

## **Fish Stocks in Rebuilding Plans: A Trend Analysis**

### Introduction

When a stock is determined to be overfished, the Regional Fishery Management Council (Council) must implement a plan to rebuild the stock to the biomass level that can produce the maximum sustainable yield.

Rebuilding a stock will generally occur if more fish survive to maturity than are lost to mortality. Thus, it is important to set catch levels at a rate that will appropriately constrain mortality from fishing and allow stocks to rebuild. Sometimes, factors such as habitat loss, environmental variability, and disease outbreaks hamper rebuilding efforts and stocks do not rebuild as expected. In most cases, if fishing mortality is kept within the levels specified in the rebuilding plan, the stock should rebuild as expected.

### Rebuilding Categories of the Trends Analysis

Using the most recent stock assessment, stocks were reviewed and grouped into rebuilding categories based on the level of fishing mortality (F) compared to the overfishing level (rebuilding categories 1 and 2 below), and the general trend in biomass (B) (rebuilding categories 3 and 4 below):

- 1) The most recent year's estimate of F or catch is below the overfishing level (not subject to overfishing).
- 2) The most recent year's estimate of F or catch is above the overfishing level (subject to overfishing).
- 3) The biomass has increased since the rebuilding plan was implemented,
- 4) The biomass has decreased or there is no substantial increasing trend since the rebuilding plan was implemented.

Inclusion of a stock in the "biomass increasing" category does not necessarily mean that the stock is rebuilding at the rate that is expected in the rebuilding plan.

### Results

As of December 31, 2016, there were 49 stocks in need of rebuilding or were rebuilt over the past year. Of these 49 stocks, 42 stocks are currently in rebuilding plans, two stocks are required to have a rebuilding plan implemented within two years of Council notification, and two stocks completed rebuilding under a rebuilding plan over the past year. The remaining three stocks do not require rebuilding plans under the Magnuson-Stevens Act (MSA), but are pursuing recovery under the Endangered Species Act or international measures. All of these stocks are listed in Table 1, which indicates which stocks were included in the trend analysis, and an explanation if they were not included. Some stocks may be in rebuilding plans but not included in the analysis for the following reasons:

- 1) A formal rebuilding program was not submitted under the Magnuson-Stevens Act<sup>1</sup>.
- 2) The stock has been recently declared overfished, so a rebuilding plan has not yet been implemented.
- 3) In a rebuilding plan, but the stock does not have reliable time series estimates of biomass and/or fishing mortality.
- 4) In a rebuilding plan, but the most recent stock assessment does not yet include a full year under the plan.
- 5) Stock does not require a domestic rebuilding plan under section 304(i) of the Magnuson-Stevens Act because status is due to excessive international fishing pressure; NMFS is working internationally to rebuild this stock.
- 6) There are multiple time series with different trends, none of which are a preferred alternative; stock is internationally assessed.

A total of 33 stocks were included in the trend analysis and are grouped into one of the four rebuilding categories described above, and listed by region in Table 2.

The percentage of stocks in each rebuilding category is as follows:

- 1) Not Subject to Overfishing/ Biomass Increasing – 49%
- 2) Not Subject to Overfishing/ Biomass Not Increasing – 21%
- 3) Subject to Overfishing/Biomass Increasing – 3%
- 4) Subject to Overfishing/ Biomass Not Increasing – 27%

Table 3 also lists which of the 33 stocks included in the trend analysis are currently in which rebuilding category.

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<sup>1</sup> Applicable to Atlantic salmon only - a Final Recovery Plan for the Gulf of Maine Distinct Population Segment of Atlantic Salmon has been developed under the Endangered Species Act.

