Supplementary Figure S1a-e

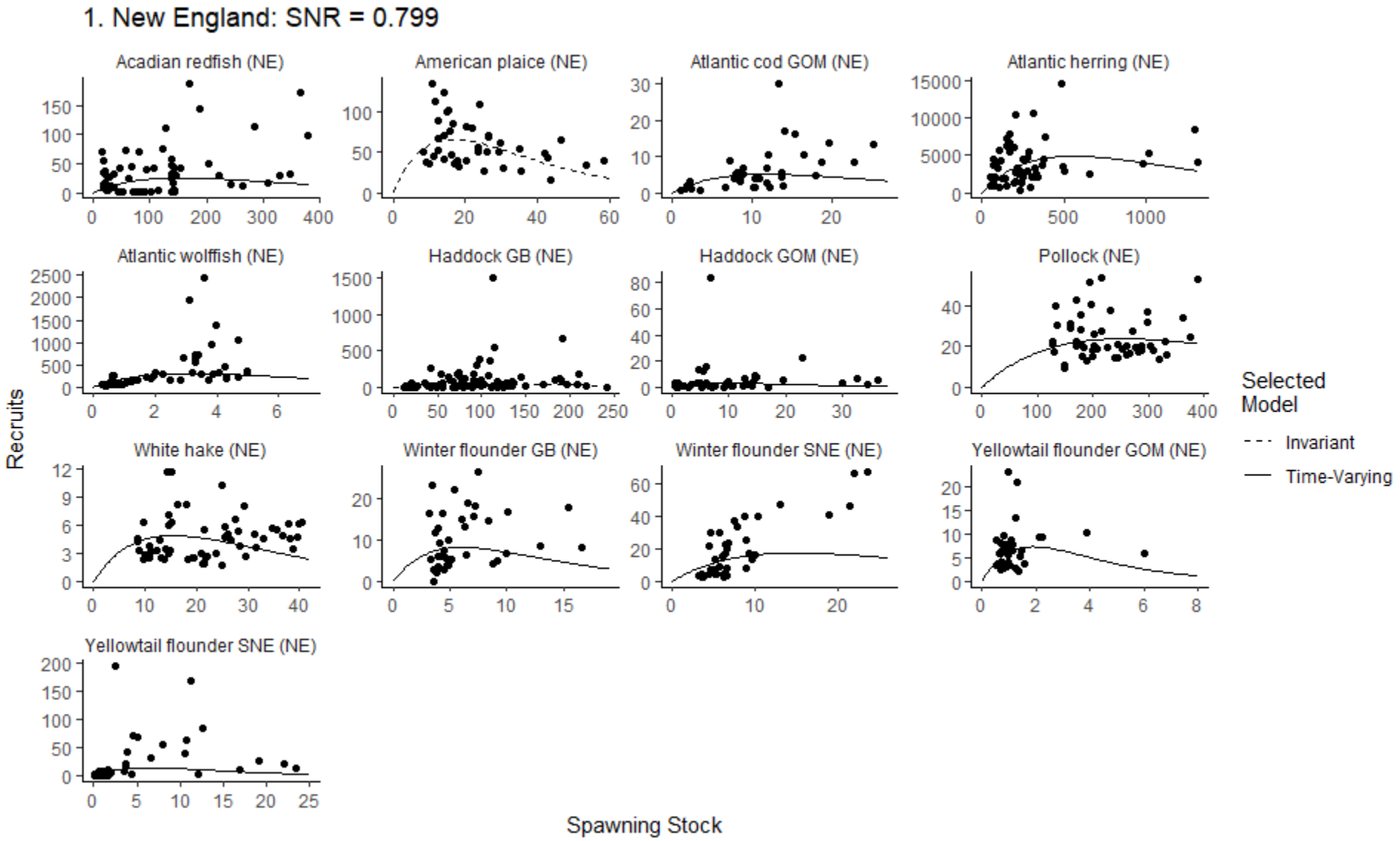


Figure S1a: Stock-recruitment values from stock assessment reports (points), and the estimated Ricker curves based on the average productivity estimated by the dynamic Ricker model with the Kalman filter. Solid lines indicate that the productivity was selected as time-varying, and thus the average is not the best fit of the data, and dashed lines indicate that the productivity was selected as time-invariant. Units are SSB (kt) and recruits (millions).

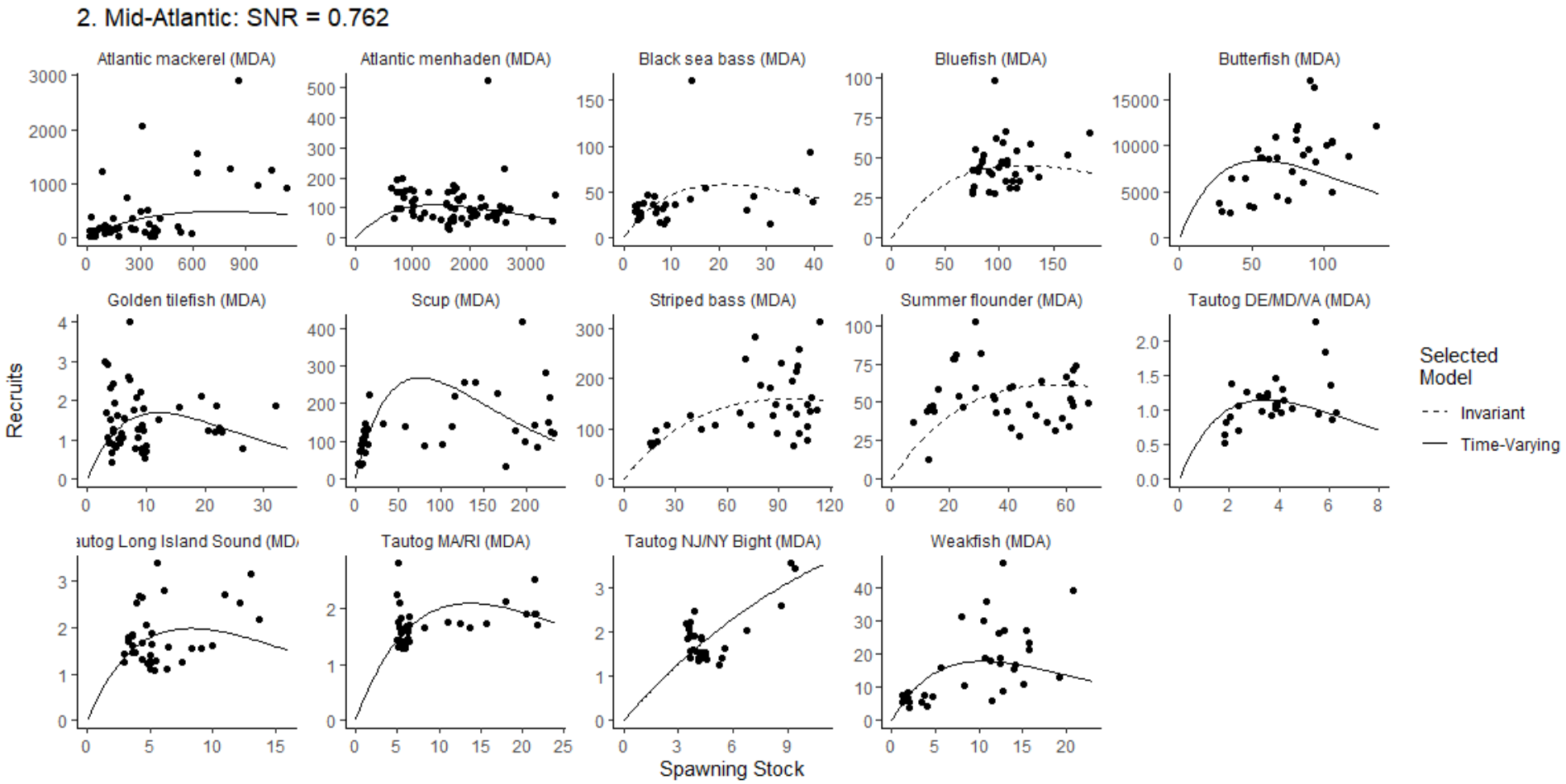


Figure S1b: Stock-recruitment values from stock assessment reports (points), and the estimated Ricker curves based on the average productivity estimated by the dynamic Ricker model with the Kalman filter. Solid lines indicate that the productivity was selected as time-varying, and thus the average is not the best fit of the data, and dashed lines indicate that the productivity was selected as time-invariant. Units are SSB (kt) and recruits (millions), except for Atlantic menhaden, which has units of spawning output (trillion eggs) and recruits (billions).

