Limburg et al. Supplemental Information

Figure S1. Principal components plot for first two components for water data, Gotland Deep, 1985-2019.
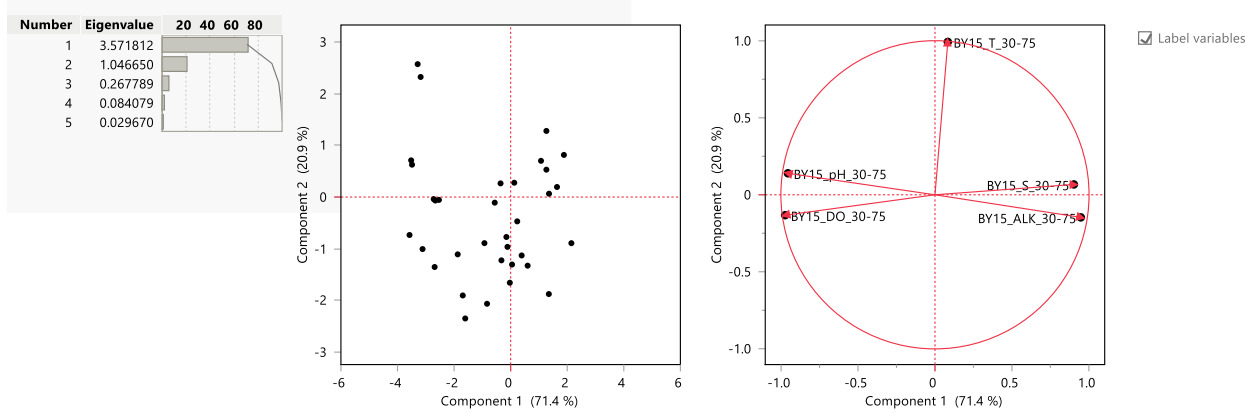
Figure S2. Time series of water data for three depth zones, Gotland Deep Station BY-15. (a) Temperature. (b) Dissolved oxygen. (c) pH. (d) Salinity. (e) Total alkalinity. (f) Alkalinity normalized to salinity.
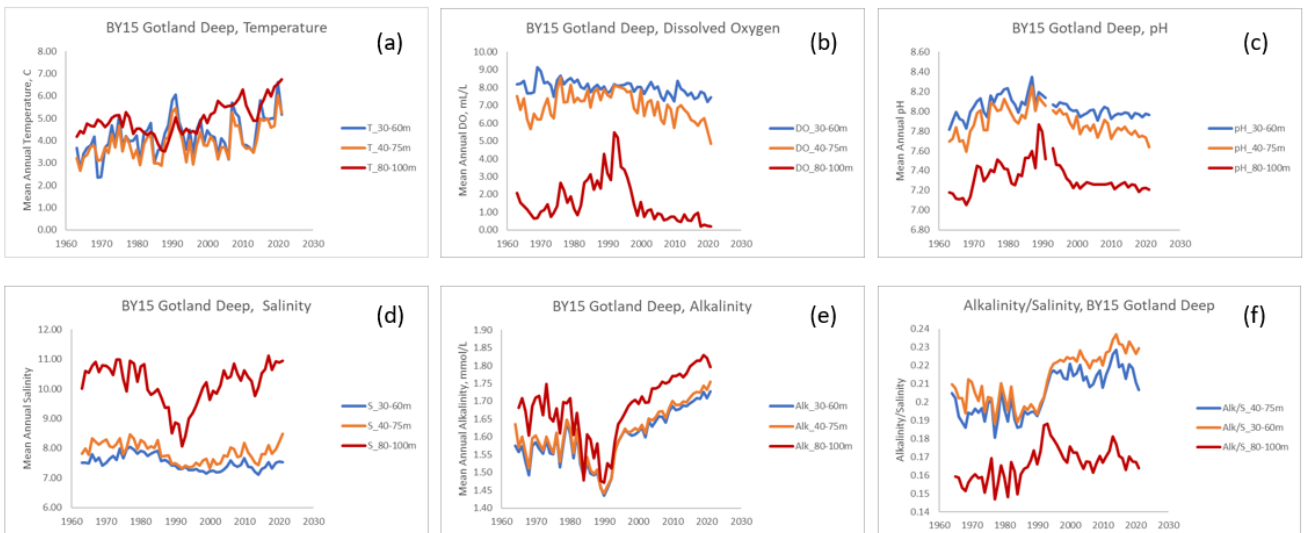
Figure S3. Mean annual B:Ca by Age and Decade.
