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Seasonal Trophic Controls Drive Population Variability in a Foundational Marine Copepod

SUPPORTING INFORMATION

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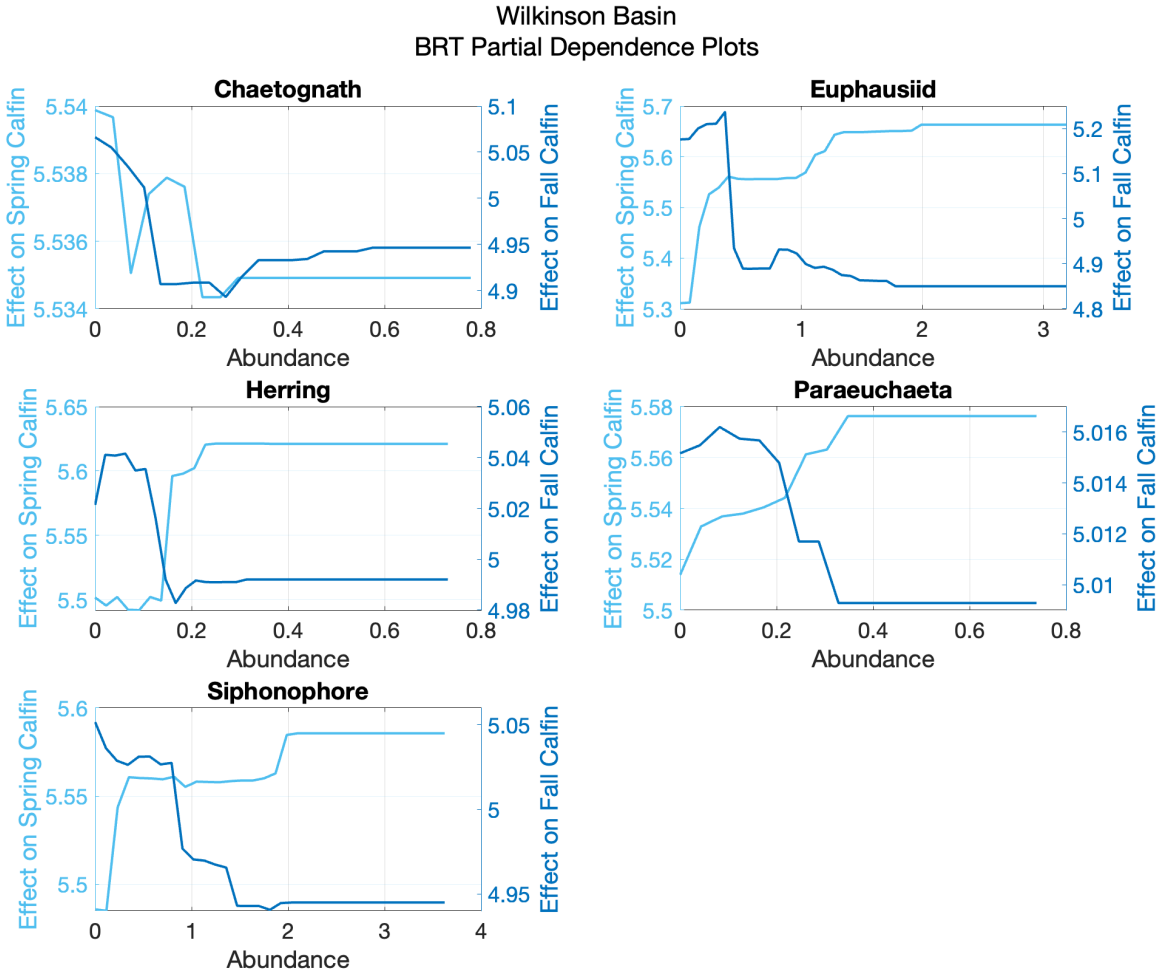

Figure S1: Partial dependence plots showing the average marginal effect of each predictor from the Boosted Regression Tree (BRT) for five potential predators of *C. finmarchicus* (Calfin) in Wilkinson Basin.