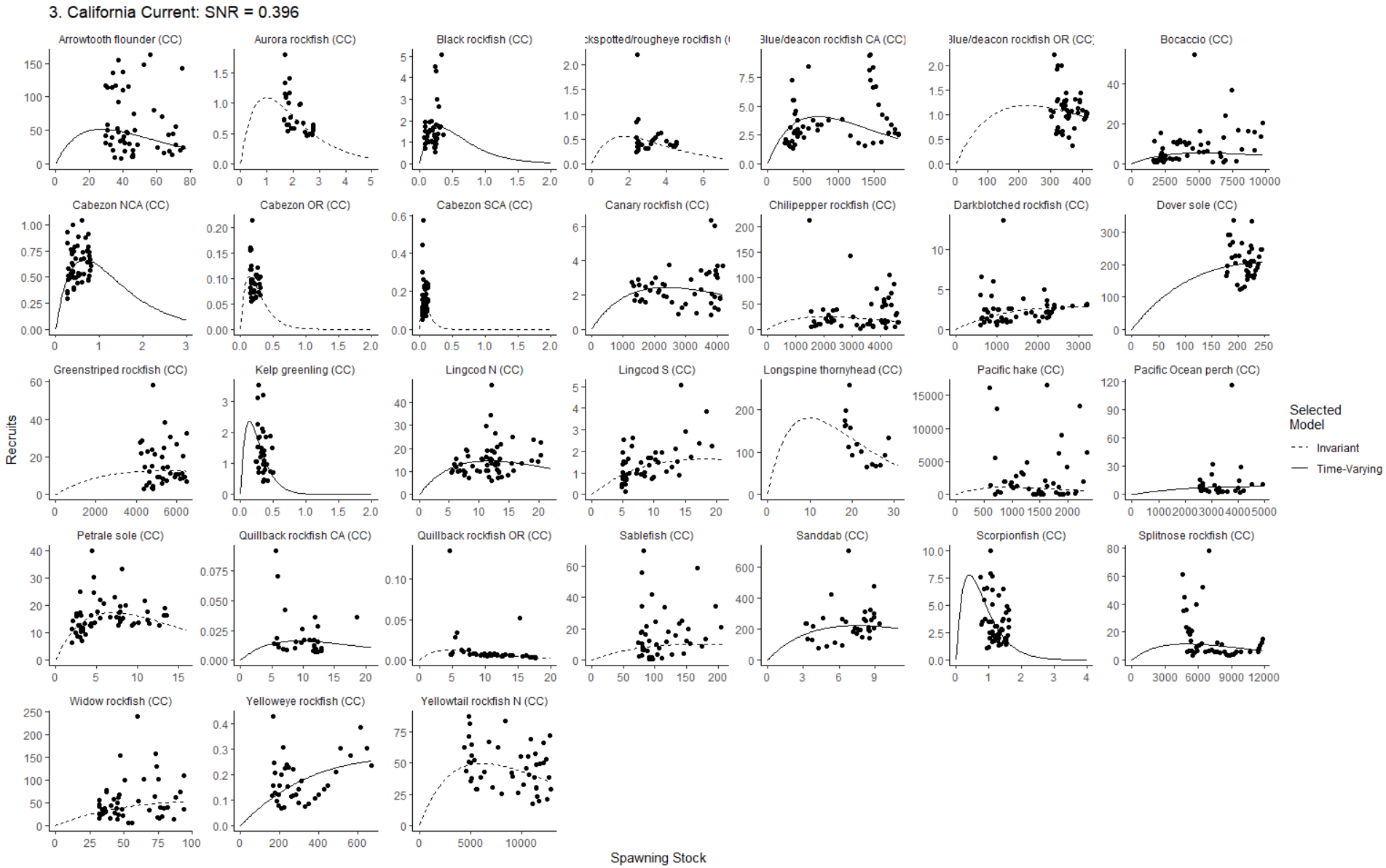


Figure S1c: Stock-recruitment values from stock assessment reports (points), and the estimated Ricker curves based on the average productivity estimated by the dynamic Ricker model with the Kalman filter. Solid lines indicate that the productivity was selected as time-varying, and thus the average is not the best fit of the data, and dashed lines indicate that the productivity was selected as time-invariant. Units are SSB (kt) and recruits (millions), except for 13 rockfish species with units of spawning output (millions/billions of eggs/larvae; see Figure S3c).

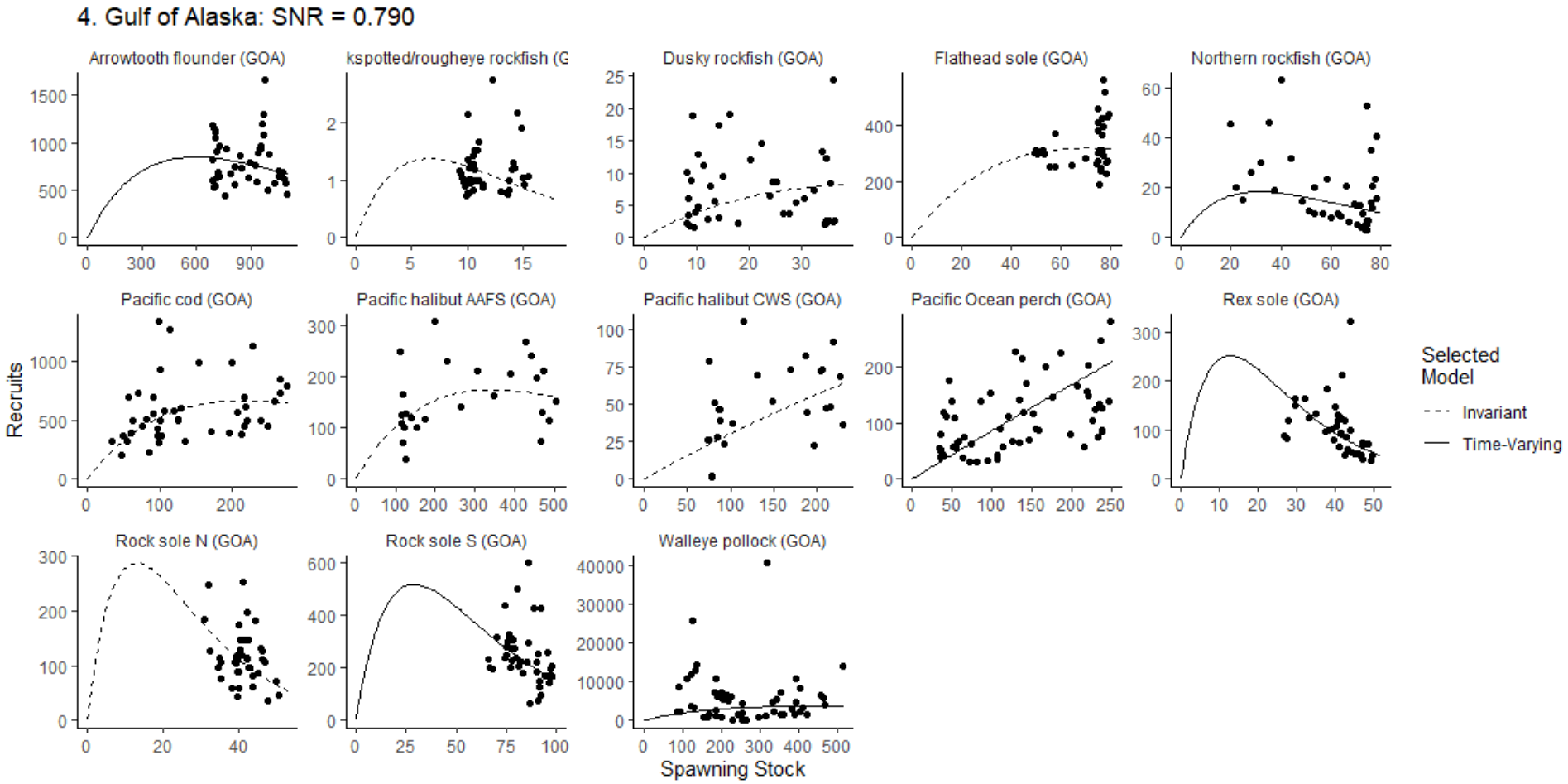


Figure S1d: Stock-recruitment values from stock assessment reports (points), and the estimated Ricker curves based on the average productivity estimated by the dynamic Ricker model with the Kalman filter. Solid lines indicate that the productivity was selected as time-varying, and thus the average is not the best fit of the data, and dashed lines indicate that the productivity was selected as time-invariant. Units are SSB (kt) and recruits (millions).

