

Fish Stocks in Rebuilding Plans: A Trend Analysis

Introduction

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

Rebuilding of a stock will generally occur if more fish survive to maturity than are lost to mortality, so it is important to set catch levels at a rate that will 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 outlined in the rebuilding plan, the stock should rebuild as expected.

Categories of the Trends Analysis

Using the most recent stock assessment, stocks were reviewed and grouped into four categories based on the level of fishing mortality (F) and how biomass (B) is responding:

- 1) The most recent year's estimate of F is below the overfishing level (not subject to overfishing);
- 2) The most recent year's estimate of F is above the overfishing level (subject to overfishing);
- 3) The biomass has increased since the rebuilding plan was implemented; and
- 4) The biomass has decreased or an increasing trend is insignificant (increase of 1-2%) since the rebuilding plan was implemented.

Inclusion of a stock in the "biomass has increased" 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, 2012, there were 59 stocks in rebuilding plans, including 6 that completed rebuilding in 2012. All of these stocks are listed in Table 2, indicating if they were included in the analysis and if not, an explanation of why they were not included. A total of 34 stocks were included in the analysis and are grouped into one of the four categories described above, and listed by region in Table 1.

The percentage of stocks in each category is as follows:

- 1) Not Subject to Overfishing/ Biomass Increasing – 47%
- 2) Not Subject to Overfishing/ Biomass Not Increasing – 15%
- 3) Subject to Overfishing/ Biomass Increasing – 21%
- 4) Subject to Overfishing/ Biomass Not Increasing – 17%

Table 1. Regional and Total Categories

Northeast Region				
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
Acadian redfish - Gulf of Maine / Georges Bank	√			
American plaice - Gulf of Maine / Georges Bank	√			
Atlantic cod - Georges Bank				√
Atlantic cod - Gulf of Maine				√
Atlantic halibut – Northwestern Atlantic Coast		√		
Barndoor skate - Georges Bank / Southern New England	√			
Ocean pout - Northwestern Atlantic Coast		√		
Thorny skate - Gulf of Maine		√		
Tilefish - Mid-Atlantic Coast	√			
White hake - Gulf of Maine / Georges Bank			√	
Windowpane - Southern New England / Mid-Atlantic	√			
Winter flounder – Georges Bank	√			
Winter flounder - Southern New England / Mid-Atlantic	√			
Yellowtail flounder - Cape Cod / Gulf of Maine			√	
Yellowtail flounder - Georges Bank			√	
Yellowtail flounder - Southern New England / Mid-Atlantic	√			
Percentage of Stocks in Category	50%	19%	19%	12%
Southeast Region				
Black sea bass – Southern Atlantic Coast			√	
Gray triggerfish – Gulf of Mexico			√	
Greater amberjack – Gulf of Mexico				√
Red porgy - Southern Atlantic Coast	√			
Red snapper – Gulf of Mexico			√	
Percentage of Stocks in Category	20%	-	60%	20%

Northwest Region				
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	√			
Canary rockfish - Pacific Coast	√			
Cowcod - Southern California	√			
Darkblotched rockfish - Pacific Coast	√			
Pacific ocean perch - Pacific Coast	√			
Yelloweye rockfish - Pacific Coast	√			
Percentage of Stocks in Category	100%	-	-	-
Alaska Region				
Blue king crab – Pribilof Islands	√			
Percentage of Stocks in Category	100%	-	-	-
Highly Migratory Species Division				
Albacore - North Atlantic				√
Bigeye tuna - Atlantic		√		
Bluefin Tuna – Western Atlantic			√	
Blue Marlin – Atlantic				√
Sandbar Shark - Atlantic		√		
Dusky Shark - Atlantic				√
Percentage of Stocks in Category	-	33%	17%	50%
National Totals				
Percentage of Stocks in Category	47%	15%	21%	17%

Table 2. Stocks that have been declared overfished and their status of inclusion or rationale for exclusion in the analysis. 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 Act¹.
- 2) In a rebuilding plan, but the plan has only recently been adopted and the most recent stock assessment does not yet include a full year under the plan.
- 3) In a rebuilding plan, but the stock does not have reliable time series estimates of biomass and/or fishing mortality.
- 4) Stock rebuilt, but not under a rebuilding plan.
- 5) In a rebuilding plan, but stock has not been assessed recently to determine effectiveness of measures (stock assessment is not recent).
- 6) Salmon rebuilding targets levels (based on escapement) are not comparable to marine stocks that rebuild to a target biomass.
- 7) The stock has been recently declared overfished, so a rebuilding plan has not yet been implemented.

