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Theme: Modelling

Session: ThC4 - Harvest strategies

Title: **When high market prices sustain the pressure on fish stocks:
Ups and downs of the European eel fishery between 1961 and
2005**

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Abstract: European eel (*Anguilla anguilla*) is one of the most important commercial species in France (eel larvae (glass eel) exports to Asia valuing more than 60 million euros in 2005) but also an endangered species with regard to the dropping recruitment. This species is particularly sensitive to oceanographic and climatic factors but also to anthropogenic factors. Prices of the European glass eel have tremendously increased for the past 40 years from a few euros per kilo to more than 1000 euros per kilo in 2005. The eel market offers a particular field of interest for research because of the mixed ecological and economic factors affecting the price equilibrium. An important set of market data between 1961 and 2005 has been collected from one of the most important glass eel traders in France. These data seem to be more reliable than the official statistics because the industry has a strong incentive to shadow their prices due to the high value of information on this market. We first examined the relationship between environmental factors and market data. Our results show the strong influence of oceanic environmental features on recruitment of European eel. These environmental factors might explain the production decrease in the early 1980s. We also demonstrate that this lower recruitment has led to an increase in price which has attracted other fishermen. When modelling prices like financial time series, we observed two structural breaks on the glass eel market. The emergence of new markets (Japan and then China) where the price elasticity is rather low has significantly enhanced the profitability of the fishery. It is commonly admitted that the low level of landings should hinder the economic returns of the fishery and hence keep the fishermen away from it. In the present case study, the reduction of landings has been compensated by higher market prices to such an extent that the licensed fishermen have kept on harvesting, thus increasing the pressure on stocks.