Theme: Modelling

Session: WeC3 - Bioeconomic modelling 2

Title: **Sea Turtle Interactions with Hawaii's Longline Fishery: An Extended Multiobjective Programming Model Incorporating Spatial and Seasonal Dimensions**

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Abstract: Accounting for endangered and protected sea turtle interactions with the pelagic longline fishery by the fishery management has become an important policy goal recently. A multi-objective programming model for Hawaii's longline fishery that incorporated sea turtle interactions (Pradhan and Leung, in press, Ecological Economics) has been extended with spatial and seasonal dimensions. As a result, the synergetic effect of these added features indicate that there exists better economic and environmental efficiency gains in terms of higher profit and reduced turtle interactions compared to the base case and without these added dimensions by reconfiguring fishing efforts across space and seasons. There also exists a trade-off between fleet-wide profit and turtle interactions. The current fishery policy related to sea turtle interactions disallows capturing all the potential efficiency gain, as the number of turtles allowed to get interacted severely limits swordfish-targeted longline fishing that uses conventional technologies. Restricting longline fishery to operate sub-optimally has average per turtle shadow value of $15,957 and $60,908 in terms of lost profit and revenue, respectively. Adaptation to 'turtle-friendly' fishing technologies is among the many strategies that would allow for higher optimal fishing efforts and also leading to higher overall welfare and towards more responsible fishery.

Note: The full paper will be published in Applied Economics.