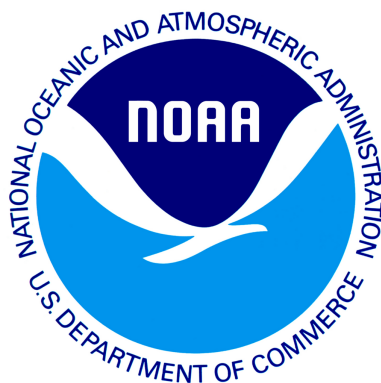


draft working paper for peer review only



Georges Bank Yellowtail Flounder

2025 Management Track Assessment Report

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts

Compiled 09-26-2025

*This assessment of the Georges Bank Yellowtail Flounder (*Limanda ferruginea*) stock is a management track assessment update of the 2024 research track assessment (NEFSC 2024). This assessment updates commercial fishery catch data, survey indices of abundance, and the analytical Woods Hole Assessment Model (WHAM) and reference points through 2024. Additionally, stock projections have been updated through 2028.*

State of Stock: Based on this assessment, the Georges Bank Yellowtail Flounder (*Limanda ferruginea*) stock is overfished and overfishing is not occurring (Figures 1-2). Spawning stock biomass (SSB) in 2024 was estimated to be 713 (mt) which is 10% of the biomass target ($SSB_{MSY} \text{ proxy} = 7,072$; Figure 1). The 2024 fully selected fishing mortality was estimated to be 0.017 which is 19% of the overfishing threshold proxy ($F_{MSY} = 0.09$; Figure 2).

Table 1: Catch and status table for Georges Bank Yellowtail Flounder. All weights are in (mt), recruitment is in (000s), and F_{Full} is the fishing mortality on fully selected ages (ages 4-6). Model results are from the updated WHAM assessment.

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
<i>Data</i>										
US landings	63	26	35	32	3	5	1	0	0	1
US discards	41	7	57	11	2	57	47	10	20	6
Canadian landings	3	1	0	0	0	0	0	1	0	0
Canadian discards	11	10	2	3	4	6	4	3	5	5
Catch for Assessment	118	44	95	45	8	68	51	15	25	12
<i>Model Results</i>										
Spawning Stock Biomass	3,324	2,330	1,401	910	747	445	841	614	633	713
F_{Full}	0.088	0.03	0.082	0.063	0.011	0.216	0.068	0.023	0.039	0.017
Recruits (age 1)	5,143	2,514	2,524	4,495	8,455	1,742	519	1,387	508	534

Table 2: Comparison of reference points estimated in the last management track and from the current management track assessment. The previous management track assessment was an empirical approach so biological reference points could not be estimated. FMSY was used for the overfishing threshold.

	2024	2025
F_{MSY}		0.09
SSB_{MSY} (mt)		7,072 (2,700 - 18,521)
MSY (mt)		597 (23 - 2,440)
Mean recruits (age 1) (000s)		31,190
<i>Overfishing</i>	Unknown	No
<i>Overfished</i>	Unknown	Yes

Projections: Short term projections were conducted in WHAM. For projections, 2025 catch was provided by the NEFMC Groundfish Plan Development Team. The maturity ogive is constant and an average of the most recent two years is used for mean weights-at-age in the projection period. The correlation structure is continued for fishery selectivity. Average bottom water temperature, as determined by an updated change point analysis, since 2009 is used to inform recruitment deviations from a Beverton-Holt stock recruit function. All methods are consistent with those defined in the research track.

Table 3: Short term projections of total fishery catch and spawning stock biomass for Georges Bank Yellowtail Flounder based on a harvest scenario of fishing at F_{MSY} between 2026 and 2028. Catch in 2025 was assumed to be 22 (mt).

Year	Catch (mt)	SSB (mt)	F_{Full}
2025	22	655 (230 - 1,860)	0.034

Year	Catch (mt)	SSB (mt)	F_{Full}
2026	57	646 (190 - 2,198)	0.09
2027	57	654 (180 - 2,374)	0.09
2028	60	699 (181 - 2,707)	0.09

Special Comments:

- What are the most important sources of uncertainty in this stock assessment? Explain, and describe qualitatively how they affect the assessment results (such as estimates of biomass, F , recruitment, and population projections).