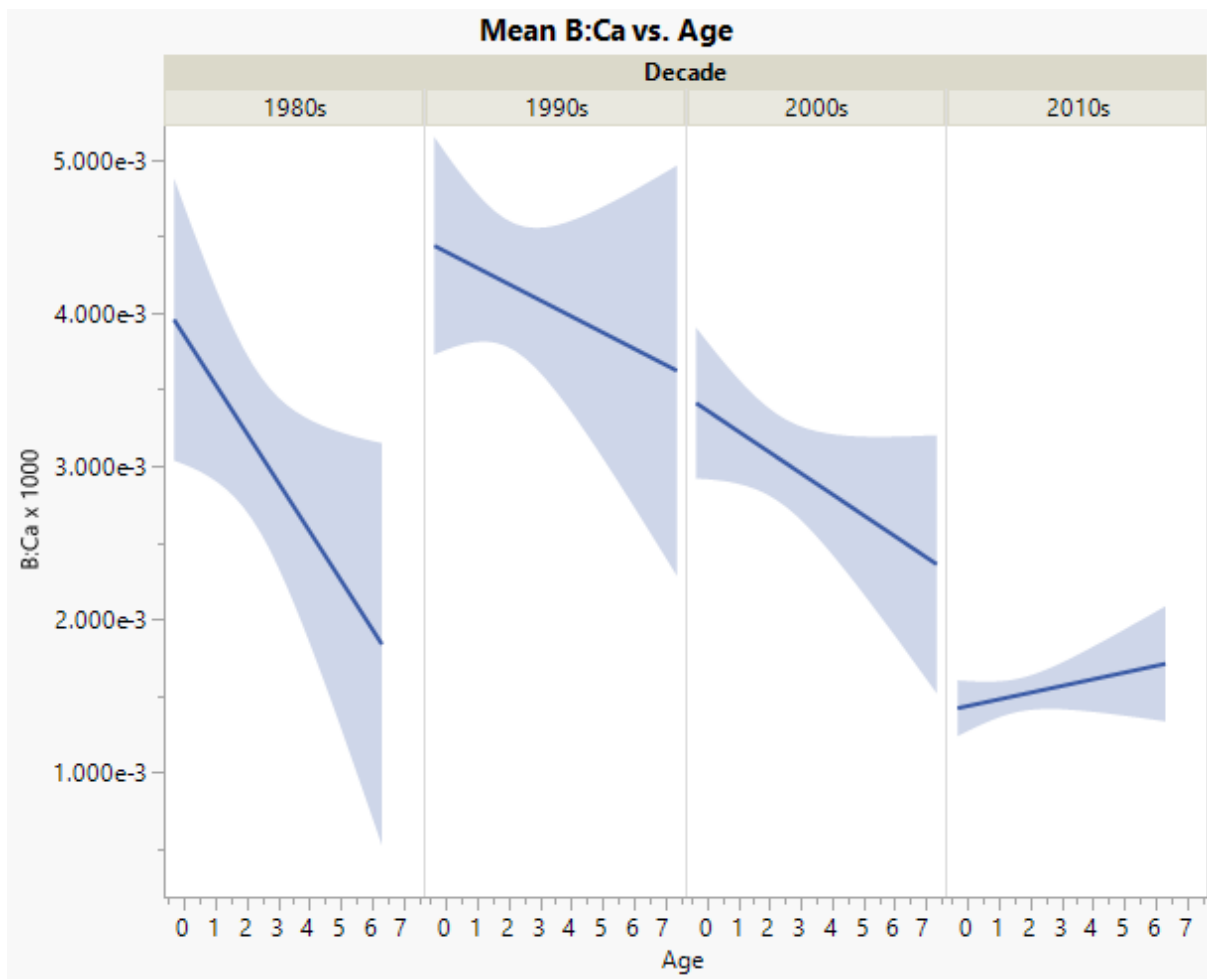
Figure S4(a). Plots of statistics for regressions of P:Ca on B:Ca computed for each otolith analyzed. Individual otolith slopes are plotted here as a function of the corresponding R^2 values. Iceland is included as an out-group. Steeper positive slopes with higher R2 values imply an unknown physiological control on B:Ca, since P:Ca is under physiological control. Dashed horizontal line shows slope = 0.
