

## SPEAR FISHING IN THE EASTERN ADRIATIC

Alen Soldo<sup>1</sup>\*, Frane Ā Keljo<sup>2</sup> and Jure Brčić<sup>2</sup>

<sup>1</sup> Institute of Oceanography and Fisheries, P.O. Box 500, 21000 Split, Croatia - soldo@izor.hr

<sup>2</sup> Department of Marine Studies, University of Split, Livanjska 5/III, 21000 Split, Croatia

### Abstract

Recent investigations show that spear fishing can have similar effects as commercial fishing. Research of spear fishing competitions in eastern Adriatic was performed during 2005. Overall, 28 different species were determined (26 teleost and 2 chondrichthyan species). The dominant (by number and weight) species were *Labrus merula*, *Diplodus sargus* and *Conger conger*.

**Keywords:** Adriatic Sea, Coastal Waters, Fisheries, Rocky Shores.

The importance of sport and recreational fishing has been consistently understated and under-reported [1]. However, nowadays it has been considered that all fishing activities have environmental impacts, so it is not appropriate to assume that these are negligible until proved otherwise. Hence, latest investigations pointed that such fishing can also cause ecosystem degradation of similar scales and types compared with commercial fishing [2]. Within sport fishing, spear fishing is one of the most popular and increasing fishing techniques in the Adriatic. Additional benefit for spear fishing in the Adriatic is the fact that mean annual sea temperatures are relatively high, which is suitable for performing of such fishing technique throughout the whole year [3]. Latest research of spear fishing in the Balearic Islands (west central Mediterranean) showed that during sport competitions spear fishing affected over 30 species, among which the most abundant were *Diplodus sargus*, *Symphodus tinca*, *Labrus merula* and Mugilidae. Hence, a decreasing trend over time for the mean CPUE was observed [4]. Conversely, it has to be pointed that it is a selective sport, as spearfishers tend to harvest larger individuals within a species. Thus, each target is individually selected, so bycatch should be zero, which is definitely a positive feature. According to Croatian regulations spear fishing using SCUBA gear is banned, as is night spear fishing. Research of five different competitions, which occurred in different locations throughout eastern Adriatic coast and lasted for several days, was performed from June to December 2005. Each caught specimen was identified, while length was measured to the nearest mm and weight to nearest g. CPUE was calculated for each competitor (g/competitor per hour). Overall, 628 specimens, weighing 554,82 kg, were caught, belonging to 28 species (26 teleost and 2 chondrichthyan species). Of 13 families present in total catch, Labridae and Sparidae were most dominant by number, while Congridae and Sparidae by weight (Fig. 1).

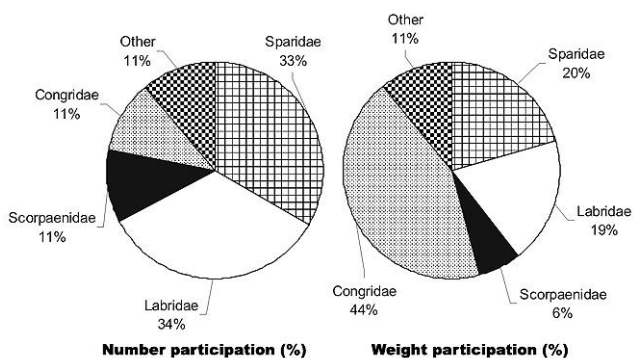


Fig. 1. Number and weight % of dominant families in spear fishing.

By species, the highest number of caught specimens belonged to brown wrasse, *Labrus merula*, white seabream, *Diplodus sargus* and european conger, *Conger conger*, while by weight *C. conger* was, due to its size, most dominant, followed by *L. merula* and *D. sargus*. Obtained results are similar to the data from west-central Mediterranean [4], which means that, due to the same fishing technique, spear fishing targets mainly the larger stationary fish species, which inhabit coastal, mainly rocky, areas of depths up to 40 m. CPUE varied between different sites (Fig. 2) and this shows that prior access by spearfishers to the site is important, e.g. data from the Senj area, where most competitors spent a long period exploring the area prior the competition, due to its importance as National championship, was also the site with the highest recorded CPUE. Another

factor influencing CPUE is the season. This is indicated by checking the data from the Podgora area, where a difference in CPUE can be observed between two competitions held at the same site, but with a 3-month period in between. A decreasing trend in some species' mean sizes was observed by comparing new data to the data obtained a year before [5], but the time period was too short to make a reliable conclusion. Although competition catches are influenced by competition rules, and may bear little relation to regular spearfisher catches, it is presumed that such data can be reliable in determining target species and weight per unit effort, and therefore, useful for the management of recreational fisheries [6]. Thus, both competition and recreational spear fishing seem to have an important effect on target fish in the Adriatic, especially for fish which are not targeted by any other gear, e.g. *Labrus merula*.

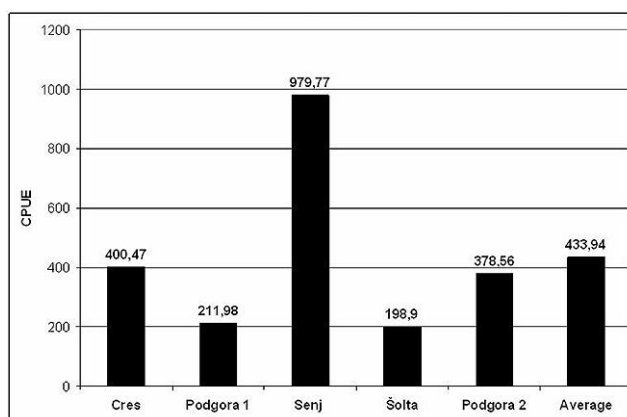


Fig. 2. Catch per unit effort (CPUE) for different areas and average (g / spearfisher per hour).

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