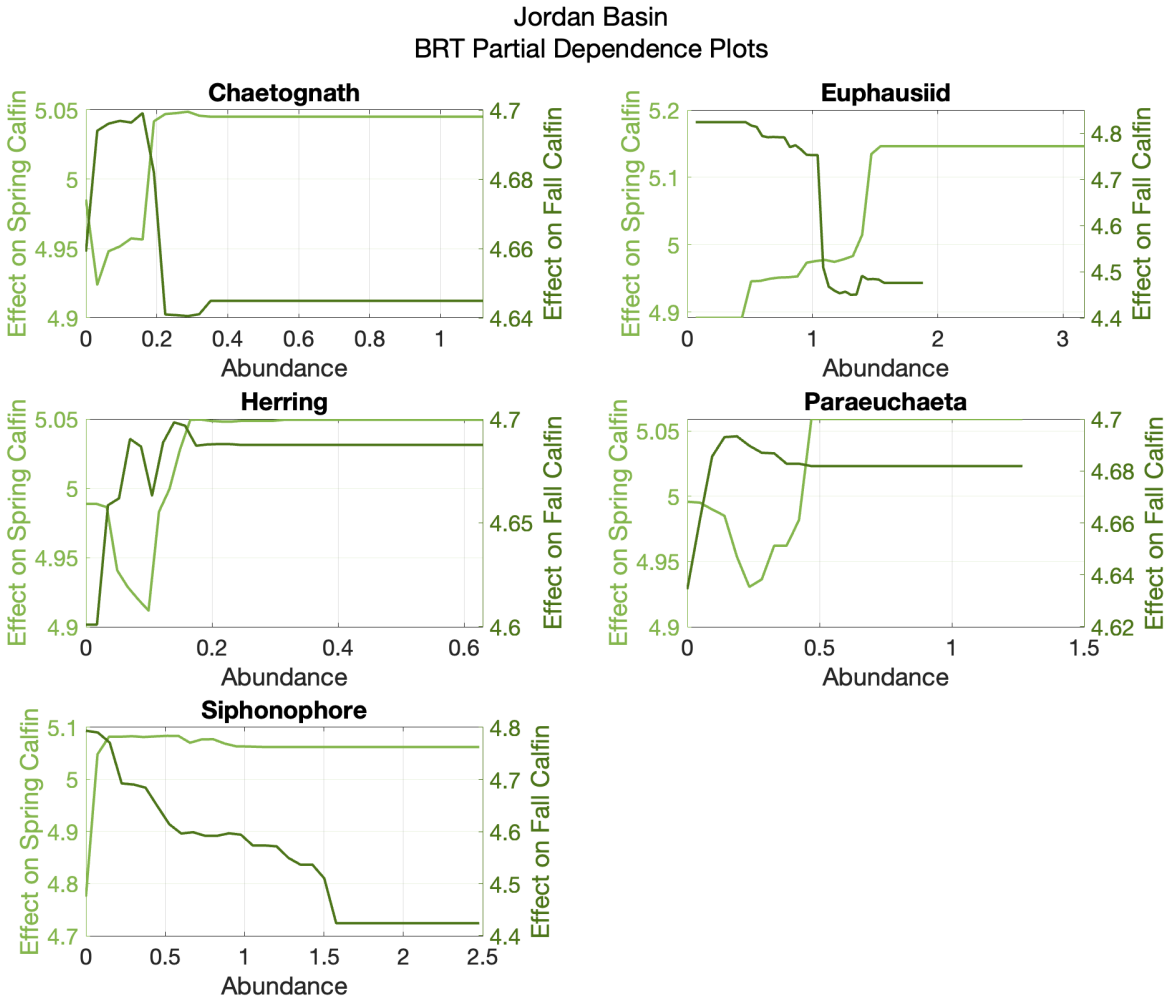

Figure S2: Partial dependence plots showing the average marginal effect of each predictor from the Boosted Regression Tree (BRT) for five potential predators of *C. finmarchicus* (Calfin) in Jordan Basin.