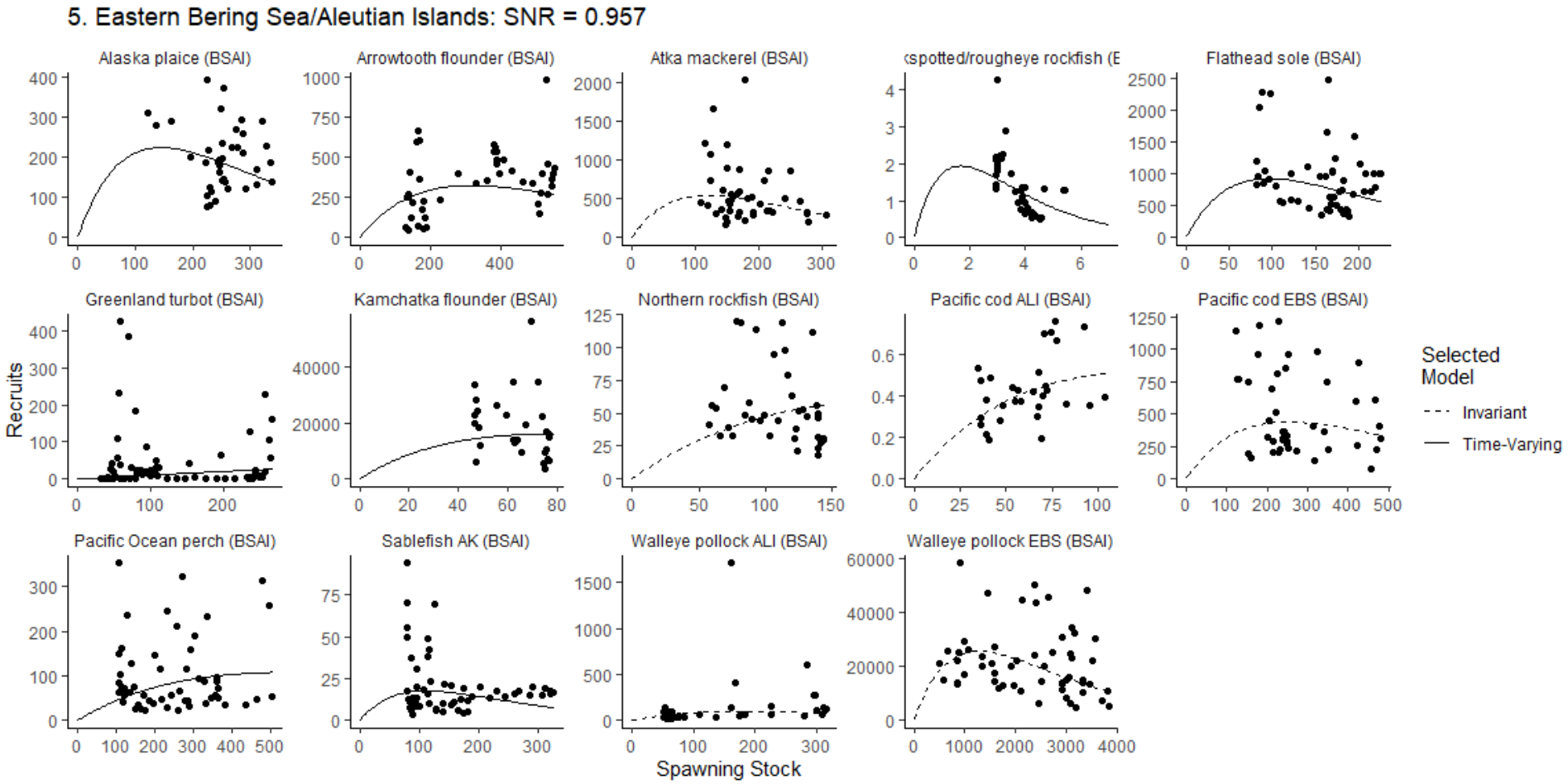


Figure S1e: Stock-recruitment values from stock assessment reports (points), and the estimated Ricker curves based on the average productivity estimated by the dynamic Ricker model with the Kalman filter. Solid lines indicate that the productivity was selected as time-varying, and thus the average is not the best fit of the data, and dashed lines indicate that the productivity was selected as time-invariant. Units are SSB (kt) and recruits (millions).

Supplementary Figure S2a-e

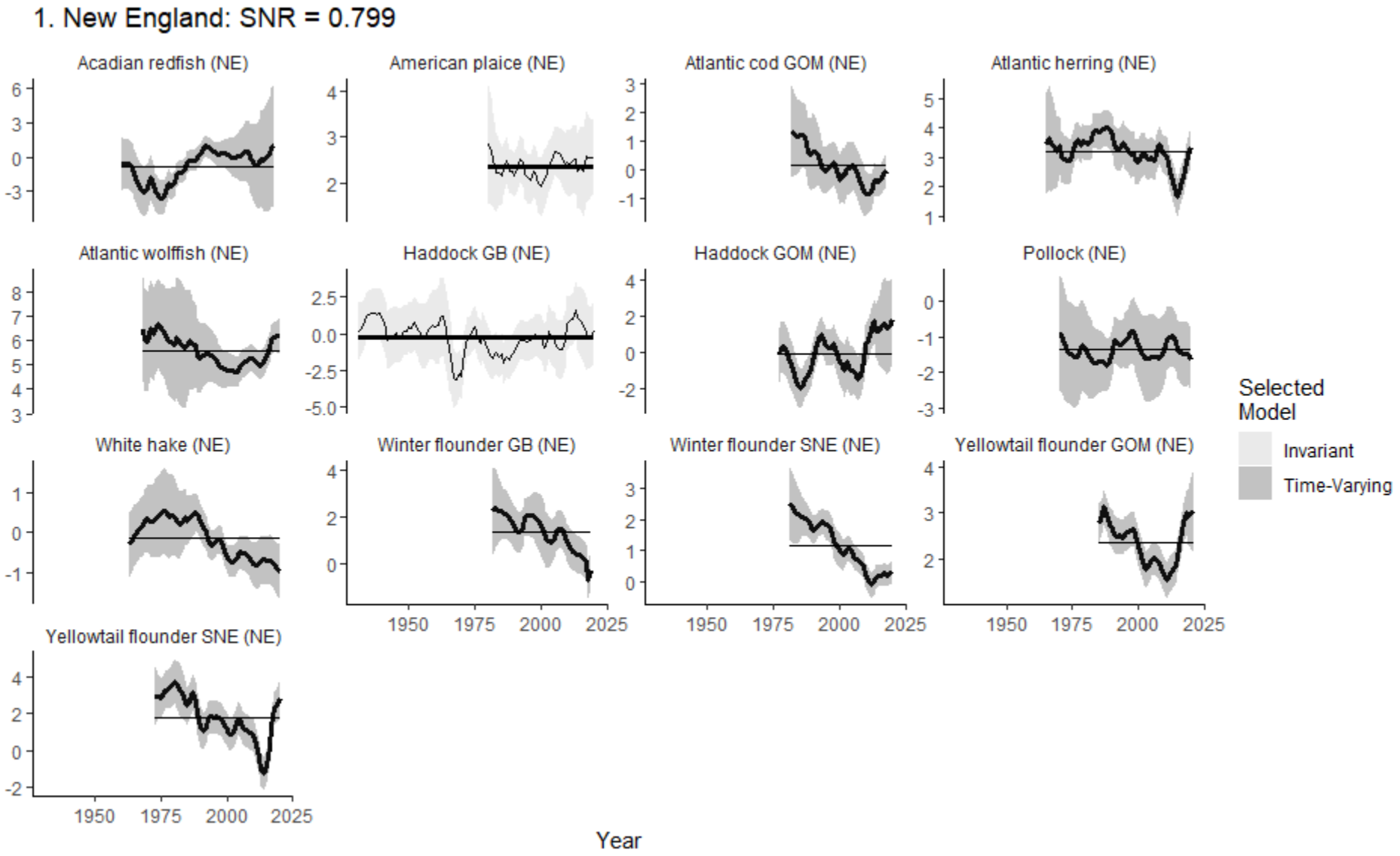


Figure S2a: Time series of productivity (a) in units of log(recruits/spawner) estimated by the dynamic Ricker model with the Kalman filter. Stocks selected as having time-varying productivity are shown with bold productivity time series, and stocks selected as having time-invariant productivity are shown with bold horizontal line indicating average productivity across the estimated time series.

