

NMFS Science Center Activities

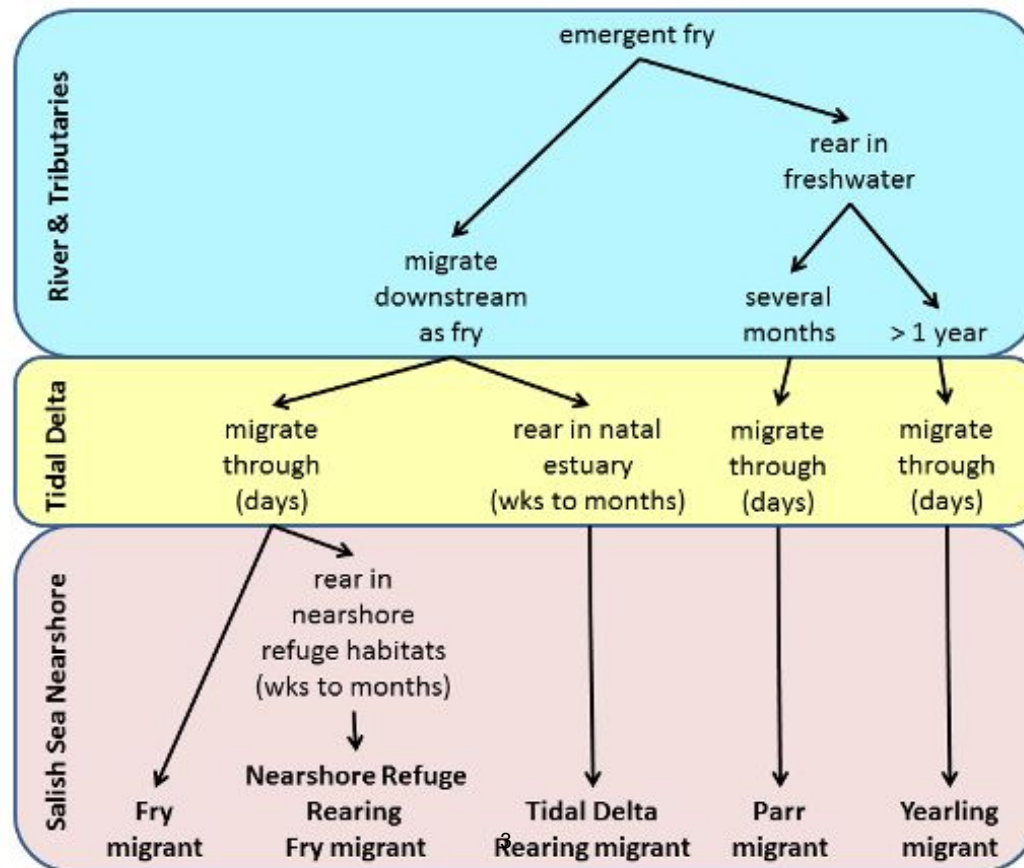
Agenda item C.1.b
Supplemental NMFS Report 1
Steve Lindley and Correigh Greene

"Every attempt has been made to provide this file in accessible formats. If you need to request an alternative version of a file, please Dr. Steve Lindley (Steve.Lindley@noaa.gov) and provide as much information as you can about the document, its location, and your specific needs."

Salmon science publications, 2023-24

- 92 publications on wide variety of topics
 - Fisheries
 - General biology
 - Estuaries
 - Freshwater habitat
 - Socioeconomics
 - Climate impacts
 - Hatcheries
 - Predation
 - Ocean ecology
 -
- 22 papers deal with life history diversity