Low catch rates in the fishery-independent surveys make it difficult to track cohorts and to estimate changes in maturity and growth. There are limited demographic samples from commercial landings; however, landings remain low. Calibration factors are not available for the 2022 DFO survey. The 2023 spring NEFSC survey is treated as missing because it only sampled during daylight hours.

- Does this assessment model have a retrospective pattern? If so, is the pattern minor, or major? (A major retrospective pattern occurs when the adjusted SSB or F_{Full} lies outside of the approximate joint confidence region for SSB and F_{Full}).

The 7-year Mohn's ρ was not available from previous assessments because an empirical approach was used. The 7-year Mohn's ρ , relative to SSB, is 0.042 in the current assessment. The 7-year Mohn's ρ , relative to F , is 0.007 in the current assessment. There was not a major retrospective pattern for this assessment because the ρ adjusted estimates of 2024 SSB ($SSB_p=684$) and 2024 F ($F_p=0.017$) were inside the approximate 90% confidence regions around SSB (491 - 1,034) and F (0.012 - 0.025).

- Based on this stock assessment, are population projections well determined or uncertain? If this stock is in a rebuilding plan, how do the projections compare to the rebuilding schedule?

It is uncertain if population projections for Georges Bank Yellowtail Flounder, are well determined because this is the first management track to use this projection methodology. Previously, annual harvest advice for this stock was based on index-based methods developed under the Transboundary Resources Assessment Committee (TRAC). This method did not produce projections. This stock is in a rebuilding plan with a target date of 2032.

- Describe any changes that were made to the current stock assessment, beyond incorporating additional years of data and the effect these changes had on the assessment and stock status.

A new model platform, WHAM, was used that was peer reviewed as part of the Yellowtail Flounder research track. The maturity ogive was updated, which had a minimal effect on the assessment and stock status.

- If the stock status has changed a lot since the previous assessment, explain why this occurred.

Stock status of Georges Bank Yellowtail Flounder was not formally determined during the research track and status of the stock has been unknown since 2014.

- Provide qualitative statements describing the condition of the stock that relate to stock status.

The most recent survey values remain low. Recent fishery catches remain well below the quota. Stock biomass is low and productivity is poor.

- Indicate what data or studies are currently lacking and which would be needed most to improve this stock assessment in the future.

The stock assessment just completed a research track in 2024 and the assessment performs well. Future studies could focus on mechanistic drivers of process error patterns to improve communication of results.

- Are there other important issues?

Management track reference points are based on current environmental conditions and thus, they are not directly comparable to past spawning stock biomass and fishing mortality rates. Supplementary material is available on the Stock Assessment Supplementary Information website (SASINF).

References:

Northeast Fisheries Science Center (In Progress). 2024. Management Track Assessments Fall 2024. US Dept Commer, Northeast Fish Sci Cent Tech Memo. 350; 167p.+xv. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026. Available at: <https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php>

Northeast Fisheries Science Center (In Progress). Report of the 2024 Yellowtail Flounder Research Track Assessment working group. Available at: <https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php>

