

CATCHES OF THE SPORT FISHING COMPETITIONS ALONG THE MALTESE COAST.

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Abstract

Coastal fish communities suffer from various anthropogenic activities. To improve integrated coastal zone management and conservation, recreational sport fishing along the coast of Malta, unstudied before, is the focus of research that started in July 2012. Results from creel surveys conducted during 35 sport fishing competitions and with 26 hobby anglers are presented here. A total of 13,205 fish were recorded from 64 different species belonging to 25 families. Benthic species were predominant in catches. This first scientific study in collaboration with sports and recreational fishermen allows for conservation measures to be increasingly considered and integrated in the activities of these recreational fishing activities. Stakeholders participate and learn from the scientific process while working closely with conservation scientists.

Keywords: *Mediterranean Sea, Fisheries, Coastal waters, Conservation*

Recreational fishing is one of the most popular leisure activities in coastal zones in many countries [1], [2] undertaken by approximately 10% of the global population [3], [4] reaching almost 11% in Europe [5] and making up more than 10% of total fisheries production in the Mediterranean [2]. Marine recreational fisheries however, are not monitored as commercial fisheries are [6], [7].

In the Maltese Islands, there is a lack of knowledge regarding recreational and sport fishing along our coasts since licences are not required to fish from the shore. In this study of shore-based recreational sport-fishing in Malta, roving-access creel surveys undertaken during 35 sport fishing competitions between July 2012 and December 2013 were used to quantify catches, catch per unit effort and angling effort. Response rate was 100%.

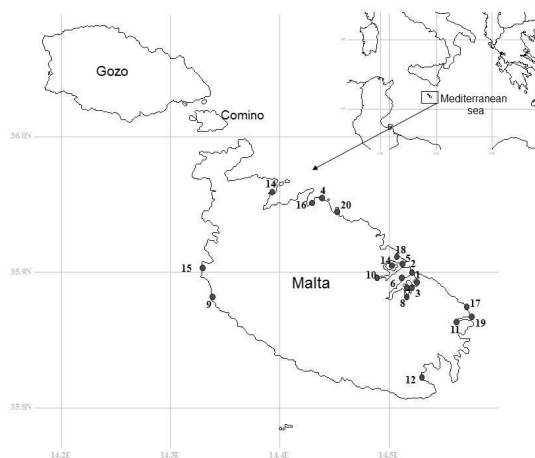


Fig. 1. Map showing sampling locations during sport fishing events between July 2012 and December 2013.

The overall catch-per-unit-effort (CPUE) during sport fishing competitions was 2.21 fish angler⁻¹h⁻¹ or 0.09kg angler⁻¹h⁻¹ with lower catches by recreational fishermen observed (1.13 fish angler⁻¹h⁻¹). Differences in CPUE by weight and number of fish were observed between 2012 (2.74 fish angler⁻¹h⁻¹ or 0.12kg angler⁻¹h⁻¹) and 2013 (2.05 fish angler⁻¹h⁻¹ or 0.08kg angler⁻¹h⁻¹), with lower values for the latter also observed in corresponding quarterly periods. Catches were also generally higher in spring and early summer (sea temperature of 19–25°C) decreasing slightly at higher temperatures and showing site variation. Each competition lasted an average of 4.8 hours while hobby anglers fished a mean 3.4 hours per trip. The most popular rig used was the paternoster rig which involved a line with a sinker attached at the extreme end and two hook traces above and used when targeting bottom fish. This was reflected in the catches where the most important species were *Coris julis* and *Diplodus annularis* accounting for 14.2% and 13.4% respectively of the total catches by

number. There was a statistically significant difference (Kruskal-Wallis test) in weight ($p=0.01$) and number ($p<0.01$) of fish caught across the different hook sizes with sports anglers using smaller hook sizes. While numbers of fish caught have been found to increase with decrease in hook sizes, smaller sized fish are also being targeted. This is of concern as the more vulnerable juvenile fish are more likely to be caught with greater mortalities.

Catch and release was practiced by sports fishermen where 75% used keep nets with an instant fish mortality rate varying between 5 and 100%. There was a small positive correlation (Spearman's correlation coefficient) between the temperature and mortality, $r = 0.274$, $n = 351$, $p < 0.001$ with high levels of mortality associated with higher levels of sea temperature. Thus, handling and fish air exposure must be more limited during warmer temperatures. Competitions taking place during the summer should also be reduced and of shorter duration so as to limit the effect of temperature and keep net use on the mortality of fish.

Sport fishing clubs hold regular competitions throughout the year and may provide information on catches that allow changes to fish abundance from year to year to be assessed. Through collaboration for scientific research, catch and effort by the sport fishing population is being monitored. The use of minimum hook sizes and barbless hooks during competitions and enforcement of minimum legal sizes (MLS) when retaining fish caught by recreational fishermen is hereby being suggested. Following this research, sports fishing clubs are now inviting scientists to collaborate e.g. during the European Shore Championships organised by the European Federation of Sea Anglers Malta where conservation scientists were invited to carry out research and provide assistance on procedures to limit mortality of fish. Such collaborations are the way forward to ensure that any conservation and management arrangements required for the recreational and sport fishery are implemented fully and expeditiously.

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