**Table 1. Stocks in Need of Rebuilding or Rebuilt in 2016**

Stock	Jurisdiction	Current Rebuilding Program Progress	Status in Analysis
<b>GREATER ATLANTIC REGION</b>			
American plaice - Gulf of Maine / Georges Bank	NEFMC	3/10-year plan Second rebuilding plan	Included
Atlantic cod - Georges Bank	NEFMC	13/23-year plan	Included
Atlantic cod - Gulf of Maine	NEFMC	3/10-year plan Second rebuilding plan	Included
Atlantic halibut - Northwestern Atlantic Coast	NEFMC	13/52-year plan	Included
Atlantic salmon - Gulf of Maine	NEFMC	N/A	Excluded – 1
Atlantic wolffish - Gulf of Maine / Georges Bank	NEFMC	Year 7 of plan	Included
Barndoor skate - Georges Bank / Southern New England	NEFMC	Rebuilt	Included
Ocean pout - Northwestern Atlantic Coast	NEFMC	13/10-year plan	Included
Smooth skate - Gulf of Maine	NEFMC	7/10-year plan	Included
Thorny skate - Gulf of Maine	NEFMC	14 of 25-year plan	Included
White hake - Gulf of Maine / Georges Bank	NEFMC	13/10-year plan	Included
Windowpane - Gulf of Maine / Georges Bank	NEFMC	7/7-year plan	Included
Winter flounder - Georges Bank	NEFMC	7/7-year plan	Included
Winter flounder - Southern New England / Mid-Atlantic	NEFMC	4/10-year plan Second rebuilding plan	Included
Witch flounder - Northwestern Atlantic Coast	NEFMC	7/7-year plan	Included
Yellowtail flounder - Cape Cod / Gulf of Maine	NEFMC	13/19-year plan	Included
Yellowtail flounder - Georges Bank	NEFMC	11/26-year plan	Included
Yellowtail Flounder - Southern New England/Mid-Atlantic	NEFMC	N/A	Excluded - 2
<b>SOUTHEAST REGION</b>			
Goliath grouper – Caribbean	CFMC	12/30-year plan	Excluded – 3
Gray triggerfish – Gulf of Mexico	GMFMC	9/10-year plan	Included
Greater amberjack – Gulf of Mexico	GMFMC	1/3-year plan Second rebuilding plan	Included
Nassau grouper – Caribbean	CFMC	12/25-year plan	Excluded – 3
Hogfish - Southeast Florida	SAFMC	N/A	Excluded - 2
Queen conch – Caribbean	CFMC	12/15-year plan	Excluded – 3
Red grouper - Southern Atlantic Coast	SAFMC	5/10-year plan	Excluded – 4
Red porgy - Southern Atlantic Coast	SAFMC	18/18-year plan	Included
Red snapper - Gulf of Mexico	GMFMC	12/27-year plan	Included
Red snapper – South Atlantic	SAFMC	7/35-year plan	Included
Snowy grouper - Southern Atlantic Coast	SAFMC	11/34-year plan	Included
<b>WEST COAST REGION</b>			
Bocaccio - Southern Pacific Coast	PFMC	17/22-year plan	Included
Cowcod - Southern California	PFMC	16/67-year plan	Included
Darkblotched rockfish - Pacific Coast	PFMC	15/23-year plan	Included
Pacific bluefin tuna – Pacific	PFMC / WPFMC	N/A	Excluded - 5
Pacific ocean perch - Pacific Coast	PFMC	17/51-year plan	Included
Yelloweye rockfish - Pacific Coast	PFMC	14/71-year plan	Included

Stock	Jurisdiction	Current Rebuilding Program Progress	Status in Analysis
<b>PACIFIC ISLANDS REGION</b>			
Seamount Groundfish Complex - Hancock Seamount	WPFMC	Year 31 of plan	Excluded - 3
Striped marlin - Central Western - Pacific	PFMC / WPFMC	N/A	Excluded - 5
<b>ALASKA REGION</b>			
Blue King Crab - Pribilof Islands	NPFMC	Year 1 of plan Second rebuilding plan	Included
<b>HIGHLY MIGRATORY SPECIES</b>			
Albacore - North Atlantic	HMS	Rebuilt	Included
Bigeye tuna - Atlantic	HMS	Year 18 of plan	Excluded - 6
Blacknose shark - Atlantic	HMS	4/30-year plan	Excluded - 4
Blue marlin - North Atlantic	HMS	Year 16 of plan	Included
Bluefin tuna - Western Atlantic	HMS	18/20-year plan	Included
Dusky shark - Atlantic	HMS	9/100-year plan	Included
Porbeagle shark - Atlantic	HMS	9/100-year plan	Excluded - 4
Sailfish - Western Atlantic	HMS	Year 18 of plan	Excluded - 3
Sandbar shark - Atlantic and Gulf of Mexico	HMS	12/66-year plan	Included
Scalloped hammerhead - Atlantic	HMS	4/10-year plan	Excluded - 4
White marlin - North Atlantic	HMS	Year 16 of plan	Excluded - 3