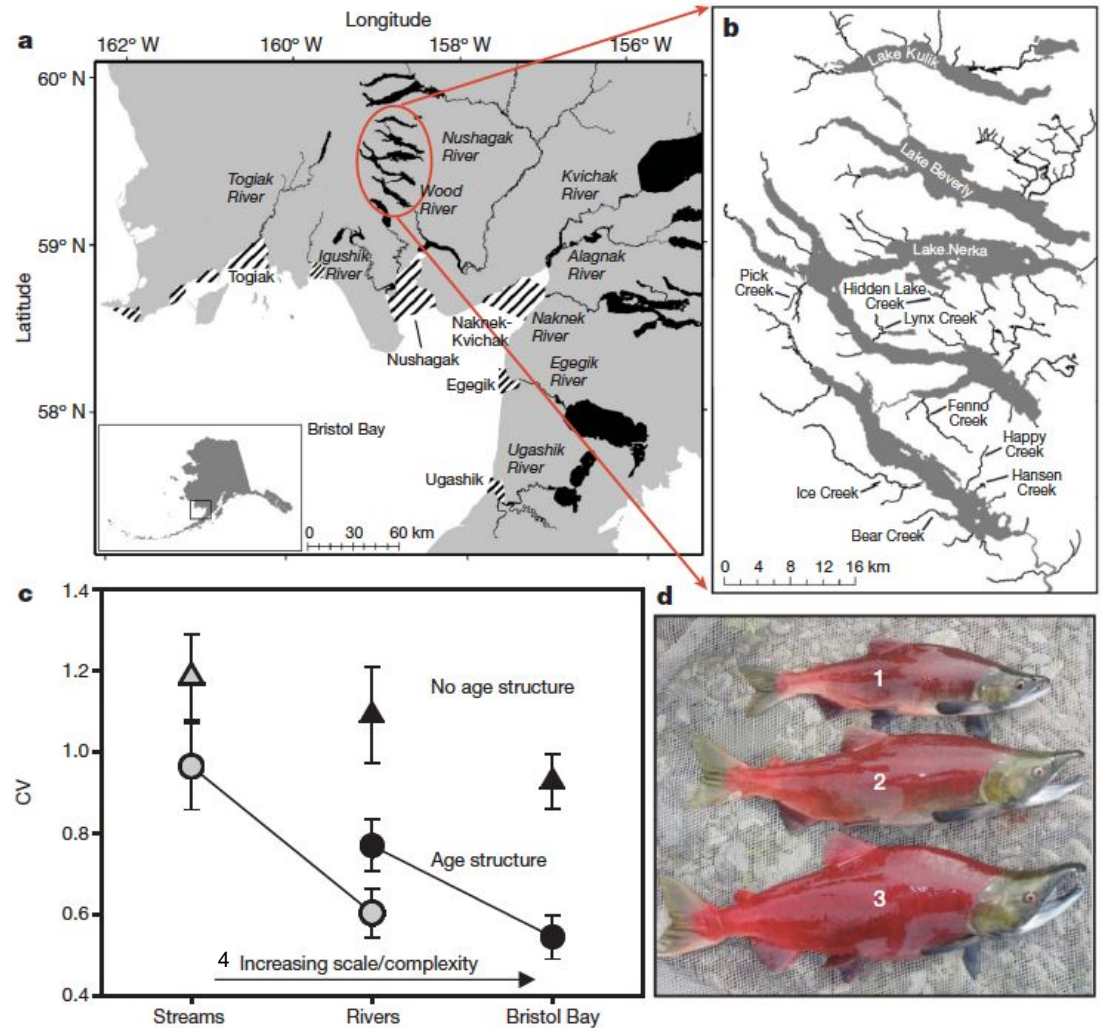
What is life history diversity?



Population diversity and the portfolio effect in an exploited species

Daniel E. Schindler¹, Ray Hilborn¹, Brandon Chasco¹, Christopher P. Boatright¹, Thomas P. Quinn¹, Lauren A. Rogers¹ & Michael S. Webster²

Nature 465:609 (2010)



Trends in life history diversity and portfolio effects

Juvenile life history variation and match-mismatch

Wilson et al. Nature Ecol Evol 7: 852 (2023)

Fig. 1: Species-specific shifts in outmigration phenology.