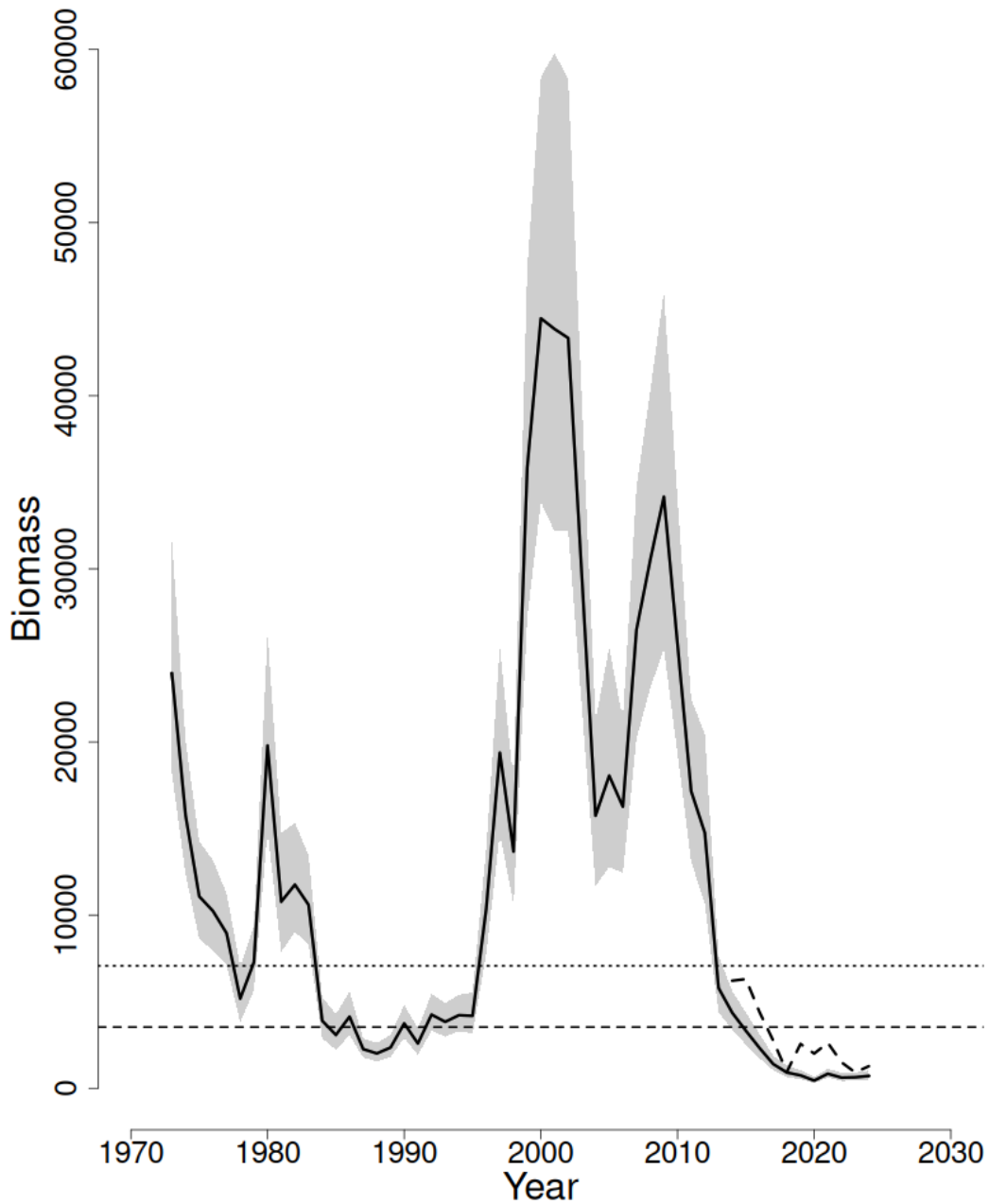


Figure 1: Trends in spawning stock biomass of Georges Bank Yellowtail Flounder between 1973 and 2024 from the current (solid line) and previous empirical (dashed line) assessments and the corresponding $SSB_{Threshold}$ ($\frac{1}{2} SSB_{MSY}$ proxy; horizontal dashed line) as well as SSB_{Target} (SSB_{MSY} proxy; horizontal dotted line) based on the 2025 assessment. The approximate 90% lognormal confidence intervals are shown. Management track reference points are based on current environmental conditions and thus, they are not directly comparable to past spawning stock biomass values.

