Productivity and Susceptibility Analyses: Northeast Atlantic

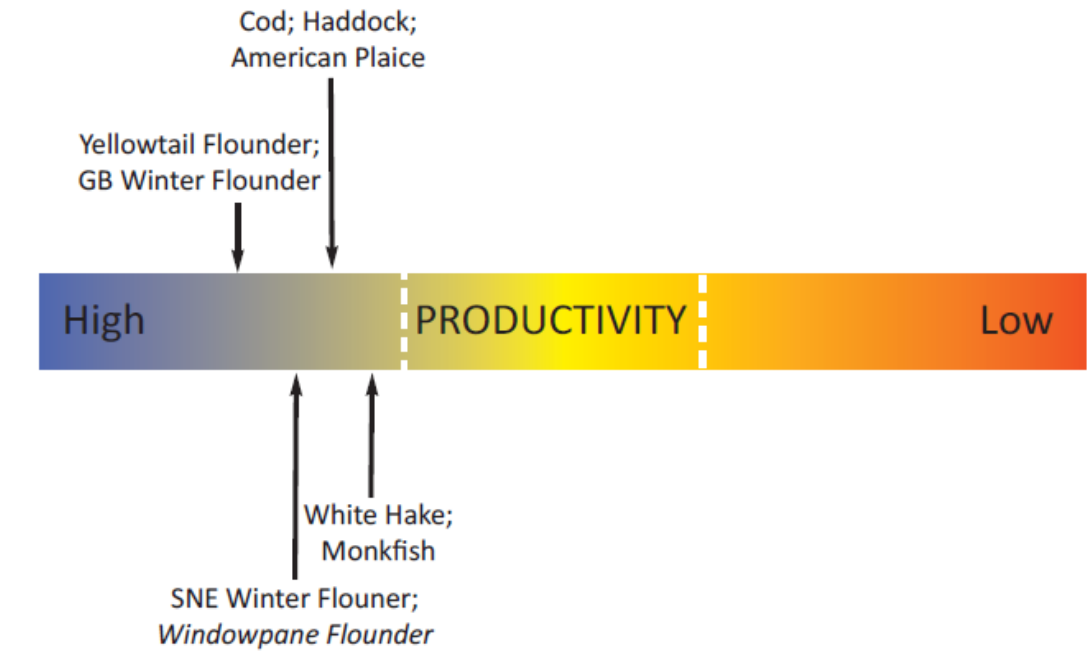
Productivity and susceptibility analyses (PSA) were conducted for 14 stocks (eight species) of groundfish in the northeast US. All of these stocks are managed by the New England Fishery Management Council (NEFMC). Twelve are managed under the Northeast Multispecies Fishery Management Plan (FMP); the remaining two are monkfish (Monkfish FMP).

