

NOTE ON HISTORICAL AND PRESENT EXPLOITATION OF *CORALLIUM RUBRUM* (LINNEO, 1758) IN THE CENTRAL WESTERN MEDITERRANEAN

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Abstract

The analyses of the landings and CPUE data from 1978 to 2005 for red coral in Sardinian seas (Central Western Mediterranean) were made. A statistical decrease in the landings can be observed. This reduction resulted very close to the decrease in the number of boats harvesting red coral. CPUE analysis at last allow to know that the average yearly amount of red coral landings by diver resulted steady with time.

Keywords: *Cnidaria, Stock Assessment, Time Series, Western Mediterranean*

Introduction

Red coral has been greatly exploited all over the Mediterranean Sea. The great exploitation of red coral made it a resource in danger according to many authors [1, 2, 3, 4, 5, 6]. Sardinia has a long history of red coral harvesting which led the adoption of a number of laws to manage this important resource. The most important rule established in 1989 in Sardinia (LR 30 maggio 1989, n. 23) banned the use of any towed gear to harvest red coral and imposed that only professional divers are allowed to pick up the coral manually. The aim of this work is then to evaluate if this resource in Sardinia has suffered overexploitation between 1978 and 2005.

Materials and Methods

The historical state of exploitation of the *Corallium rubrum* resource in Sardinian seas has been evaluated through the analysis of the data from FAO fisheries statistics. Yearly landings data (kg) from 1978 to 2005 were analyzed to find possible trends. Moreover, for the same period the analysis of the Catches per Unit of Effort (CPUE) has been made. The unit of effort here considered is the number of boats in which the "ingegno" was used for the period 1978-1989. The unit of effort in the following years is the number of divers manually harvesting the red coral. CPUE then represents the yearly mean of the red coral fished for unit of effort. Statistical trends were evaluated with the Spearman rank test [7].

Results and Discussion

FAO sources supply data for the red coral Sardinian landings from 1978 to 2005. A sharp decrease can be observed (Fig. 1). Spearman test indicates a statistically significant decreasing trend ($P\text{-value} \ll 0.01$). In fact from 1978 the data fall from more than 45000 kg to less than 5000 kg in 1990. After this 12 years decrease, however, a low steady state seems to be present (average of about 206 kg in the period 1989-2005).

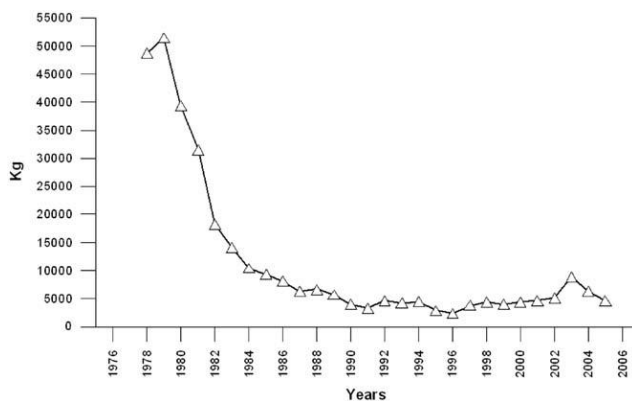


Fig. 1. FAO landings data of *Corallium rubrum* for the sea around Sardinia (1978-2005)

This data alone however cannot be used as a sure assessment of a resource in danger. In fact if the number of boats used to harvest red coral is considered, a marked decrease of them can be noted. So the fishing effort has changed too with time and the decrease in the landed red coral does not necessarily indicate a decrease in its production. The CPUE can then be used to evaluate if the average of red coral landed by boats (or diver) has changed over time (Fig. 2).

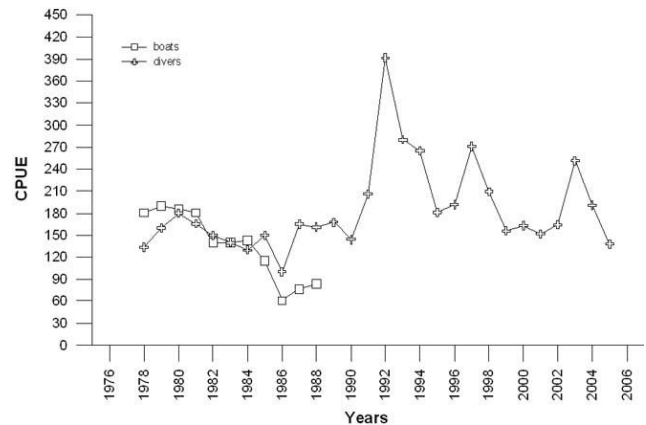


Fig. 2. CPUE (kg) of *Corallium rubrum* in the seas around Sardinia (1978-2005)

From 1978 to 1988 both the ingegno and the manually harvesting were made. The latter became the only way to pick up coral in Sardinia since 1989. A certain decrease in the CPUE relative to the boats can be observed, however, the data of the CPUE by diver show a steady state (mean value = 184 kg, $P\text{-value} > 0.05$). The average amount of red coral landed by diver seems not to be decreased with time in the analysed period. These analyses show that the amount of red coral by diver stayed constant with time without decreasing as should be the case if an overexploitation of the resource is present. The regional laws seem to work in a good way to prevent the overexploitation of this resource in Sardinia.

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