Eastern Georges Bank Haddock
Summary of 2014 Data

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Acknowledgement to Heath Stone (DFO) for providing slides that were used for this presentation

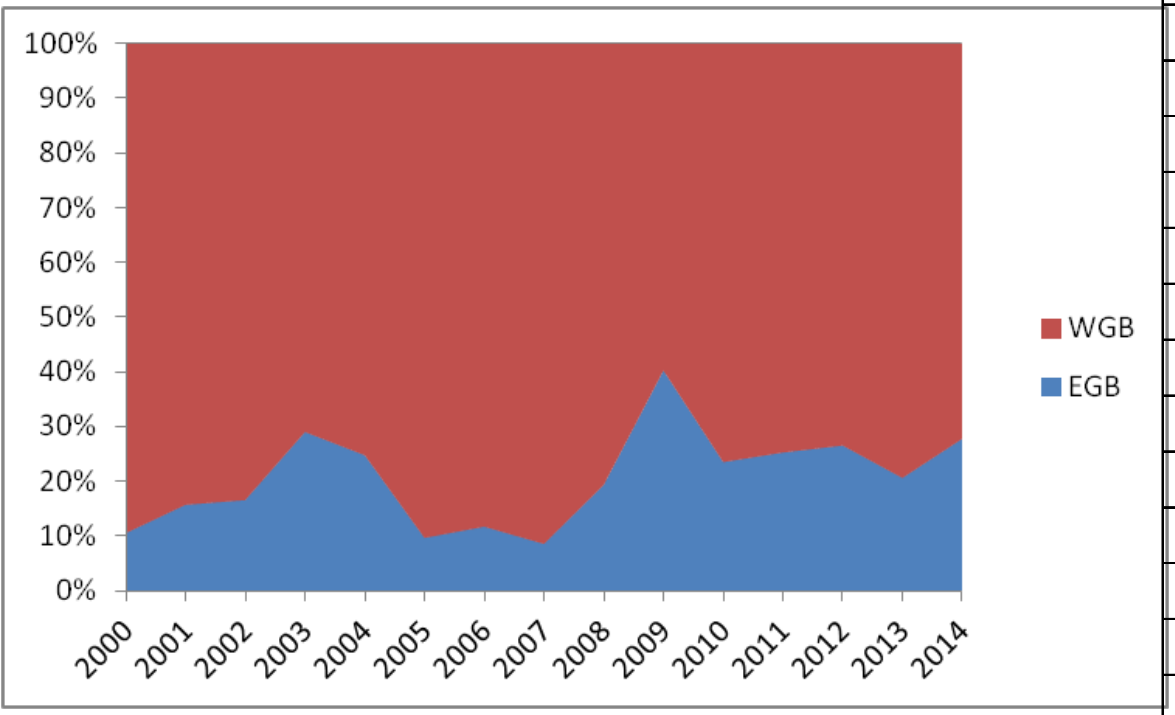
Executive Summary – US Data

- US Landings dominated by 2010 year class (85% by number, 82% by weight)
- US Discards were dominated by 2013 year class (94% by number, 75% by weight)
- US and Canada only landed a fraction of 2014 quota on EGB (15.4% US, 91% Canada)
- Survey biomass indices close to highest in time series
- 2013 year class largest estimated
- 2010 year class 2nd largest estimated

Outline

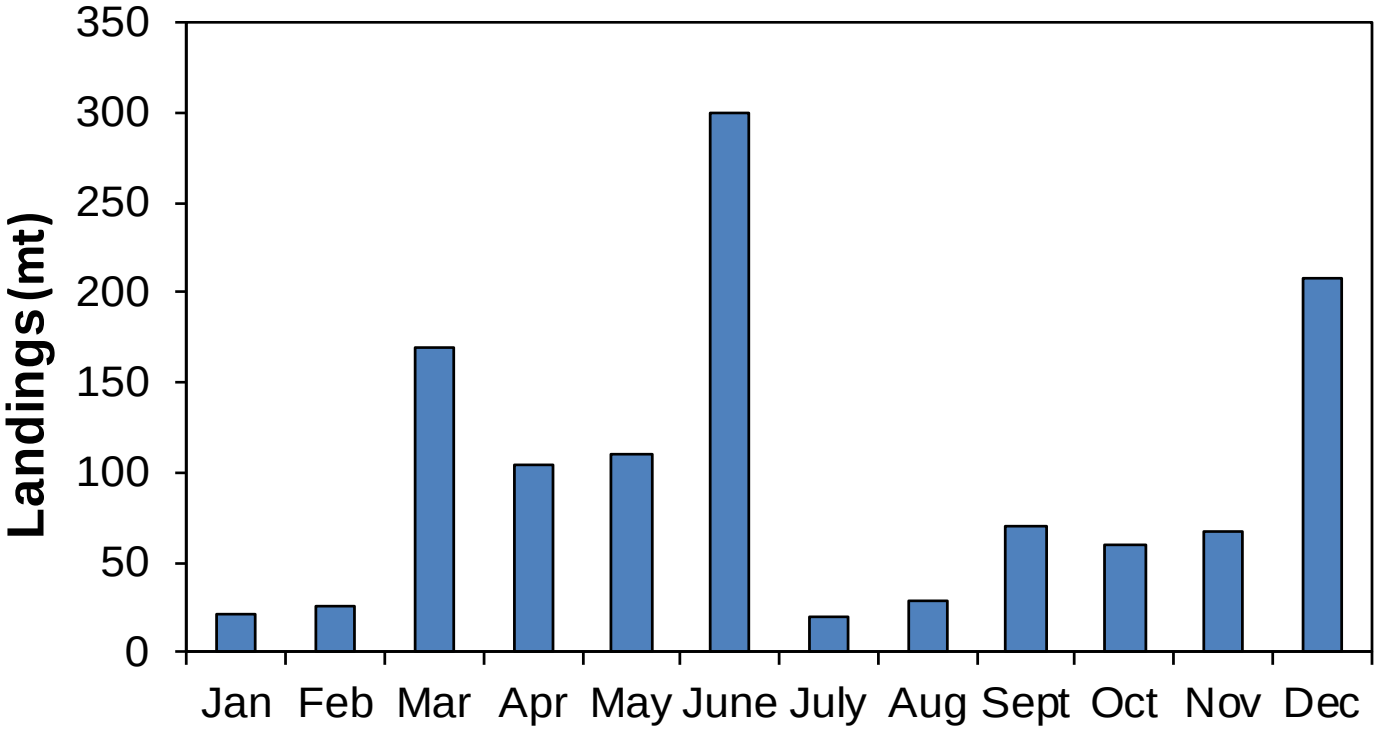
1. Landings Trends
2. Discard Trends
3. Survey Trends
4. Biology and Recruitment Trends

1. US Landings Trends (mt)



Year	EGB	WGB	GB Total	%EGB
2000	340	2862	3203	11%
2001	762	4058	4820	16%
2002	1089	5443	6532	17%
2003	1676	4083	5760	29%
2004	1835	5541	7375	25%
2005	645	5959	6604	10%
2006	312	2331	2644	12%
2007	256	2698	2954	9%
2008	1138	4714	5851	19%
2009	2152	3183	5335	40%
2010	2167	7014	9180	24%
2011	1322	3889	5210	25%
2012	413	1137	1550	27%
2013	344	1315	1659	21%
2014	1182	3058	4240	28%