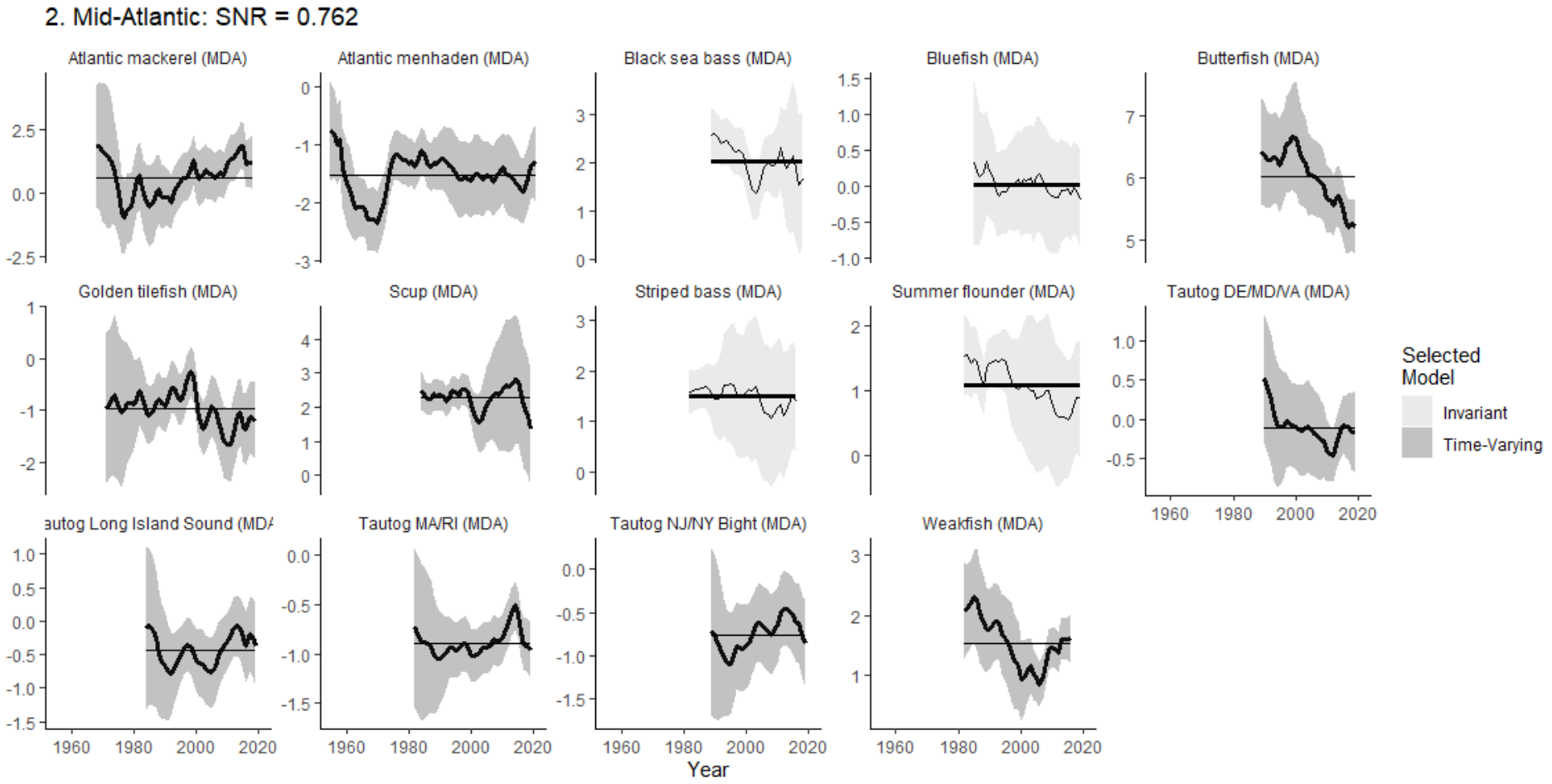


Figure S2b: Time series of productivity (a) in units of log(recruits/spawner) estimated by the dynamic Ricker model with the Kalman filter. Stocks selected as having time-varying productivity are shown with bold productivity time series, and stocks selected as having time-invariant productivity are shown with bold horizontal line indicating average productivity across the estimated time series.