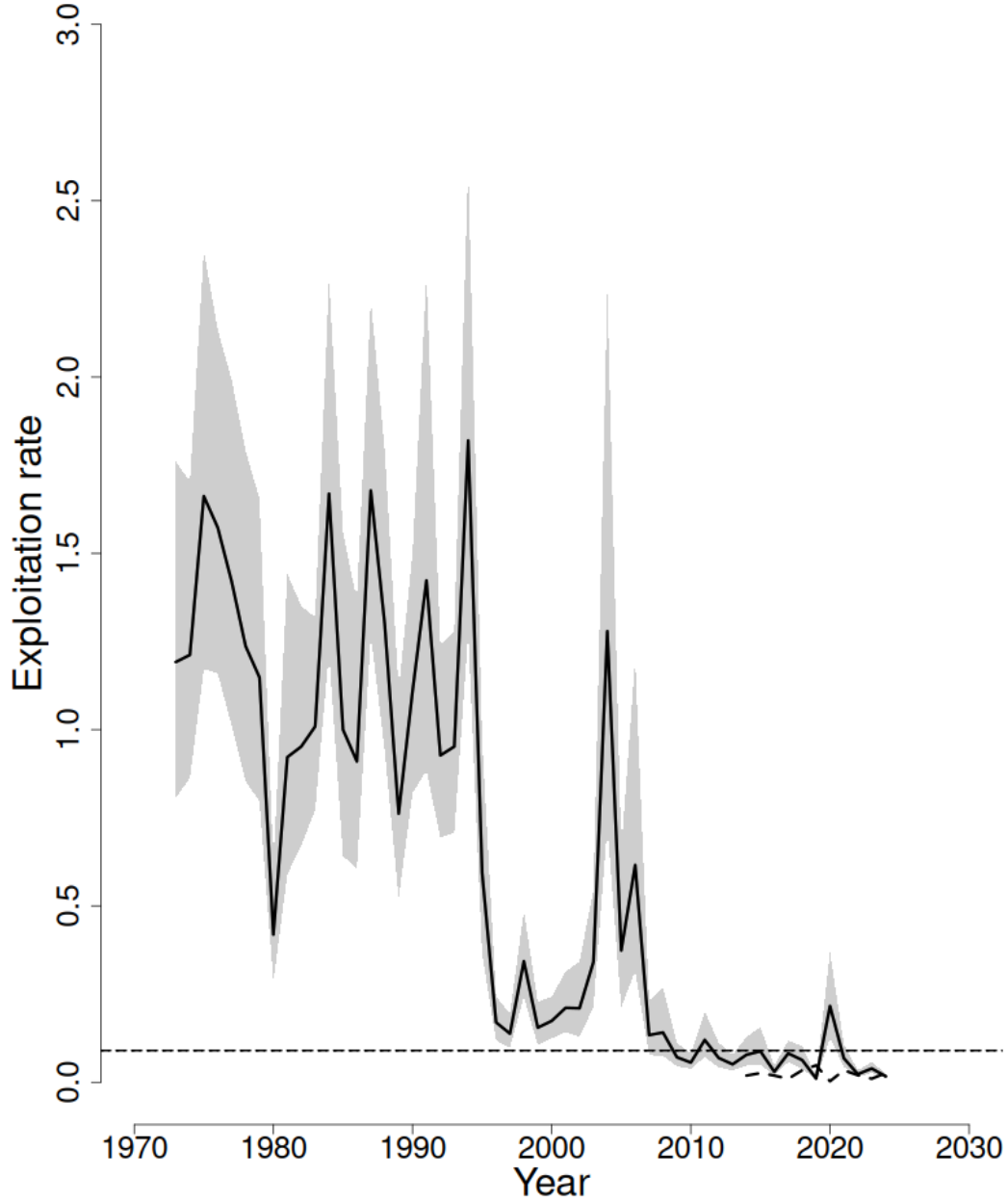


Figure 2: Trends in the fully selected fishing mortality (F_{Full}) of Georges Bank Yellowtail Flounder between 1973 and 2024 from the current (solid line) and previous empirical (dashed line) assessments and the corresponding $F_{Threshold}$ ($F_{MSY}=0.09$; horizontal dashed line) based on the 2025 assessment. The approximate 90% lognormal confidence intervals are shown. Management track reference points are based on current environmental conditions and thus, they are not directly comparable to past fishing mortality rates.