1. Landings (mt) by month



- Landings ~ 100% OT (1181 mt); peak in June followed by Dec

1. Vessel Monitoring System – VMS

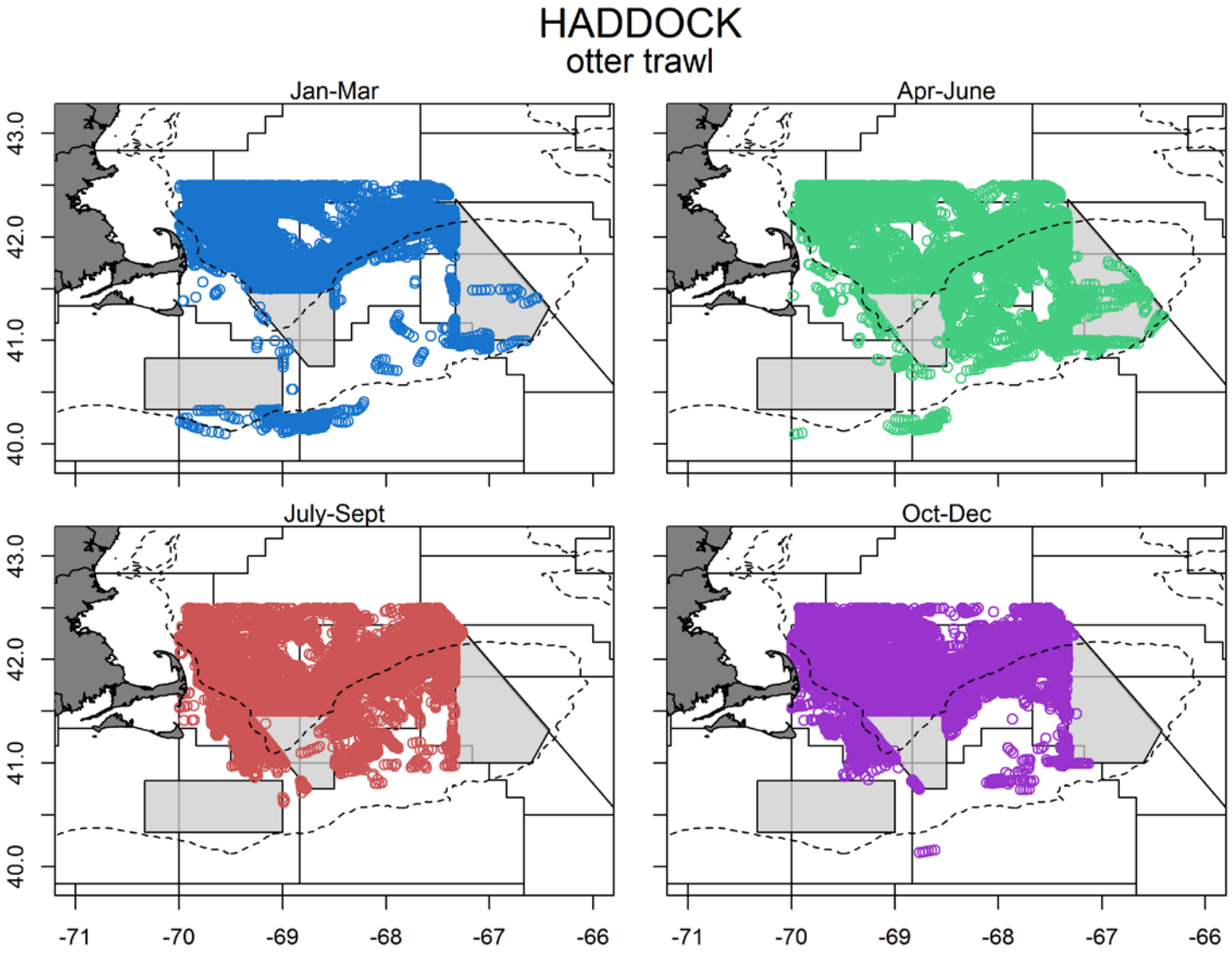
- infer fishing activity from polling locations
  - filtered by speed of vessel

- caveat: some false positives (fishing activity inferred when actually steaming) due to averaging of polling locations

- VMS linked to VTR :
  match vessels landing species of interest

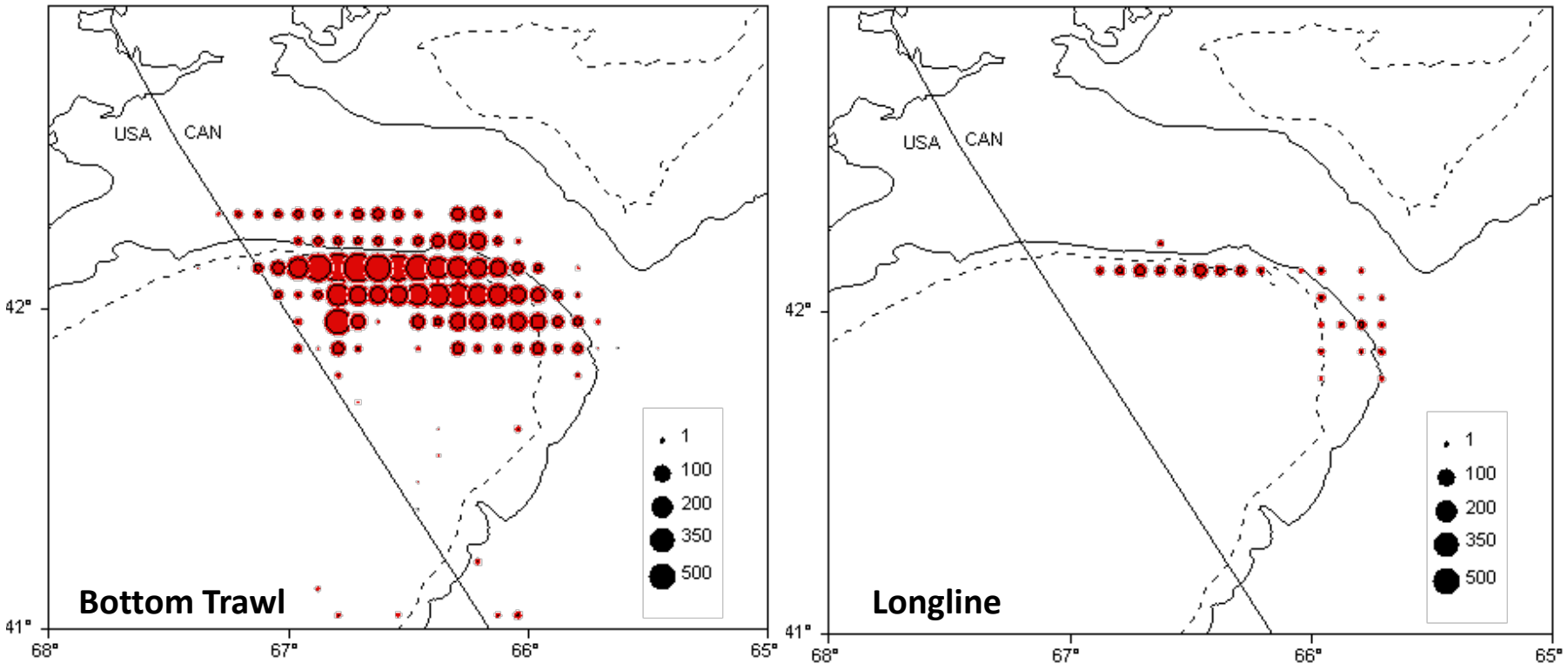
Thanks to Alicia Miller for providing the following plots of VMS data