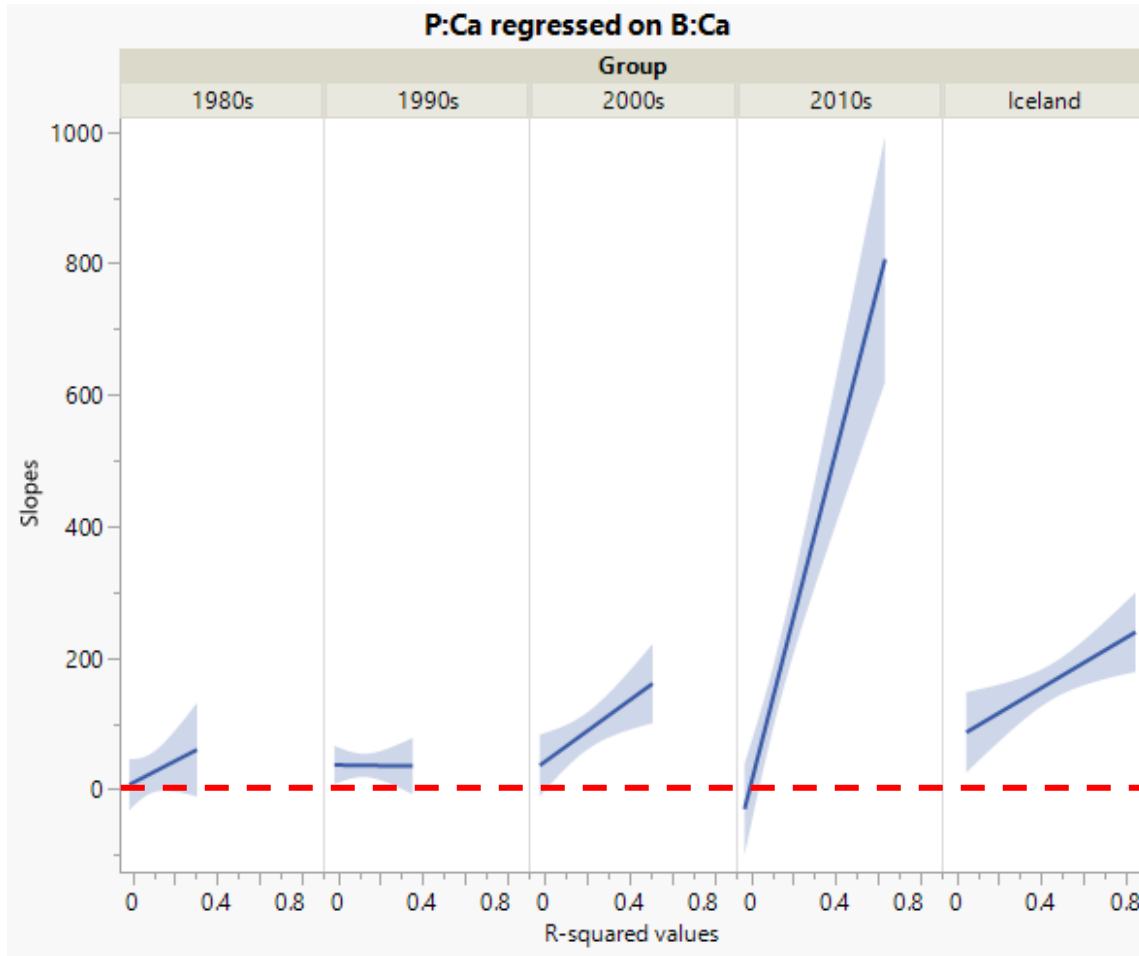
Figure S4(b). Box plots of R^2 values of individual fish regressions of P:Ca on B:Ca, by decade.