From: [Phenological shifts and mismatch with marine productivity vary among Pacific salmon species and populations](#)

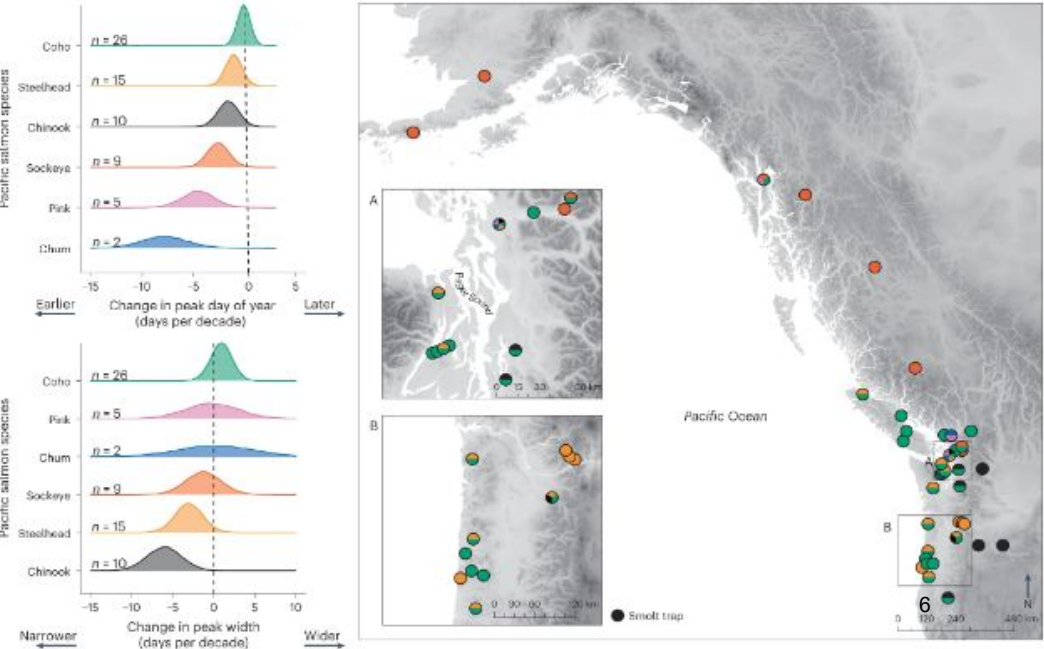
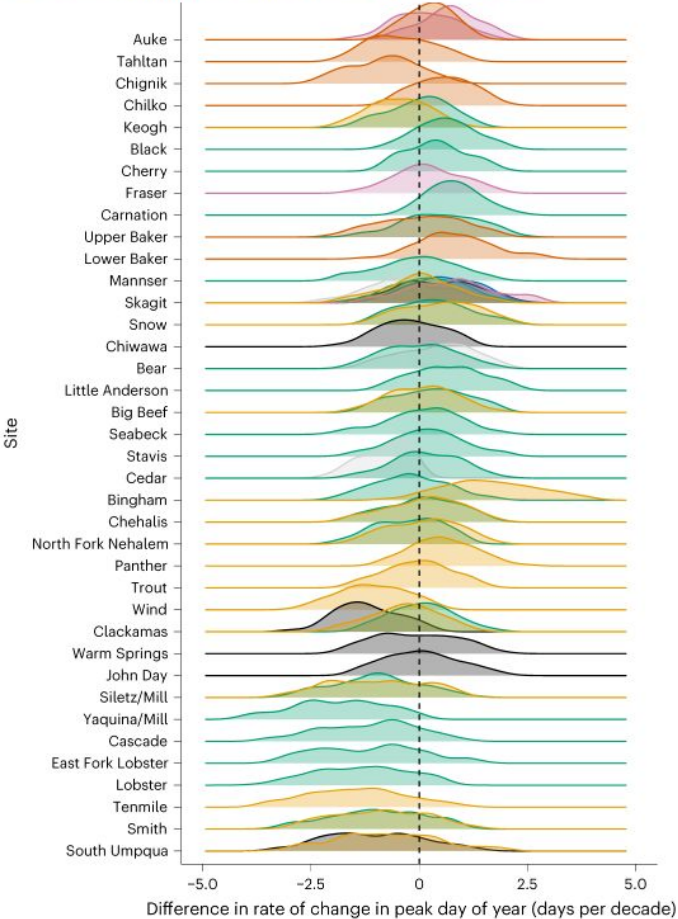