1. Quarterly tow locations from VMS



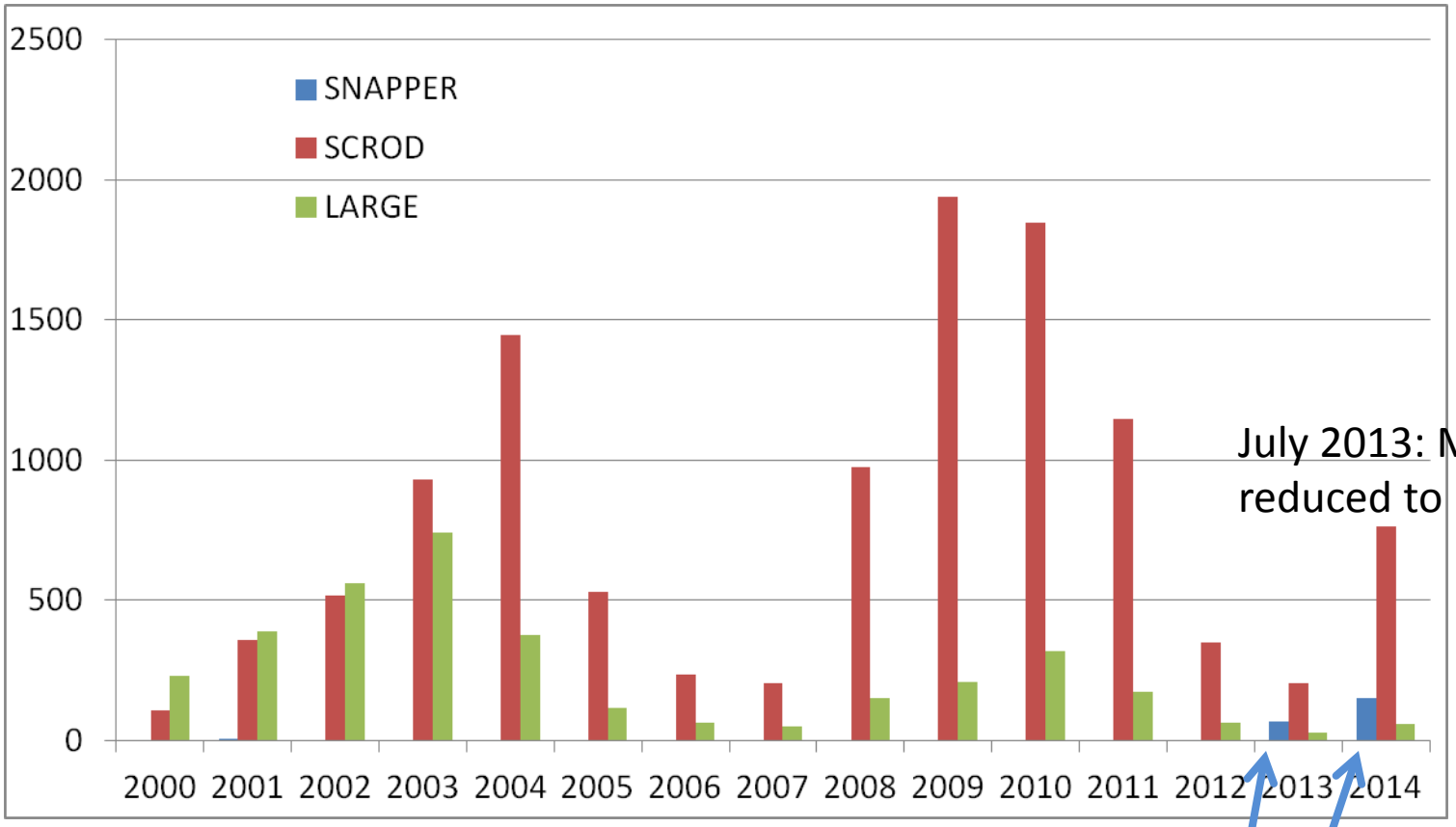
Thanks to Alicia Miller for providing these maps

1. CDN Haddock Catches (mt/5 min sq), Jan-Dec 2014



- 2014 **Bottom trawl** catches on northeastern half of bank in 5Zj
- **Longline** catches along northern edge and eastern edge along Fundian Channel

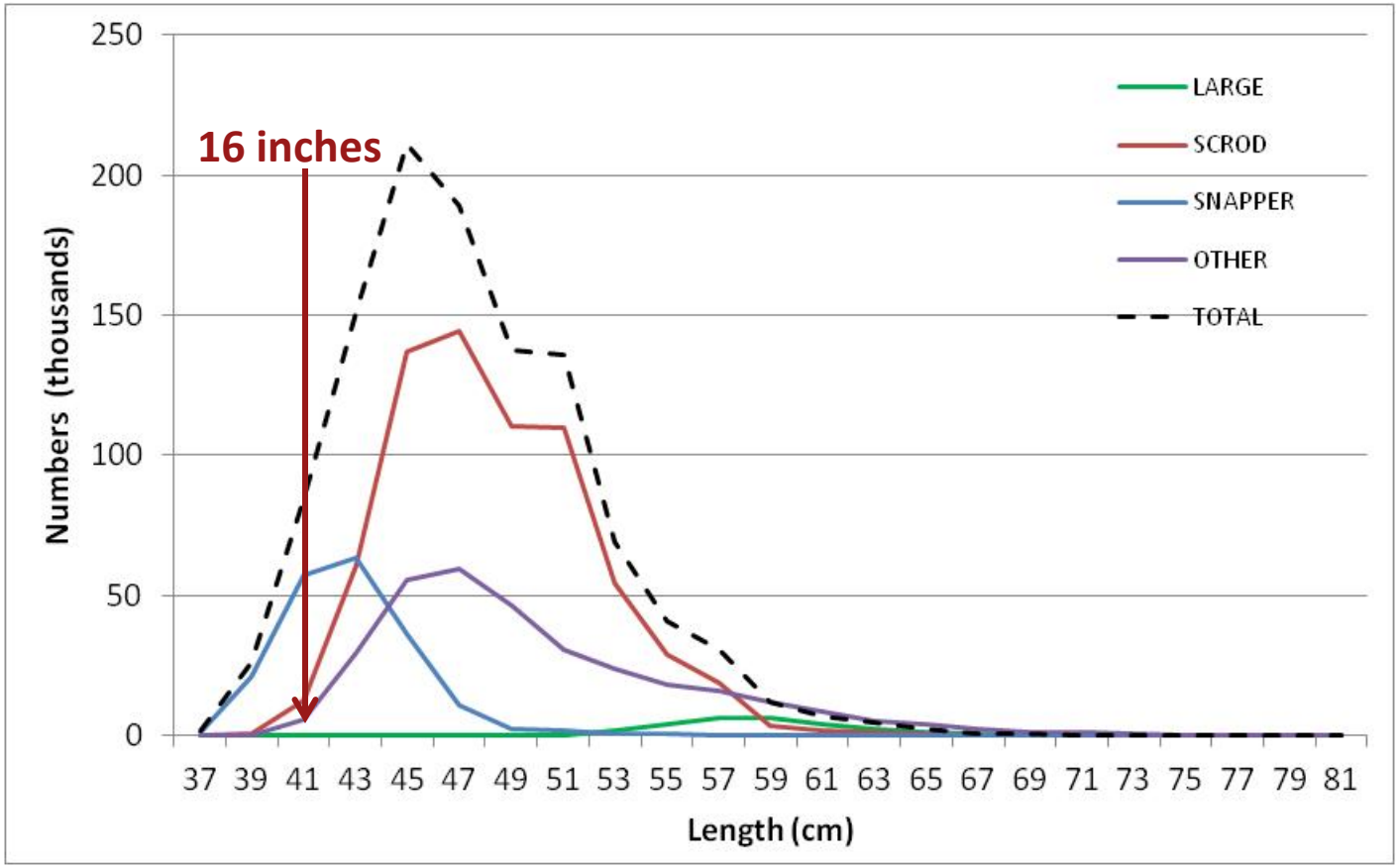
1. Market Trends of Landings (mt)