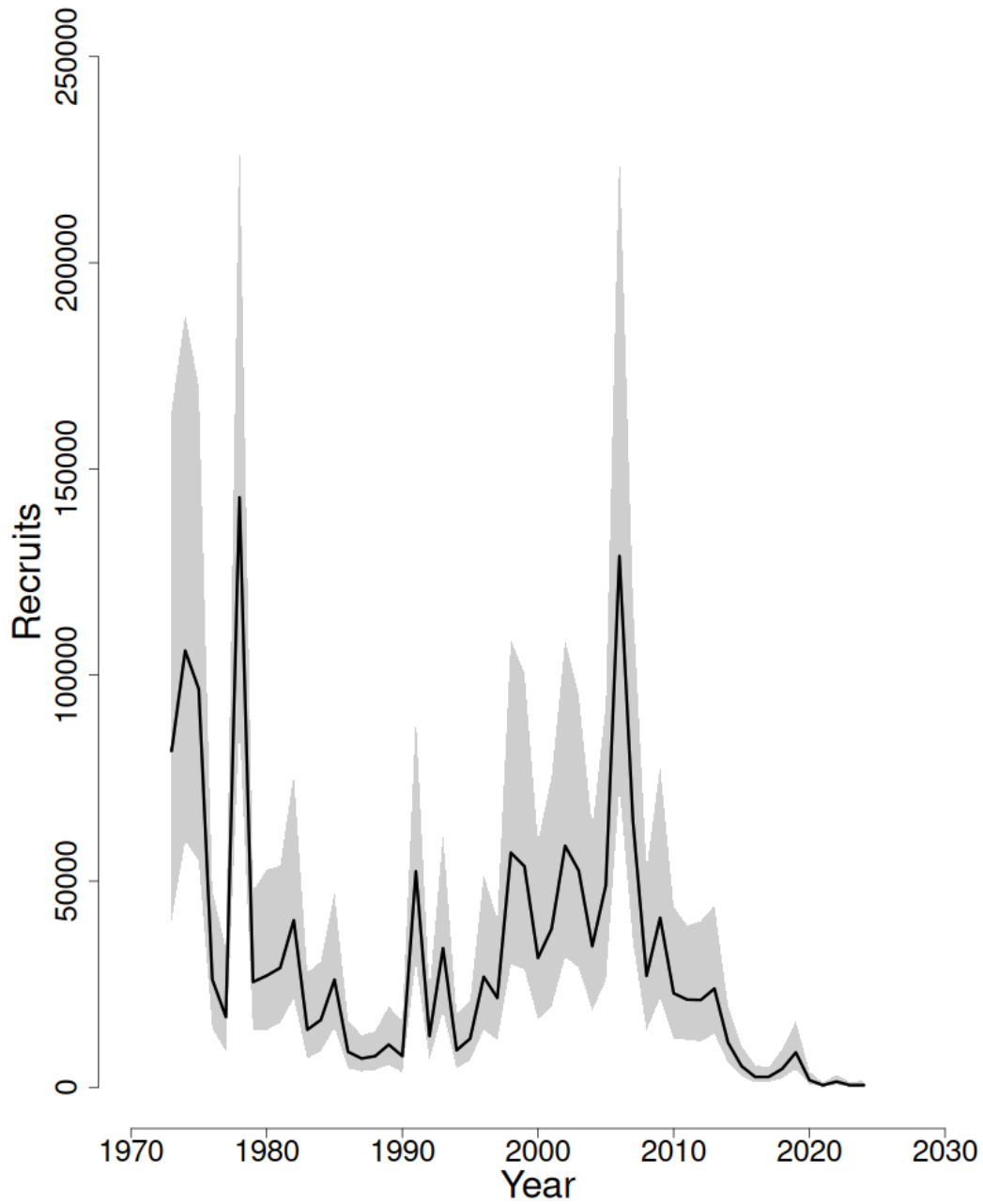


Figure 3: Trends in Recruits (age 1) (000s) of Georges Bank Yellowtail Flounder between 1973 and 2024 from the current (solid line) assessment. The approximate 90% lognormal confidence intervals are shown.