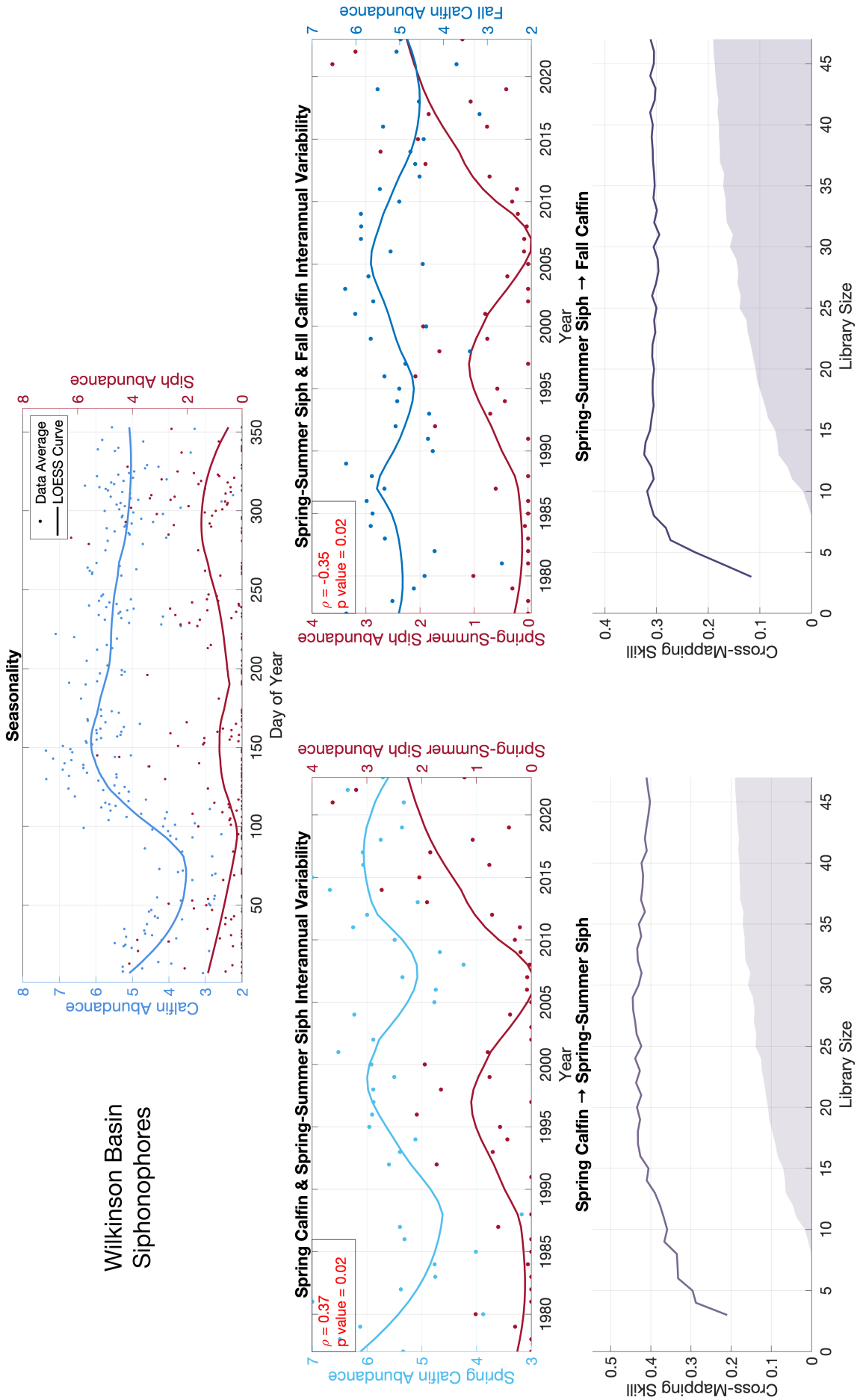

Figure S3: Seasonality, interannual variability, and CCM results analyzing Spring-Summer siphonophores (Siph) and Spring/Fall *C. finmarchicus* (Calfin) abundances in Wilkinson Basin. Points represent day of year or annual seasonal means; solid lines show LOESS-smoothed trends. Abundance values are in units of ln(abundance $m^{-3} + 1$).

