

Modeling effects of growth and temperature on the recruitment variability of Pacific saury (*Cololabis saira*)

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Pacific saury (*Cololabis saira*) is a commercially and ecologically important pelagic fish in the North Pacific. The variability in stock abundance cannot be explained solely by fisheries catch but also related to the reproductive success. In this study, we examine the recruitment variability of Pacific saury using an individual-based model combining a bioenergetics, migration and mortality models. We parameterize the mortality rate with the weight, growth rate and temperature. The annual survival rates (recruitment per spawning biomass: RPS) from the model (mRPS) are calculated from the number of survived fish at age-1, and compared with RPS derived from the stock assessment for 2003–2012. The interannual variability in RPS is well reproduced in the model, especially in cases parameterizing the mortality using the weight and temperature, and weighting the spring-spawned cohort. The importance of the spring-spawned cohort is consistent with the hypothesis derived from observations in 1990–1998.

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