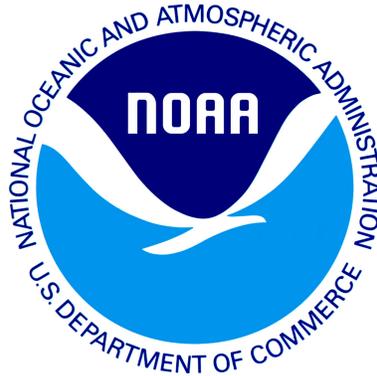


draft working paper for peer review only



Ocean Pout

2015 Assessment Update Report

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

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This assessment of the ocean pout (*Zoarces americanus*) stock is an operational update of the 2012 assessment (NEFSC 2012) and the 2008 benchmark assessment (NEFSC 2008). Based on the 2012 assessment, the stock was overfished but overfishing was not occurring. This assessment updates commercial fishery catch data, research survey indices and the exploitation ratios through 2014. There are no stock projections.

State of Stock: Based on the current assessment, the ocean pout (*Zoarces americanus*) stock is overfished and overfishing is not occurring (Figures 1-2). Biomass proxy (B) in 2014 was estimated to be 0.29 (kg/tow) which is 6% of the biomass target ($B_{MSY} proxy = 4.94$; Figure 1). The 2014 fully selected fishing mortality was estimated to be 0.269 which is 35% of the overfishing threshold proxy ($F_{MSY} proxy = 0.76$; Figure 2).

Table 1: Catch and model results table for ocean pout. Catch weights are in (mt), survey biomass is in (kg/tow), and the relative exploitation ratio is the total catch / NEFSC 3 year average spring biomass index. Model results are from the current updated index assessment.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<i>Data</i>										
US Commercial discards	197	180	164	118	164	125	76	90	68	76
US Commercial landings	4	5	4	7	3	0	0	0	0	2
Other landings	0	0	0	0	0	0	0	0	0	0
Catch for Assessment	201	184	167	126	168	126	77	90	68	78
<i>Model Results</i>										
NEFSC 3 yr average Spring Survey	0.533	0.51	0.475	0.513	0.479	0.44	0.343	0.298	0.357	0.29
Relative Exploitation Ratio	0.377	0.361	0.352	0.246	0.351	0.287	0.225	0.302	0.19	0.269

Table 2: Comparison of reference points estimated in an earlier assessment and from the current updated assessment. For ocean pout, median NEFSC 3 year average Spring survey biomass and median exploitation ratio during 1977-1985 are used as B_{MSY} and F_{MSY} proxies, respectively.

	2012	Current
$F_{MSY} proxy$	0.76	0.76
$B_{MSY} proxy$ (kg/tow)	4.94	4.94
MSY (mt)	3,754	3,754
<i>Overfishing</i>	No	No
<i>Overfished</i>	Yes	Yes

Projections: The index-based assessment approach does not support catch projections; catch advice for ocean pout has been based on the target exploitation rate and the most recent centered 3-year average biomass index from the NEFSC spring survey.

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).

An important source of uncertainty is the stock has not responded to low catch as expected.

- Does this assessment model have a retrospective pattern? If so, is the pattern strong, moderate, or mild?

N/A

- Based on this stock assessment, are population projections well determined or uncertain?

N/A

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

TOGA (Type, Operation, Gear, Acquisition) values were used for haul criteria for NEFSC surveys for 2009 onward and minor changes in the use of observer data for discard estimates were made to the current assessment. These changes had a negligible effect on the assessment and stock status. Recreational landings were updated and found to be negligible (time series average of recreational landings to total catch was less than 1%) and therefore not included in this assessment.

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

Ocean pout stock status has not changed since the previous assessment.

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

The ocean pout assessment could be improved with studies that explore why this stock is not rebuilding as expected.

- Are there other important comments?

Biological reference points are based on catch; the estimated discards used in the catch are based on a mix of direct (1989 onward) and indirect (1988 and back) methods. The catch used to determine MSY is based on indirect methods.

