Effects of climate change on the survival of larval cod

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Cod distribution present

Cod distribution 2050

Data from Aquamaps
Important spawning locations
Light at spawning locations

Surface layer

20 meters depth
Mechanistic modeling considers the physical and biological properties that affect larval fish, e.g.

- light
- temperature
- turbulence
- contrast
- prey density
- prey size
- prey swimming speed
- ...
North Atlantic Oscillation
Specific growth rate (temperature determined)
Large phytoplankton (ESM2.1)

Georges Bank
North Sea
Iceland
Lofoten
Predicted survival rate in Georges Bank
Predicted survival rate in the North Sea
Predicted survival rate in Iceland
Predicted survival rate in Lofoten
Preliminary conclusions

• Larval growth and survival are strongly controlled by ocean temperature, light, and prey conditions and operate non-linearly in combination.

• Larval cod survival rates were predicted to increase in Lofoten and Iceland.

• Larval cod survival rates were predicted to decrease in the North Sea and Georges Bank.