Stock	Jurisdiction	Current Rebuilding Program Progress	Status in Analysis
NORTHEAST REGION			
Acadian redfish - Gulf of Maine / Georges Bank*	NEFMC	Rebuilt	Included
American plaice - Gulf of Maine / Georges Bank*	NEFMC	9/10-year plan	Included
Atlantic cod - Georges Bank*	NEFMC	9/22-year plan	Included
Atlantic cod - Gulf of Maine*	NEFMC	9/10-year plan	Included
Atlantic halibut - Northwestern Atlantic Coast	NEFMC	9/52-year plan	Included
Atlantic salmon - Gulf of Maine	NEFMC	Not included	Excluded – 1
Atlantic wolffish - Gulf of Maine / Georges Bank	NEFMC	Not included	Excluded – 2
Barndoor skate - Georges Bank / Southern New England	NEFMC	Year 10 of plan	Included
Butterfish (Atlantic)	MAFMC	Not included	Excluded – 3
Ocean pout - Northwestern Atlantic Coast*	NEFMC	9/10-year plan	Included
Smooth skate - Gulf of Maine	NEFMC	Not included	Excluded – 2
Thorny skate - Gulf of Maine	NEFMC	10 of 25-year plan	Included
Tilefish - Mid-Atlantic Coast	MAFMC	12/10-year plan	Included
White hake - Gulf of Maine / Georges Bank*	NEFMC	9/10-year plan	Included
Windowpane - Gulf of Maine / Georges Bank	NEFMC	Not included	Excluded – 2
Windowpane - Southern New England / Mid-Atlantic*	NEFMC	Rebuilt	Included
Winter flounder - Georges Bank	NEFMC	3/7-year plan	Included
Winter flounder - Southern New England / Mid-Atlantic*	NEFMC	9/10-year plan	Included
Witch flounder - Northwestern Atlantic Coast	NEFMC	Not included	Excluded – 2
Yellowtail flounder - Cape Cod / Gulf of Maine*	NEFMC	9/19-year plan	Included
Yellowtail flounder - Georges Bank	NEFMC	7/26-year plan	Included
Yellowtail flounder - Southern New England / Mid-Atlantic*	NEFMC	Rebuilt	Included
<i>* This stock is contained in the Northeast Multispecies FMP and has been in a rebuilding plan since 1986.</i>			

¹ 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.

Stock	Jurisdiction	Current Rebuilding Program Progress	Status in Analysis
SOUTHEAST REGION			
Caribbean Grouper Unit 1	CFMC	Not included	Excluded – 3
Black sea bass - Southern Atlantic Coast	SAFMC	7/10-year plan	Included
Caribbean Grouper Unit 2	CFMC	Not included	Excluded – 3
Caribbean Grouper Unit 4	CFMC	Not included	Excluded – 3
Gag - Gulf of Mexico	GMFMC	Not included	Excluded – 2
Gray triggerfish – Gulf of Mexico	GMFMC	5/6-year rebuilding plan	Included
Greater amberjack – Gulf of Mexico	GMFMC	10/10-year plan	Included
Pink shrimp - Southern Atlantic Coast	SAFMC	Rebuilt (not under a plan)	Excluded – 4
Queen conch – Caribbean	CFMC	Not included	Excluded – 3
Red grouper - Southern Atlantic Coast	SAFMC	Not included	Excluded – 2
Red porgy - Southern Atlantic Coast	SAFMC	13/18-year plan	Included
Red snapper – South Atlantic	SAFMC	Not included	Excluded – 2
Red snapper - Gulf of Mexico	GMFMC	12/32-year plan	Included
Snowy grouper - Southern Atlantic Coast	SAFMC	Not included	Excluded – 5
NORTHWEST REGION			
Bocaccio - Southern Pacific Coast	PFMC	13/22-year rebuilding plan	Included
Canary rockfish - Pacific Coast	PFMC	12/26-year rebuilding plan	Included
Chinook salmon - California Central Valley: Sacramento (fall)	PFMC	Not included	Excluded – 6
Coho salmon - Washington Coast: Western Strait of Juan de Fuca	PFMC	Rebuilt	Excluded – 6
Cowcod - Southern California	PFMC	12/67-year rebuilding plan	Included
Darkblotched rockfish - Pacific Coast	PFMC	11/23-year rebuilding plan	Included
Pacific ocean perch - Pacific Coast	PFMC	13/20-year rebuilding plan	Included
Petrale sole - Pacific Coast	PFMC	Not included	Excluded – 2
Yelloweye rockfish - Pacific Coast	PFMC	10/71-year rebuilding plan	Included
PACIFIC ISLANDS REGION			
Seamount Groundfish Complex - Hancock Seamount	WPFMC	Not included	Excluded – 3
ALASKA REGION			
Blue King Crab - Pribilof Islands	NPFMC	8/10-year plan	Included
Southern Tanner crab - Bering Sea	NPFMC	Rebuilt (not under a plan)	Excluded – 4
HIGHLY MIGRATORY SPECIES			
Blue marlin – North Atlantic	HMS	Year 12 of plan	Included
Albacore - North Atlantic	HMS	Year 7 of Plan	Included
Bigeye tuna – Atlantic	HMS	Year 14 of Plan	Included
Blacknose shark – Atlantic	HMS	Not included	Excluded – 2
Bluefin tuna – Western Atlantic	HMS	14/20-year plan	Included
Dusky shark – Atlantic	HMS	Year 5/100-year plan	Included
Porbeagle shark – Atlantic	HMS	Not included	Excluded – 2
Sailfish – Western Atlantic	HMS	Not included	Excluded – 3
Sandbar shark – Atlantic	HMS	5/66-year plan	Included
Scalloped hammerhead – Atlantic	HMS	Not included	Excluded – 7
White marlin – North Atlantic	HMS	Not included	Excluded – 3

Table 3. Rebuilding stocks quadrant

The green and red colors highlight stock that have biomass (B) responding as expected to fishing mortality (F). The orange color indicates the stocks are not responding to F status as expected.

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

* This stock is part of the Northeast Multispecies FMP and has been in a rebuilding plan since 1986.

**Although this stock is not subject to overfishing, there is no time series, or multiple year estimates, of fishing mortality