Growth and survival of juvenile Japanese anchovy *Engraulis japonicus* in the Kuroshio-Oyashio transitional regions in 2010

Engraulis japonicus

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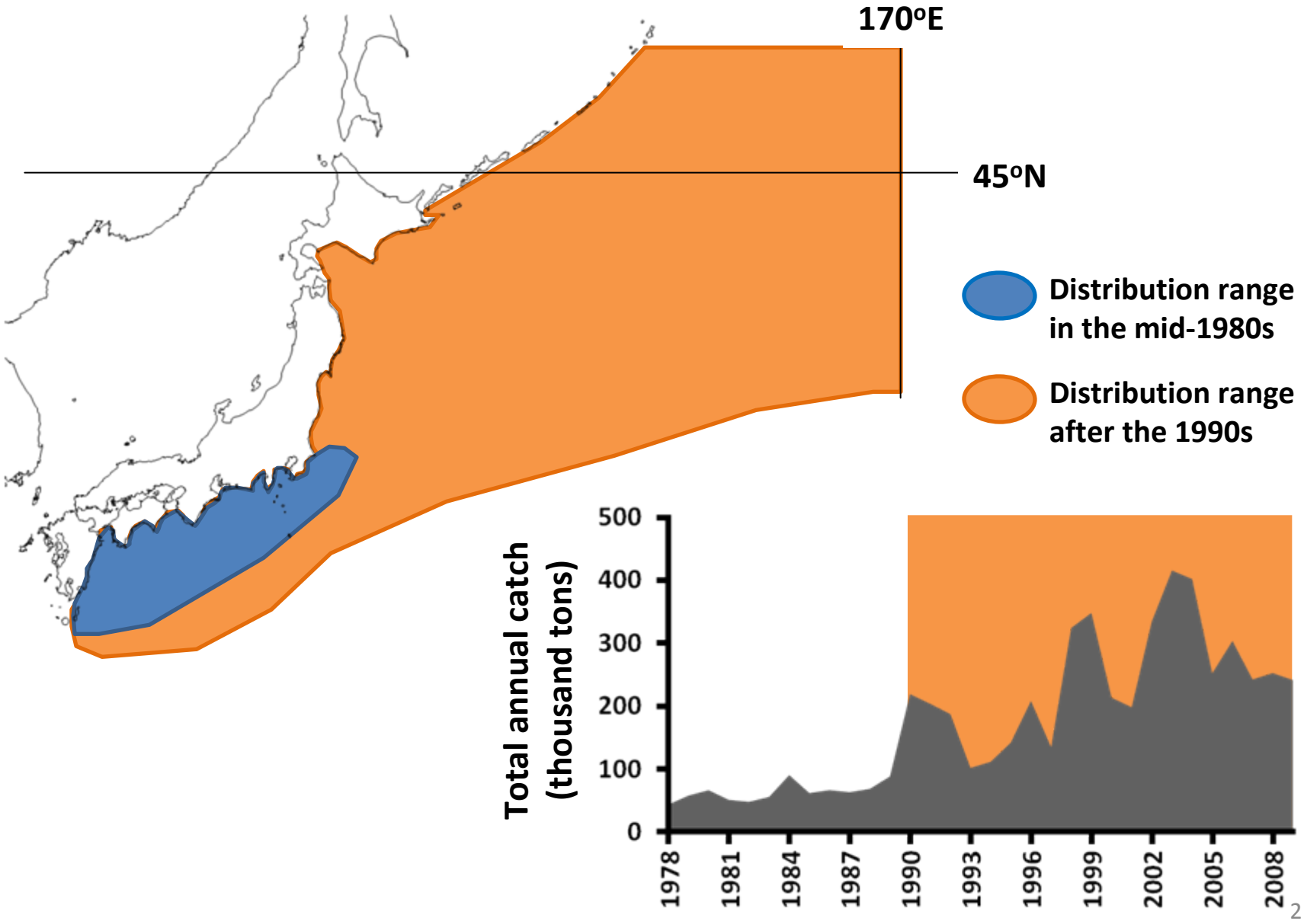
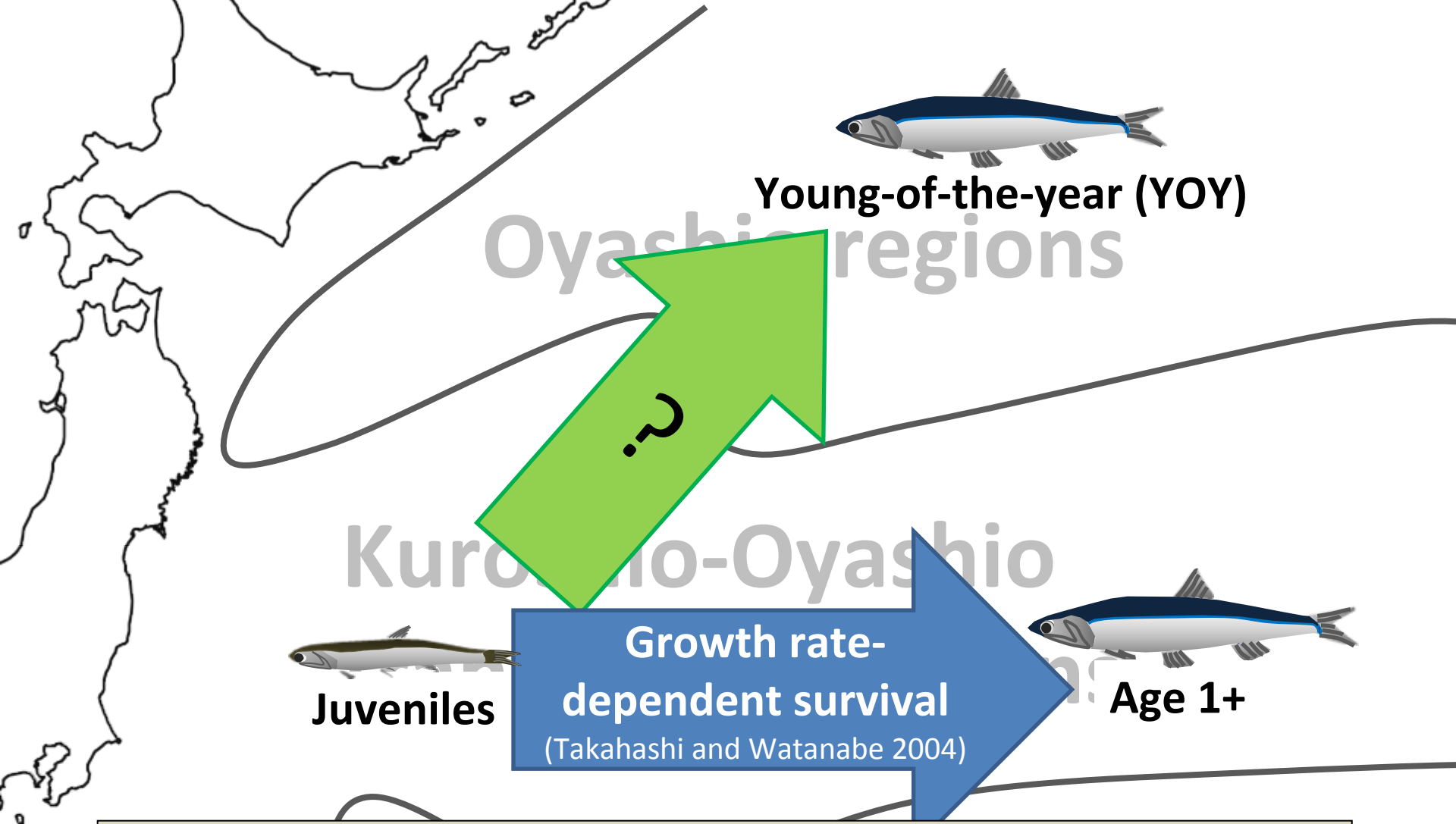
Change in distribution range of Japanese anchovy with population fluctuation



