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Daily variation of fishing effort and ex-vessel prices in a western Mediterranean multi-species fishery: Implications for sustainable management

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ABSTRACT

The daily variation of fishing effort and ex-vessel price was analysed to determine which day of the week is suitable to ban the fishery, as an alternative management measure to the one month seasonal closure. Thus, 10-years landings data were used from two representative trawling ports of the western Mediterranean: Dénia and La Vila Joiosa. Analysis of variance (ANOVA) was used to detect significant differences in fishing effort (total and by métier) and daily ex-vessel price of the main target species. Also, the economic loss produced by banning one day (the proposed measure) was compared to economic loss produced by the seasonal closure (the actual measure). Daily variation in the fishing effort was observed in La Vila Joiosa mainly due to higher effort at the end of the week devoted on crustacean métiers, while effort was similar among days in Dénia. The lowest mean prices for most target species were on Tuesday and Wednesday, and were higher on Monday and Friday. Banning one day per week (Tuesday or Wednesday), when market prices of target species are lower would reduce the double of effort than one month of seasonal closure, and likely without subsidies. However, the loss by banning all Wednesdays (approx. 50 days) was higher in both ports than one month, but lower than an equivalent two months closure.

1. Introduction

For many reasons multi-species multi-gear fisheries (e.g. Mediterranean fisheries) present an immensely more difficult challenge for fisheries management than single species fisheries, combining management complexity, scientific uncertainty and political sensitivity [1]. Due to the diversity of both, the characteristics of fleet and the catch composition, the GFCM (General Fisheries Commission for the Mediterranean) has placed emphasis on the direct control of fishing capacity and effort rather than catch limitation as an effective way to reduce fishing mortality [2,3]. Measures to regulate fishing effort are the main measures used for the management of Mediterranean multi-species fisheries, in combination with other technical measures, i.e. minimum mesh and landing size or spatio-temporal closures [4]. The objective is trying to reduce the pressure on fish stocks by limiting the overall size of the fleet as well as the amount of time that the fleet can spend fishing. This includes: limiting the number of vessels (fishing licenses), limiting fishing capacity (total and individual power), and limiting the fishing time (seasonal closure, days in a week or hours in a day) [4]. Out of these, limiting the fishing time is one of the most effective ways to reduce the fishing effort.

Adopting the seasonal closure to limit the fishing time involves withdrawing the semi-industrial fleet (i.e. trawl fisheries) for a specified period (1–2 months depending on the port and the year). This normally generates problems, because it requires subsidies for vessels owners and crews to compensate this period without revenue, while it also may cause a drop in prices due the market imbalances [5]. Besides the burden of the subsidies on the administration, closure involves an additional problem in the Mediterranean fisheries that have been criticized as most of these subsidies have been transformed into structural compensations [5,6]. On the other hand, controlling the fishing effort by limiting the number of fishing days per week can have the opposite effect, because it keeps weekly earnings and may lead to short-term price increases by concentrating sales/purchases and could be adopted without subsidies.

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For these reasons, a recent surge of studies in the western Mediterranean has discussed the reduction of effort by banning fishing one more day per week (other than the week-end) instead of the seasonal closure [5,7,8]. This would result in approximately the double annual amount of effort reduction if compared with one month of closure; as well minimize the short-term negative economic effect of seasonal closure on market prices and therefore, on fishers income [5]. Also it is more acceptable by the fishing community to stop fishing one day than a whole month, and can be easily applied without additional costs of subsidies. However, the selection of which day has to be banned is still under discussion. Daily variation in fishing effort and first sale landings prices (also called ex-vessel prices) of the main target species, are important to consider in order to select the most suitable day to be banned.

