

Assessment Model, Terminal Year	Description of Assessment Model	Overfishing?/ Overfished?	In Rebuilding Program?	OFL	ABC/ABC CR	ACL	ACT
PlanBSmooth, 2020	Empirical	Yes/Yes (determined by NOAA Fisheries)	Yes 2004-2026	Unknown in 2022	Total ABC 754 mt in and US ABC 343 mt in FY2022	330 mt in 2022	N/A for groundfish
Iconic New England species. Multispecies groundfish fishery with commercial and recreational catches. Overfished and unknown if overfishing occurring. Co-caught with other abundant species, such as haddock and pollock. Transboundary EGB cod management unit co-managed by the U.S. and Canada.				MSY/OY	AMs	Discards	State Waters
				Unknown	Commercial: In-season closures, reactive lb-lb payback Recreational: Stricter management measures in following years	30.5 mt in 2022	11 mt in 2022
Availability of Biological and Assessment Data		Used in Assessment: Commercial catch (US and Canadian), recreational catch (US), bottom trawl surveys (NMFS Spring, NMFS fall)					
Recent Performance Against Harvest Control Rule		Total ACL caught: 58.4% of ACL in FY2018, 36.9 % of ACL in FY2019, and 59.3% of the ACL in FY2020.					
Current Management Program		<p>The GB cod overfishing limit (OFL) is unknown. The ABC is based on the results of the empirical model applied to a recent 3-year average catch. For GB cod, the total ABC is reduced by the amount of the Canadian quota and an estimate of catch expected from state waters, non-groundfish commercial fisheries, and the recreational fishery. There is no allocation of GB cod to the recreational fishery, however a recreational catch target is established along with measures (i.e., bag limits, seasons, fish sizes) to stay within the target. Components of the fishery that receive an allocation have a sub-ACL set by reducing their portion of the ABC to account for management uncertainty and are subject to accountability measures (AM) if they exceed their respective catch limit during the fishing year. The commercial groundfish sub-ACL is further divided into the non-sector (common pool) sub-ACL and the sector sub-ACL. Eastern GB cod is jointly managed with Canada under the United States/Canada Resource Sharing Understanding. Each year, the Transboundary Management Guidance Committee (TMGC) and Steering Committee (SC) recommends a shared quota for Eastern GB cod based on the most recent stock information and the TMGC's harvest strategy. The shared quotas are allocated between the United States and Canada based on a formula that considers historical catch (10-percent weighting) and the current resource distribution (90-percent weighting).</p>					
Variability in Catch/Revenues?		<p><i>Revenue</i> : EGB: \$500,000 in 2018; \$300,000 in 2019; \$200,000 in 2020; \$400,000 5-year average WGB: \$3,200,000 in 2018; \$2,300,000 in 2019 \$1,600,000 in 2020; \$2,700,000 5-year average <i>Ex-vessel price/lb</i> : EGB: \$2.52 in 2018; \$2.31 in 2019; \$2.18 in 2020; \$2.52 5-year average EGB \$2.36 in 2018; \$2.73 in 2019 \$2.47 in 2020; \$2.64 5-year average <i>Total GB Cod catch (landings + discards)</i>: 887.3mt in 2018; 641.7mt in 2019; 731.2mt in 2020 During 2018-2020, the majority of EGB catch occurs in the first quarter of the fishing year (May 1 – July 31), with the next highest proportion occurring in the last quarter (February 1 – April 30). WGB catch was more variable during 2018-2020, with the highest proportion of catch occurring in the last quarter in 2018 and 2019 but the first quarter in 2020.</p>					
Data - Vessels, Permits, Dealers, Processors, Employment		FY2020: 876 commercial groundfish permitted vessels, with 590 reporting landings. 99 dealers reported buying groundfish. 114 for-hire recreational vessels catching cod or haddock on GB.					
% Food, % Recreational		There is no recreational sub-ACL, but a recreational catch target is set each year. The FY2022 recreational catch target takes into consideration recent average recreational catch from the previous three years and the change in the US ABC for GB cod between FY2021 and FY2022. The commercial (sector and common pool) sub-ACLs are equal to 95% of the remaining ABC after the recreational catch target and state-waters sub-components are subtracted from the total US ABC.					