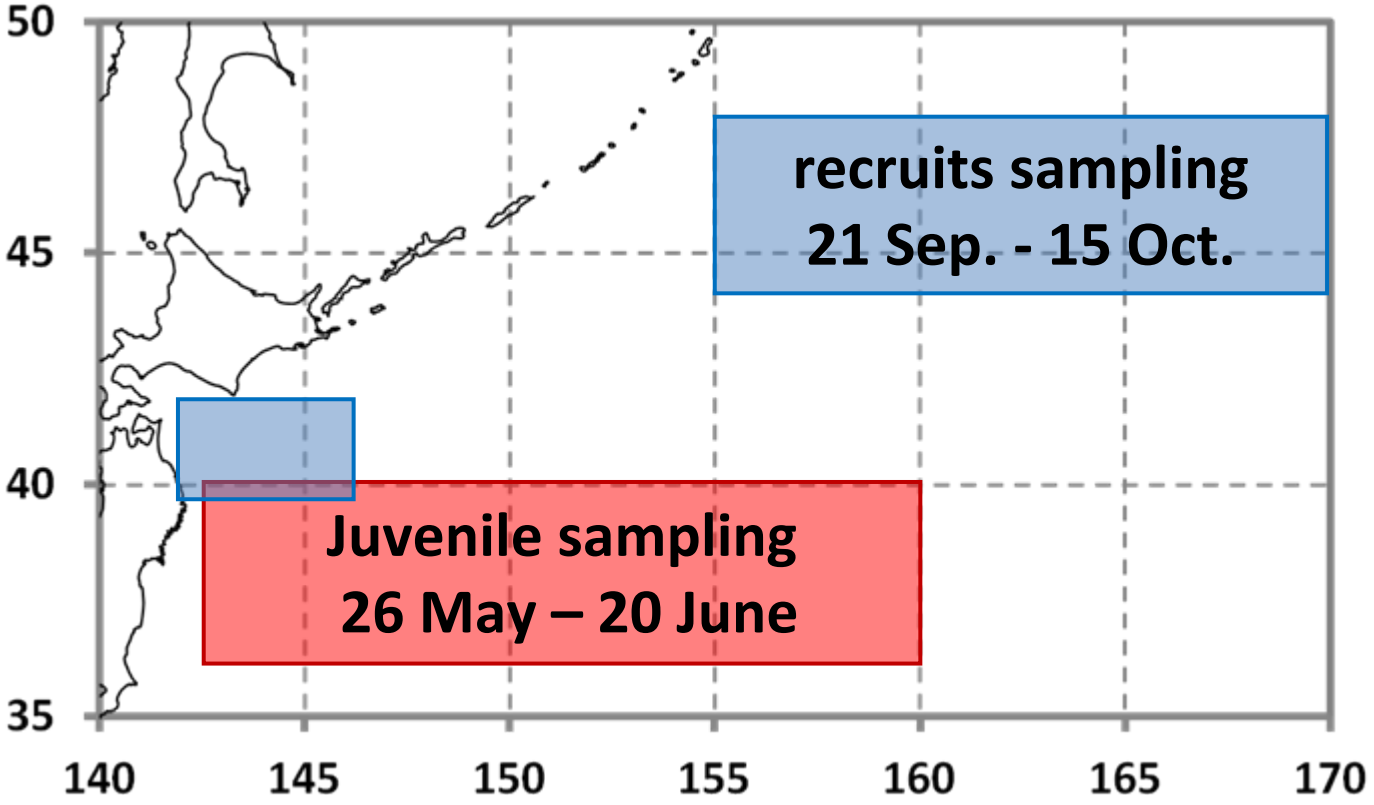


Growth and survival of anchovy juveniles during northward migration are crucial in understanding recruitment dynamics of anchovy population.