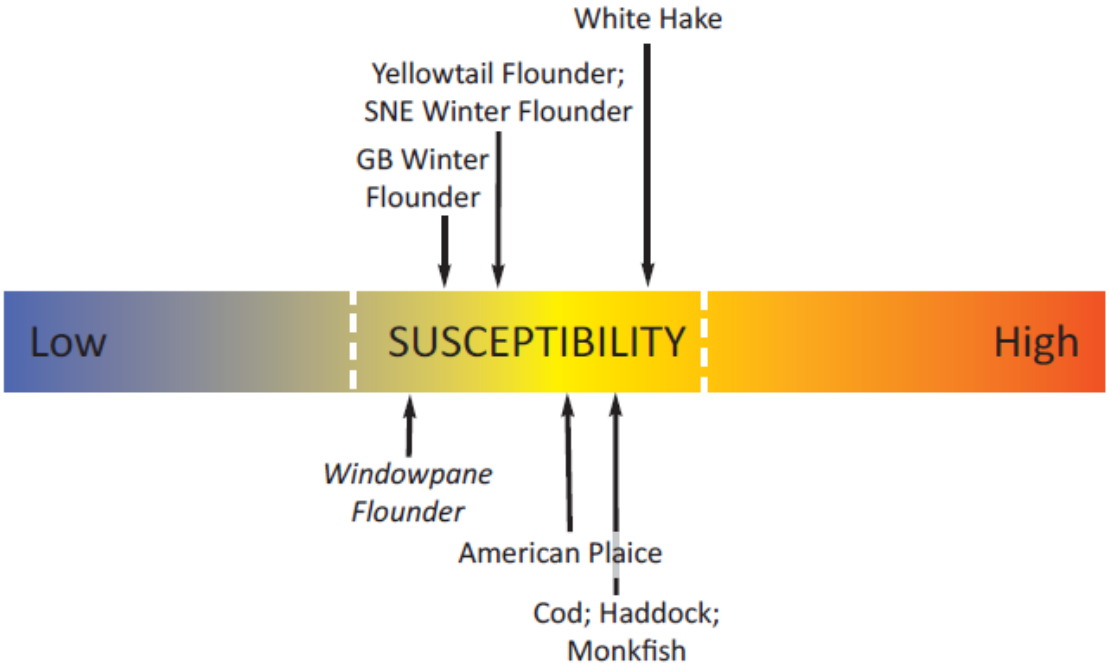
The New England Fishery Management Council (NEFMC) manages fisheries primarily through a complicated input control management regime. The Council utilizes closed areas, daily and trip catch limits, gear restrictions and limits on allowable days-at-sea (DAS) along with other regulations. Unlike most other regional councils, the NEFMC has not set enforceable catch limits where fishing ceases when the annual catch limit is met; though this will change very soon given the mandates of the MSFCMA reauthorization. Further, the NEFMC does not directly account for annual catch overages, which commonly were two to three times above sustainable limits for certain fish species, by reducing catch levels in following years. Both the groundfish and monkfish management plans utilize closed areas and DAS restrictions as the primary control in reducing overfishing and rebuilding stock biomass. Within each fishery, vessels are given a number of days in which they are allowed to fish that fishery, and must comply with catch limits while on DAS. Allowable days differ by vessel, determined by a vessel's gear usage and landings history prior to a set control date. While complex, this system limits access to fisheries and requires some vessels to use days from more than one fishery at the same time. Other regulations employed include seasonal and year-round closures, minimum size limits, gear restrictions and harvest allocations.

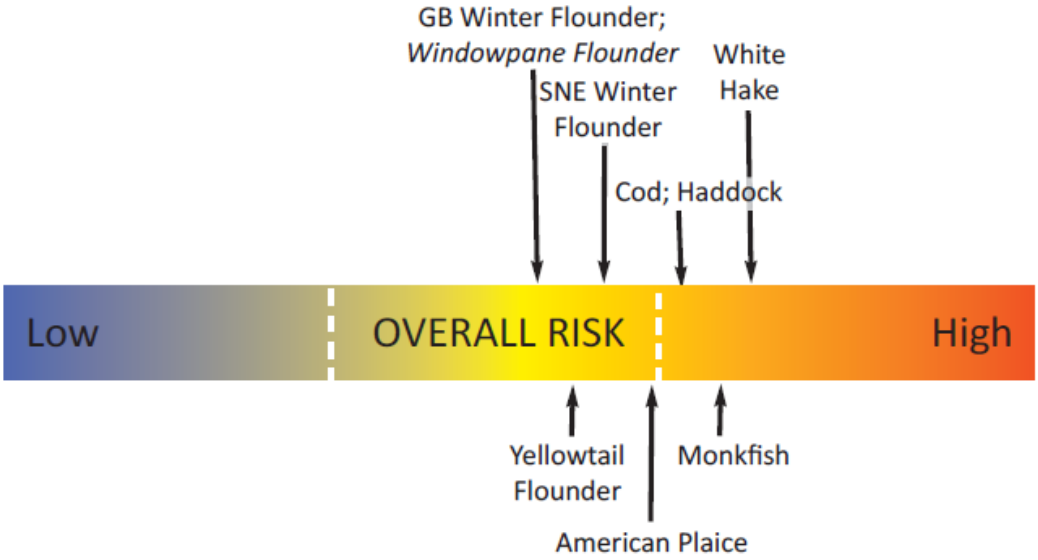
The northeast groundfish were recently assessed (through 2007) in the 3rd Groundfish Assessment Review Meeting (GARM). The assessment revealed changes in status for a number of groundfish stocks as compared with the 2007 report to Congress on the Status of US Fisheries. Additionally, monkfish were assessed in 2007 by the Northeast Data Poor Stocks Working Group; these results also provided updated stock statuses. These updates are provided in the table below.

Of these fourteen, seven scored moderate overall risk, and seven scored high overall risk. In the following figures, the italicizes stock names are those stocks where at least one attribute is missing information and was given a high score due to that uncertainty, in accordance with the CSIRO's treatment of uncertainty in their ERAEF methodology. In the plotted results below, open symbols indicate uncertainty.

