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Fisheries and Reproductive Biology of European pilchard (Sardina pilchardus (Walbaum, 1792)) in the Southwest of Marmara Sea

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Abstract

European pilchard (*Sardina pilchardus* (Walbaum, 1792)) is one of the most important species in the ecosystem due to its ecological and economic importance. The stocks of this species generally tend to decrease over the years in the Marmara Sea. So, the fisheries and biology of European pilchard were analyzed monthly between January and December 2024 around the Southwest of Marmara Sea, Türkiye. It was determined that European pilchard was caught from commercial fishermen with purse seines using 8-10 mm mesh sizes from September 1st to April 15th and after April 15th with gillnets using 12, 12.5, 12.75, 13 mm mesh sizes in the Marmara Sea. Approximately 10 times more yield was caught per operation with purse seines than with gillnets. The total length and weight varied from 10.0 cm to 15.6 cm (mean:12.42±0.05 cm) and 5.98 g to 26.79 g (mean:13.46±0.18 g) in purse seine, and 10.7 cm to 15.1 cm (mean:12.49±0.05 cm) and 9.62 g to 21.58 g (mean:13.55±0.17 g) in gillnets. The 656 total individuals consisted of 243 females, 217 males, and 196 not dissected. The ratio of males to females was calculated as 1.0:1.12. The total length and weight of all individuals varied from 10.0 cm to 15.6 cm (mean:12.44±0.04 cm) and 5.98 g to 26.79 g (mean:13.48±0.13 g), respectively. The length-weight relationships were determined as $W=0.0091TL^{2.8849}$ in females ($R^2=0.82$), $W=0.0092TL^{2.883}$ ($R^2=0.82$) in males, $W=0.0094TL^{2.8723}$ ($R^2=0.82$) in all sexes. The negative allometric growth was found in females, males and all sexes. The first maturity length was determined as 12.76 cm for females, 11.96 cm for males. The gonadosomatic index value was maximum in February for females and males and minimum in August for females and June for males. The condition factor was maximum in August for females and November for males and minimum in May for females and March for males. The reproductive period of European pilchard takes place between November and April. Consequently, the fisheries and biology of European pilchard should be monitored for its sustainability.

Key Words: *Gillnet, Purse seine, Gonadosomatic index, First maturity length, Reproductive period*