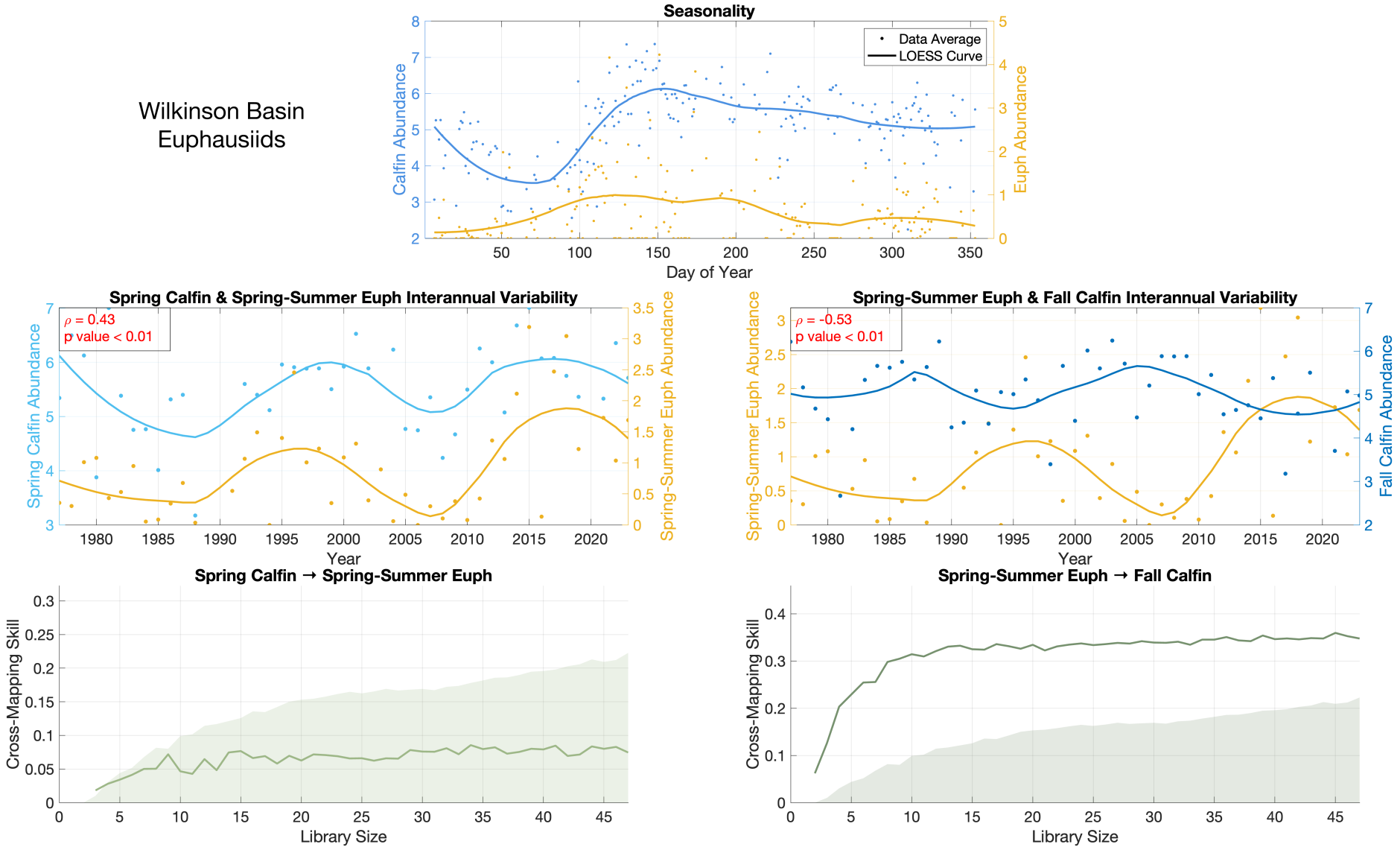

Figure S4: Seasonality, interannual variability, and CCM results analyzing Spring-Summer euphausiids (Euph) and Spring/Fall *C. finmarchicus* (Calfin) abundances in Wilkinson Basin. Points represent day of year or annual seasonal means; solid lines show LOESS-smoothed trends. Abundance values are in units of ln(abundance $m^{-3} + 1$).