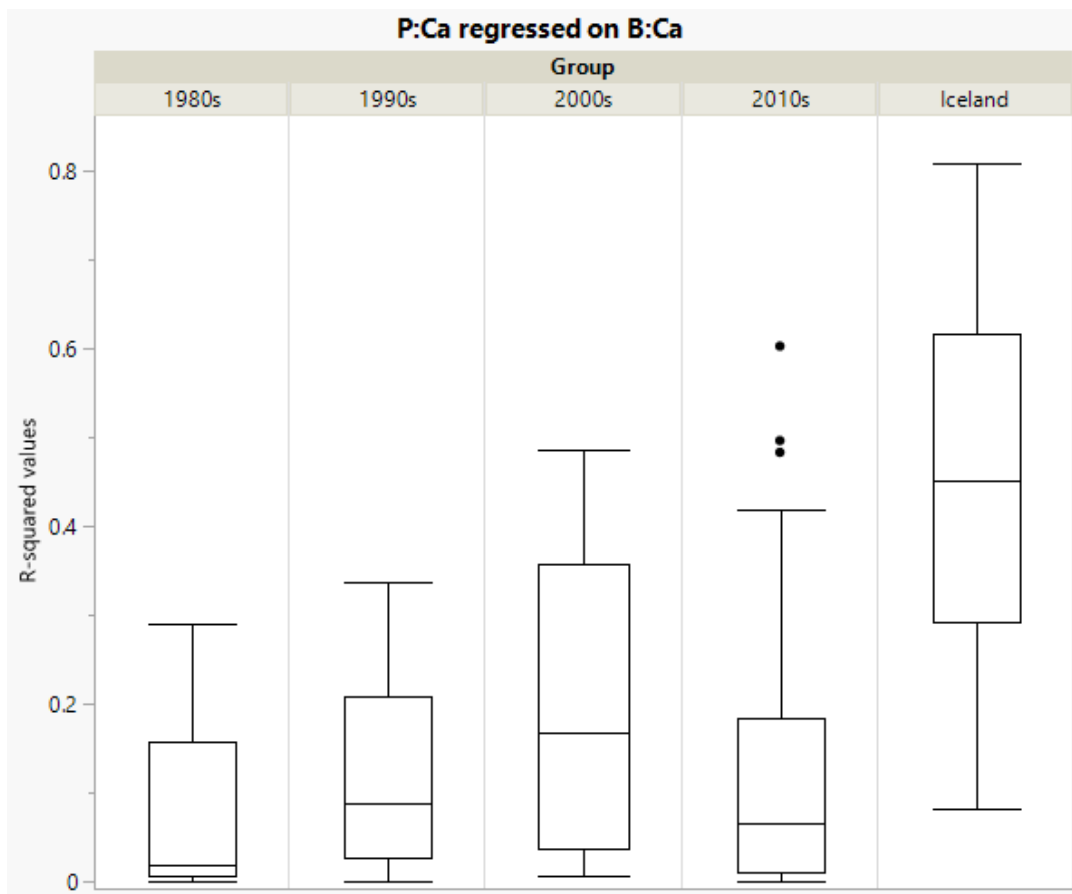
Figure S5. Plots of statistics for regressions of Mn:Mg on B:Ca computed for each otolith analyzed. Individual otolith slopes are plotted here as a function of the corresponding R^2 values. Because otolith Mn:Mg serves as a proxy for hypoxia exposure, negative slopes imply that when hypoxia is high, B:Ca is low, which could occur if organic acids are formed during algal bloom decomposition that consumes oxygen. Dashed horizontal line shows slope = 0.