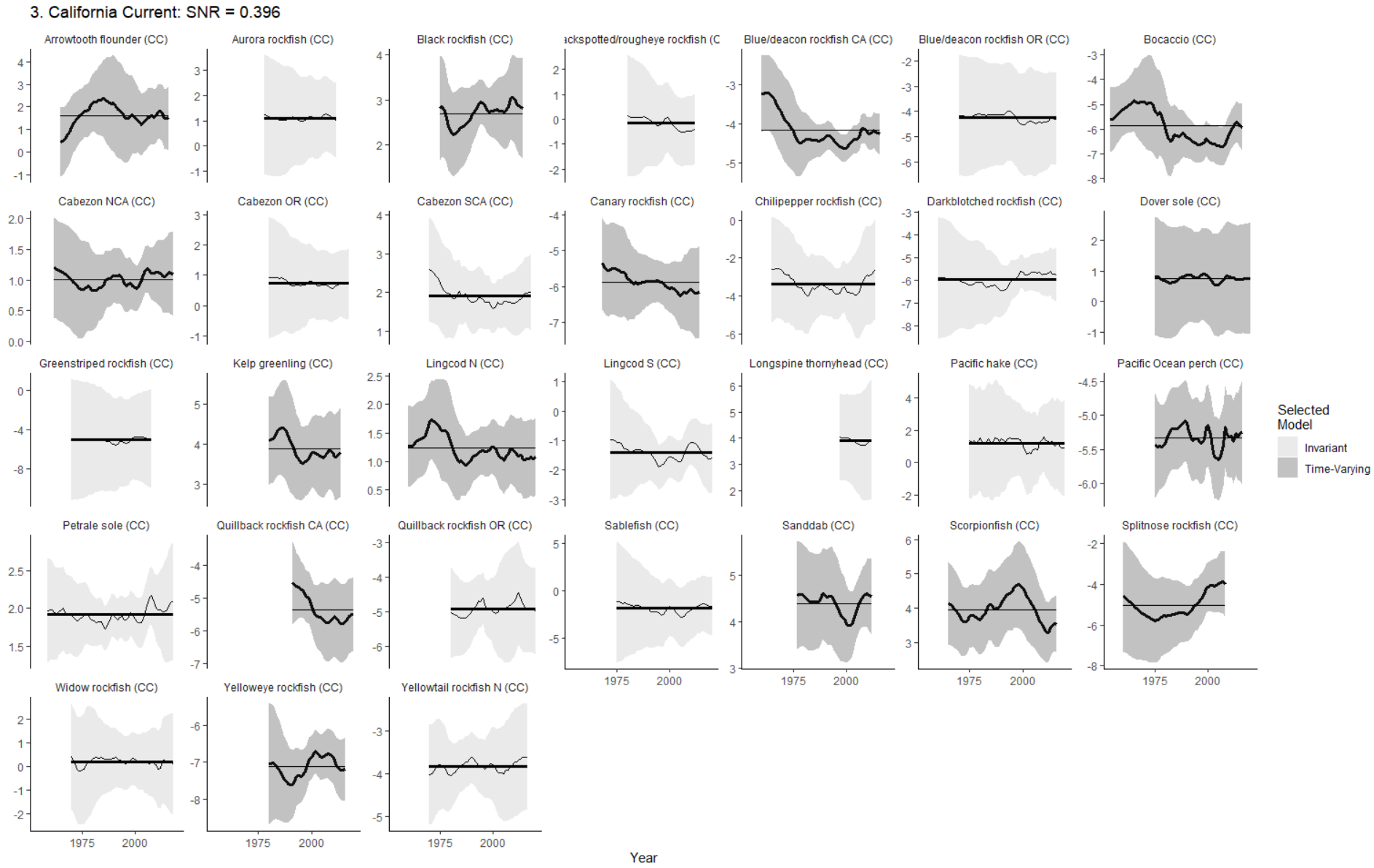


Figure S2c: Time series of productivity (a) in units of log(recruits/spawner) estimated by the dynamic Ricker model with the Kalman filter. Stocks selected as having time-varying productivity are shown with bold productivity time series, and stocks selected as having time-invariant productivity are shown with bold horizontal line indicating average productivity across the estimated time series.

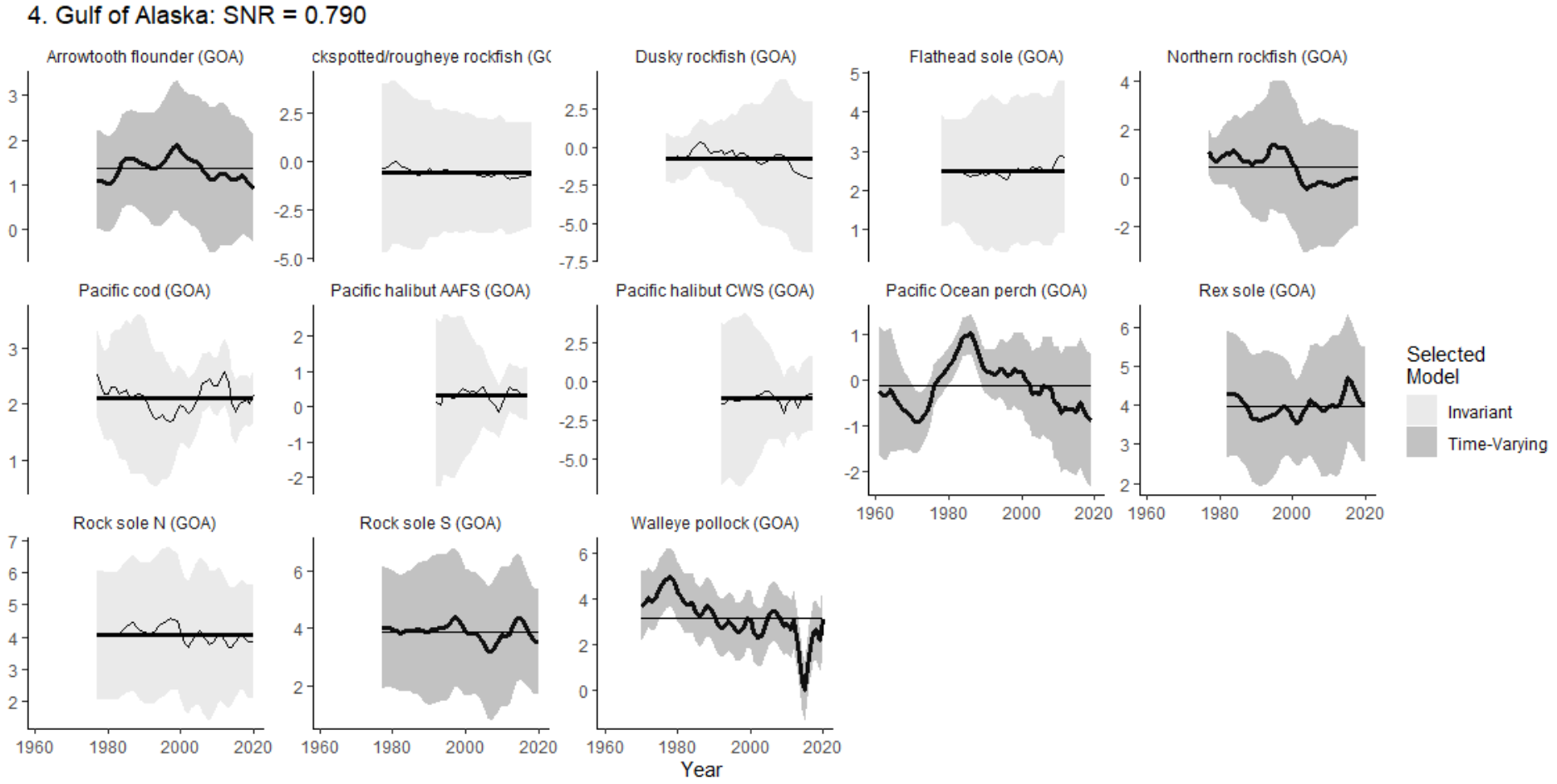


Figure S2d: Time series of productivity (a) in units of log(recruits/spawner) estimated by the dynamic Ricker model with the Kalman filter. Stocks selected as having time-varying productivity are shown with bold productivity time series, and stocks selected as having time-invariant productivity are shown with bold horizontal line indicating average productivity across the estimated time series.