In this study

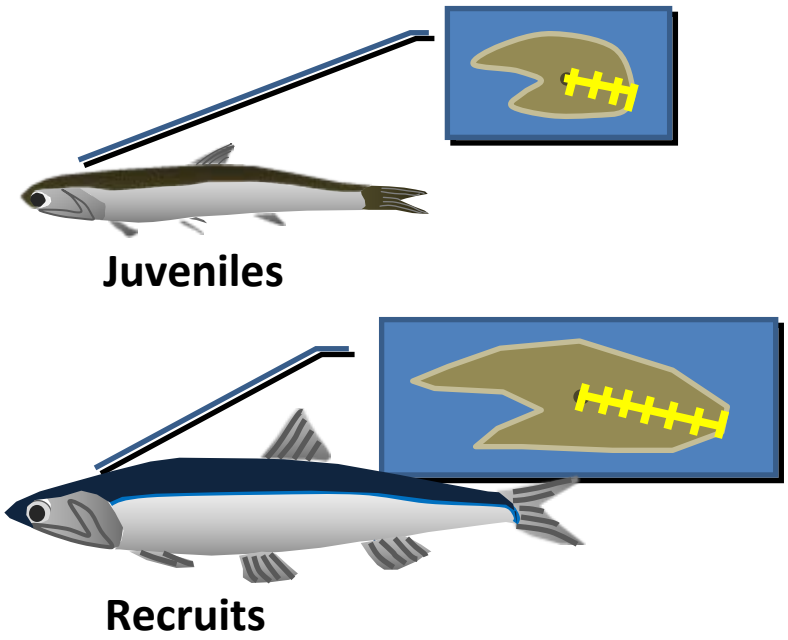
- We back calculated the growth rates of anchovies in the early life stage through otolith examination.
- Growth histories in early life stages between JUVENILES from Transitional region and RECRUITS from Oyashio region were compared.
- Growth and survival processes of young-of-the-year (YOY) anchovy during the northward migration are discussed.

