

THE LOBSTER FISHERY WITH GILLNETS IN THE EASTERN ADRIATIC

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Abstract

Lobster fishery in the Eastern Adriatic should be performed with pots and lobster gillnets, but other gillnets and trammel nets are also used. Influence of gillnets, with inadequate mesh size, on lobster has been evaluated according to length frequency of caught lobsters, percentage of immature specimens, sex ratio and length-weight relationship. According to obtained results, impact of gillnets with inadequate mesh size on lobster is very harmful, so lobster fishing with such gillnets should be forbidden, in order to prevent overfishing and extinction of this species in the Eastern Adriatic.

Keywords : fisheries, Adriatic Sea

Introduction

Common spiny lobster, *Palinurus elephas* (Fabricius, 1787), is known from the western and central Mediterranean up to coasts of Turkey, while in the Atlantic it occurs from the British Isles to the Azores (1). In the Eastern Adriatic it is distributed throughout the entire coast at depths from 20 to 120 meters, but it is rare in the Northern Adriatic. Main areas of its distribution and in the same time its most important fishing areas are southern sides of distant islands (2).

According to croatian fishing legislation lobster fishing season is from 1st May to 31st August and it should be performed by lobster pots with minimum mesh size of 110 mm or by lobster gillnets with minimum mesh size of 240 mm. Because of deficient fishing legislation, in lobster fishing areas, trammel nets and, especially, gillnets with 120 mm mesh size, originally used for fishing of cartilaginous fish (3), are also used for lobster fishing. Furthermore, lobster gillnets (240 mm mesh size) are mainly abandoned and replaced by 120 mm mesh size gillnets. Although there is no proper fishery statistics regarding lobster landings, different sources (fishermen, fishery market...) indicated decline in lobster landings during the last decade, with inadequate gillnets as presumed main reason for that situation. Accordingly, research has been carried out in order to evaluate impact of these gillnets on lobster population.

Material and methods

Research has been carried out in different lobster fishing areas of southern and central eastern Adriatic during 1998. and 1999. Gillnet with mesh size of 120 mm, height of 10,5 meshes and 0,33 hanging ratio has been used. Total length (TL) from tip of the rostrum to the end of telson in mm, carapace length (CL) in mm, weight (W) in grams and sex has been measured for each lobster specimen. According to previous researches (4; 5) and fishery legislation, 28 cm of total length is length at first maturity and minimum landing size for common spiny lobster in the Eastern Adriatic. Length-weight relationship is analysed according to following equation: $W = a TL^b$.

Results and discussion

Total number of 594 specimens was caught and analysed. Fig.1 shows length frequency distribution of common spiny lobster, both males and females, according to total length. Length range of caught specimens was between 12 and 42 cm of total length, while weight range was between 48 and 2228 g. 477 specimens were under 28 cm of total length, which represents 80,30 % of immature specimens.

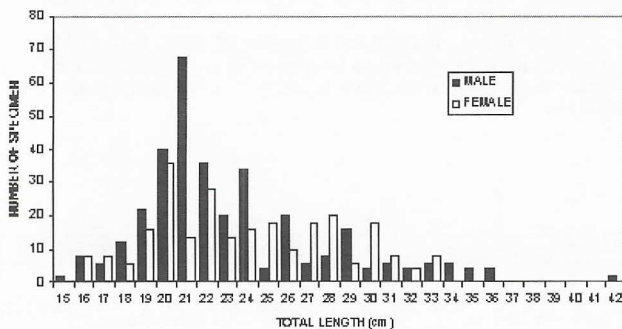


Figure 1: Length frequency distribution of common spiny lobster.

Length-weight relationship of common spiny lobster is presented with following equation :

$$W = 0,033924 TL^{2,905} \quad (r = 0,958),$$

$$\text{while for males is : } W = 0,039437 TL^{2,860} \quad (r = 0,969),$$

$$\text{and for females is : } W = 0,041658 TL^{2,832} \quad (r = 0,955).$$

Sex ratio for common spiny lobster is 1,3 : 1 in favour of females.

Only seven berried females were caught (0,011 %), mainly during the end of August, which proves that berried females occur mainly from September onwards in the Adriatic (6), what is the same period as in the Mediterranean (7). Therefore, closed season falls during spawning period, which is prerequisite for better protection and management of lobster.

Recent investigations shows that length at first maturity for common spiny lobster in Mediterranean and Atlantic is 82-86 mm CL (7) what is in relation with obtained CL of lobsters with 28 cm TL in the Eastern Adriatic. This means that minimum landing size of 28 cm TL for lobster is in accordance with length at first maturity. Comparison of investigated gillnets with lobster gillnets shows significant differences. Mesh size of lobster gillnets is twice of mesh size used in investigated gillnets. Furthermore, hanging ratio of investigated gillnets ($E = 0,33$) in relation to hanging ratio of lobster gillnets ($E = 0,67$) is significantly unfavourable for species with body characteristics such as in lobster. Accordingly, result of these gear characteristics is high percentage of immature specimens (80,30%) in catches. These results show that impact of gillnets on lobsters is very severe. Therefore, in order to prevent overfishing of lobster, which signs were already present, and to allow normal reproduction of species, fishing with these gillnets should be forbidden at the lobster fishing areas.

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