

# **Cooperative and non-cooperative harvesting in a multi-species fish war model**

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## **Abstract :**

The present paper investigates the role played by cooperation for the sustainable management of an exploited ecosystem. To achieve this, a bio-economic model based on a multi-species Gompertz dynamics with trophic interactions is considered. A comparison between the noncooperative and cooperative optimal outcomes is done. It is first proved how fishing intensity is larger in the non cooperative case. Then it is proved how viability of the ecosystem is also reinforced by cooperation. An application to the small scale fishery in French Guiana illustrates the results.