References:

Northeast Fisheries Science Center. 2012. Assessment or Data Updates of 13 Northeast Groundfish Stocks through 2010. US Dep Commer, NOAA Fisheries, Northeast Fish Sci Cent Ref Doc. 12-06; 789 p. <http://www.nefsc.noaa.gov/publications/crd/crd1206/>

Northeast Fisheries Science Center. 2008. Assessment of 19 Northeast Groundfish Stocks through 2007: Report of the 3rd Groundfish Assessment Review Meeting (GARM III), Northeast Fisheries Science Center, Woods Hole, Massachusetts, August 4-8, 2008. US Dep Commer, NOAA Fisheries, Northeast

Fish Sci Cent Ref Doc. 08-15; 884 p + xvii. <http://www.nefsc.noaa.gov/publications/crd/crd0815/>

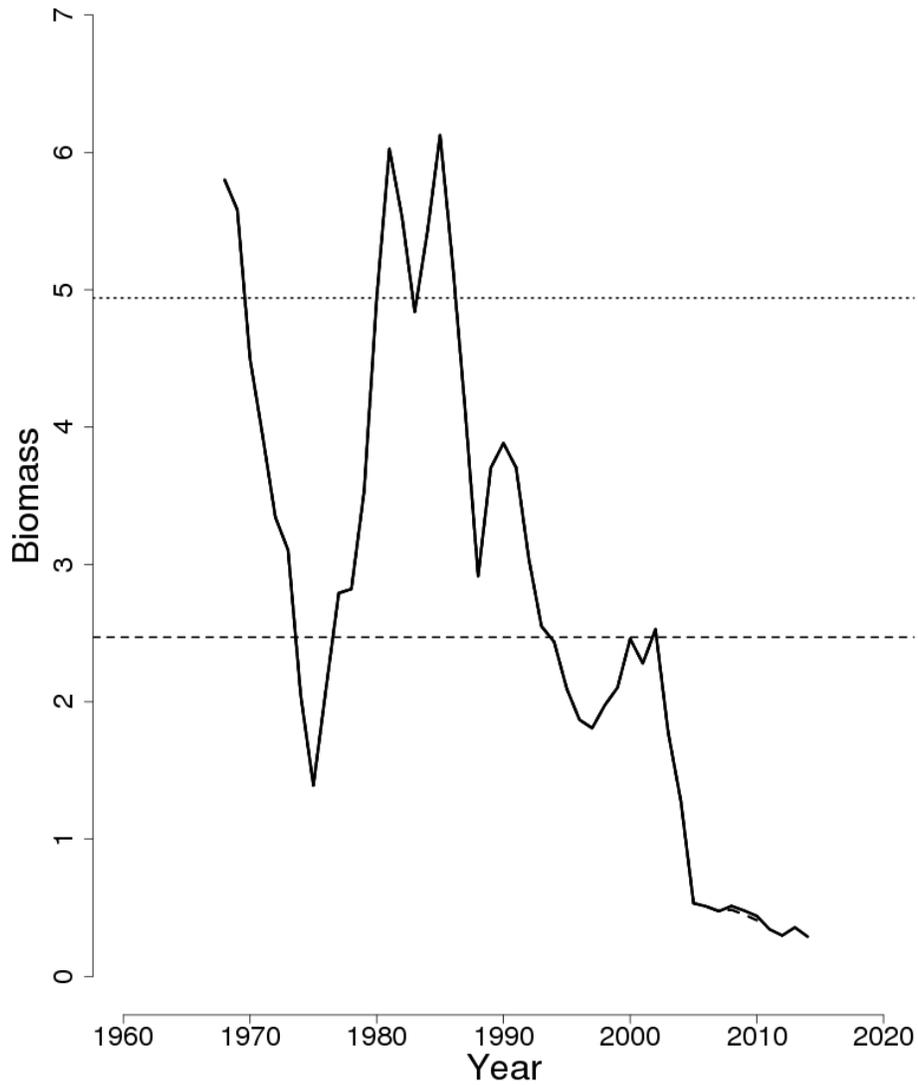


Figure 1: Trends in biomass (kg/tow) of ocean pout between 1968 and 2014 from the current (solid line) and previous (dashed line) assessment and the corresponding $B_{Threshold}$ ($\frac{1}{2} B_{MSY}$ proxy; horizontal dashed line) as well as B_{Target} (B_{MSY} proxy; horizontal dotted line) based on the current assessment.