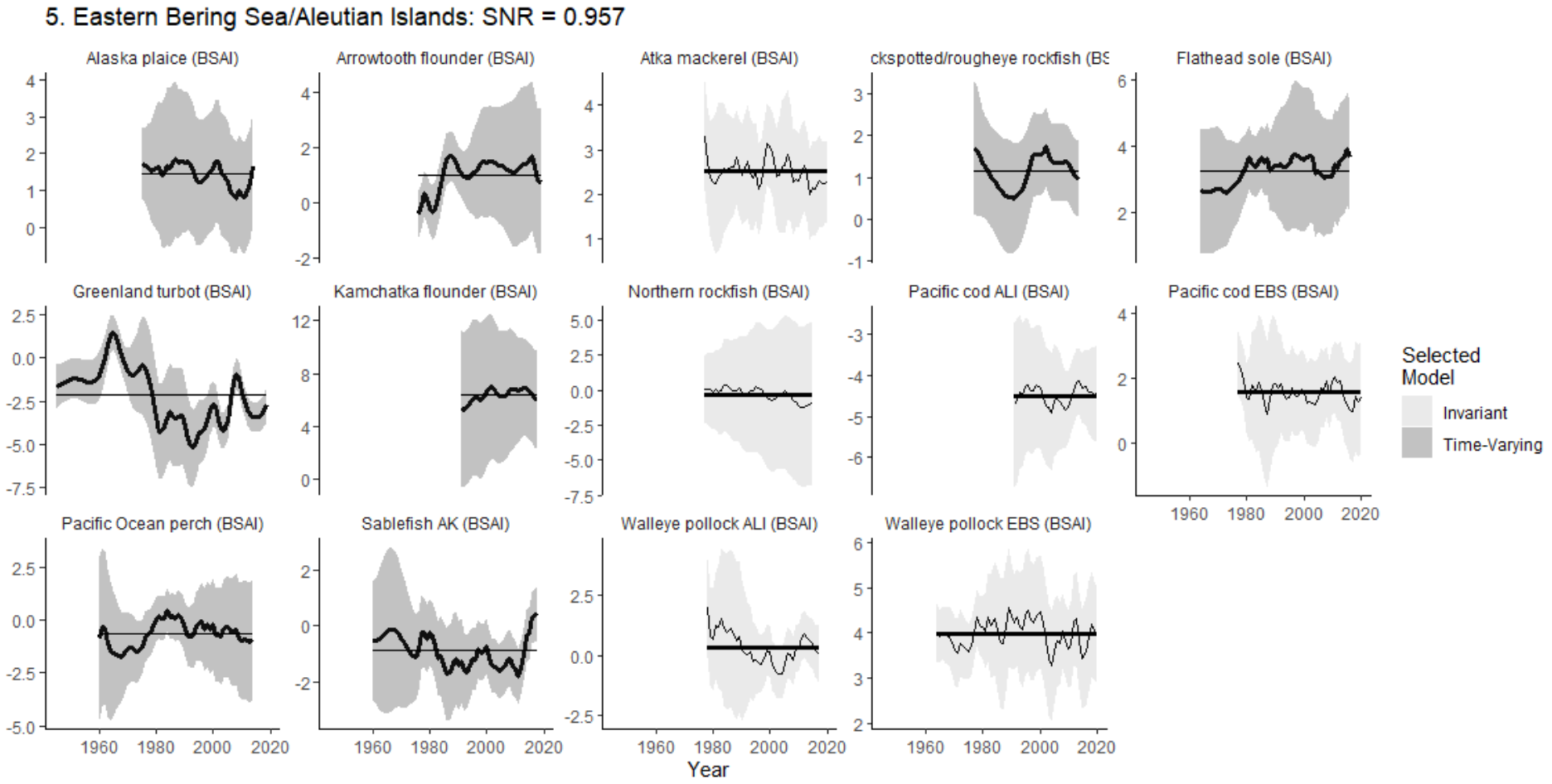


Figure S2e: Time series of productivity (a) in units of log(recruits/spawner) estimated by the dynamic Ricker model with the Kalman filter. Stocks selected as having time-varying productivity are shown with bold productivity time series, and stocks selected as having time-invariant productivity are shown with bold horizontal line indicating average productivity across the estimated time series.

Supplementary Figure S3a-e

1. New England

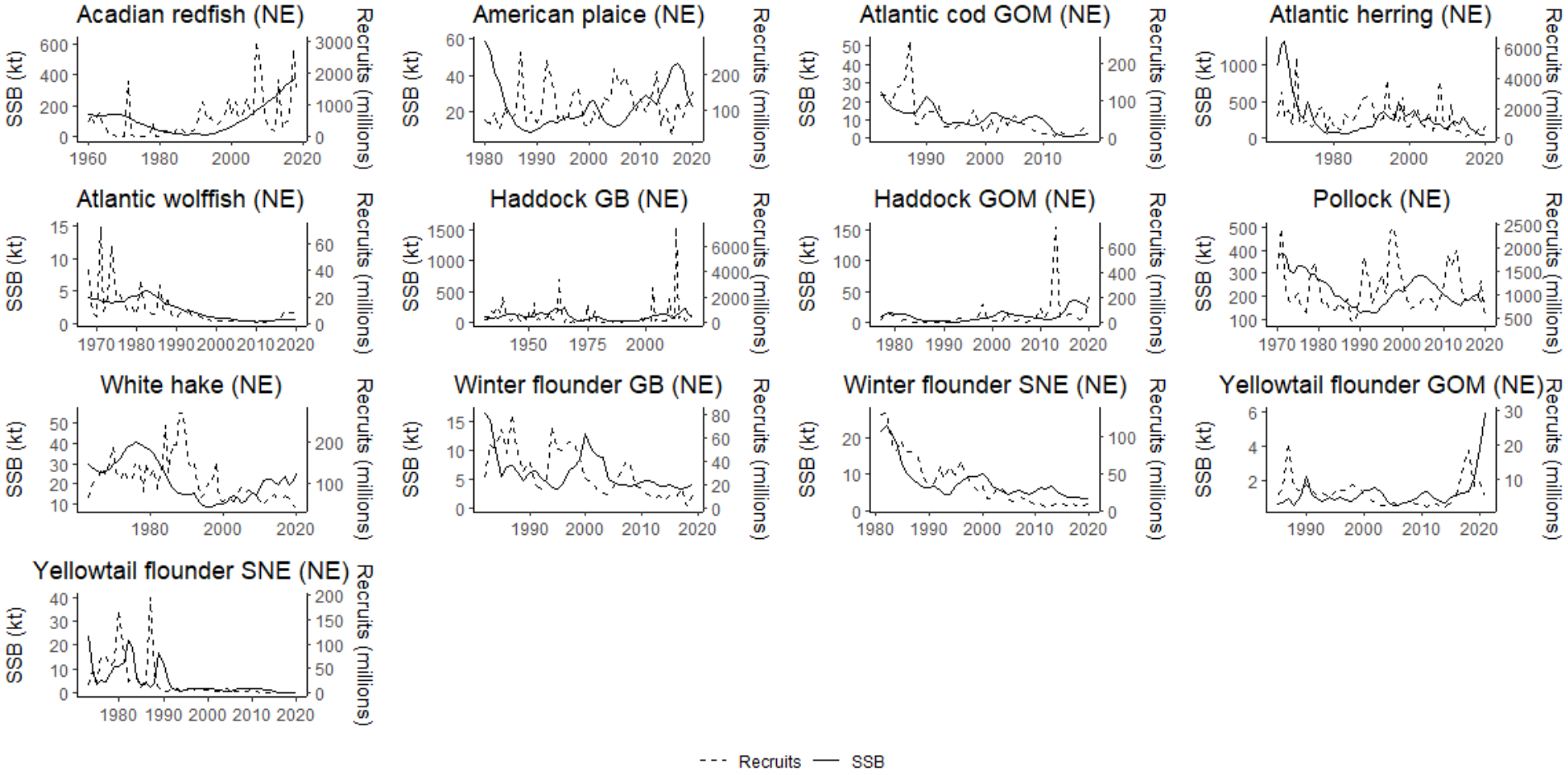


Figure S3a: Time series of spawning stock biomass (solid line) and recruitment (dashed line) from stock assessment reports.

2. Mid-Atlantic

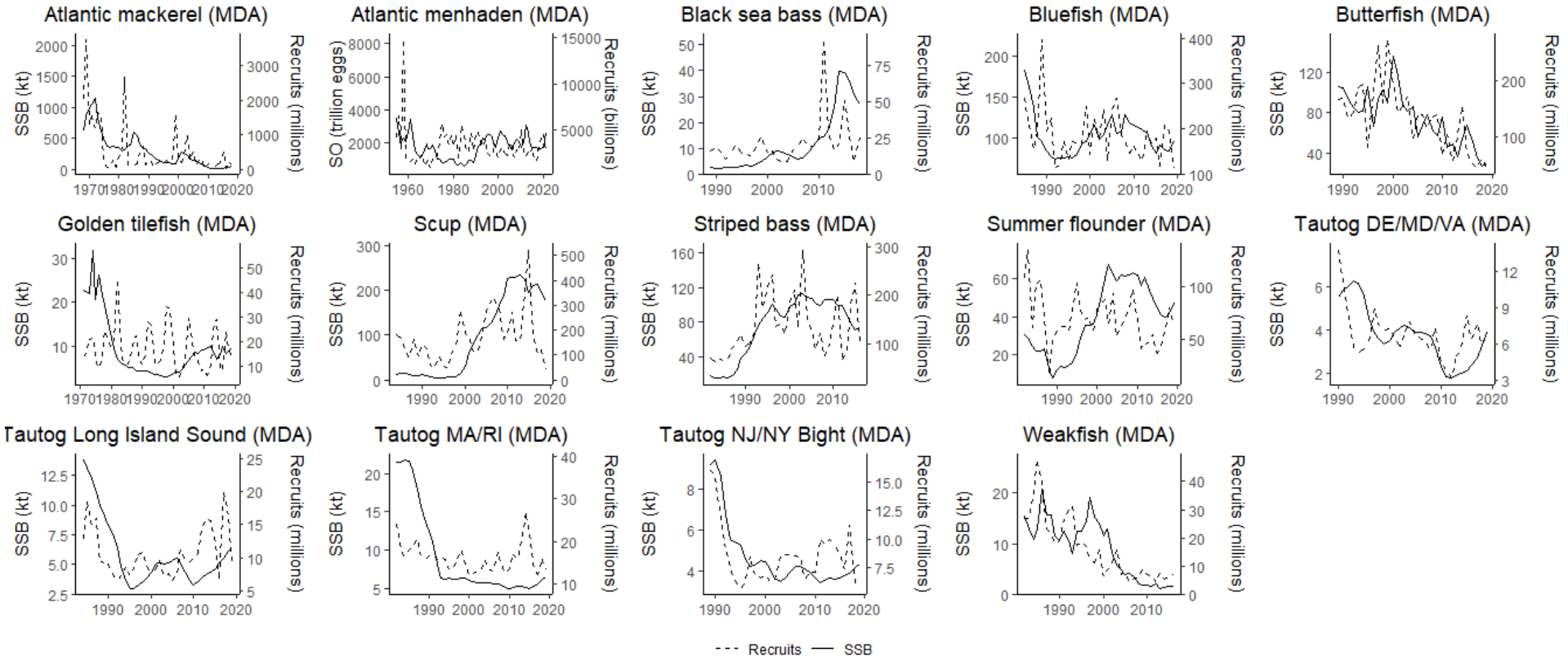


Figure S3b: Time series of spawning stock biomass or spawning output (solid line) and recruitment (dashed line) from stock assessment reports.