July 2013: Min size reduced to 16 inch

Snapper Market emerges

1. Landings Size Composition by Market

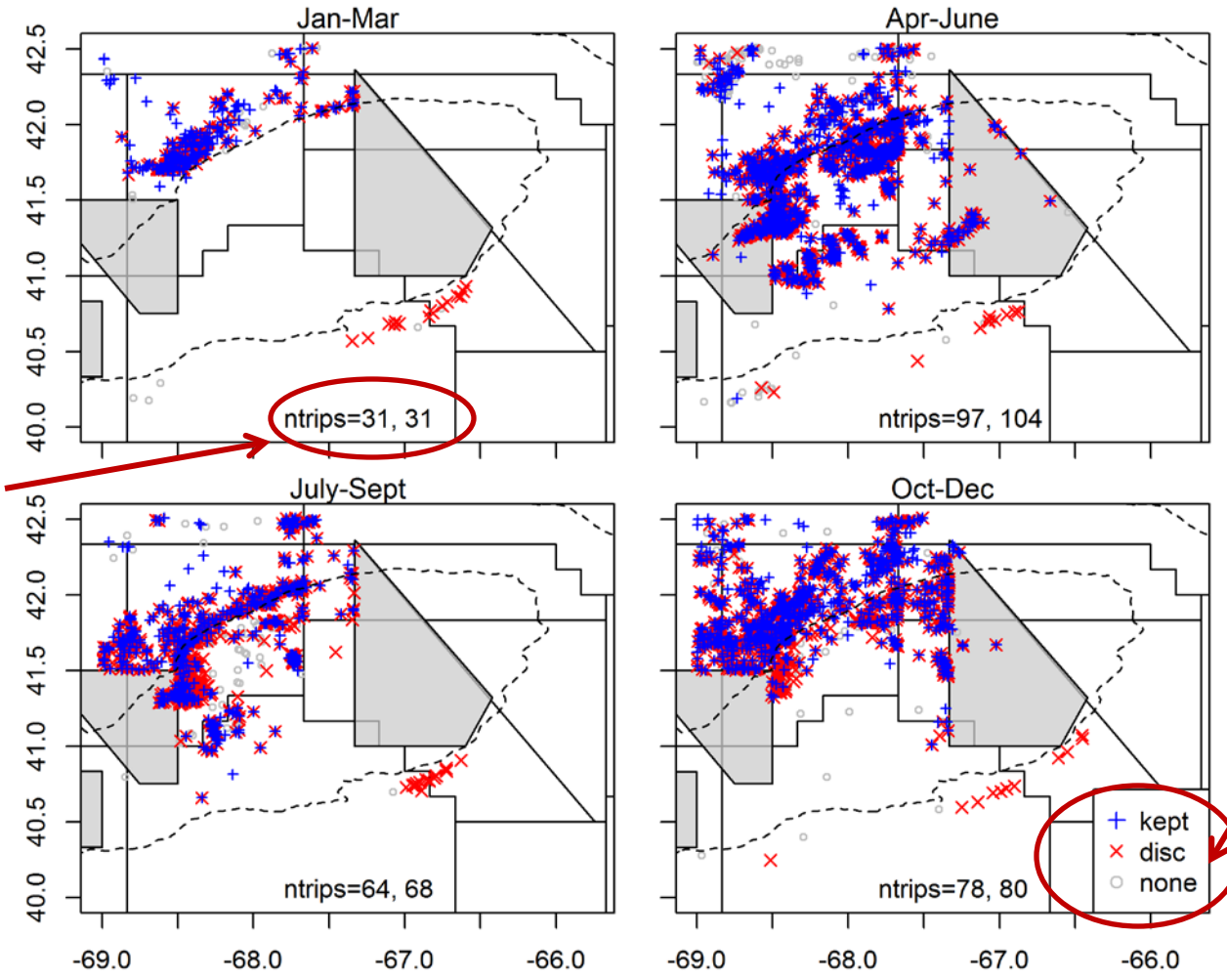


2. Observed trips

HADDOCK

1st value = number of trips with haddock observed;