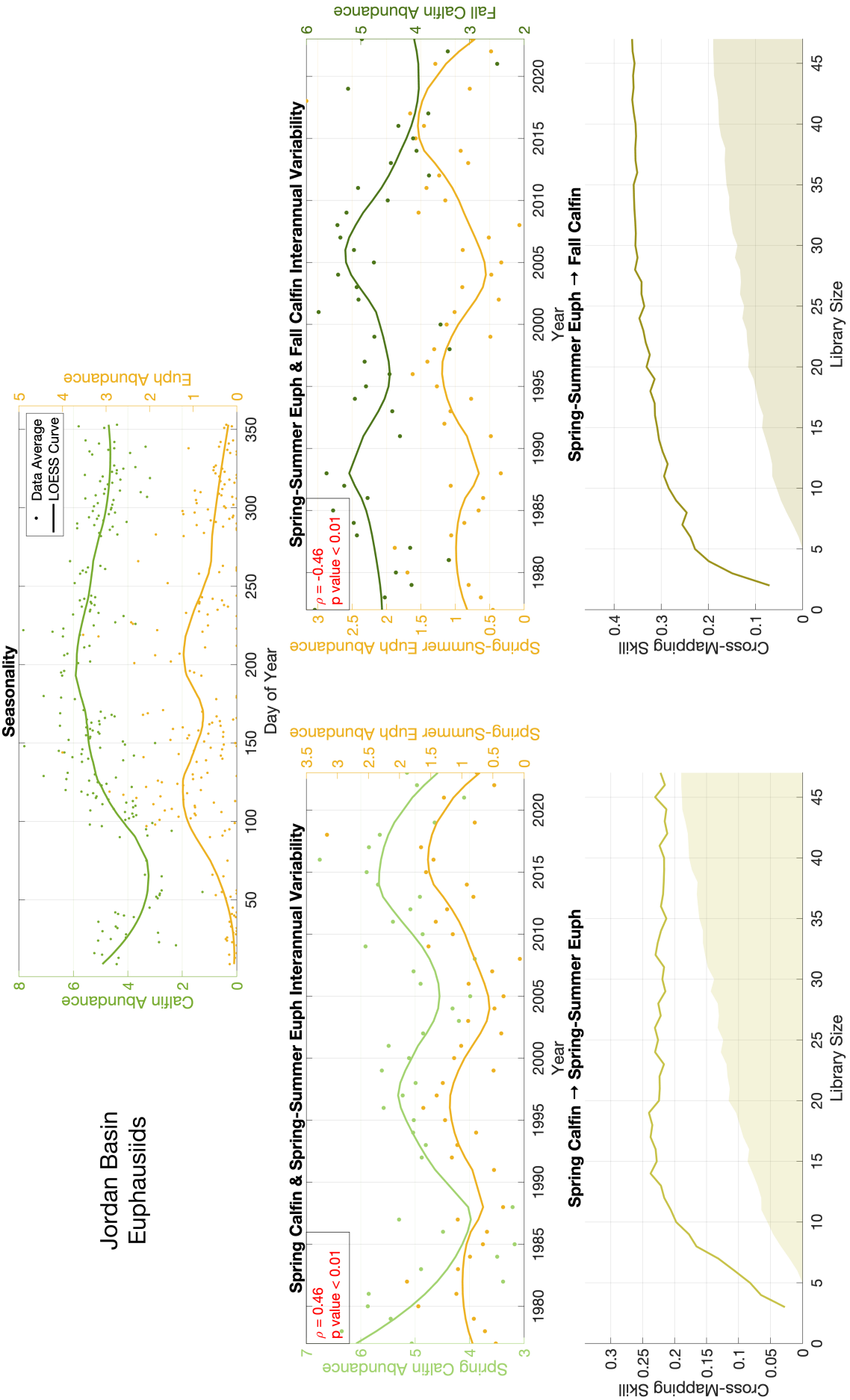

Figure S5: Seasonality, interannual variability, and CCM results analyzing Spring-Summer euphausiids (Euph) and Spring/Fall *C. finmarchicus* (Calfin) abundances in Jordan Basin. Points represent day of year or annual seasonal means; solid lines show LOESS-smoothed trends. Abundance values are in units of ln(abundance $m^{-3} + 1$).