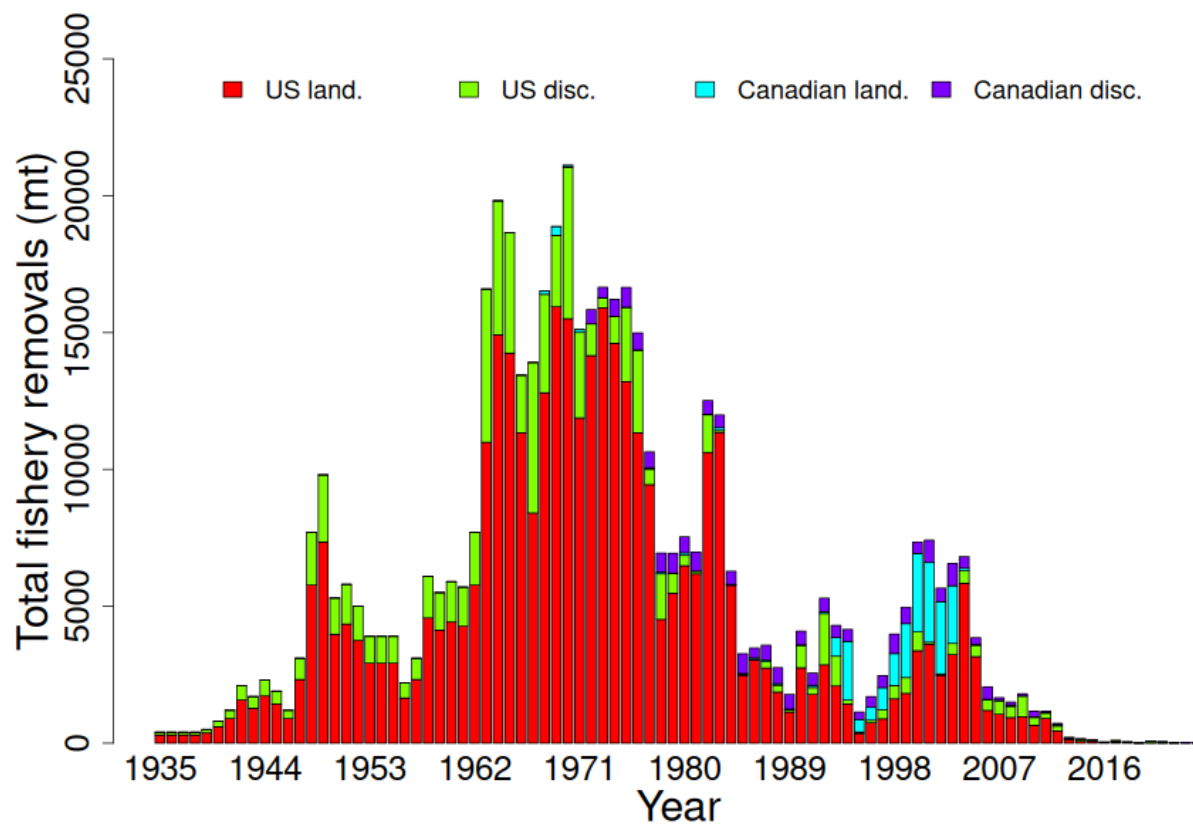


Figure 4: Total catch of Georges Bank Yellowtail Flounder between 1973 and 2024 by country (US, Canada) and disposition (landings and discards).