Fishing Communities		Commercial - The top 5 ports based on the Groundfish-Specific Commercial Engagement Indicator (2004-2020) are Gloucester, MA; New Bedford, MA; Boston, MA; Narragansett, RI; and Portland, ME. Recreational - When expanding out to the top 20 communities in recreational engagement in the Northeast (all recreational fishing) Recreational Engagement Indicators (2009-2018), New England communities include: Narragansett/Point Judith, RI, Newburyport, MA and Barnstable, MA. Other ports of interest with relatively high engagement (i.e., ranking somewhere outside the top 20) in the last five years include Gloucester, MA, Waterford, CT, East Lyme/Niantic, CT, and Old Saybrook, CT.					
Other Economic/Social Factors		GB cod is an important resource for the recreational fishing industry, an average of 98 for-hire recreational vessels targeted GB cod or haddock from FY2016 through FY2020.					
Major Sources of Scientific Uncertainty		From the 2021 Management Track assessment: (1) natural mortality rates; (2) missing 2020 spring and fall surveys; and (3) causes of retrospective patterns.					
Major Sources of Management Uncertainty		With respect to Atlantic cod stock structure, the current spatial boundaries of management units fail to account for considerable phenotypic and genetic heterogeneity from the western to eastern ends of the GB management unit. There is no recreational allocation of GB cod and an overage caused by the recreational fishery exceeding their catch catch target may trigger a pound-for-pound payback in the commercial fishery in a subsequent year under certain conditions.					
How is the probability of overfishing addressed?		There have been low commercial quotas in recent years (the FY2022 commercial quota was 78% less than FY2021) in response to the overfishing status of GB cod. There have also been drastic reductions to the recreational fishery catch target and the implementation of more restrictive bag, season, and fish sizes.					
What is the consequence of overfishing?		<p><i>Quota overages in the sector or common pool fisherie s</i> trigger accountability measures within season or in subsequent fishing years or fishing trimesters (common pool only). The measures are designed to correct the problems that caused the quota to be exceeded.</p> <p><i>For the recreational fishery</i>, the Regional Administrator can adjust measures to prevent the fishery from exceeding the recreational catch target in FY2023 and FY2024</p> <p><i>Any US fishery overage of the EGB cod U.S. TAC</i> is subtracted from the following year's U.S. TAC</p>					
How are expected net benefits to the Nation currently measured/evaluated?		Yield (mt and \$)					

Interactions with Other Fisheries/Stocks, Bycatch Issues	The TMGC/SC recommends TACs for the U.S./Canada shared resources for GB cod (and haddock and yellowtail flounder). Cod is frequently caught with other abundant groundfish stocks (e.g., haddock and pollock) in the multi-species fishery. The low catch limit on cod can lead to reduced catches of other stocks.
Ecosystem Considerations: Trophic Interactions	Cod are generalists. The GB cod diet has changed over the last three decades, reflecting changes in the relative abundance of different prey. There has been a decline in many cod predators (Atlantic halibut, large hakes, large cod) but it is unclear if the declines in predators are due to the decline in cod.
Ecosystem Considerations: Habitat	GB cod habitat vulnerability was assessed in Omnibus Habitat Amendment 2. The range of GB cod has contracted over time, and their current center of distribution has moved north. Closures in place in the GB area include the GB Dedicated Habitat Research Area, Closed Area II, and a Seasonal Spawning Closure.
Ecosystem Considerations: Climate	Atlantic cod is considered moderately vulnerable to climate change (high climate exposure risk and moderate biological sensitivity). Fishermen have commented that cod are sensitive to water temperatures and shifted to deeper waters to spawn. Others have noted the location of spawning will change from year-to-year depending on water temperature.
Other Important Considerations/Notes	Recent ABC reductions are anticipated to allow the stock to rebuild. GB cod continues to show a truncated age structure. Stock structure of Atlantic cod. The current GB cod stock overlaps the new cod biological units of Western Gulf of Maine winter spawners, Georges Bank, and Southern New England. Research Track for Atlantic cod underway.