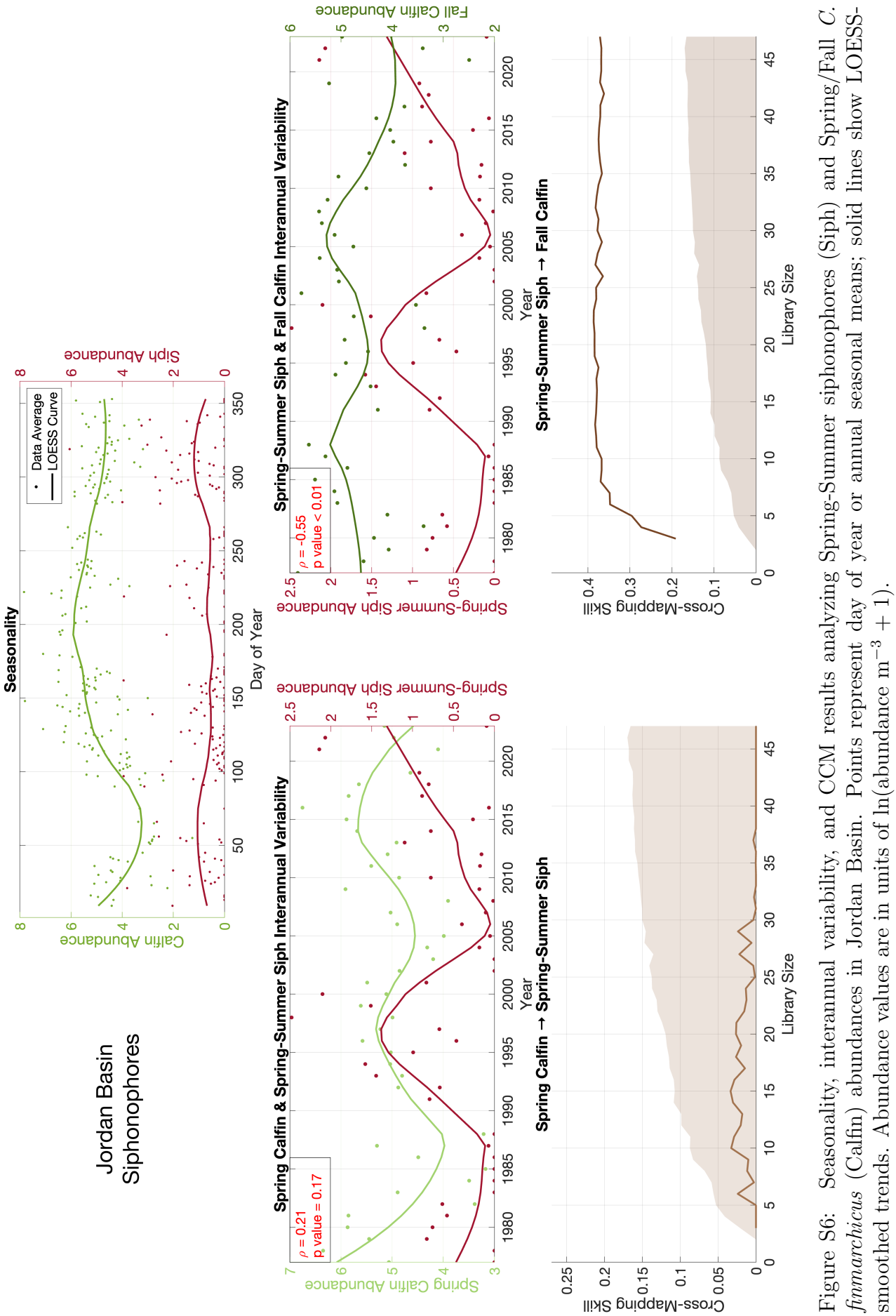

Figure S6: Seasonality, interannual variability, and CCM results analyzing Spring-Summer siphonophores (Siph) and Spring/Fall *C. finmarchicus* (Calfin) abundances in Jordan Basin. Points represent day of year or annual seasonal means; solid lines show LOESS-smoothed trends. Abundance values are in units of ln(abundance $\mathrm{m}^{-3} + 1$).

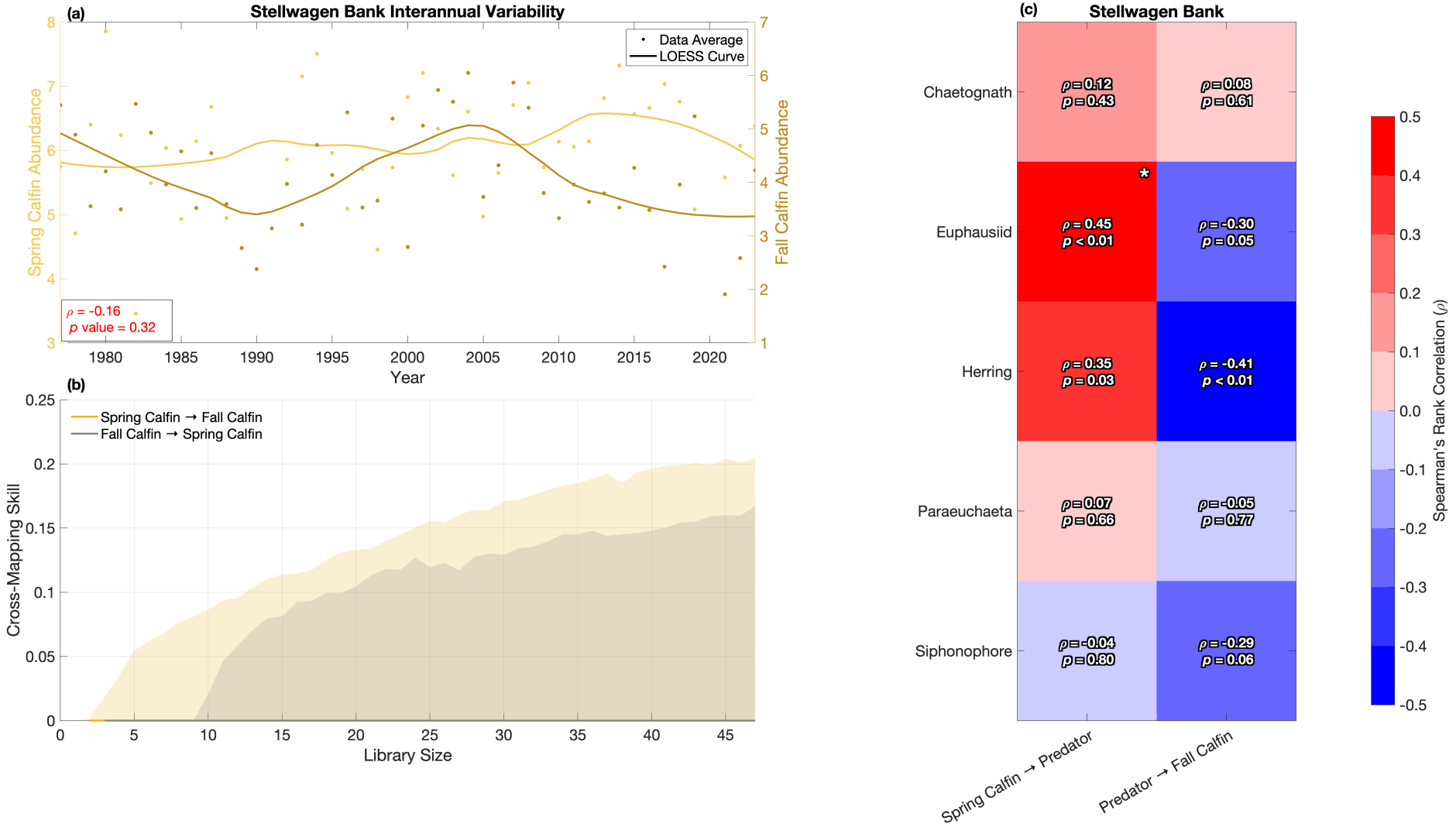

Figure S7: Spring → Fall CCM results for *C. finmarchicus* (Calfin) populations (a, b) and predator correlations/CCM results (c) on Stellwagen Bank. Points represent annual seasonal means; solid lines show LOESS-smoothed trends. Abundance values are in units of ln(abundance $m^{-3} + 1$).