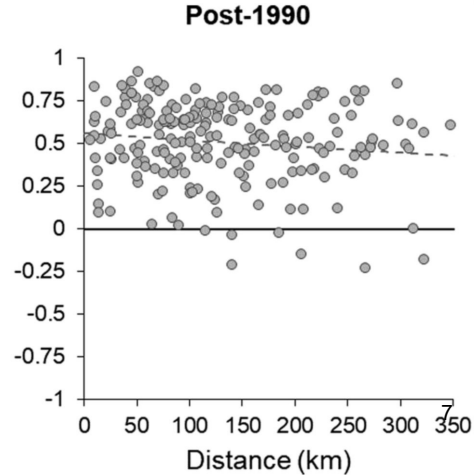
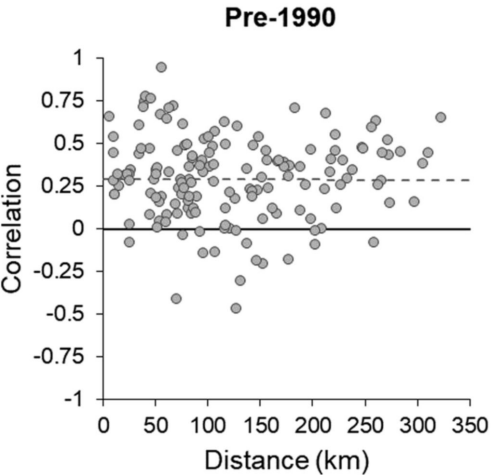
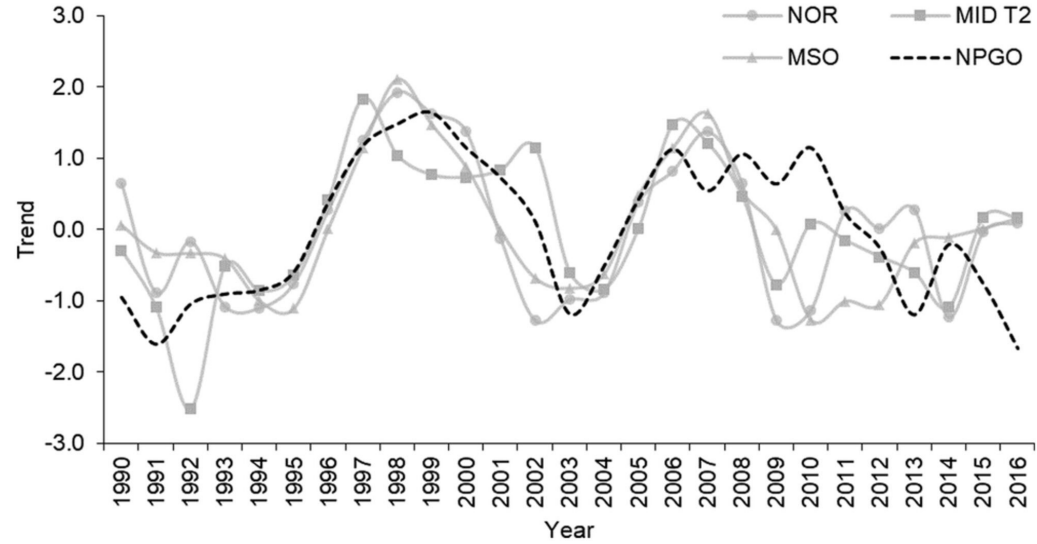
Fig. 3: Mismatch between the rate of change in peak smolt outmigration phenology and the rate of change in the spring phytoplankton bloom.