The aim of this work is to analyse the daily variation of fishing effort and ex-vessel price to determine which day of the week is better to ban the fishery. The economic loss produced by banning

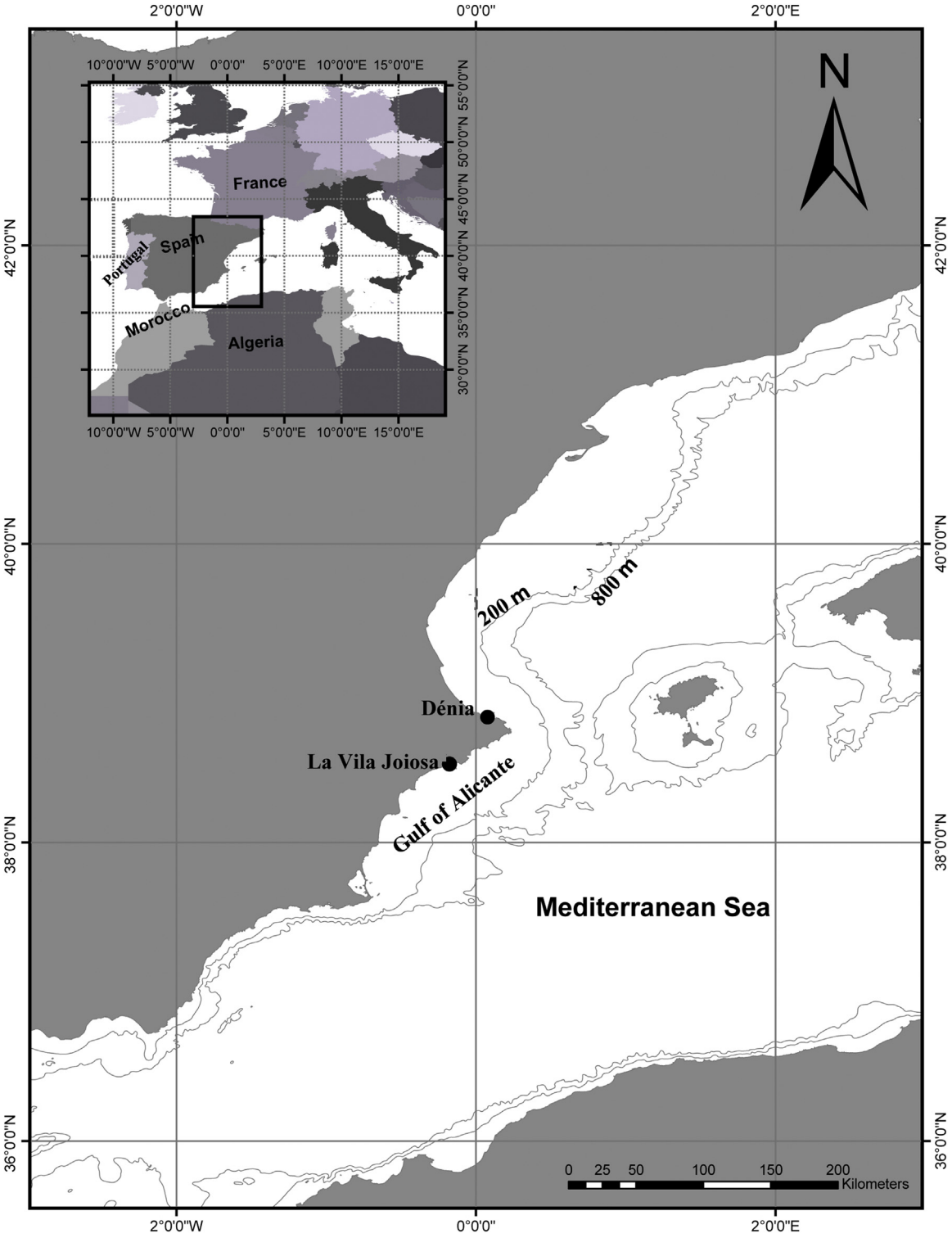

Fig. 1. Map of the study area (SW Mediterranean) showing the location of the two trawling ports studied: La Vila Joiosa and Dénia (Spain).