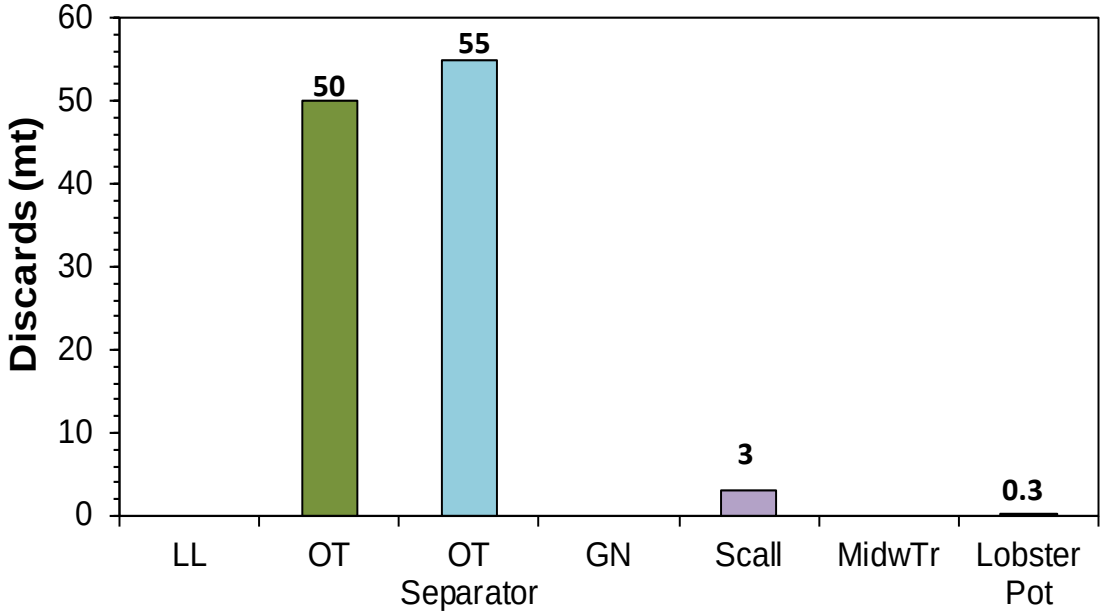
2nd value = number of trips



Each symbol is an observed haul

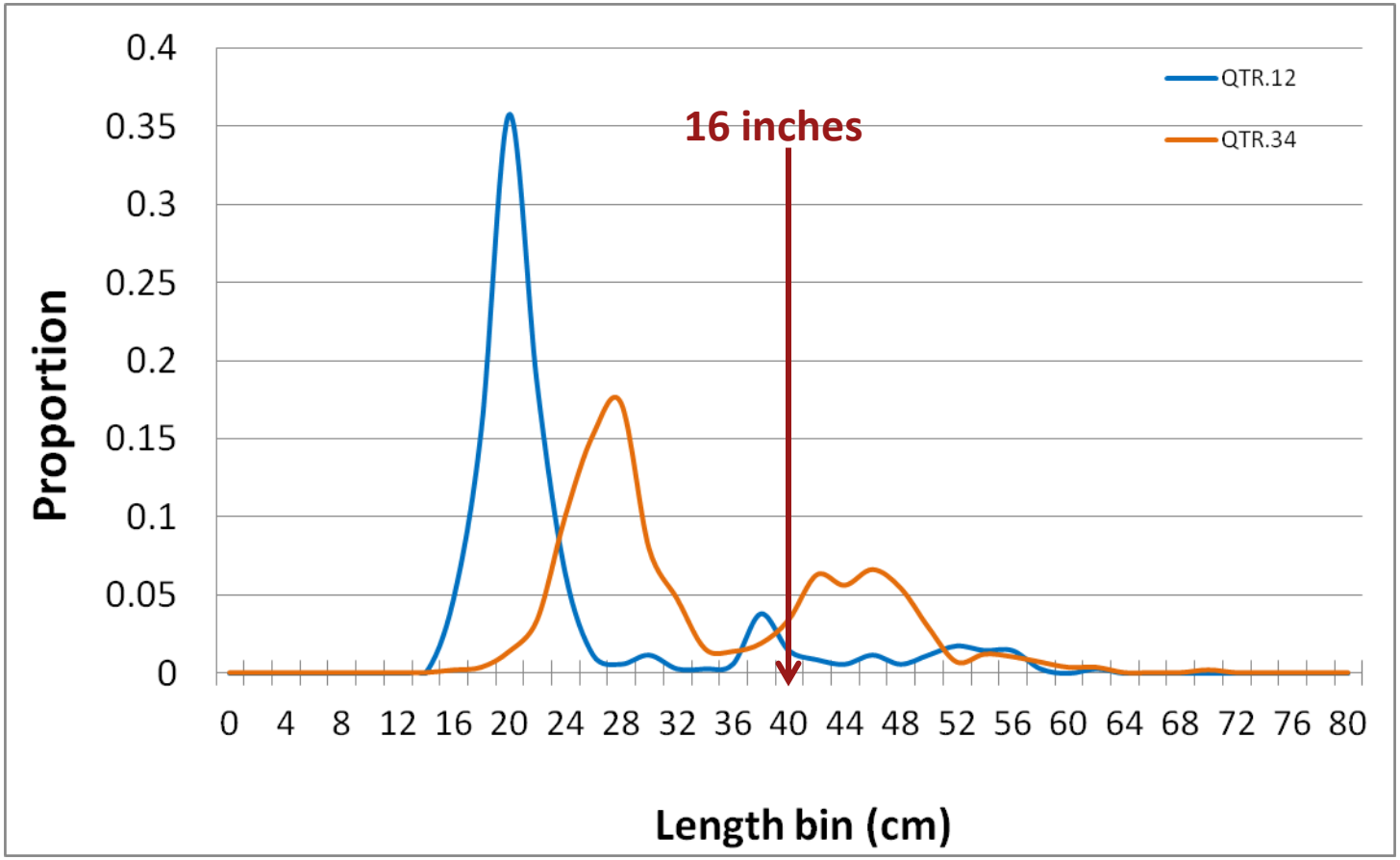
Thanks to Alicia Miller for providing these maps

2. Discards (mt) by Gear

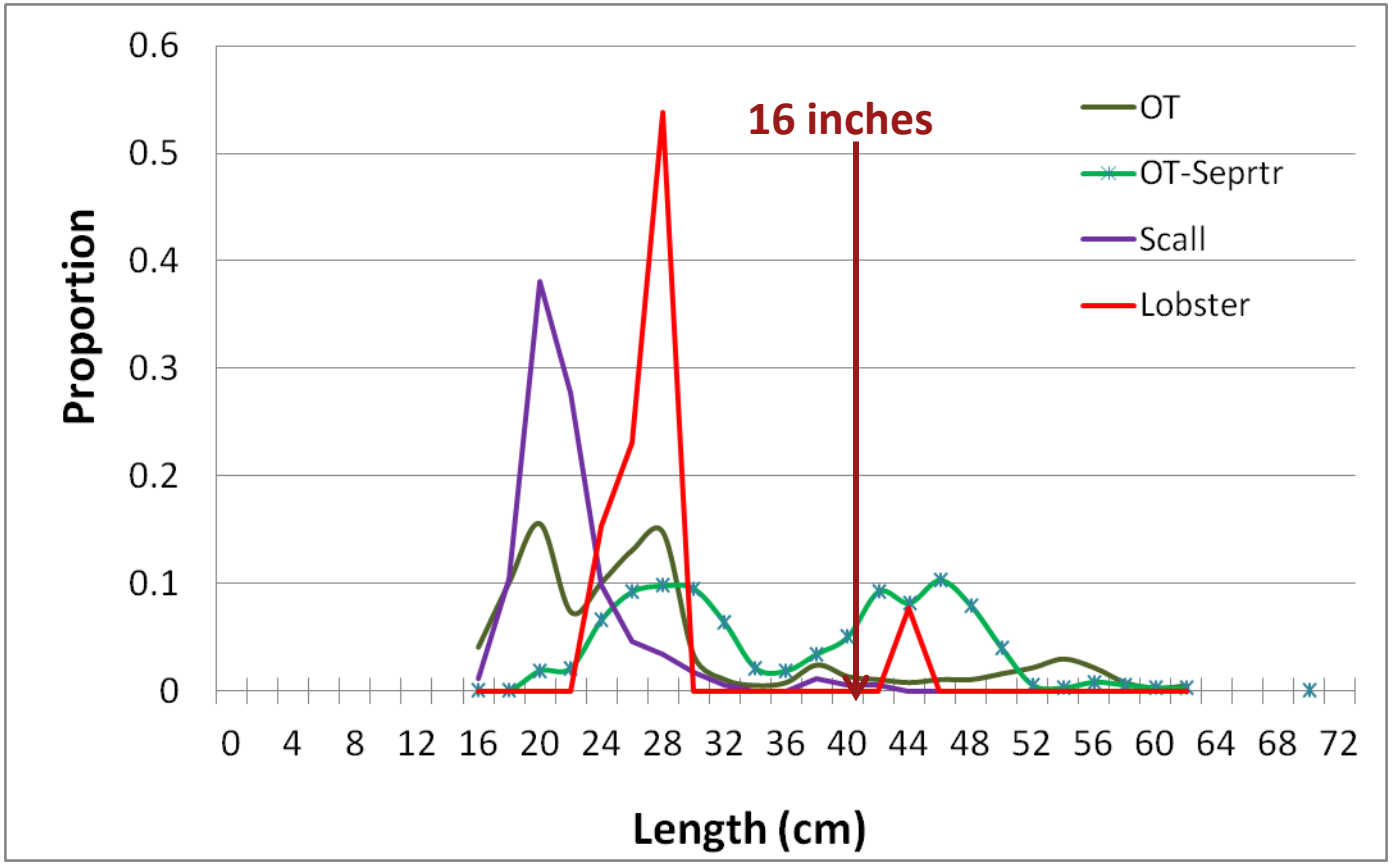


- Discards were 8% of US catch by weight (108 mt)

