

## Predator-prey interactions on the Norwegian Continental shelf – starvation mortality in Northeast Arctic cod larvae

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Most fish larvae die. But it is uncertain how this varies between years, and across temporal and spatial scales. Field observations alone cannot provide an integrated assessment of how this play out during the planktonic drift phase from spawning grounds along the coast to the nursery grounds. Here, we have combined observations and biophysical models to quantify spatiotemporal availability in stage-specific *Calanus Finmarchicus* on the Norwegian Continental shelf and thereby enable quantifications of starvation in larval Northeast Arctic (NEA) cod. We utilize a coupled ocean, nutrient, primary and secondary production model (SINMOD) and a biophysical model for early life stages of cod to address prey availability for first-feeding cod larvae. We have coupled these model components both online, communicating through a coupler on a common time step of 6 minutes, and offline with a time step of 12 hours to enable sensitivity testing of central parameters. In particular, we have focused on the effects of various vertical responses in *Calanus Finmarchicus* to the presence of NEA cod larvae and the consequence for larval ingestion rates and survival across three different years.