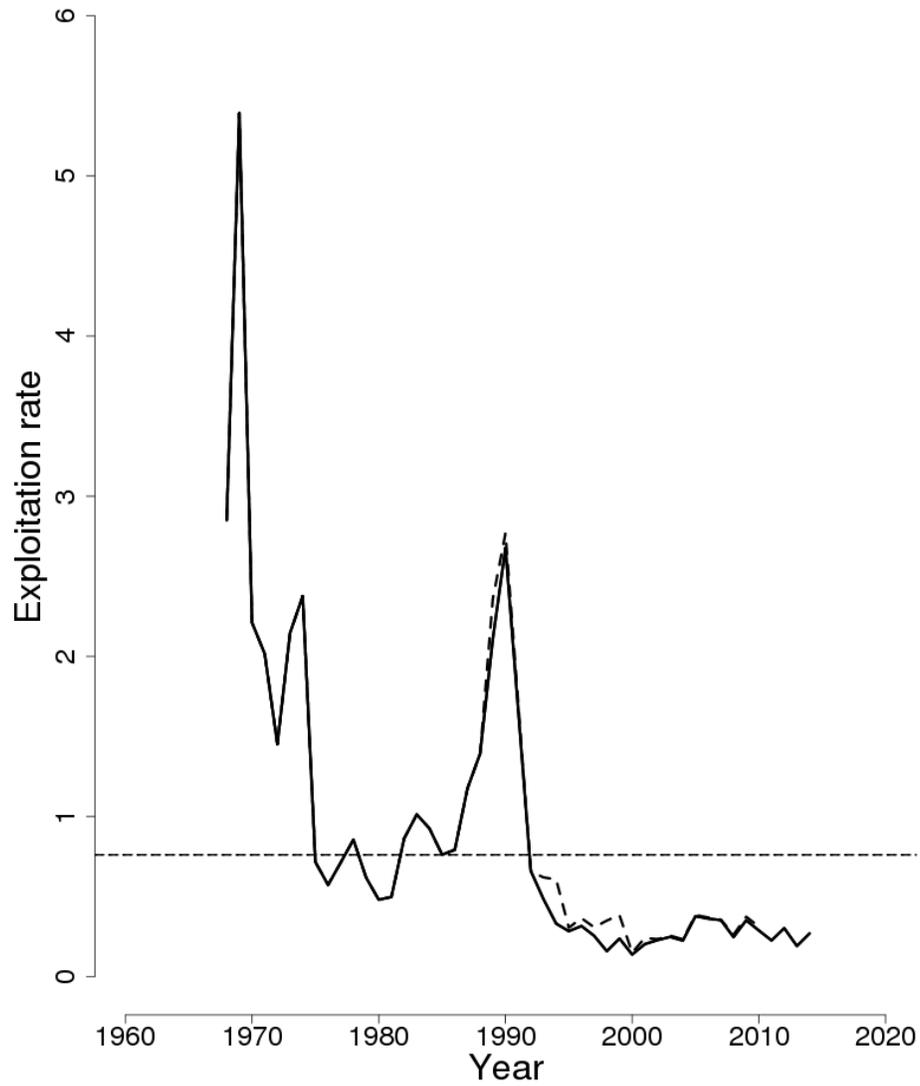


Figure 2: Trends in the exploitation rate of ocean pout between 1968 and 2014 from the current (solid line) and previous (dashed line) assessment and the corresponding $F_{Threshold}$ (F_{MSY} proxy=0.76; horizontal dashed line) based on the current assessment.