**Table 2. Stocks Included Within Trends Analysis By Rebuilding Category - Regional and Cumulative Percentages**

Stock	Not Subject to Overfishing/ Biomass Increasing	Not Subject to Overfishing/ Biomass Not Increasing	Subject to Overfishing/ Biomass Increasing	Subject to Overfishing/ Biomass Not Increasing
American plaice - Gulf of Maine / Georges Bank	√			
Atlantic cod - Georges Bank				√
Atlantic cod - Gulf of Maine				√
Atlantic halibut – Northwestern Atlantic Coast		√		
Atlantic wolffish - Gulf of Maine / Georges Bank	√			
Barndoor skate - Georges Bank / Southern New England	√			
Ocean pout - Northwestern Atlantic Coast		√		
Smooth skate – Gulf of Maine	√			
Thorny skate - Gulf of Maine		√		
White hake - Gulf of Maine / Georges Bank	√			
Windowpane - Gulf of Maine / Georges Bank		√		
Winter flounder – Georges Bank				√
Winter flounder - Southern New England / Mid-Atlantic		√		
Witch flounder - Northwestern Atlantic Coast				√
Yellowtail flounder - Cape Cod / Gulf of Maine				√
Yellowtail flounder - Georges Bank				√
<b>Greater Atlantic Region Percentage of Stocks in Category</b>	31%	31%	-	38%
Gray triggerfish – Gulf of Mexico		√		
Greater amberjack – Gulf of Mexico	√			
Red porgy - Southern Atlantic Coast	√			
Red snapper – Gulf of Mexico	√			
Red snapper – Southern Atlantic Coast			√	
Snowy grouper - Southern Atlantic Coast	√			
<b>Southeast Region Percentage of Stocks in Category</b>	66%	17%	17%	-

Stock	Not Subject to Overfishing/ Biomass Increasing	Not Subject to Overfishing/ Biomass Not Increasing	Subject to Overfishing/ Biomass Increasing	Subject to Overfishing/ Biomass Not Increasing
Bocaccio - Southern Pacific Coast	√			
Cowcod - Southern California	√			
Darkblotched rockfish - Pacific Coast	√			
Pacific ocean perch - Pacific Coast	√			
Yelloweye rockfish - Pacific Coast	√			
<b>West Coast Region Percentage of Stocks in Category</b>	100%	-	-	-
Blue king crab – Pribilof Islands				√
<b>Alaska Region Percentage of Stocks in Category</b>	-	-		100%
Albacore - North Atlantic	√			
Blue Marlin – Atlantic				√
Bluefin Tuna – Western Atlantic	√			
Dusky Shark - Atlantic				√
Sandbar Shark - Atlantic		√		
<b>Highly Migratory Species Division Percentage of Stocks in Category</b>	40%	20%	-	40%
<b>National Totals</b>				
<b>Percentage of Stocks in Category</b>	49%	21%	3%	27%

**Table 3. Rebuilding stocks quadrant**

	<b>Not Subject to Overfishing</b>	<b>Subject to Overfishing</b>
<b>Biomass Increasing</b>	<ul style="list-style-type: none"> <li>• Albacore - North Atlantic</li> <li>• American plaice - Gulf of Maine / Georges Bank</li> <li>• Atlantic wolffish - Gulf of Maine / Georges Bank</li> <li>• Barndoor skate - Georges Bank/Southern New England</li> <li>• Bluefin tuna - Western Atlantic</li> <li>• Bocaccio - Southern Pacific Coast</li> <li>• Cowcod - Southern California</li> <li>• Darkblotched rockfish - Pacific Coast</li> <li>• Greater amberjack - Gulf of Mexico</li> <li>• Pacific ocean perch - Pacific Coast</li> <li>• Red porgy - Southern Atlantic Coast</li> <li>• Red snapper – Gulf of Mexico</li> <li>• Smooth skate – Gulf of Maine</li> <li>• Snowy grouper - Southern Atlantic Coast</li> <li>• White hake - Gulf of Maine / Georges Bank</li> <li>• Yelloweye rockfish - Pacific Coast</li> </ul>	<ul style="list-style-type: none"> <li>• Red snapper – Southern Atlantic Coast</li> </ul>
<b>Biomass Not increasing</b>	<ul style="list-style-type: none"> <li>• Atlantic halibut - Northwestern Atlantic Coast</li> <li>• Gray Triggerfish - Gulf of Mexico</li> <li>• Ocean pout - Northwestern Atlantic Coast</li> <li>• Sandbar Shark – Atlantic</li> <li>• Thorny skate - Gulf of Maine</li> <li>• Windowpane - Gulf of Maine / Georges Bank</li> <li>• Winter Flounder – Southern New England / Mid-Atlantic</li> </ul>	<ul style="list-style-type: none"> <li>• Atlantic cod – Georges Bank</li> <li>• Atlantic cod - Gulf of Maine</li> <li>• Blue marlin – Atlantic</li> <li>• Dusky Shark – Atlantic</li> <li>• Winter flounder - Georges Bank</li> <li>• Witch flounder - Northwestern Atlantic Coast</li> <li>• Yellowtail flounder - Cape Cod/Gulf of Maine</li> <li>• Yellowtail Flounder - Georges Bank</li> <li>• Blue king crab – Pribilof Islands</li> </ul>