2. Size Composition of Discards



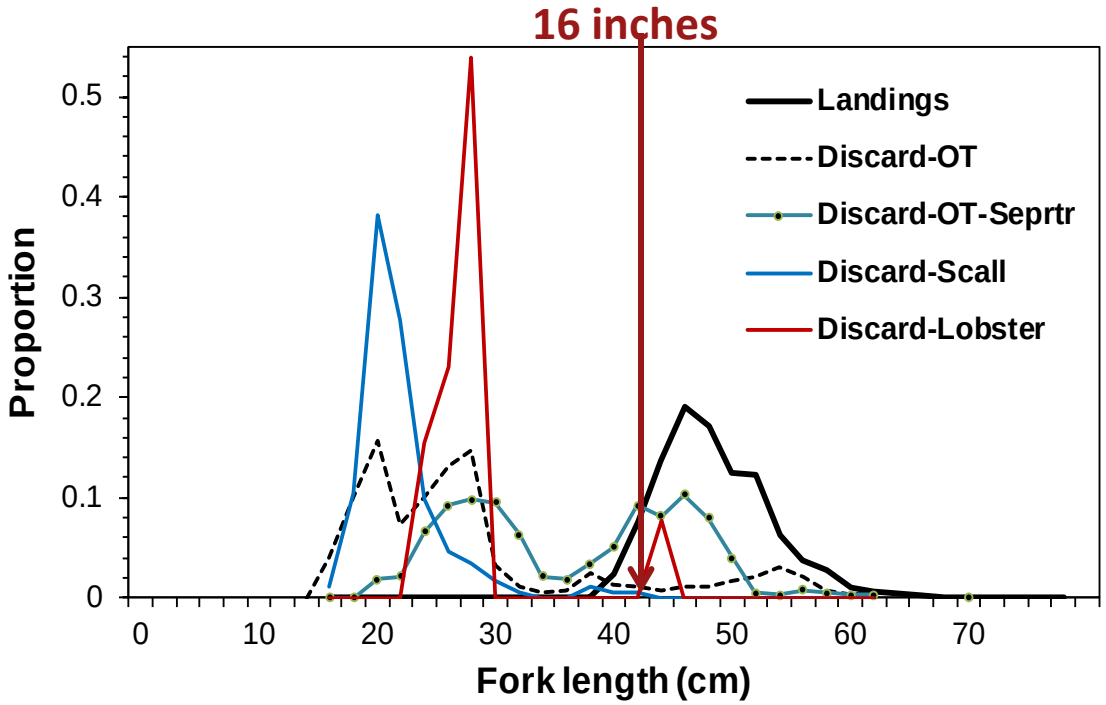
2. Size Composition by Gear of Discards



2. Discard reason

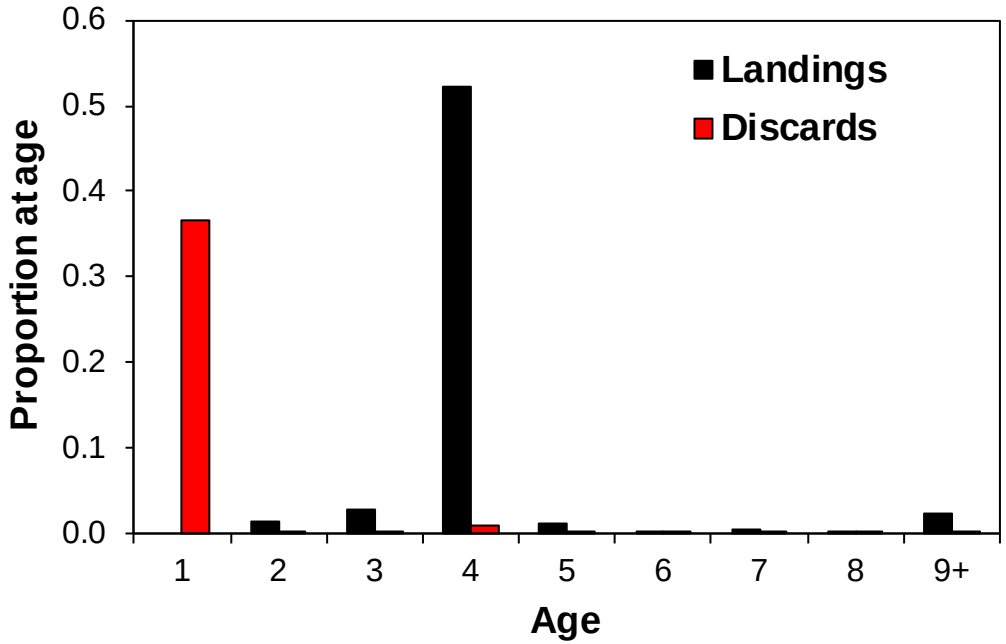
REASON	%
NO MARKET, REASON NOT SPECIFIED	2%
POOR QUALITY, GEAR DAMAGE	0%
REGULATIONS PROHIBIT ANY RETENTION	61%
REGULATIONS PROHIBIT RETENTION, TOO SMALL	36%