3. California Current

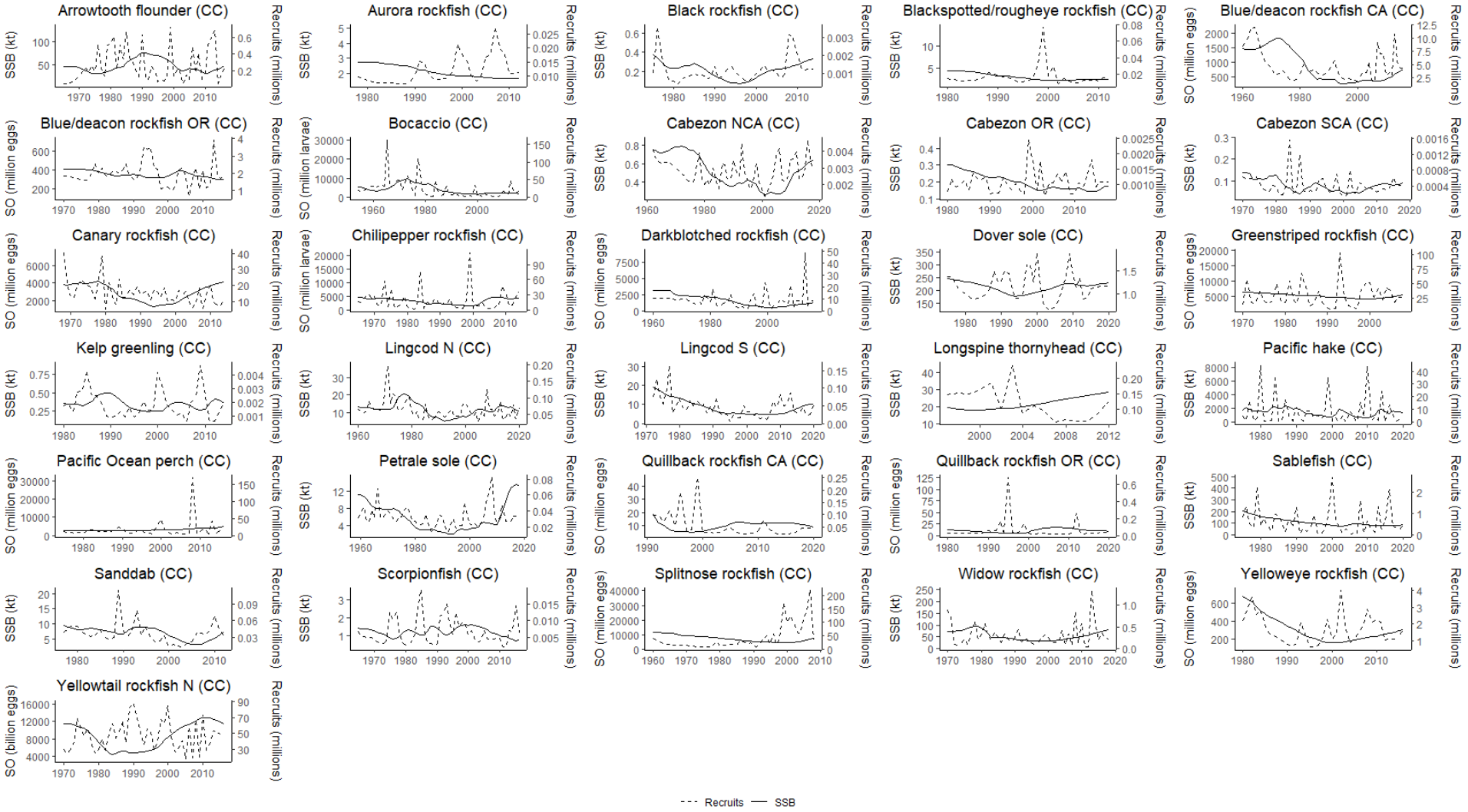


Figure S3c: Time series of spawning stock biomass or spawning output (solid line) and recruitment (dashed line) from stock assessment reports.

4. Gulf of Alaska

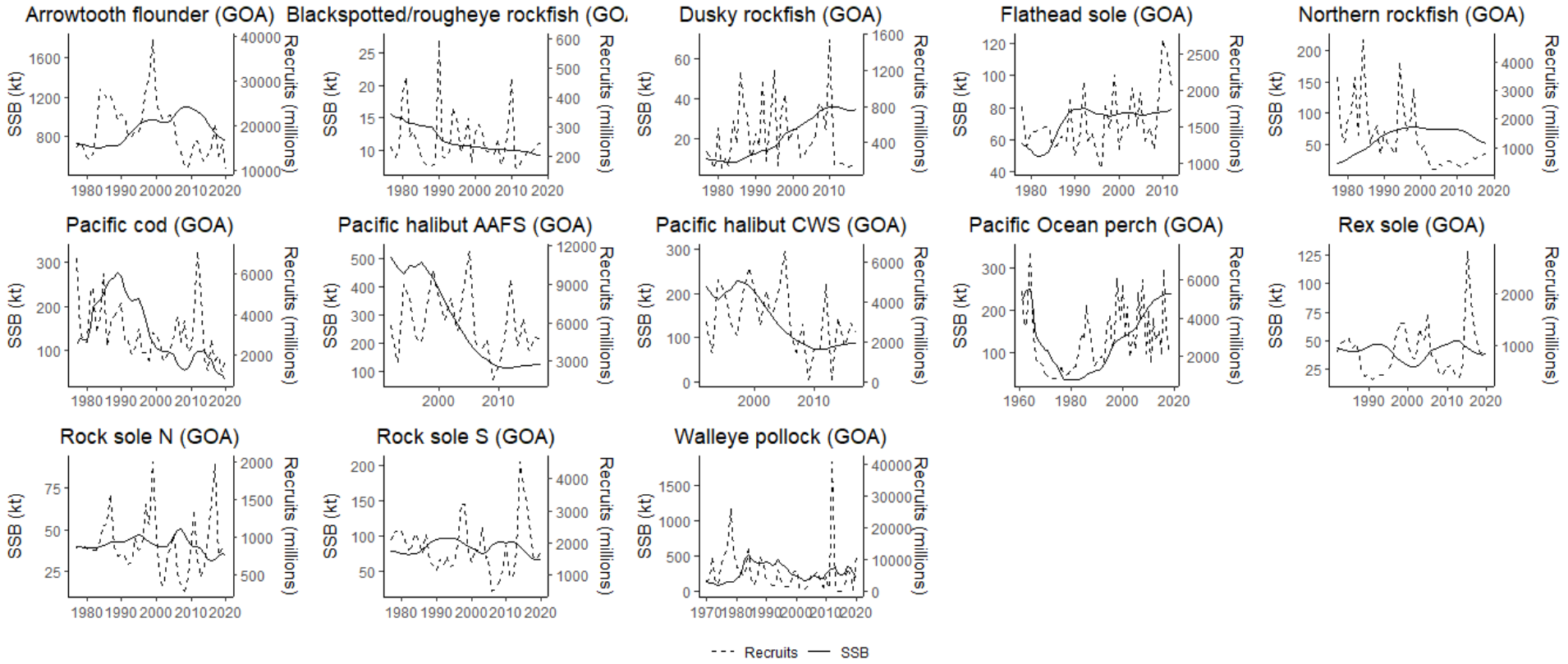


Figure S3d: Time series of spawning stock biomass (solid line) and recruitment (dashed line) from stock assessment reports.