	2007 Status of US Fisheries	**GARM III (2008)**
Overfishing and Overfished	GB Cod GOM Cod GB Yellowtail Flounder CC/GOM Yellowtail Flounder SNE/MA Yellowtail Flounder White Hake SNE/MA Winter Flounder	GB Cod Georges Bank Yellowtail CC/GOM Yellowtail Flounder SNE/MA Yellowtail Flounder White Hake GB Winter Flounder SNE/MA Winter Flounder N Windowpane Flounder
Not Overfishing but Overfished	GB Haddock GOM Haddock American Plaice	
Overfishing but not Overfished	GB Winter Flounder	GOM Cod
Not Overfishing and not Overfished	N Windowpane Flounder N & S Monkfish	GOM Haddock GB Haddock American Plaice N & S Monkfish

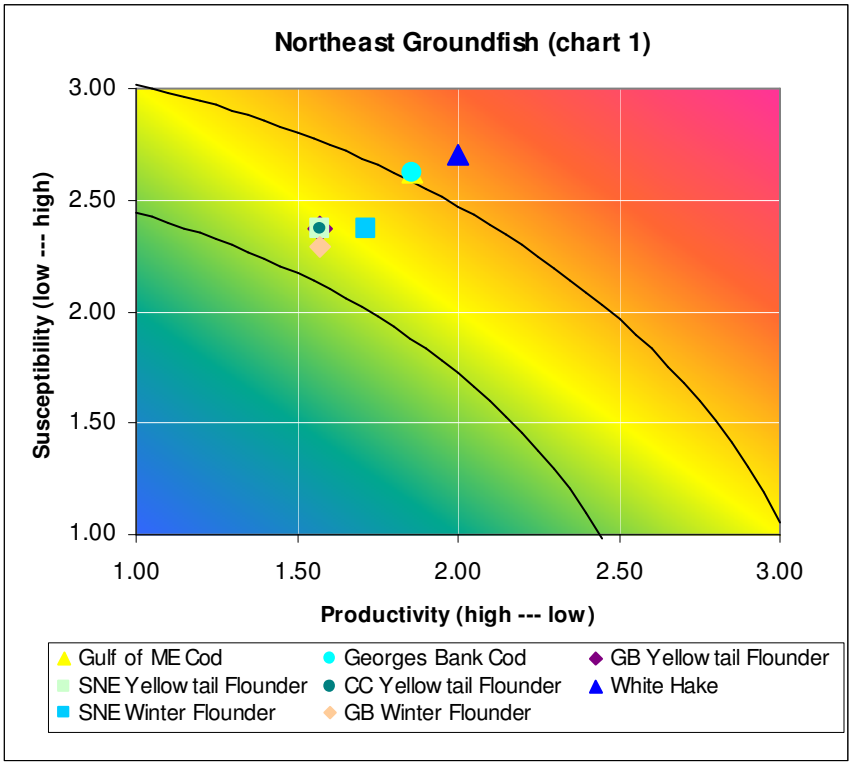

Cod; Haddock;
American Plaice
Yellowtail Flounder;
GB Winter Flounder
High
PRODUCTIVITY
Low
White Hake;
Monkfish
SNE Winter Flouner;
Windowpane Flounder