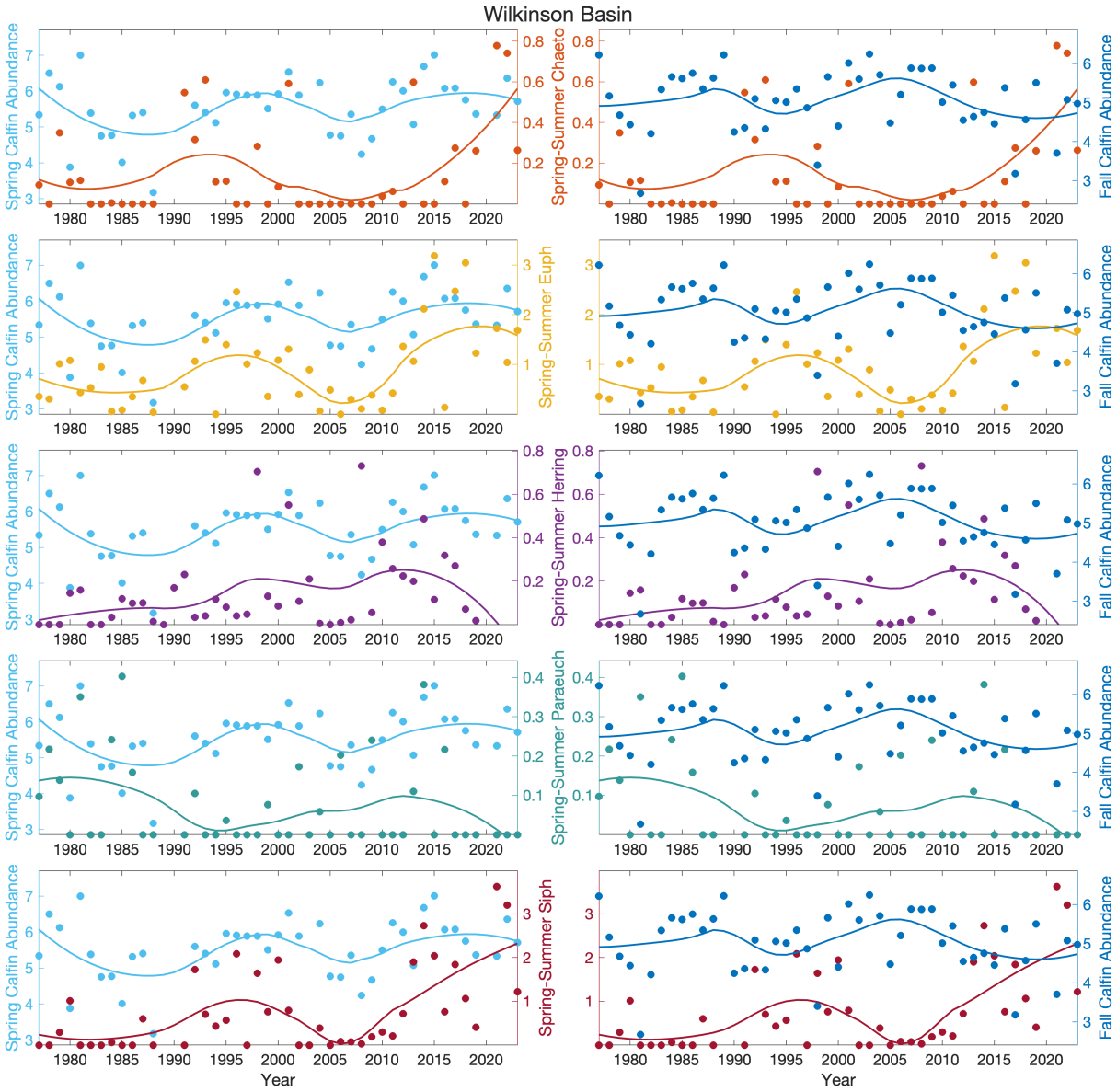

Figure S8: Interannual variability in seasonal abundance of five potential predators of *Calanus finmarchicus* (Calfin) in Wilkinson Basin. Each row corresponds to a different predator group—chaetognaths (Chaeto), euphausiids (Euph), Atlantic herring (Herring), *Paraeuchaeta* spp. (Paraeuch), and siphonophores (Siph)—with seasonal predator abundance plotted against Calfin abundance. Left column panels show predator abundance compared to Spring Calfin; right column panels show the same predator groups compared to Fall Calfin. Points represent annual season means; solid lines show LOESS-smoothed trends for better visualization. Y-values are log-transformed (in units of ln[abundance m^{-3} + 1] and ln[kg/ha + 1] for herring) and averaged across years within each season.

