

Finding Acceptable Catch Limits for Atlantic Halibut in the US

Paul Rago*

Contractor for New England Fishery Management Council

Mid-Atlantic Fisheries Management Council, Science and Statistical Committee

Maine Fishermen's Forum

March 3, 2017

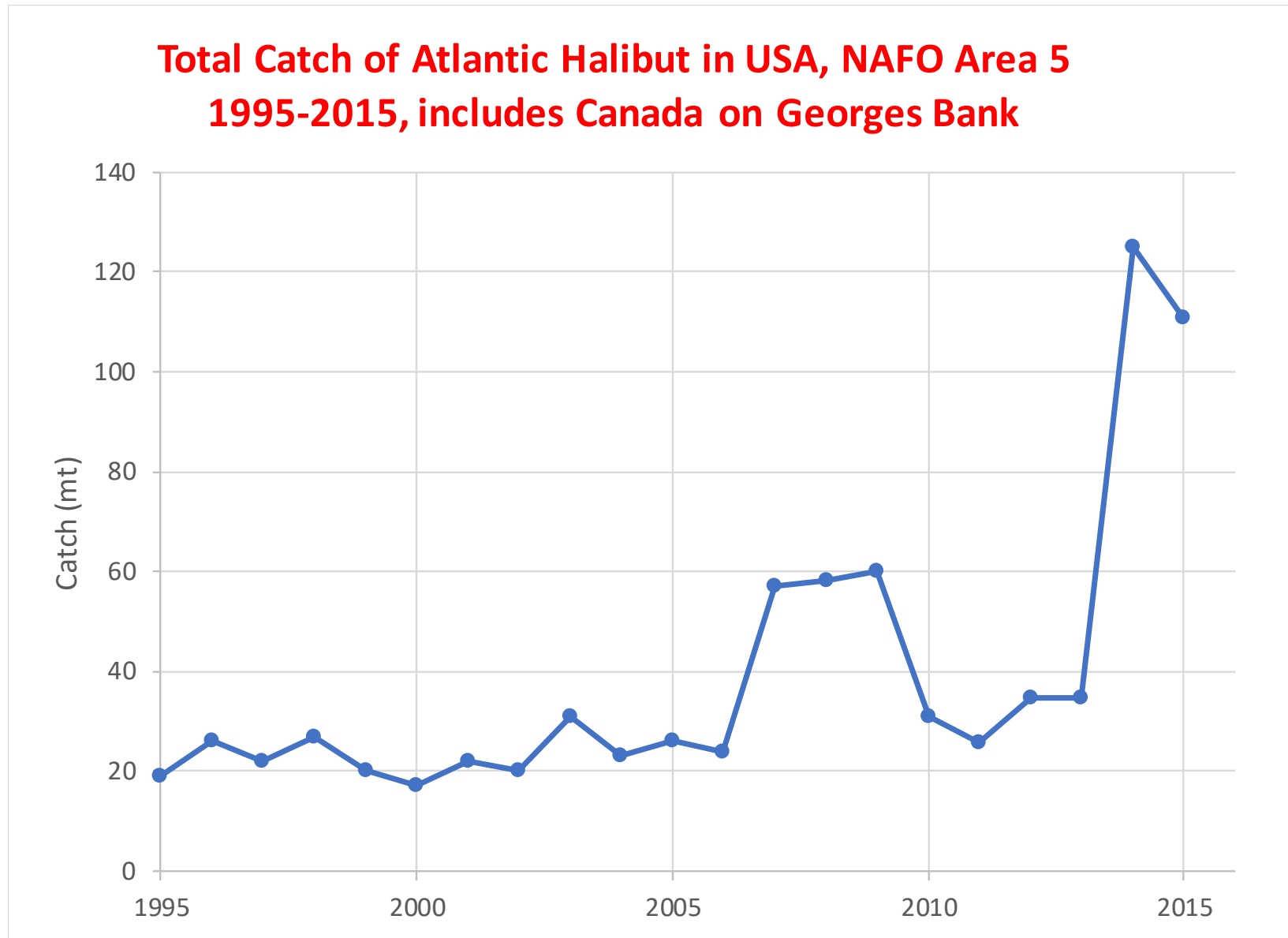
*With acknowledgements to

Dan Hennen, NEFSC, Jamie Cournane, NEFMC, and Sally Sherman, ME DMR

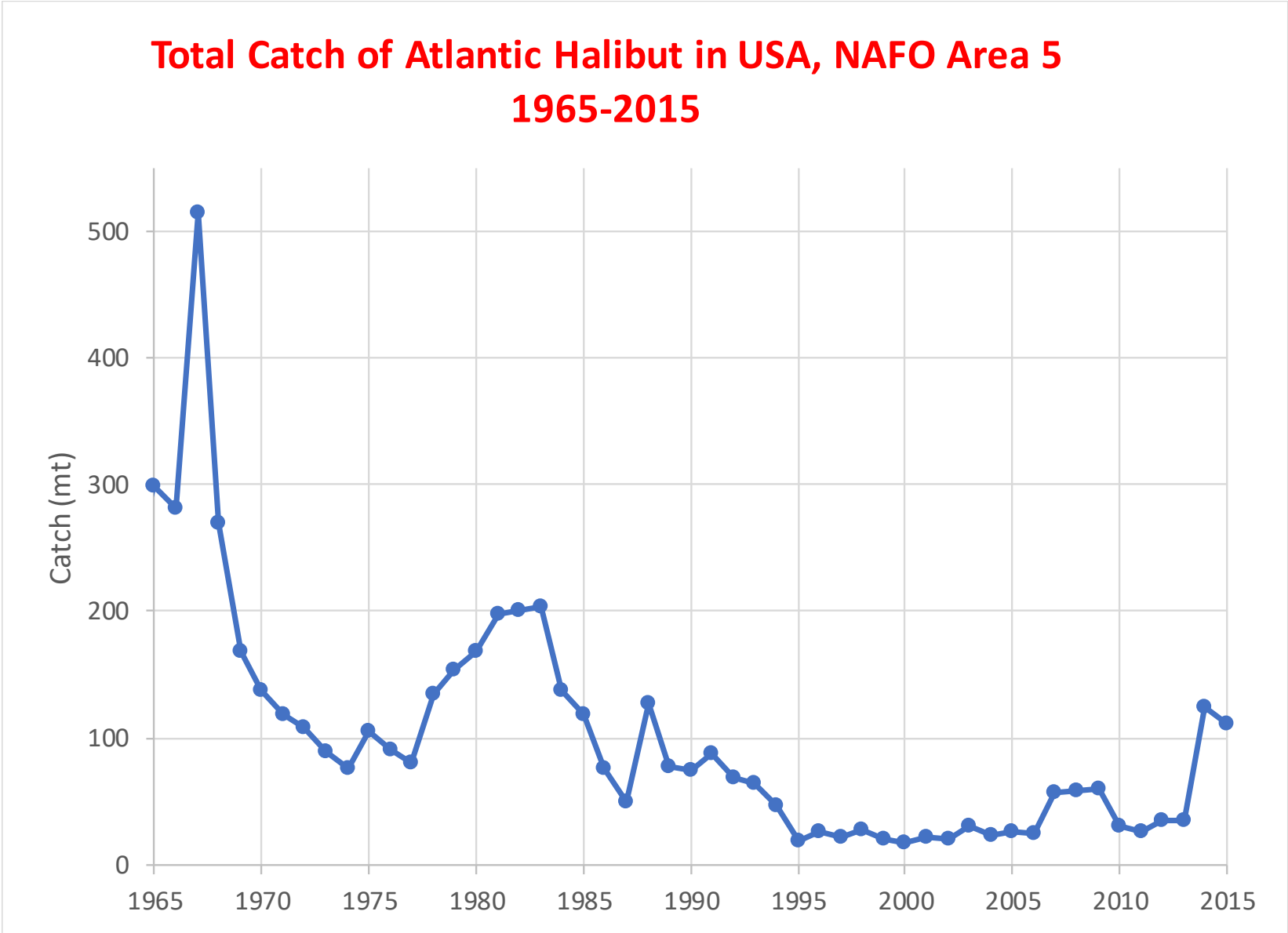
Key Considerations

- Recent Trends in Landings and Surveys
- Operational Assessment is an update, **NOT** a Benchmark
 - Changes to Model and data sources are limited
- Key assessment concerns
 - Stock structure
 - Discard mortality
 - Results of historical and recent tagging studies
- The dilemma of Canadian Rebuilding—movements among stock areas
- The even bigger dilemma of rebuilding the US stock