2. Size Composition of Catch



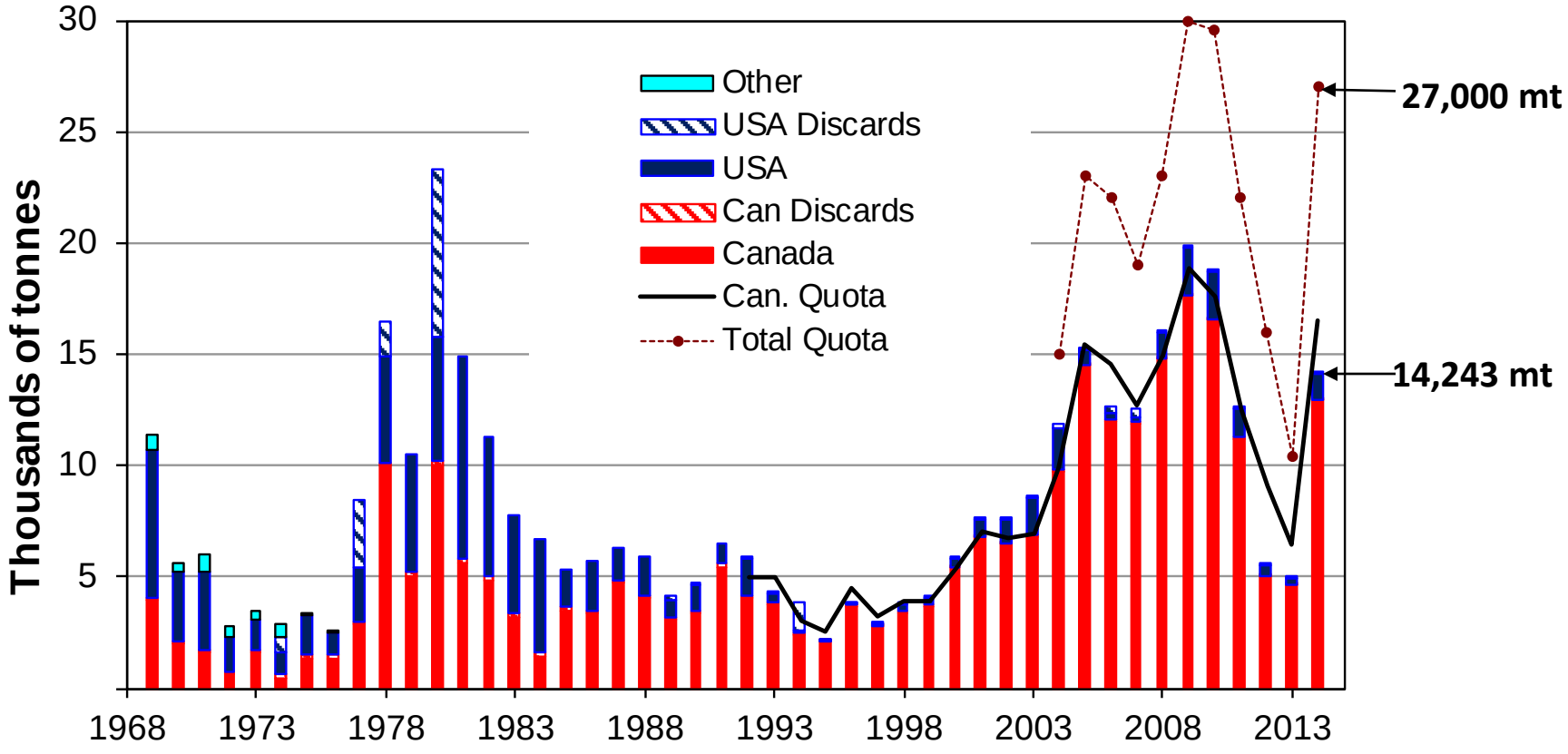
- Landings: modal size 46 cm
- OT Discards: with separator – 28 & 46 cm; w/o separator - 20 & 28 cm
- Dredge Disc: 20 cm
- Lobster pot: 28 cm

2. Age Composition of US Catch

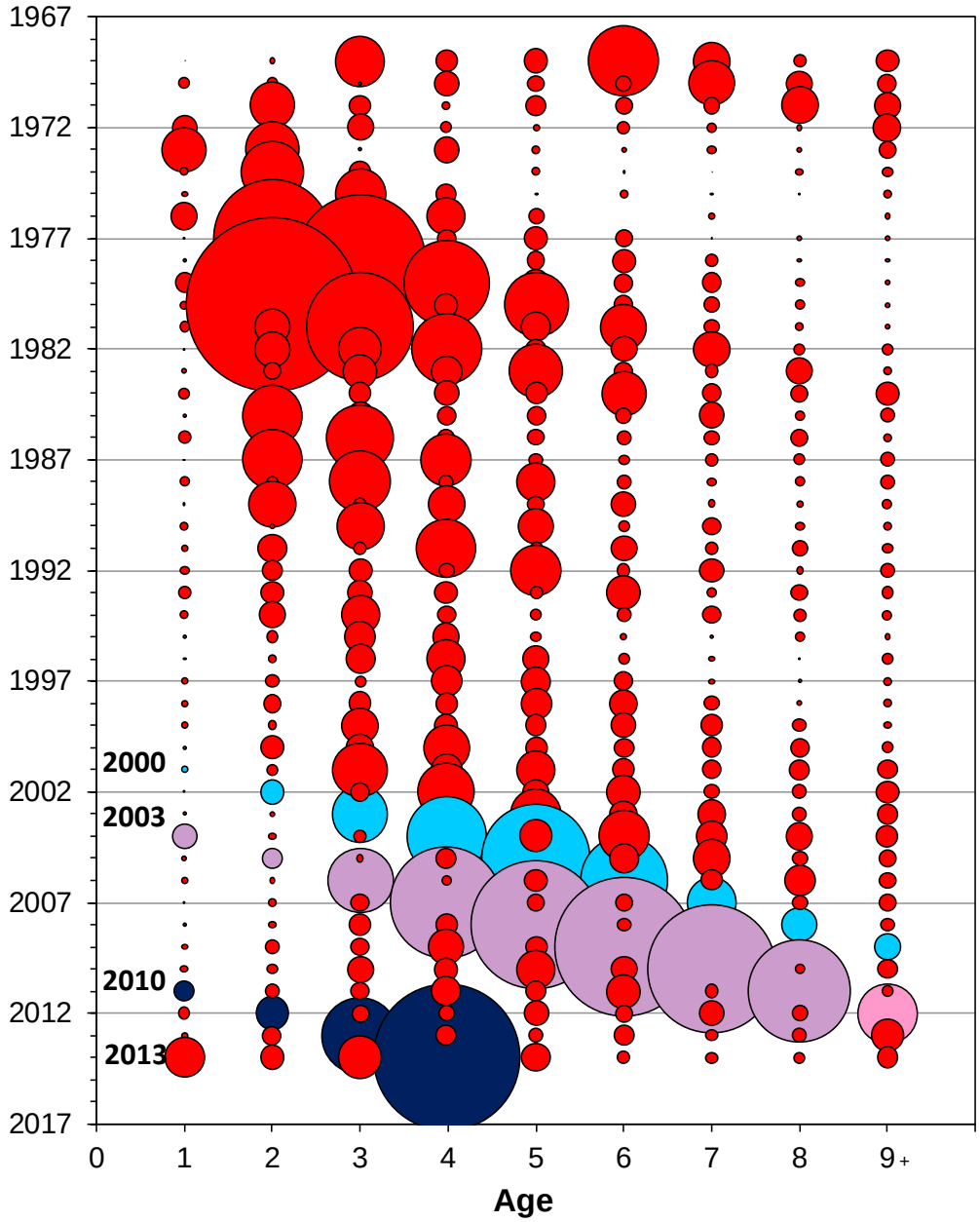


- Age 4 (2014 yc) represented 53% of CAA in numbers
- Age 1 (2013 yc) was 36% of CAA in numbers, most of which were discarded
- 2003 yc (Age 11) now at < 2% of CAA in numbers