5. Eastern Bering Sea/Aleutian Islands

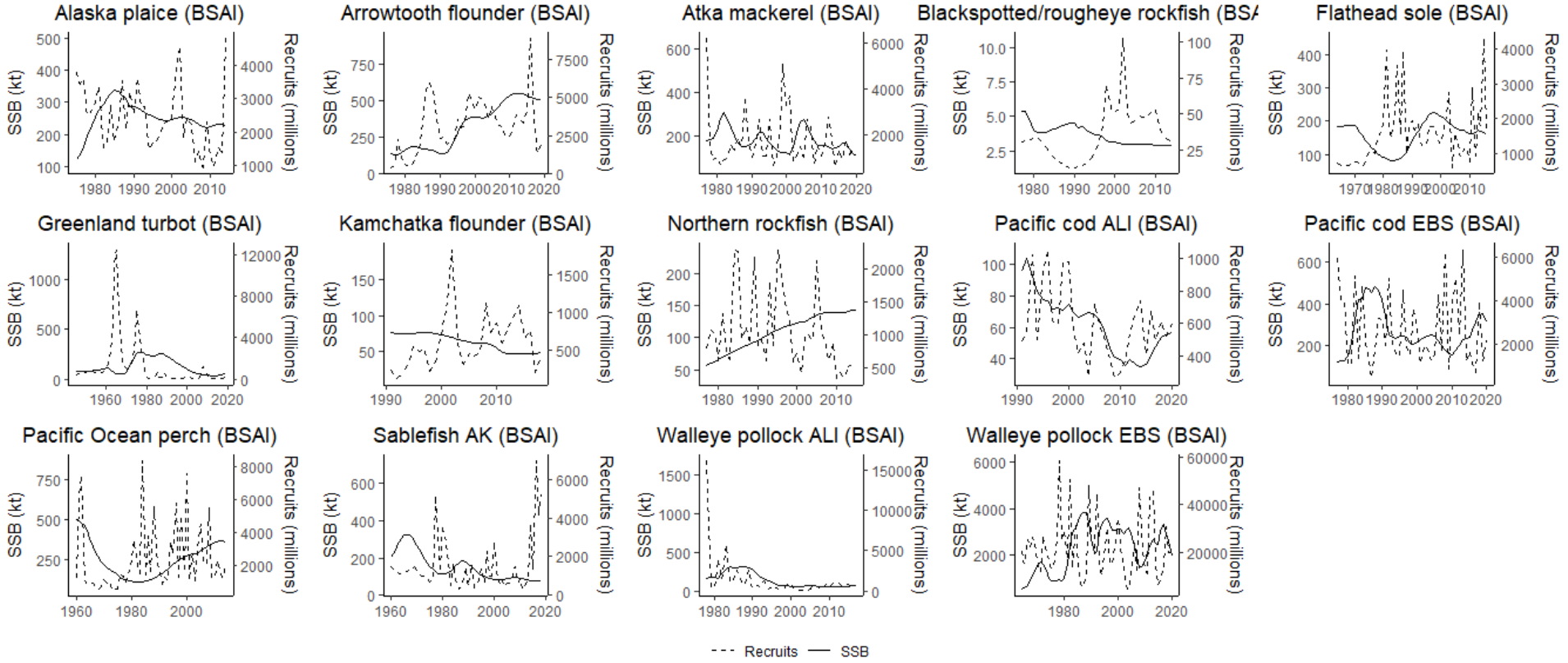
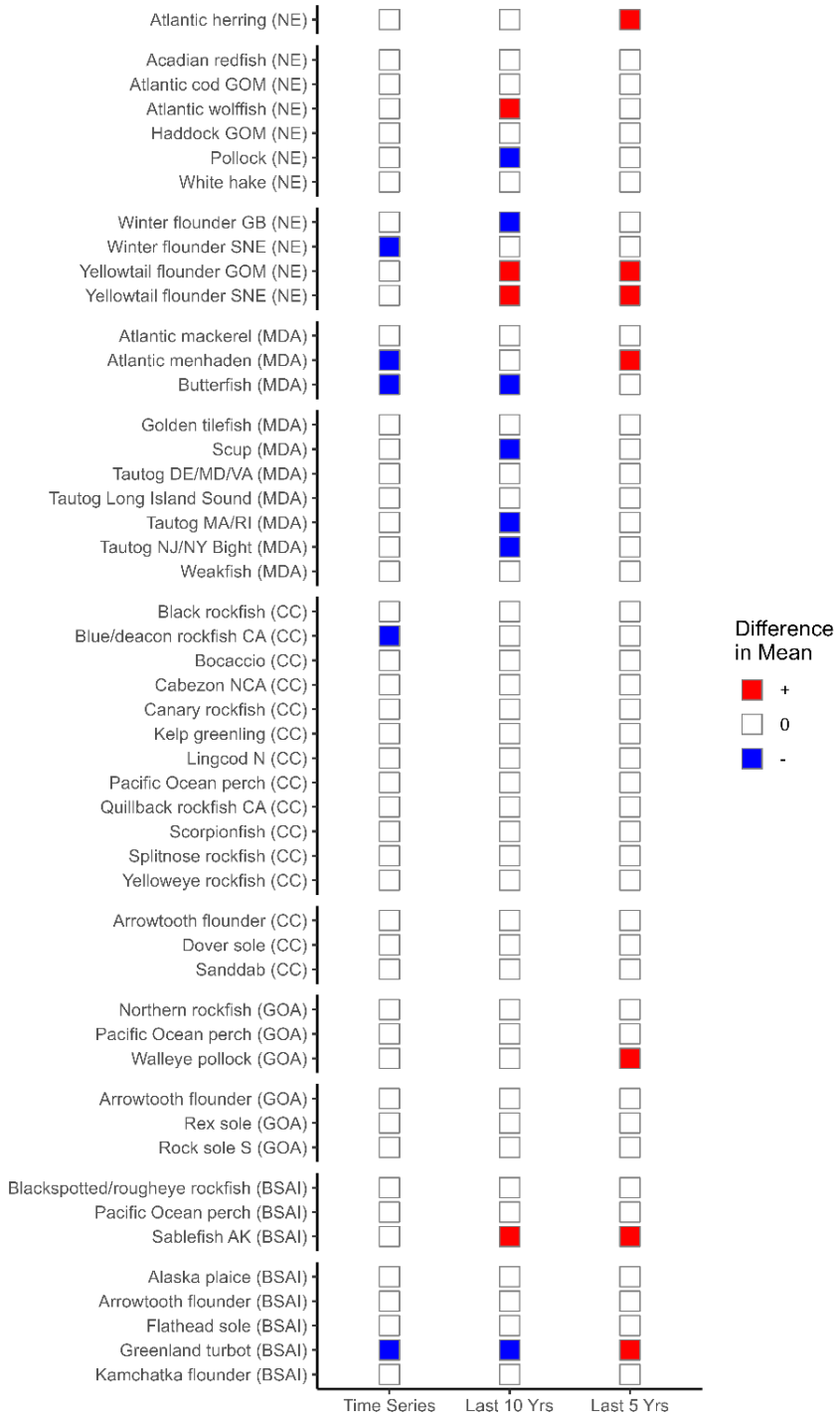


Figure S3e: Time series of spawning stock biomass (solid line) and recruitment (dashed line) from stock assessment reports.



Supplementary Figure S4

Figure S4: Summary of the difference in current mean stock productivity relative to the mean estimated at the beginning of the time series (col. 1), ten years prior to current (col. 2), and five years prior to current (col. 3). Red squares indicate that productivity is currently higher than it was at the beginning of the given time period (i.e. increased), and blue squares indicate that productivity is currently lower (i.e. decreased). White squares indicate that the productivity has not changed notably since the beginning of the given time period, relative to the standard error of the productivity estimate.