

fisheries revenues and costs. The model includes a multifleet component which enables us to be as close as possible to the current organization of the West of Scotland fisheries. Three bioeconomic models are tested. The baseline model assesses seal impacts on fisheries revenues in the long term assuming a constant fishing mortality. Two dynamic models are also tested to determine seal impacts when fleet behaviour is considered: the open-access model where the revenues are dissipated at the equilibrium and the closed fishery model where the fleets maximize their net profits (Maximum Economic Yield scenario). Cod is the fish the most impacted by seal predation so its collapse in the long term has to be avoided to observe any possible seal impact. The open-access model predicts cod collapse regardless of the number of seals so no impact is observed in this scenario. The baseline and MEY scenarios show that a small change in seal population can induce a slightly larger change in fleet revenues at the equilibrium. However, the MEY scenario estimates a substantial impact on the total fishery profitability. Consequently fleet revenues and fishery profitability may be increased by grey seal management, but this strategy can only be successful by applying complementary fisheries regulations to avoid cod collapse in the long term.

Keywords: Bioeconomic Models, Fisheries, Seal Predation

Competitive interactions between pulse and beam trawlers in the Southern part of the North Sea

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Abstract: Since 2009 every European member state is allowed to replace 5% of its beam trawl fleet by pulse trawlers to target demersal fish in the Southern part of the North Sea. Compared to beam trawling, pulse trawling is more efficient in terms of fuel use, reduces by-catches and has less disturbance of the seafloor. The Dutch beam trawl fleet switched gradually to pulse trawling and since 2012, 42 vessels are equipped with pulse fishing gear to target sole (*Solea solea*). Simultaneous changes occurred in the fishing effort distribution of Belgian beam trawlers. Effort is reduced on fishing grounds which they exploit together with pulse trawlers and reallocated to areas where pulse trawlers do not fish. This study investigates the relationship between the introduction of pulse trawlers and the changed effort patterns of Belgian vessels. The focus of this study is on the short term and reversible mechanism of interference between fishing vessels. This mechanism is examined based on the difference in weekly exploitation patterns of Belgian and Dutch fishing vessels. Dutch fishermen typically make fishing trips from Monday until Thursday, while Belgian fishermen continue fishing during weekends. Thus, if interference competition increased, we hypothesize that daily catch rates during weekends should be higher than during weekdays. Logbook data of commercial Belgian beam trawlers were used to fit a regression model with an interaction effect accounting for the weekend effect. Other relevant covariates accounting for skipper effect and spatio-temporal variation are included as well. Results show differences in catch rates for sole between weekdays and weekends. In 2012 and 2013, daily sole catches are higher during weekends than during weekdays. Before 2012, in absence of pulse trawling no difference was measured. For plaice (*Pleuronectes platessa*), there was no weekend effect in 2012, but in 2013 there was a negative effect during weekends. For the values of landings, there was only a negative effect during weekends in 2012. Our results show that interference competition for the target species sole increased. Fishermen reacted in different ways, some fishermen fish less in the Southern part of the North Sea and reallocate effort to other fishing areas while other fishermen changed their strategy by targeting plaice to balance the loss of sole in 2013.

Keywords: Fleet Dynamics, Econometrics, Pulse Fisheries

An application of life-cycle theory to the west of scotland cod fishery

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Abstract: This paper applies a life-cycle approach to the West of Scotland fishery for atlantic cod. It approaches the fish stock as a harvestable resource regardless of growth levels and drops the assumption usually