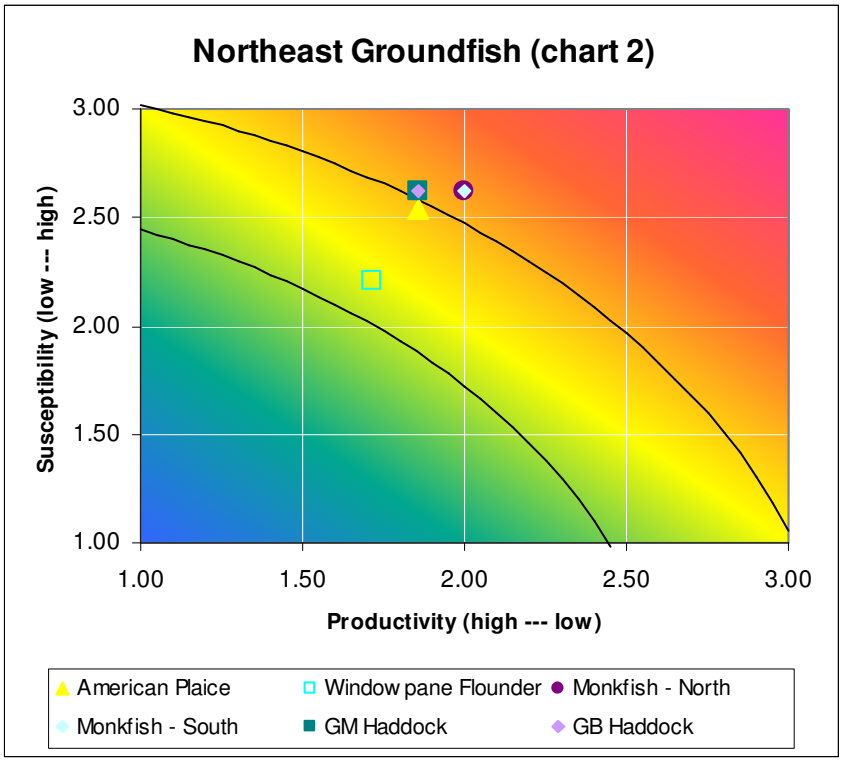

White Hake
Yellowtail Flounder;
SNE Winter Flounder
GB Winter
Flounder
Low
SUSCEPTIBILITY
High
Windowpane
Flounder
American Plaice
Cod; Haddock;
Monkfish



Northeast Multispecies FMP: Gulf of Maine Cod, Georges Bank Cod, Georges Bank Yellowtail Flounder, Southern New England Yellowtail Flounder, Cape Cod/Gulf of Maine Yellowtail Flounder, White Hake, Southern New England/Mid Atlantic Winter Flounder, Georges Bank Winter Flounder, Gulf of Maine Haddock, Georges Bank Haddock, American Plaice, Windowpane Flounder

Monkfish FMP: Monkfish, Northern Stock, Monkfish, Southern Stock





			Groundfish												
			Gulf of ME Cod	Georges Bank Cod	GB Yellowtail Flounder	SNE Yellowtail Flounder	CC Yellowtail Flounder	White Hake	SNE Winter Flounder	GB Winter Flounder	GM Haddock	GB Haddock	American Plaice	Windowpane Flounder	Monkfish N & S
Productivity	Age at maturity		med	med	med	med	med	med	med	med	med	med	high	med	high
	Size at maturity		med	med	med	med	med	med	med	low	med	med	low	low	med
	Maximum age		med	med	med	med	med	med	med	med	med	med	med	low	med
	Maximum size		med	med	low	low	low	high	low	low	med	med	med	low	med
	Fecundity		low	low	low	low	low	low	low	low	low	low	low	unk	low
	Reproductive strategy		low	low	low	low	low	low	med	med	low	low	low	low	low
	Trophic level		high	high	med	med	med	high	med	med	high	high	high	high	high
Productivity Score			1.86	1.86	1.57	1.57	1.57	2.00	1.71	1.57	1.86	1.86	1.86	1.71	2.00
Susceptibility	Availability	Global Dist	med	med	med	med	med	med	med	med	med	med	med	med	med
		Behavior	high	high	high	high	high	high	high	high	high	high	high	high	high
	Encounterability	Habitat	high	high	high	high	high	high	high	high	high	high	high	high	high
		Bathymetry	high	high	high	high	high	high	high	high	high	high	high	high	high
	Selectivity	Size at Mat	med	med	med	med	med	med	med	low	med	med	low	low	med
		Max Size	med	med	low	low	low	high	low	low	med	med	med	low	med
		Desirability	med	med	med	med	med	med	med	med	med	med	med	low	med
	Post Capture Mortality		high	high	high	high	high	high	high	high	high	high	high	high	high
Susceptibility Score			2.63	2.63	2.38	2.38	2.38	2.71	2.38	2.29	2.63	2.63	2.54	2.21	2.63
Overall Risk Score			3.22	3.22	2.85	2.85	2.85	3.37	2.93	2.78	3.22	3.22	3.15	2.80	3.30
Risk Ranking			High	High	Med	Med	Med	High	Med	Med	High	High	Med	Med	High
Overfishing			yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	yes	no
Overfished (Depleted)			no	yes	yes	yes	yes	yes	yes	yes	no	no	no	yes	no

unk = unknown attribute values are treated with precaution and assigned high risk; stock status unknown

low, med, high = risk score for attribute value

RED = overfished and overfishing is occurring