the rate of fishing matches the rate at which the fish stocks are being replenished. However, there is a critical initial stock level below which the optimal harvesting policy is to “collapse” the fish stocks by harvesting the remaining fish as quickly as possible. It is shown that even when following the optimal sustainable policy, if the policy is not implemented correctly (for example, by re-optimising after a fixed interval), then this can result in the collapse of the fish stocks.

The talk will also briefly describe current research into the design of feedback mechanisms that will accommodate the inherent uncertainties in the system and the application of the ideas to the design of sustainable policies for greenhouse gas emissions.

Venue: Seminar Room, Hamilton Institute, Rye Hall, NUI Maynooth

Time: 2.00 - 3.00pm (followed by tea/coffee)

Travel directions are available at www.hamilton.ie