Catch Trends, Last 20 Years

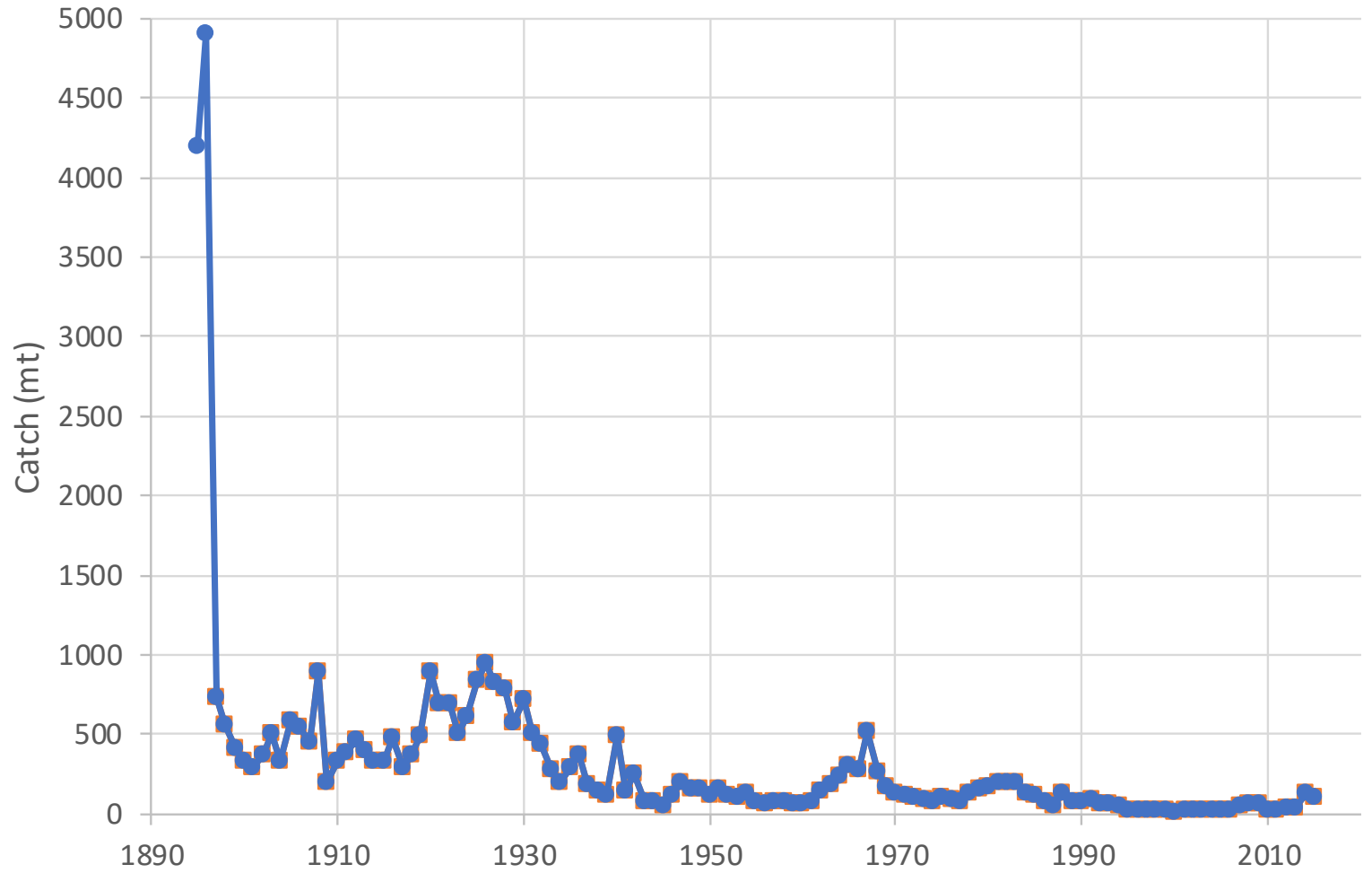


Catch
Trends,
Last 50
years



Catch Trends, Last 120 Years

Total Catch of Atlantic Halibut in USA, NAFO Area 5 1895-2015



Stock Assessment Operational Assessment-2017

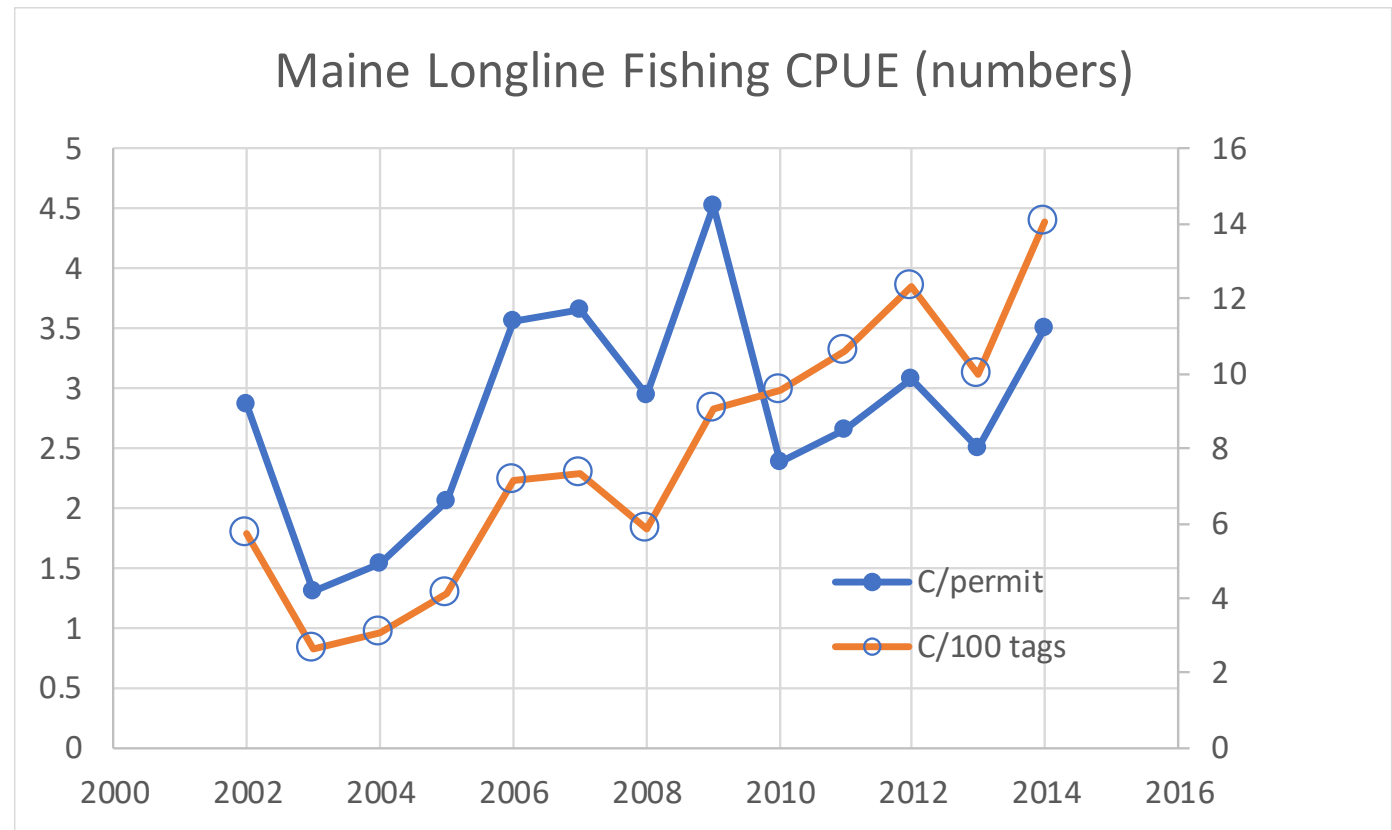
- NOT a benchmark which means you update the old model with new data
- You cannot change
 - Previously approved model
 - Introduce new data sources into model
 - Key assumptions (e.g., stock structure or natural mortality)
 - Basis for biological reference points.
- However assessment model was rejected in 2015 which leads to Plan B
- Plan B???
 - Alternative basis for catch advice
 - Simpler approach, empirical
 - Reduced range of options
 - Adjustments to recent average catch