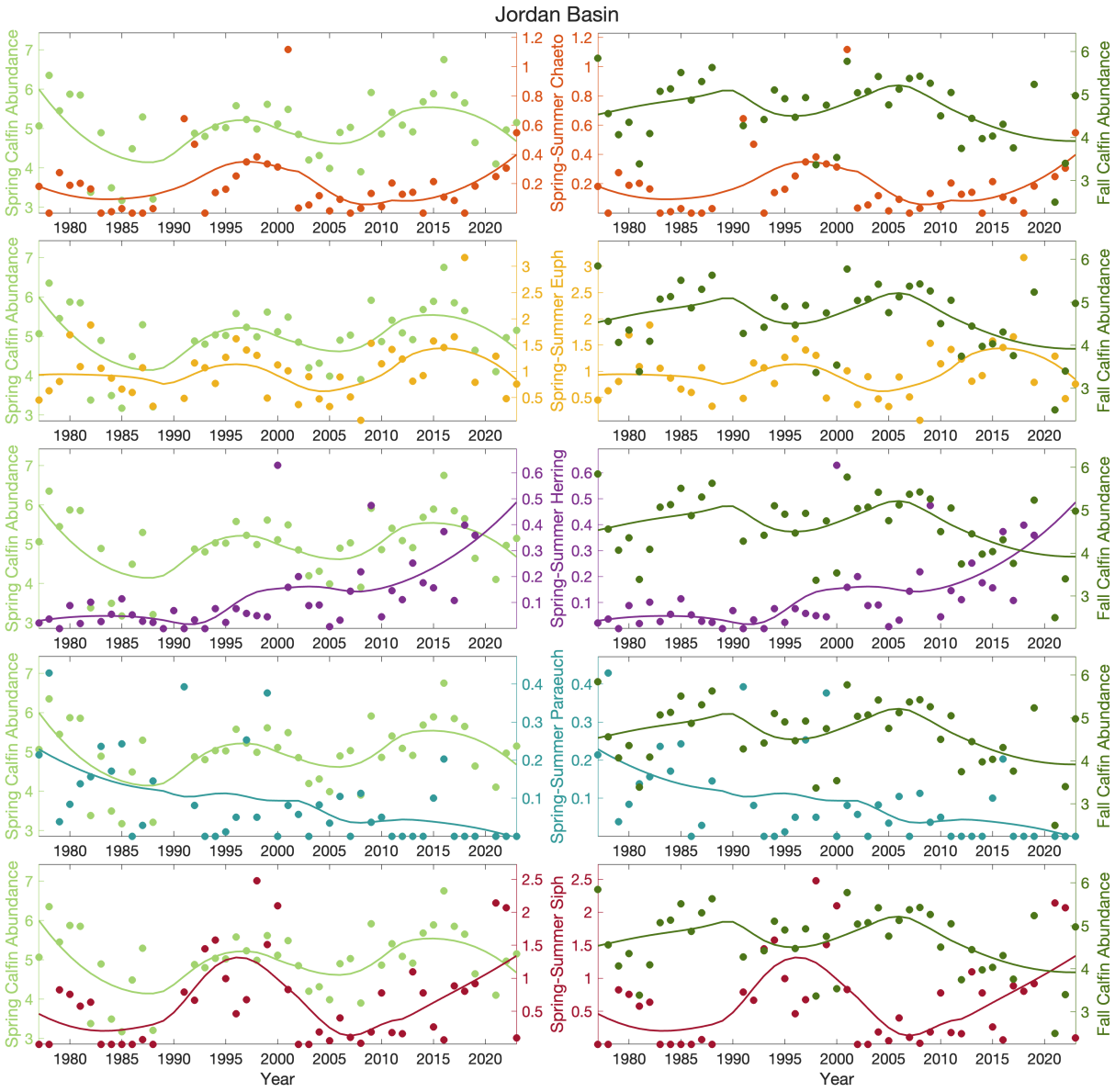

Figure S9: Interannual variability in seasonal abundance of five potential predators of *C. finmarchicus* (Calfin) in Jordan Basin. Each row corresponds to a different predator group—chaetognaths (Chaeto), euphausiids (Euph), Atlantic herring (Herring), *Paraeuchaeta* spp. (Paraeuch), and siphonophores (Siph)—with seasonal predator abundance plotted against Calfin abundance. Left column panels show predator abundance compared to Spring Calfin; right column panels show the same predator groups compared to Fall Calfin. Points represent annual season means; solid lines show LOESS-smoothed trends for better visualization. Y-values are log-transformed (in units of ln[abundance m^{-3} + 1] for invertebrates and ln[kg/ha + 1] for herring) and averaged across years within each season.