

Analysis of the interaction between life history parameters of *Sebastes mentella* Travin, 1951, the environment and the fisheries in the Flemish Cap area.

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Understanding fish life histories is a key to sustainably managing fisheries, it is well known that life-history parameters are shaped by several factors of environmental, populational and genetic aspect. To understand the evolution of the growth and the maturation of *S. Mentella* growth analysis was performed based on the age determination of 25 728 otoliths collected during the European Union surveys in the Flemish cap since 1988, we have performed three growth analyses i) study the annual variation in growth; ii) compare

growth among cohorts; and iii) compare growth between sexes.

Maturity was microscopically staged in 4719 females during the period 1991-2019, of which 1595 were immature and 3124 were mature, the maturity ogive was estimated by size and age among years and cohorts.

The analysis of the environmental data has shown that concurrently the Flemish Cap has undergone major environmental shifts in a period during which several stocks collapsed, due to a severe overfishing that affected also to *S. mentella*.

Changes in a growth pattern for both sexes and between several cohorts namely the cohorts born between 2001 to 2007 has been noticed. Also, this study shows that variation of L50 and A50 did not follow any particular trend by years but this pattern changes when these parameters are analyzed by cohort, a decrease in L50 is observed from the first three cohorts

(1990-1992) but he most recent cohorts seem to return to mature at larger sizes. Age at 50%

maturity declined steadily from the 1990 cohort to the most recent cohorts.

The gradient in selection differentials shows that fishing doesn't generate a strong selection that can lead to a genetic alteration, but it has an impact on phenotypic changes related to the

population dynamic and the interaction between the environment and other species in the ecosystem.

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