From: [Phenological shifts and mismatch with marine productivity vary among Pacific salmon species and populations](#)



Portfolio effect in Oregon Coast Coho is declining

Davis et al. Fish Ocean 32:293 (2023)



Consequences of life history variation

Malick et al. Fish Fish 24:454 (2023)

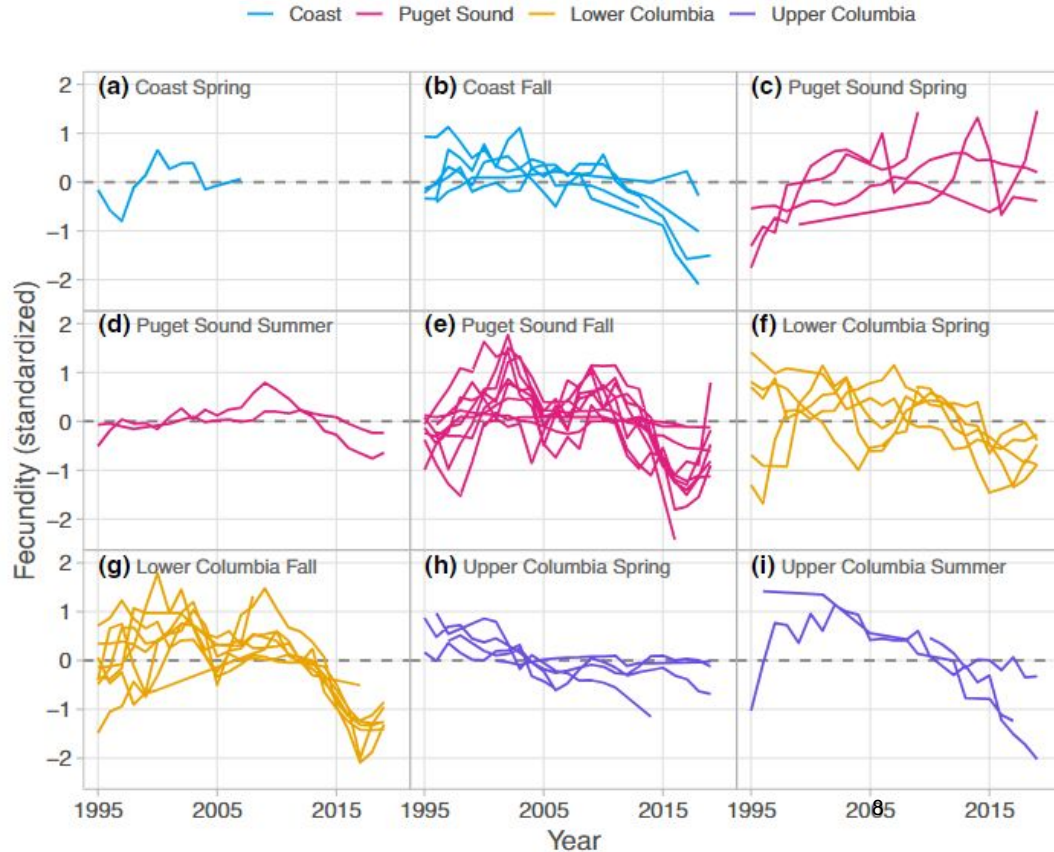
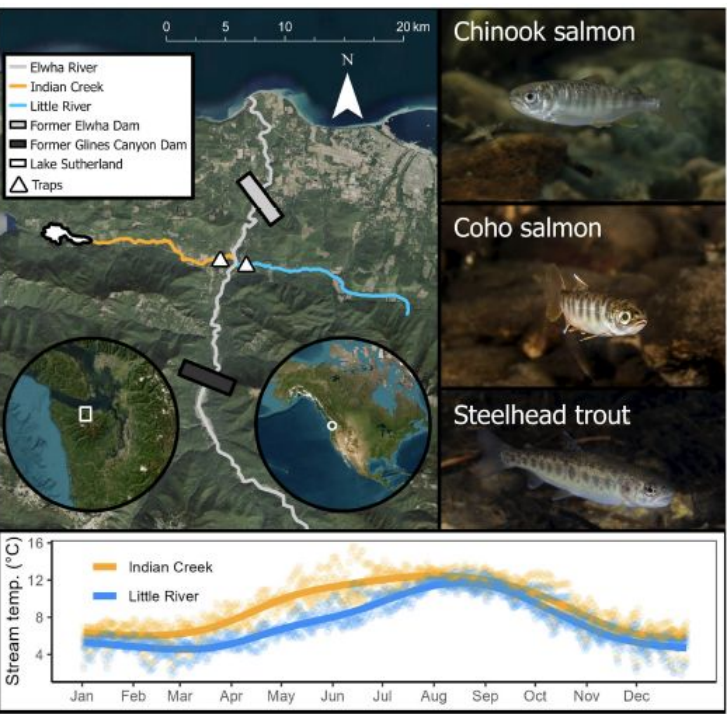