Measures of Relative Abundance

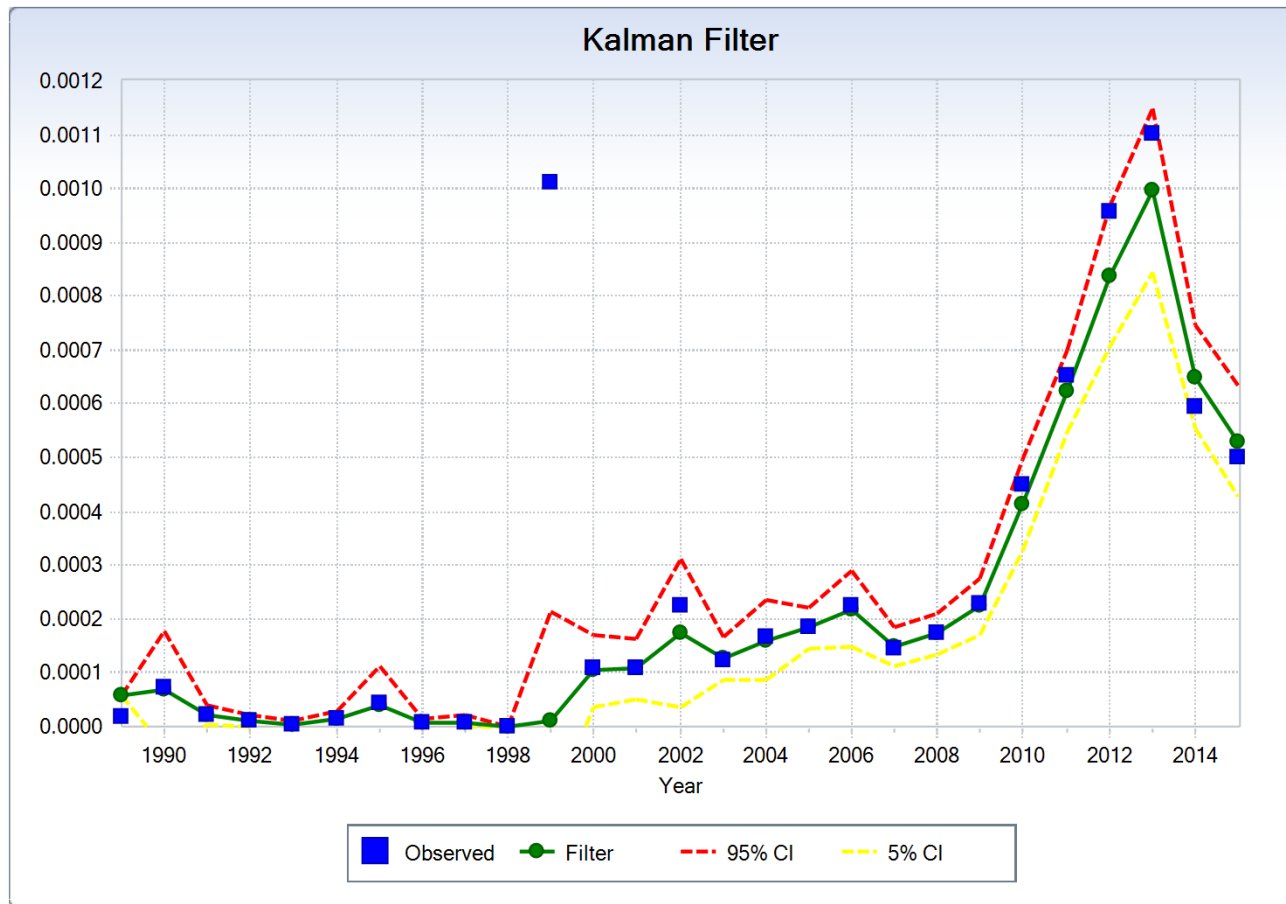
- Want measures of abundance that are proportional to true stock size
- Multiple measures better than any single measure
- Independence of measures (eg not all from same place or same fishery/fleet)
- Coherence of pattern: e.g., All trending upward/downward
- Reduce influence of external factors, e.g., regulations