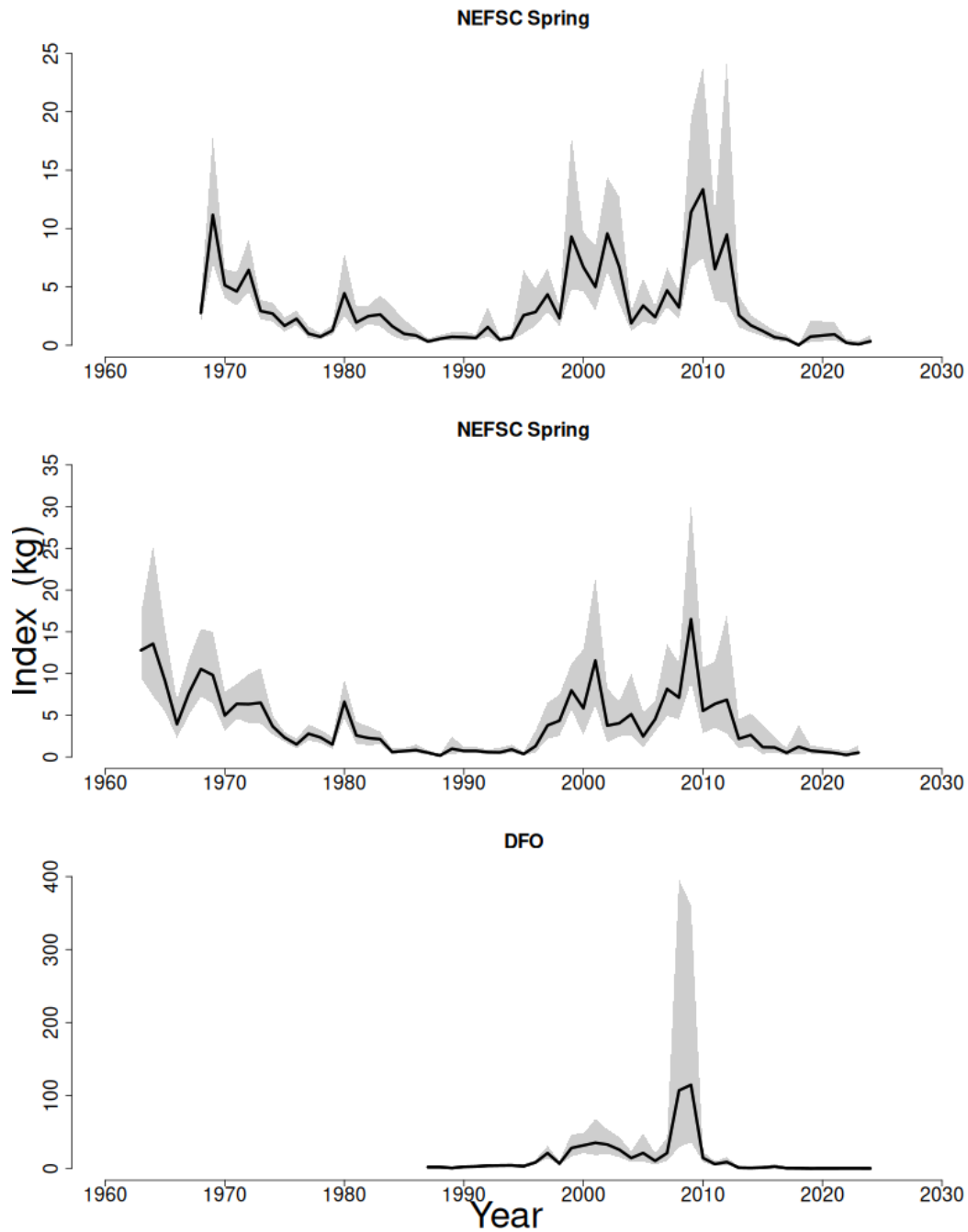


Figure 5: Indices of biomass for the Georges Bank Yellowtail Flounder between 1963 and 2024 for the Northeast Fisheries Science Center (NEFSC) spring, NEFSC fall and Fisheries and Oceans Canada (DFO) time series. The approximate 90% lognormal confidence intervals are shown.