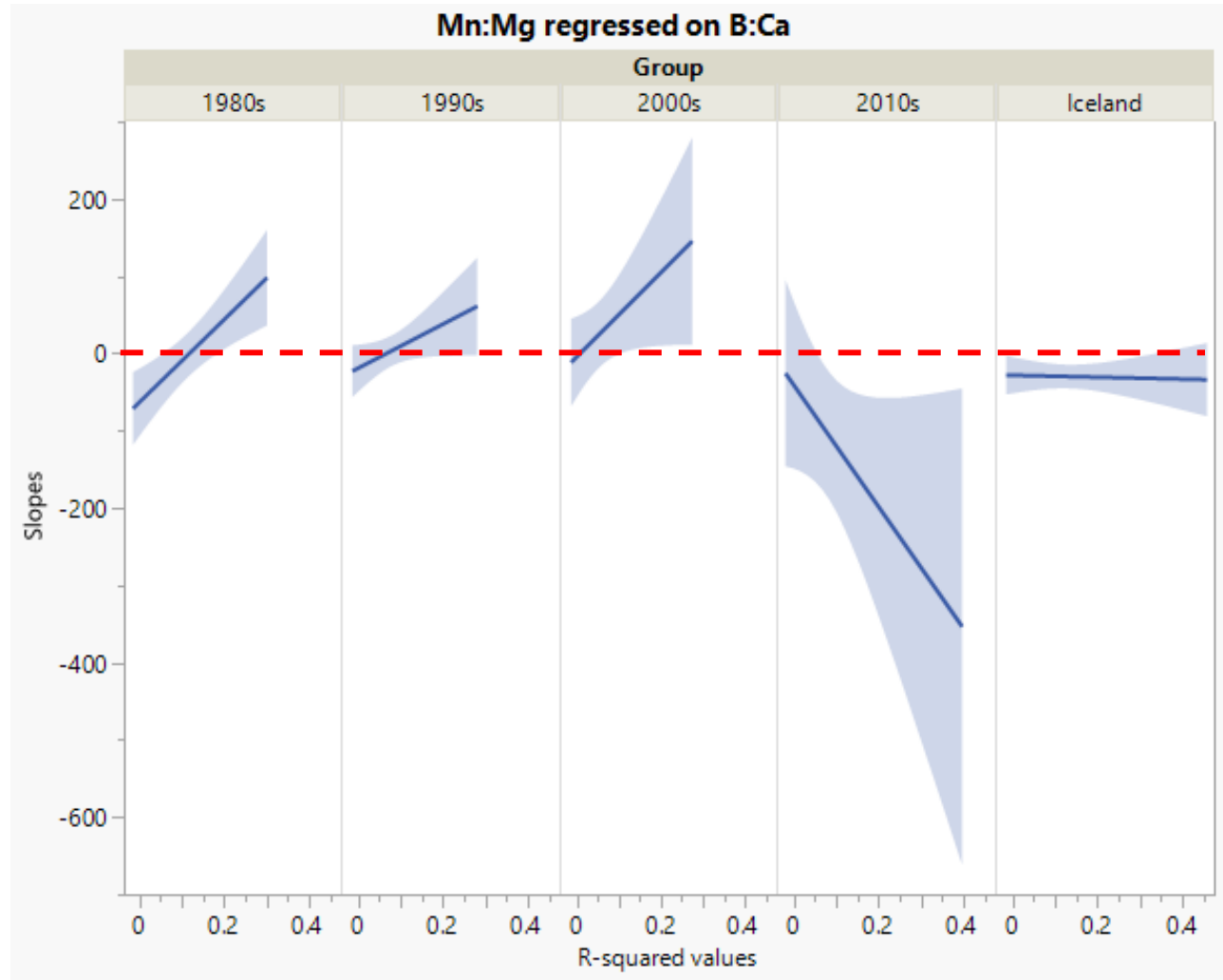
Figure S6. Slopes of Mn:Mg regressions on B:Ca computed for each otolith plotted against fish age by decade (with Iceland being an out-group). Dashed horizontal line shows slope = 0.