CPUE in Maine

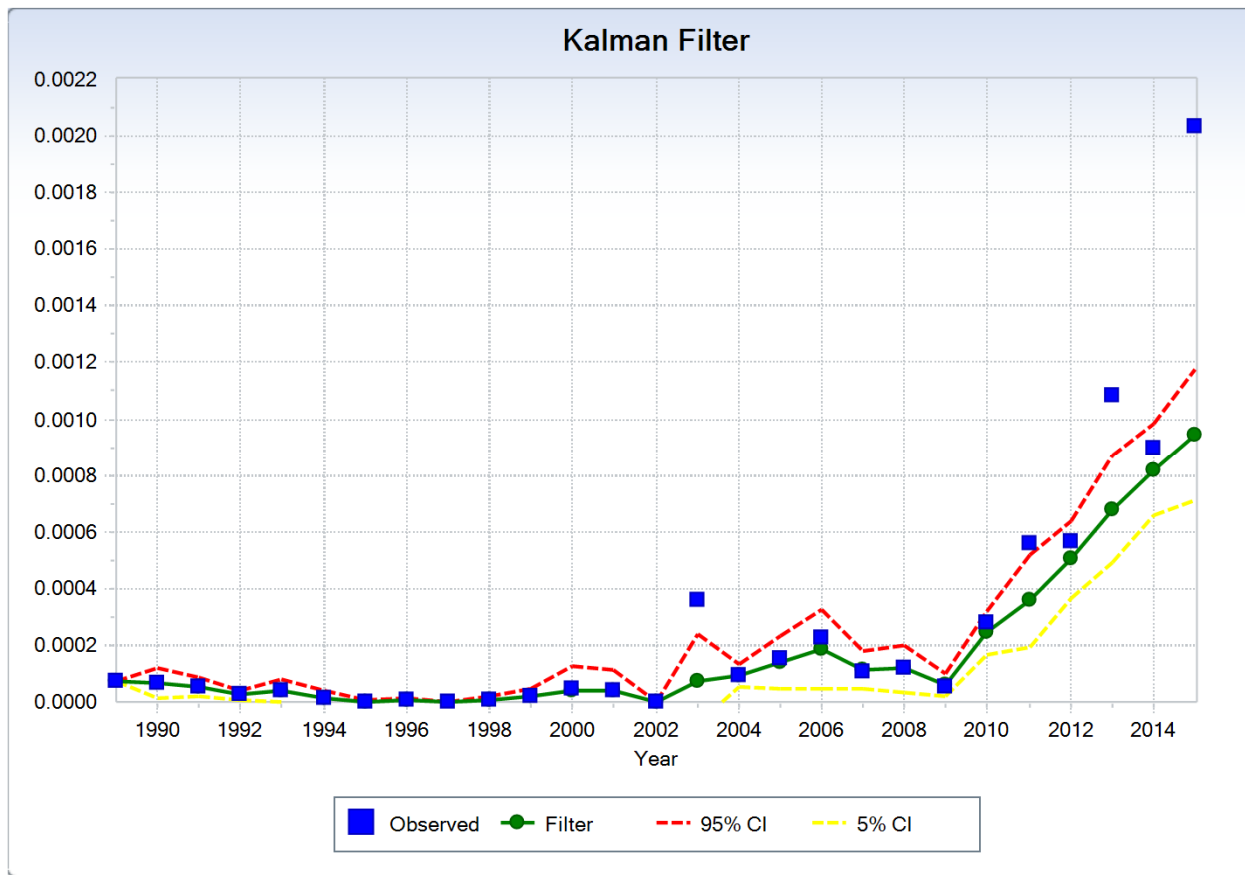
- Trends in catch per permit and catch per tag in Maine



Trawl Discard rate in New England expressed as lbs/total lbs of all species landed



Gill Net Discard rate in New England expressed as lbs/total lbs of all species landed



2002-2014* Halibut Length (in) Frequency expressed as percents

Year

Total Length (inches)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<30	6.4	14.3	5.5	9.0	7.5	4.4	7.6	3.9	5.6	8.6	6.5	2.8	4.1	2.5
30	2.4	1.8	1.4	1.5	3.7	2.1	2.3	1.6	1.1	3.2	2.1	1.3	1.9	1.5
31	0.9	2.7	0.9	1.7	3.4	1.7	2.2	1.0	0.6	2.0	1.9	0.8	0.7	0.6
32	1.6	3.0	3.2	1.2	5.3	2.8	3.1	2.0	2.3	3.1	2.8	1.7	2.1	2.6
33	2.8	1.2	1.4	0.5	4.6	1.9	2.5	0.9	2.2	2.6	1.3	1.1	1.4	0.7
34	1.9	3.9	2.5	1.3	8.9	2.5	2.6	1.9	2.1	2.7	3.5	1.9	1.6	1.1
35	2.1	2.1	3.2	1.3	2.9	2.2	1.9	2.1	2.2	2.8	2.2	1.3	2.1	1.6
36	5.4	5.7	6.6	2.2	8.6	7.1	4.7	3.3	2.2	3.9	4.9	3.6	3.0	1.9
37	5.9	4.5	4.8	3.0	6.0	7.3	2.8	1.4	2.2	1.6	2.4	1.9	1.5	1.8
38	9.9	6.8	6.8	4.7	9.0	11.5	11.5	9.9	3.6	3.9	5.6	3.9	2.7	3.8
39	3.8	4.2	6.2	2.2	2.4	6.0	8.1	10.8	2.9	1.7	3.8	3.5	2.4	3.1
40	8.0	4.8	7.3	5.0	4.1	9.3	8.6	10.7	2.0	1.9	3.8	2.5	2.2	3.4
41	5.9	4.5	5.3	5.0	2.9	5.4	5.5	6.9	9.5	6.2	7.5	8.7	7.0	6.7
42	6.4	6.0	3.7	5.2	2.0	5.5	5.3	8.6	12.0	8.6	11.3	13.8	11.7	14.5
43	4.5	2.7	3.7	5.5	2.5	3.1	4.0	4.1	9.3	8.4	6.8	9.6	9.2	9.2
44	4.2	2.7	4.3	5.0	1.6	4.3	4.1	3.7	7.7	7.7	5.2	8.0	9.3	8.1
45	2.6	0.9	4.1	5.8	1.5	2.3	2.7	3.2	4.8	5.3	3.8	5.4	6.4	4.1
46	4.0	1.8	3.9	4.2	2.4	1.7	2.5	2.6	4.1	5.1	3.3	4.7	5.4	5.5
47	3.3	2.1	3.0	4.2	3.4	1.4	1.8	1.8	3.1	3.1	2.4	2.7	4.0	2.3
48	2.6	4.5	4.1	3.3	2.3	1.9	3.3	3.2	3.6	3.1	2.8	4.1	5.5	5.8
49	0.9	2.7	1.6	4.0	1.3	1.0	1.1	1.3	2.0	2.1	1.5	1.6	2.1	2.5
50	2.6	2.1	2.1	3.8	1.6	1.7	2.3	2.3	3.3	2.2	1.8	2.0	3.0	3.2
>50	12.0	15.5	14.6	20.4	12.0	12.9	9.4	12.8	11.6	10.2	12.6	13.1	10.6	13.4