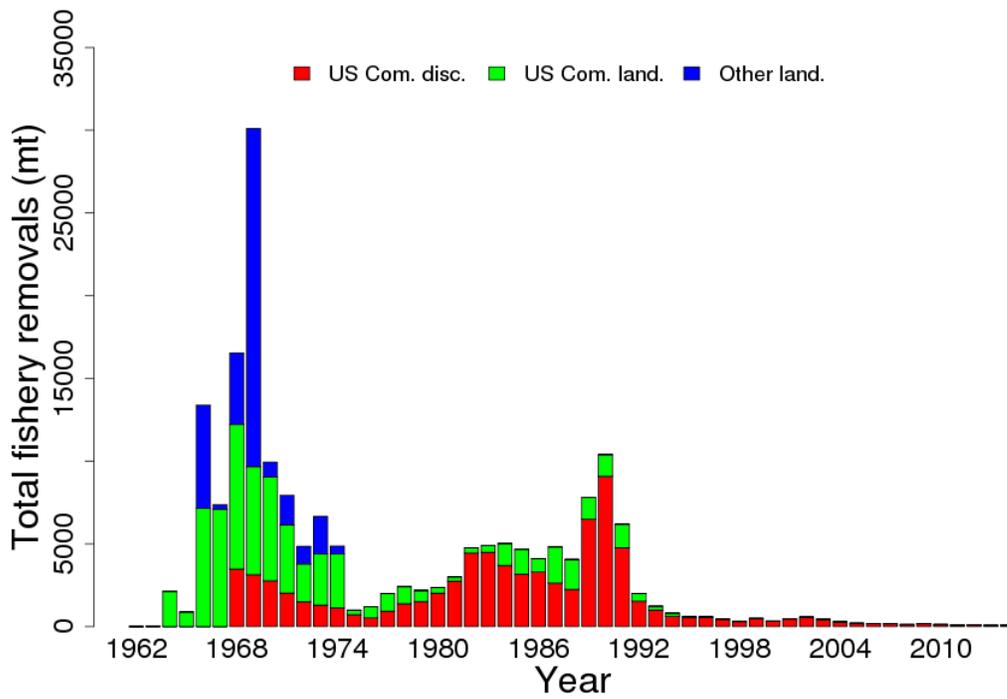


Figure 3: Total catch of ocean pout between 1968 and 2014 by fleet (US and Other) and disposition (landings and discards).

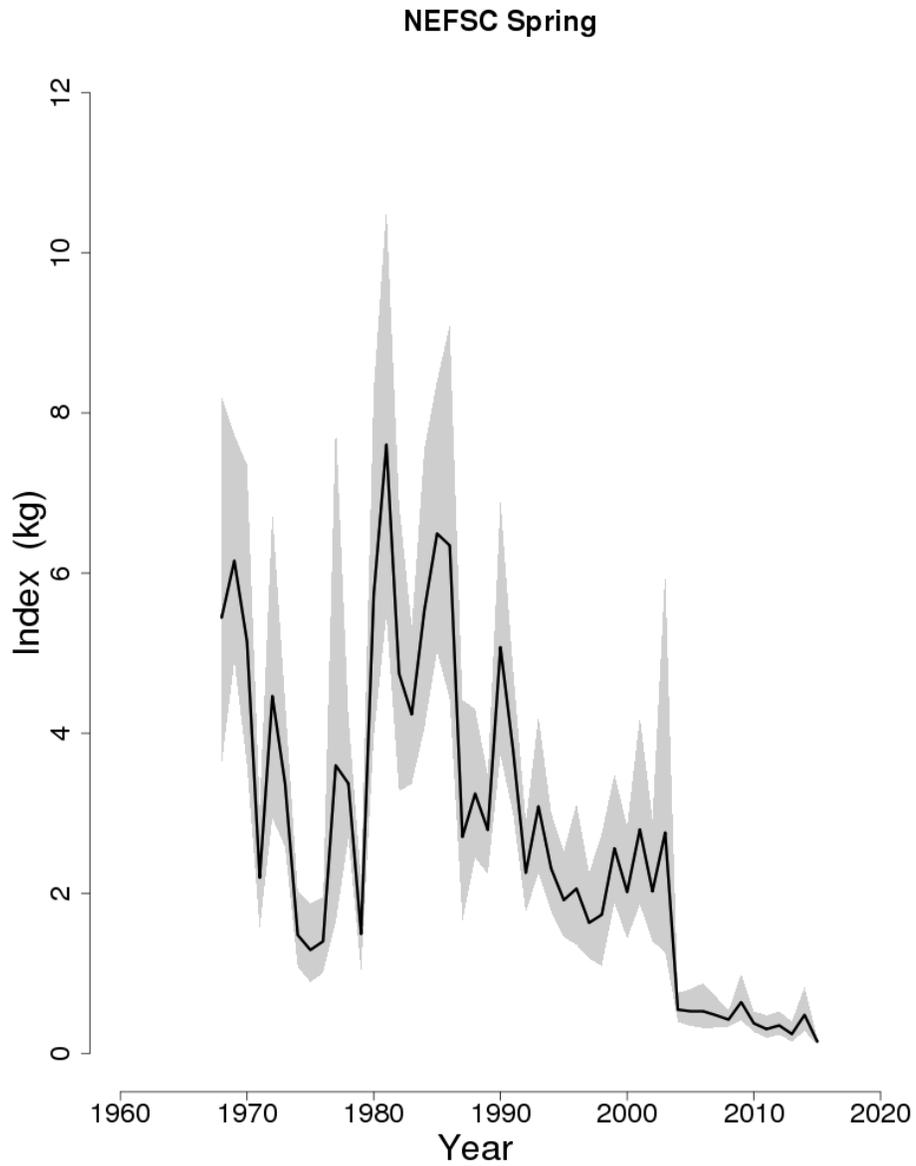


Figure 4: Indices of biomass (kg/tow) for ocean pout between 1968 and 2015 for the Northeast Fisheries Science Center (NEFSC) spring survey. The approximate 90% lognormal confidence intervals are shown.