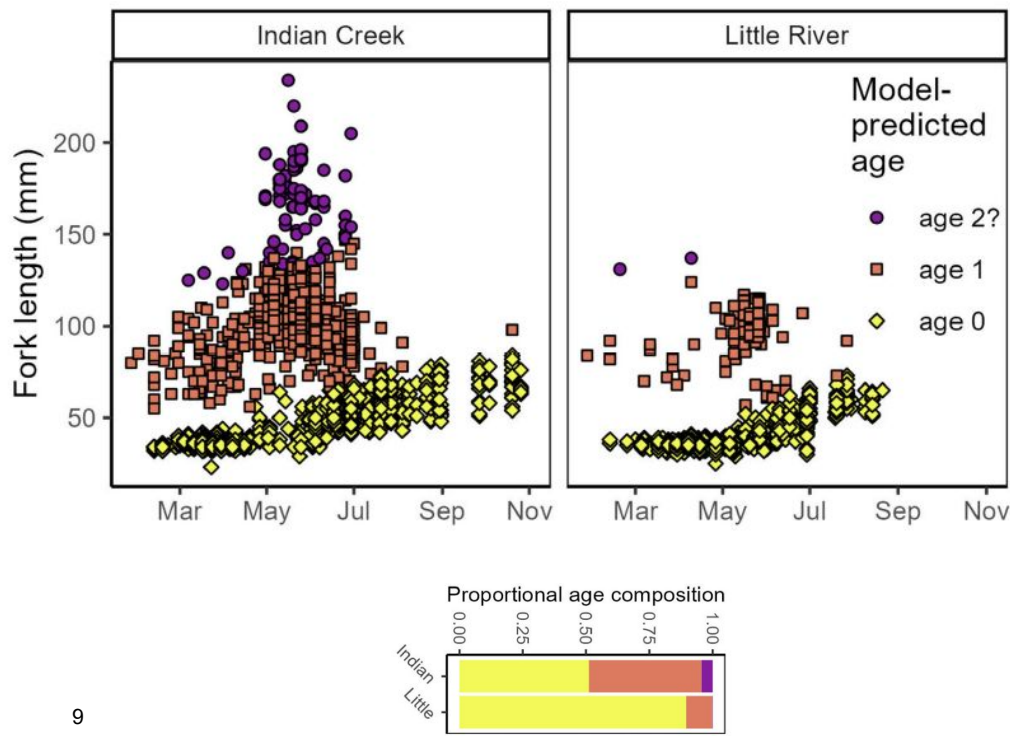
FIGURE 2 Fecundity trends from the univariate state-space random walk models. Lines show the latent fecundity trend (x_t) for each stock and trends are grouped by region and run timing.