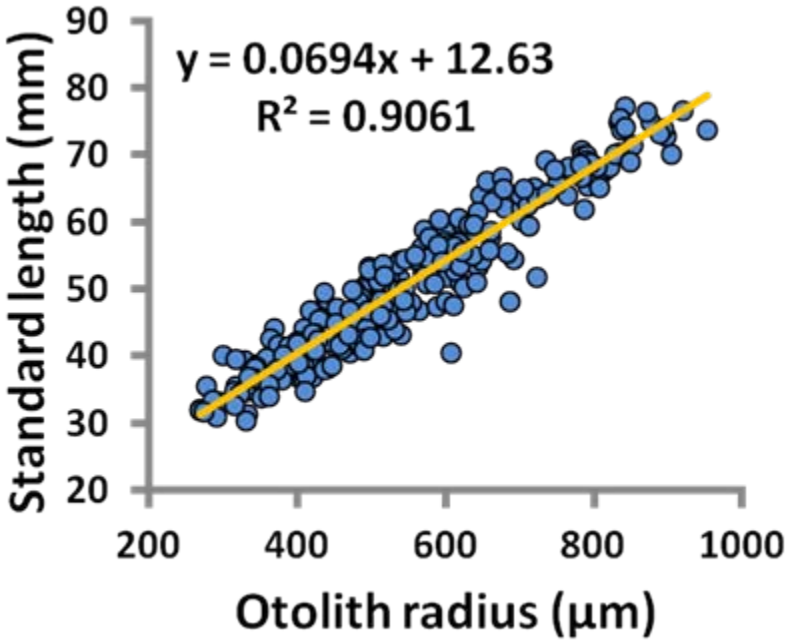
Field sampling



- **Recruit:** YOY > 90 mm SL
- **Juvenile:** 30 mm < YOY < 80 mm SL

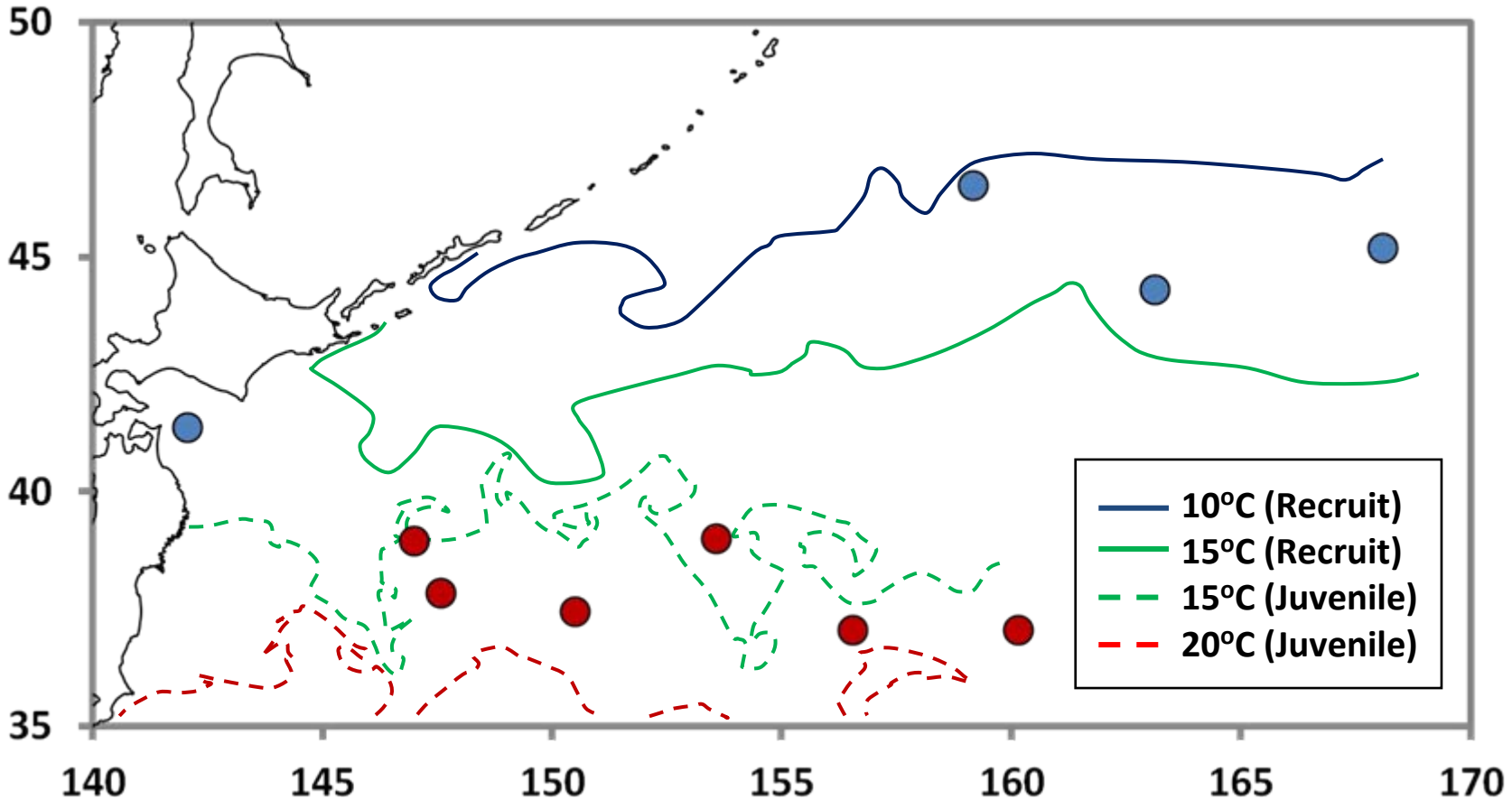
Growth analysis





Otolith radius growth → SL growth

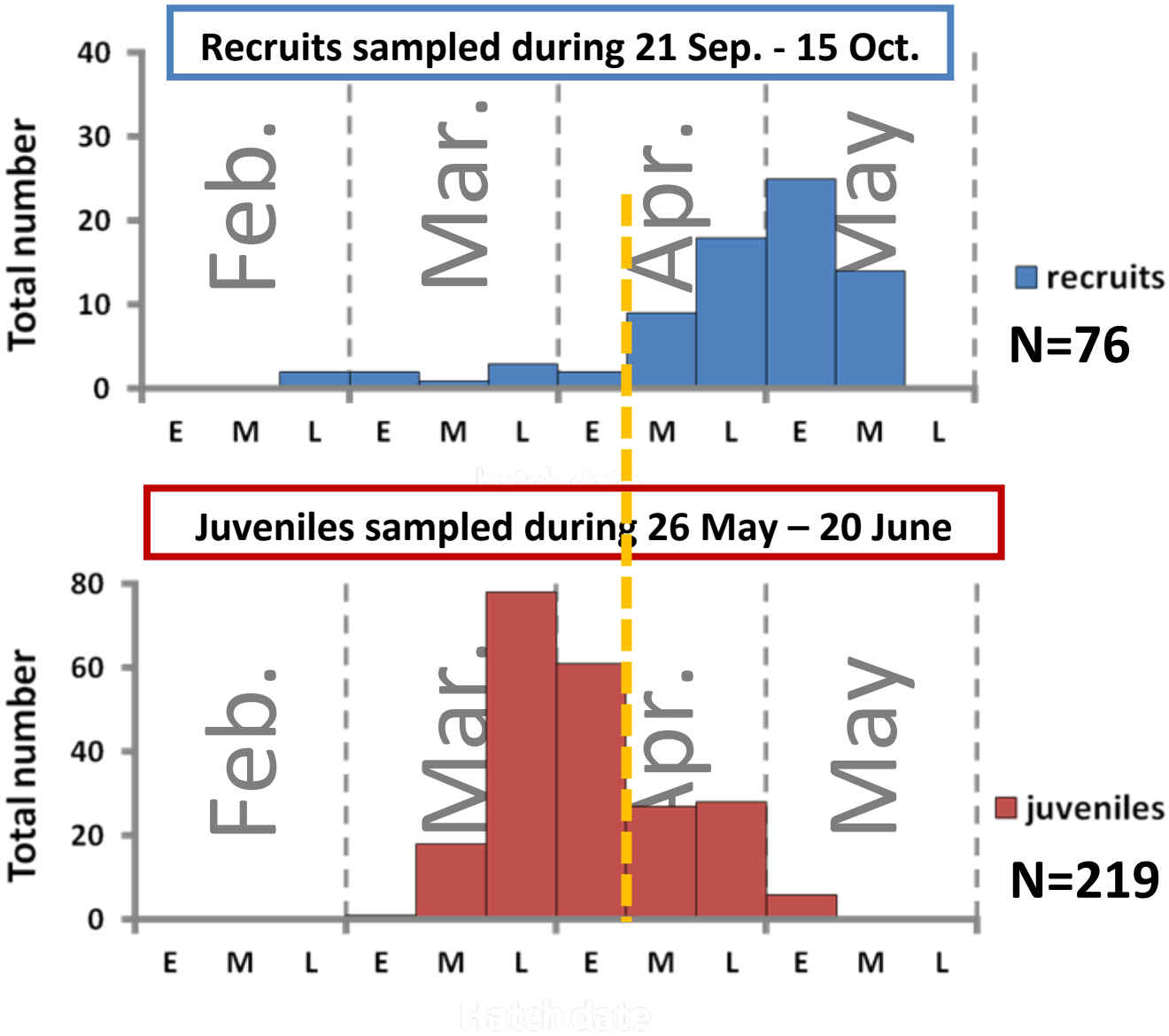
Sampling stations for growth analysis



