***Supporting Information Appendix***

**Larger but younger fish when growth compensates for higher mortality in warmed ecosystem**

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Chart

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Fig. S1. Simulations from the prior predictive distribution for the VBGE model, where the solid line is the median and the shaded areas correspond to the 95%, 80% and 50% credible intervals.

A picture containing chart

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Fig. S2. von Bertalanffy growth equation: Traceplot to illustrate chain convergence for key (population-level) parameters (A), residuals (B), QQ-plot (C) and posterior predictive check (D).

Shape, arrow

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Fig. S3. Cohort-specific predictions (i.e., with cohort-varying and ). Points correspond to data, solid lines correspond to the median of the posterior prediction from the model and the shaded area corresponds to the 95% credible interval.

Chart, line chart, scatter chart

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Fig. S4. Posterior distributions of the cohort-varying parameter in the VBGE. Points correspond to the median and the horizontal lines correspond to the 95% credible interval. Note that the distributions of in the warm areas extend beyond the x-axis for cohorts 1995:1997 (also evident in Fig. S3). The range of the x-axis was set to be wide enough to include the posterior medians of the larger estimates but narrow enough to allow for comparison between the other cohorts and areas.

Chart

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Fig. S5. Posterior distributions of the cohort-varying parameter in the VBGE. Points correspond to the median and the horizontal lines correspond to the 95% credible interval.

A picture containing text, screenshot, appliance

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Fig. S6. Simulations from the prior predictive distribution for the allometric growth model, where the solid line is the median and the shaded areas correspond to the 95%, 80% and 50% credible intervals.

\*Add the diag here after solve the memory issue!\*

Fig. S7. Allometric growth model: Traceplot to illustrate chain convergence for key (population-level) parameters (A), residuals (B), QQ-plot (C) and posterior predictive check (D).

Diagram

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Fig. S8 Catch curve model: Traceplot to illustrate chain convergence for key (population-level) parameters (A), residuals (B), QQ-plot (C) and posterior predictive check (D).

Chart

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Fig. S9. Posterior distributions of the cohort-varying slopes, where , the mortality rate, is the negative of the slope of natural log of catch per unit effort (CPUE) as a function of age). Points correspond to the median and the vertical lines correspond to the 95% credible interval.

Chart, diagram

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Fig. S10. Size spectrum slopes vs year model: Traceplot to illustrate chain convergence for key (population-level) parameters (A), residuals (B), QQ-plot (C) and posterior predictive check (D).



Fig. S11. Example plot for the Biotest lake (the warm area) for 1995. To view corresponding size-spectrum plots for all years, we refer to the repository of this project (<https://github.com/maxlindmark/warm_life_history> and zenodo).



Fig. S12. Example plot for the Forsmark (the cold area) for year 1995. To view corresponding size-spectrum plots for all years, we refer to the repository of this project (<https://github.com/maxlindmark/warm_life_history> and zenodo).