Life history diversity supported by access to diverse habitats

Munsch et al. Front Ecol Evol 11:1188921 (2023)

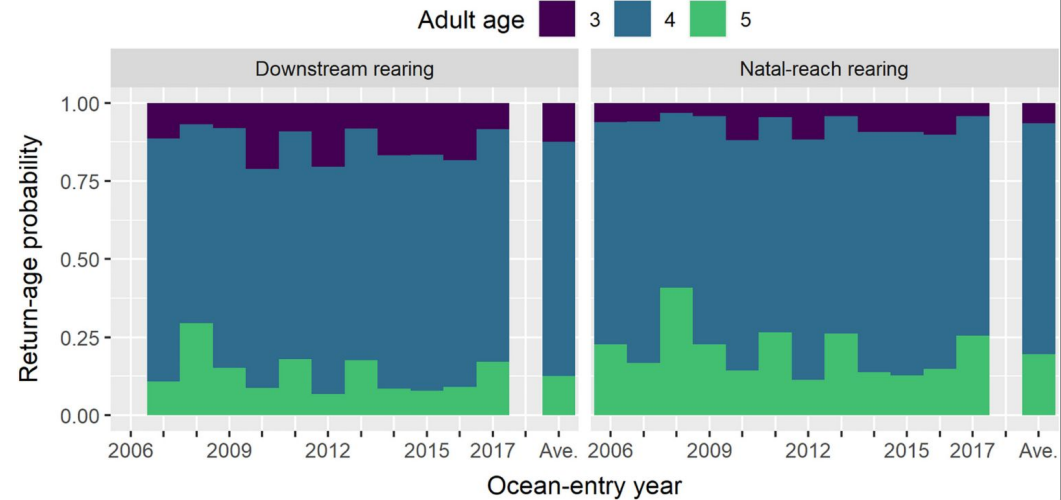
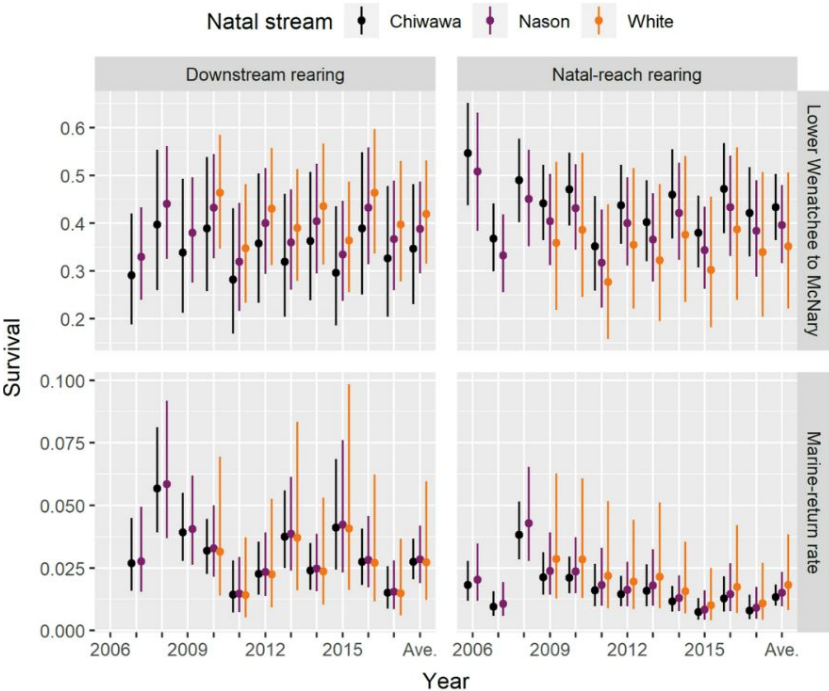


