

SPAWNING SEASON OF *GYMNAMMODYTES CICERELUS* AND *G. SEMISQUAMATUS* IN THE NW MEDITERRANEAN

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Abstract

We studied the reproductive biology of the sandeel, *Gymnammodytes cicerelus* and *G. semisquamatus*, on the fishing grounds off the Catalan coast (NW Mediterranean). In the case of *G. cicerelus* the spawning period extended from November to February, while that of *G. semisquamatus* was a little delayed, from December to March.

Keywords: *Reproduction, North-Western Mediterranean, Fishes*

A Management Plan for a boat seine called “sonsera” used in Catalonia targeting sand eels (*Gymnammodytes cicerellus* and *G. semisquamatus*), but also transparent gobies, is carried out in order to establish an exception to European rules regarding the general prohibition of this type of gears. A Co-management Committee was formally created with the specific mission to ensure a sustainable activity of the fishery. The Committee is composed by Public Administrations, Fishermen Associations, Researchers and NGOs. The process has two phases: first, a comprehensive study of the fishery and subsequent advice for the establishment of a Management Plan and second, the implementation and monitoring of the Management Plan itself.

Data were collected from 95 fishing days on board “sonsera” boats (boat seiners), from August 2012 to December 2016. Sampling was carried out off the five ports with “sonsera” fleet (1). A total of 2864 gonads were examined, (2030 of *G. cicerelus*; 834 of *G. semisquamatus*), the sex determined, and macroscopically assigned to a gonadal stage considering the following scale: I=Immature; II=Resting; III=Developing; IV=Advanced maturation; V=Spawning; VI=Post spawning. Sex was easily assessed macroscopically in mature individuals. The spawning season was established from the gonadosomatic (GSI) index trend, by sex: $GSI = (GNW / TW) \times 100$ Where TW is total weight and GNW gonad weight

Gymnammodytes cicerelus

The monthly trend of the macroscopic classification of the maturity phases revealed the maximum occurrence of advanced maturation females (phase IV) and presence of spawning females (phase V) from November to February, with a maximum peak in January. Females in immature and resting phases (I and II) were found from March to October mainly. Males showed the same pattern as females, with a maximum peak of individuals in phase V in December-January. Gonadosomatic index (GSI) was calculated for mature males and females. The mean GSI for females was highest from November to February, with a peak of maximum activity in January (7.94) (Fig. 1). Males showed the same pattern as females with a peak of maximum activity in January (13.55) The size at-first-maturity (size at which 50% of individuals are mature) was 7.32 cm TL. This value has been obtained fitting a normal cumulative curve to the maturity tax per length.

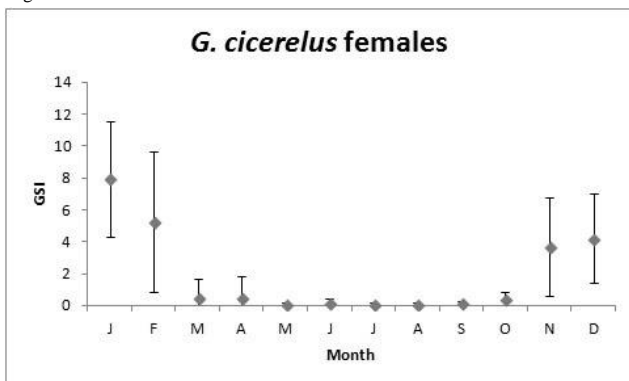


Fig. 1. Monthly changes in the mean gonadosomatic index for females of *G. cicerelus*.

Gymnammodytes semisquamatus

The monthly trend of the macroscopic classification of the maturity phases revealed the maximum occurrence of advanced maturation females (phase IV) from December to March. The presence of spawning females (phase V) was observed from December to March, with a maximum peak in February. Females in immature and resting phases (I and II) were found from March to December. Males showed the same pattern than females, with a maximum peak of individuals in phase V in January-February. The smallest mature female and male were 7.2 cm and 7.6 cm TL respectively. Gonadosomatic index (GSI) was calculated for mature males and females. The mean GSI for females was highest from December to March, with a peak of maximum activity in January (8.39) (Fig. 2). Male showed the same pattern as females with a peak of maximum activity in January (11.27)

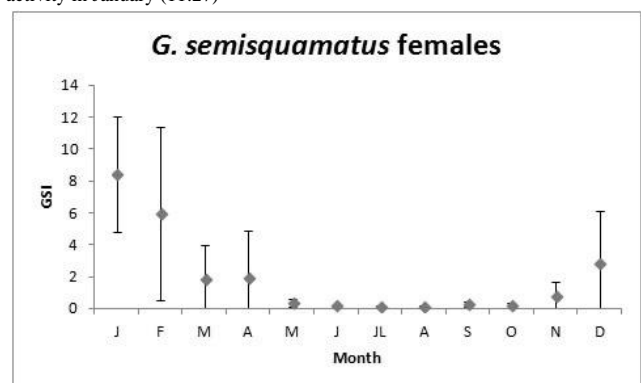


Fig. 2. Monthly changes in the mean gonadosomatic index for females of *G. semisquamatus*

The reproduction period of both species in the area extends from November to February-March and at the end of the fishing season in mid- December the population consists of individuals that have attained the maturity and are ready to spawn. Therefore, it is advisable to maintain the timing of the currently implemented closed season, from mid- December to the end of February.

References

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