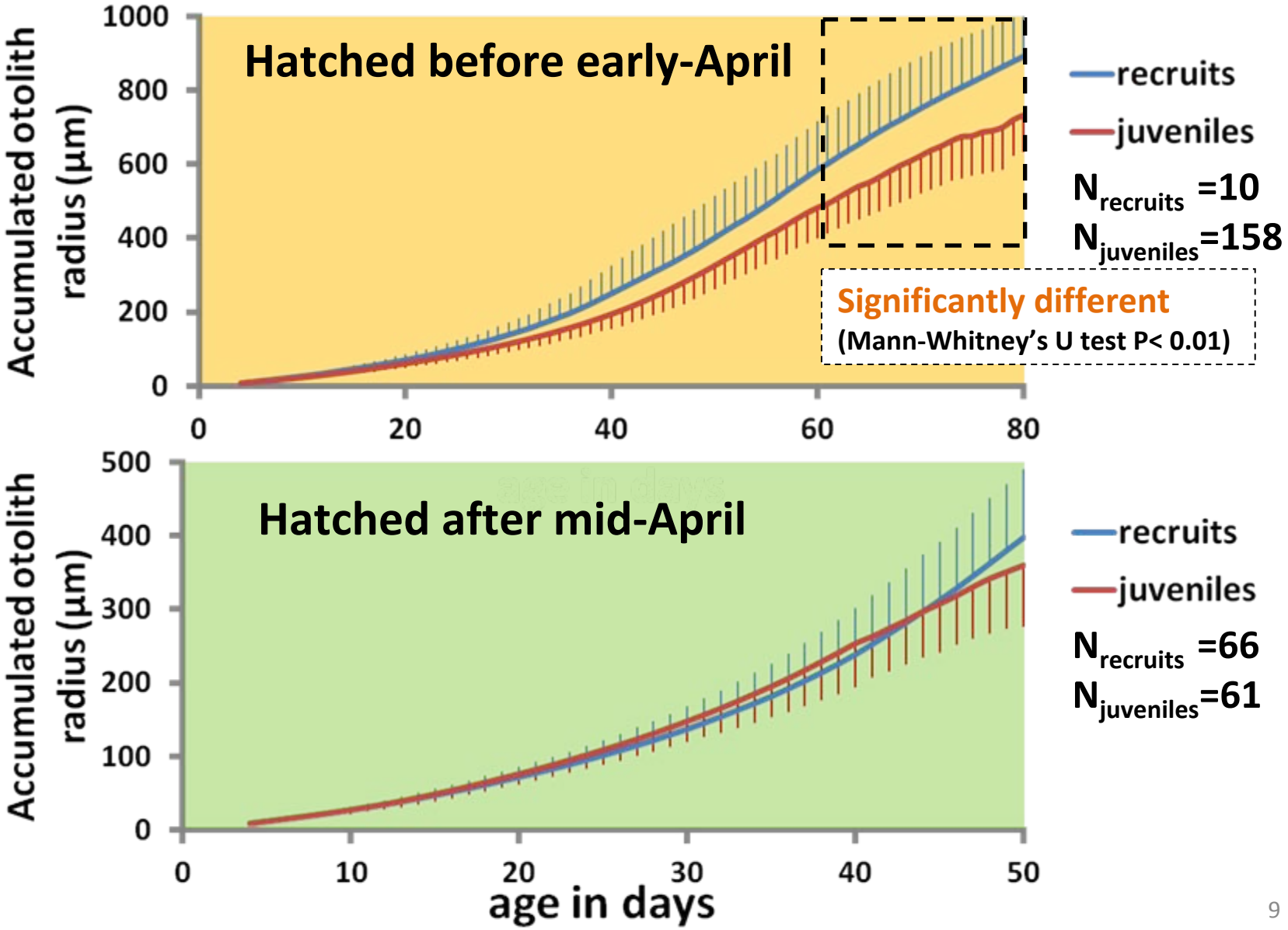
Blue points: recruit sampling stations during 21 Sep. - 15 Oct.

Red points: juvenile sampling stations during 26 May – 20 June

Hatch date distribution



In the early hatch date group growth rate-dependent survival was observed.



Summary

Growth rate-dependent survival is a hatch date specific survival process during the northward migration.

- Before early-April
  - Recruits grew faster than juveniles
  - Growth rate-dependent survival
  - Consistent with Takahashi and Watanabe (2004)
- After mid-April
  - Juveniles grew as fast as recruits
  - Non growth rate-dependent survival
  - High probability to survive