**Length
Frequencies
from Maine
Logbooks,
2002-2015**

Model Estimates of biomass and recruits in Canadian Scotian Shelf and Southern Grand Banks



Courtesy den Heyer et al 2015

Canadian Stock
Assessment
Areas:

NAFO--
3NOPs4VWX5Zc

And

NAFO--4RST

From
Trzcinski
and Bowen,
2016

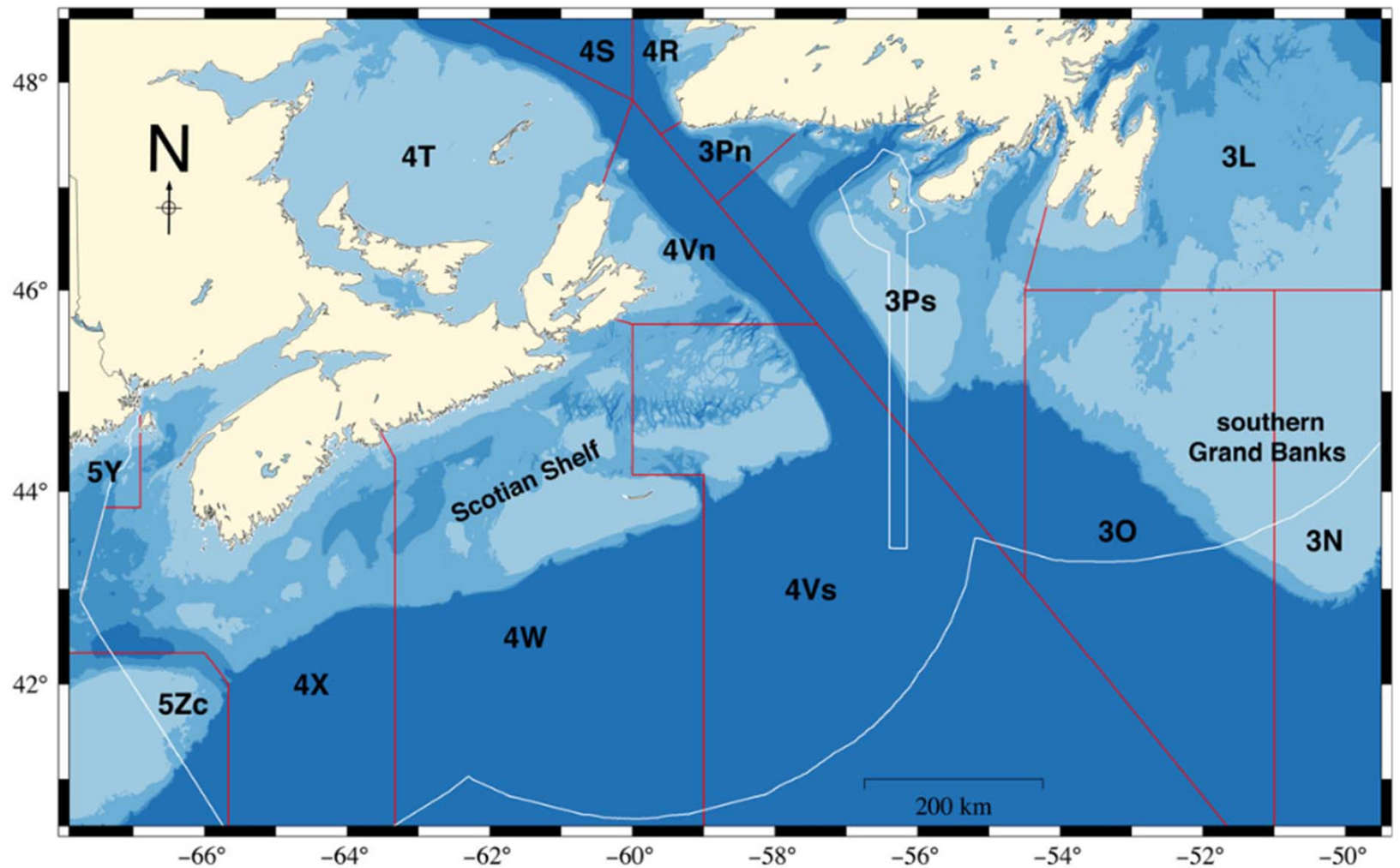


Figure 1. Map of the management unit (NAFO: 3NOPs4VWX5Zc) for Atlantic halibut. The Gulf of St Lawrence (4RST), the northern Grand Banks (3L), and US waters are outside the management unit. The white line indicates the EEZ. This figure is available in black and white in print and in colour at *ICES Journal of Marine Science* online.