Coho salmon



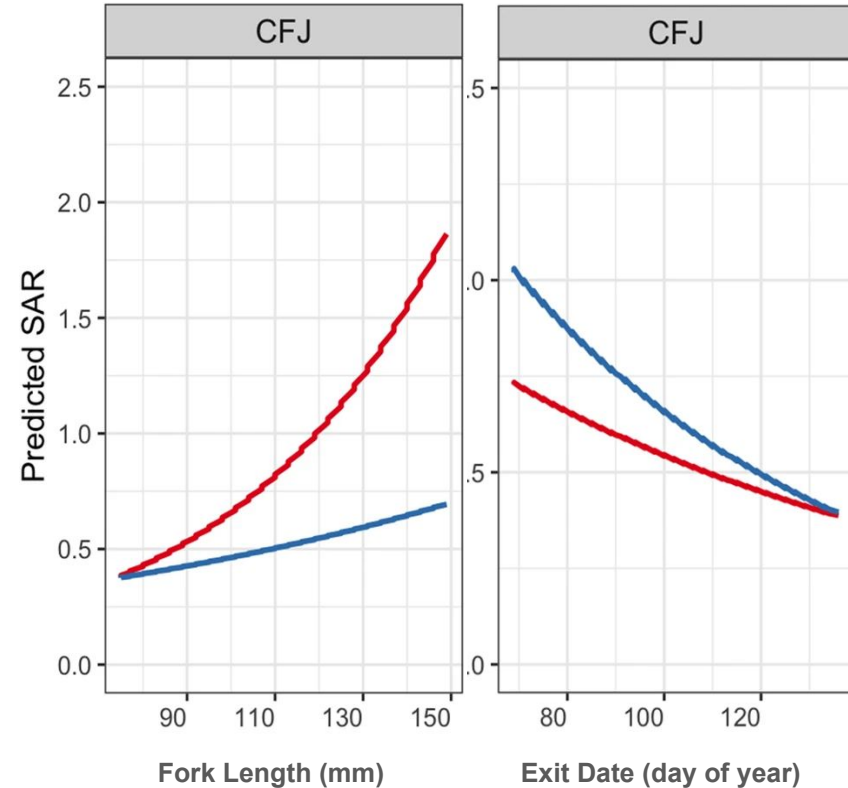
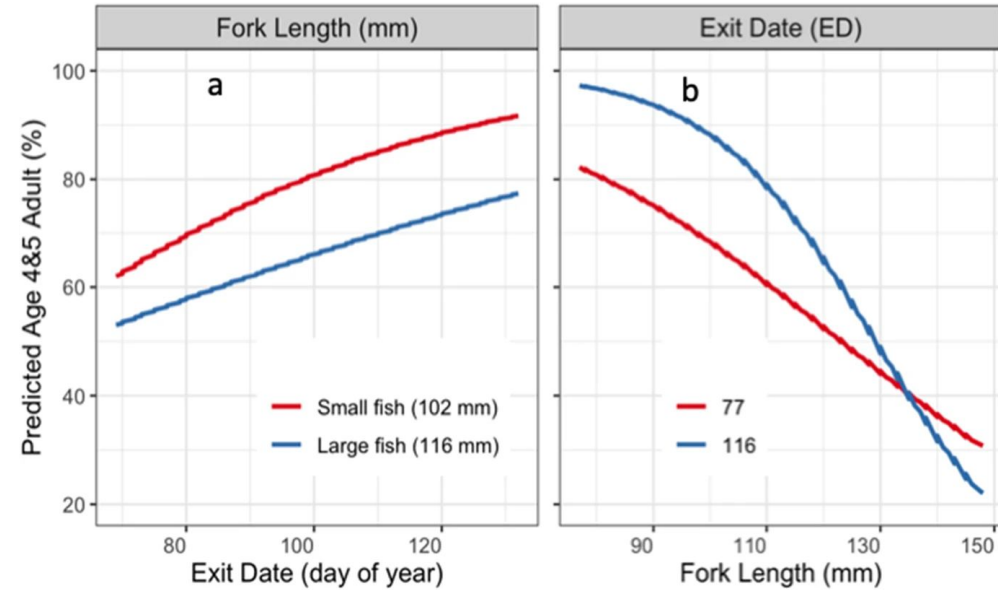
Habitat diversity and consequences of early life history variation

Sorel et al. Ecosphere 14:e4366 (2023)



Hatchery practices can bolster life history diversity

Bosch et al. Environ Biol Fish 106:1037 (2023)



Age-structure diversity can buffer climate impacts

Carvalho et al. Can J Fish Aquat Sci 80:924 (2023)