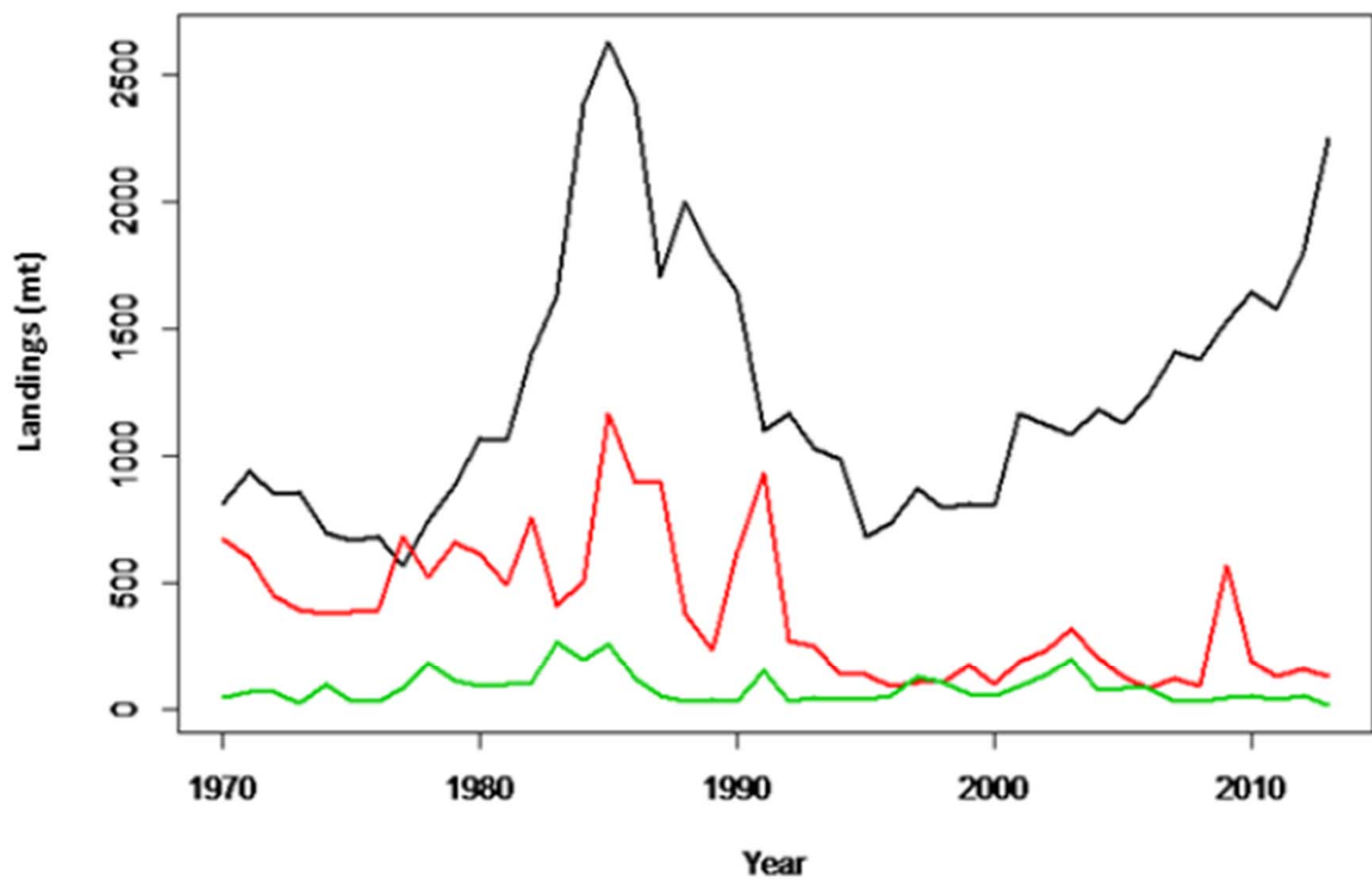
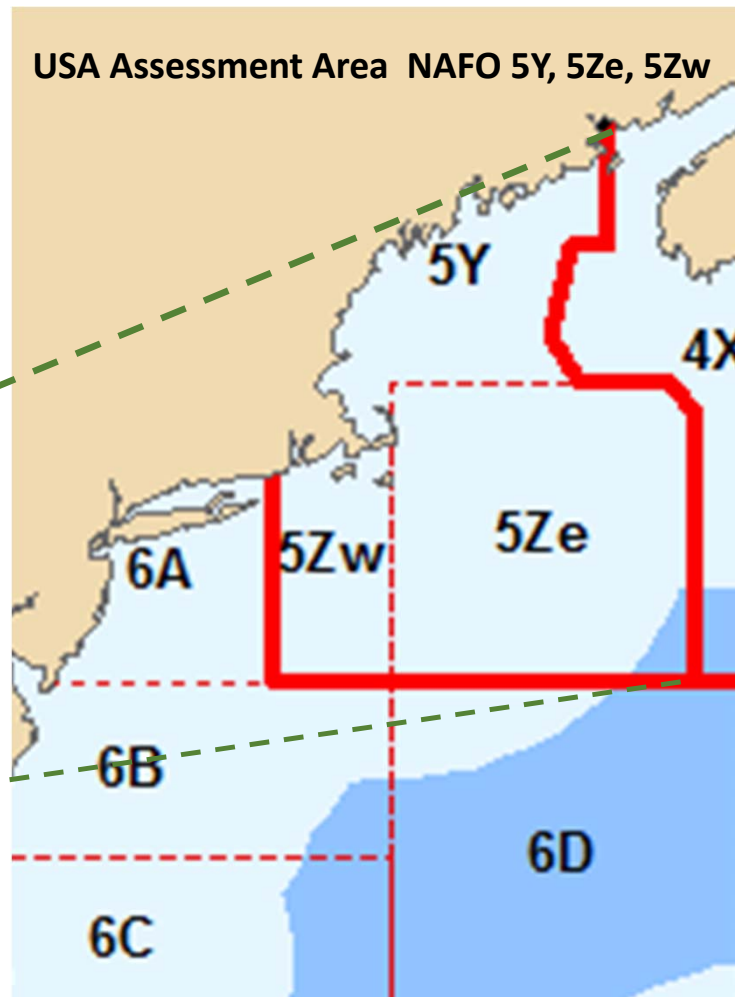
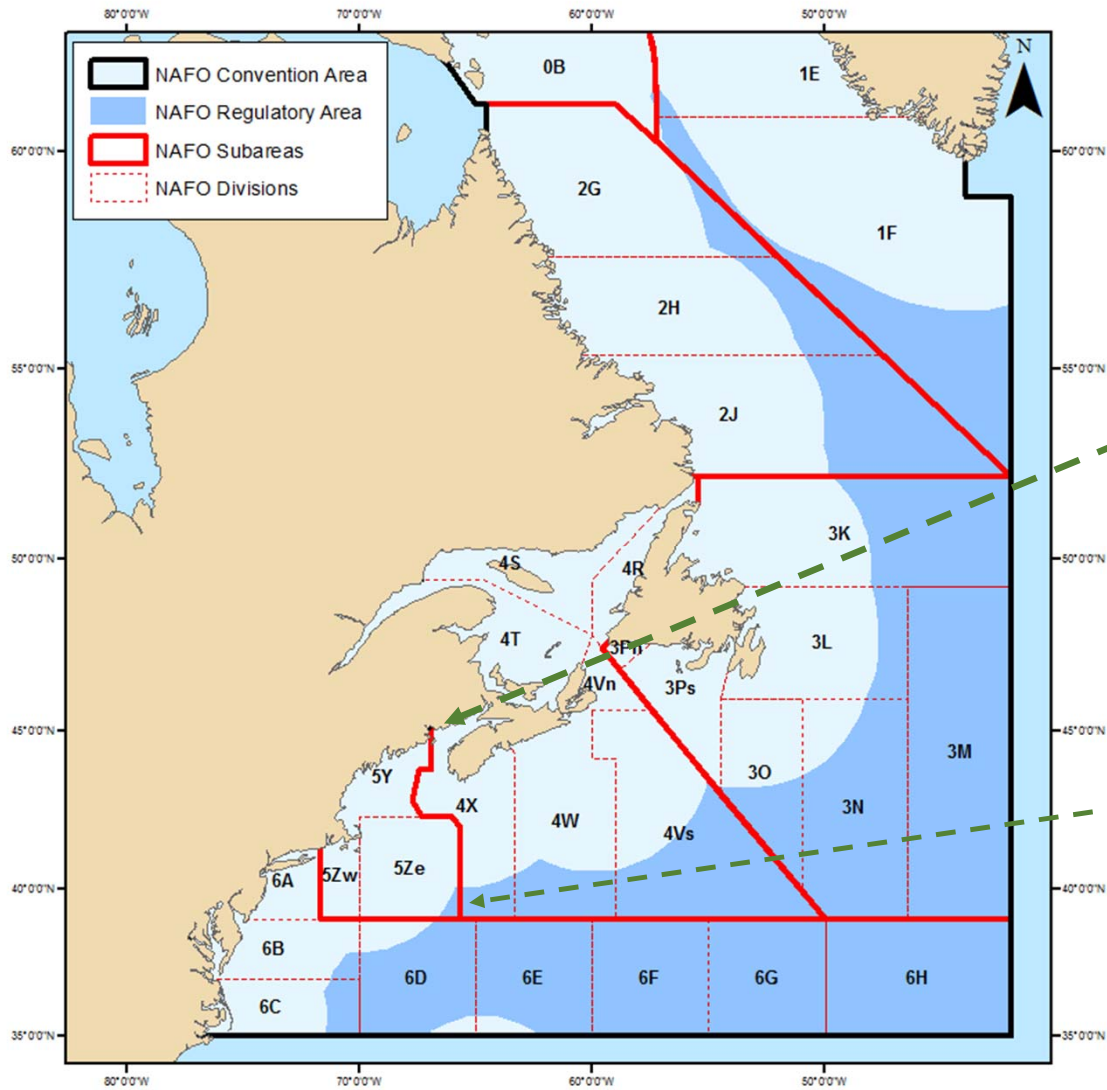


Figure 6. Plot of Atlantic halibut landings in metric tonnes between 1970 and 2013 by longline (black), otter trawl (red), and all other gear (green).



A transboundary dilemma: dichotomous designations of Atlantic halibut status in the Northwest Atlantic

Nancy L. Shackell^{1*}, Kenneth T. Frank¹, Janet A. Nye², and Cornelia E. den Heyer¹

¹Oceans and Ecosystem Science Division, Department of Fisheries and Oceans, Bedford Institute of Oceanography, DFO, BIO, PO Box 1006, Dartmouth, NS, Canada B2Y 4A2

²School of Marine and Atmospheric Sciences, Stony Brook University, Stony Brook, NY 11794, USA

Where do we go from here?

- Develop alternative basis for ABC recommendation using variety of data poor methods
 - Further discussions with commercial fisherman on recent trends
 - Collaborate with State, Federal, Canadian agencies and scientists
 - Consultations with NGO and academic scientists
 - Collaborate with NEFMC committees and PDT
 - Work closely with NEFSC stock assessment lead Dan Hennen
- Review by Assessment Oversight Panel and NEFMC Science and Statistical Committee
- Participate in Groundfish Operational Assessments in August-September 2017