2. Catch – US and Canada

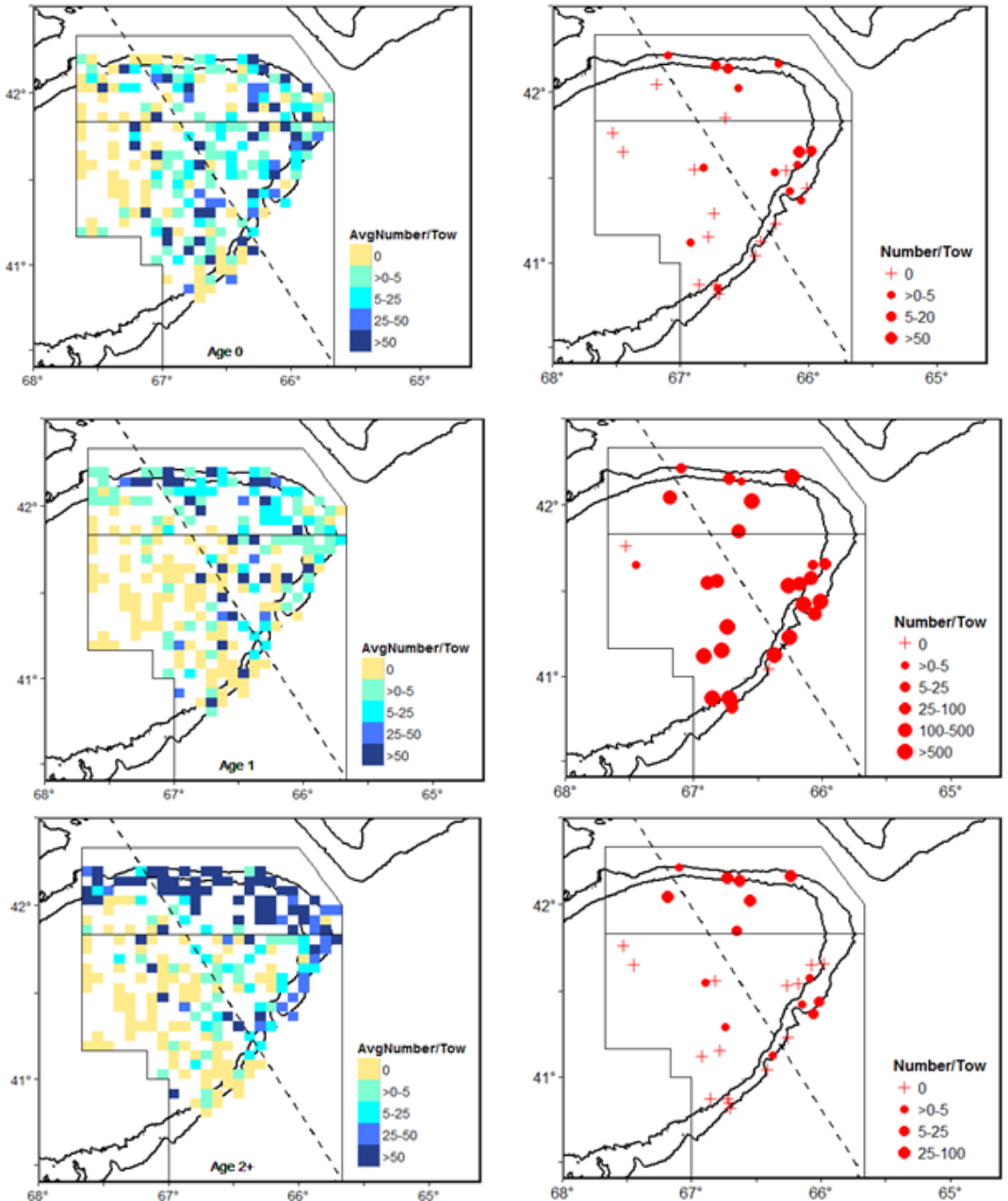


2. EGB Haddock: Catch Age Composition



- Canadian and USA landings plus discards
- Recent strong years classes highlighted: 2000, 2003 and 2010
- 2010 yc (Age 4) represented 79% of total catch (by number), followed by 2011 yc (Age 3) and 2013 yc (age 1) at 7% and 6%
- Catches of older fish (6-9+) were low in 2014

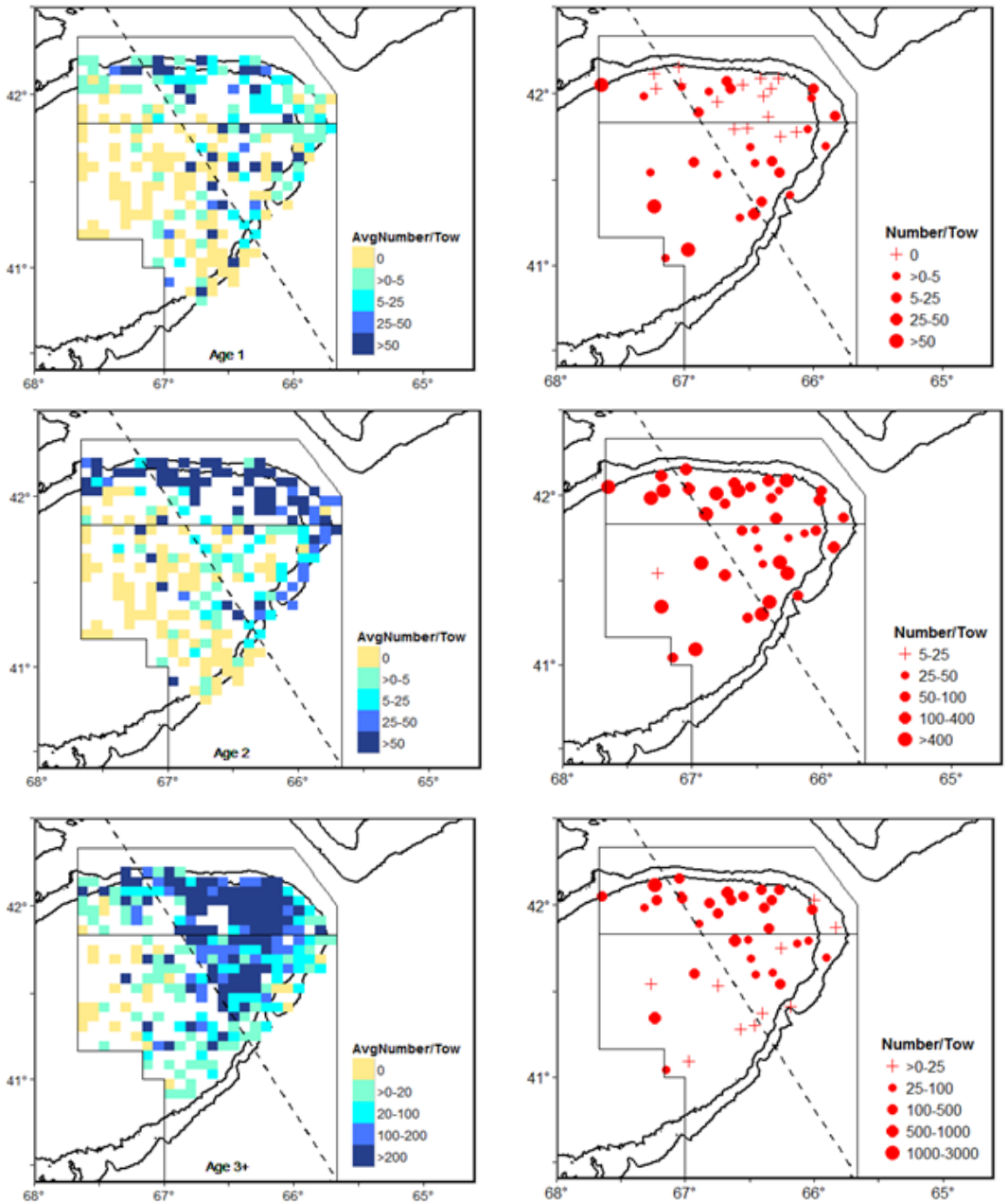
3. EGB Haddock: 2014 NMFS Fall Survey Distribution



Left Panel: 10 year Avg #/tow
Right Panel: 2014 survey #/tow
Note different scales

- Age 0 and 1 throughout stock area, with higher catches on CDN side
- Both age groups occurred in CDN waters on northern and SE edge; more on southern half compared to 10-yr average
- Older fish (2+) generally occur northern edge; 2014 survey caught them on both northern and southern edges

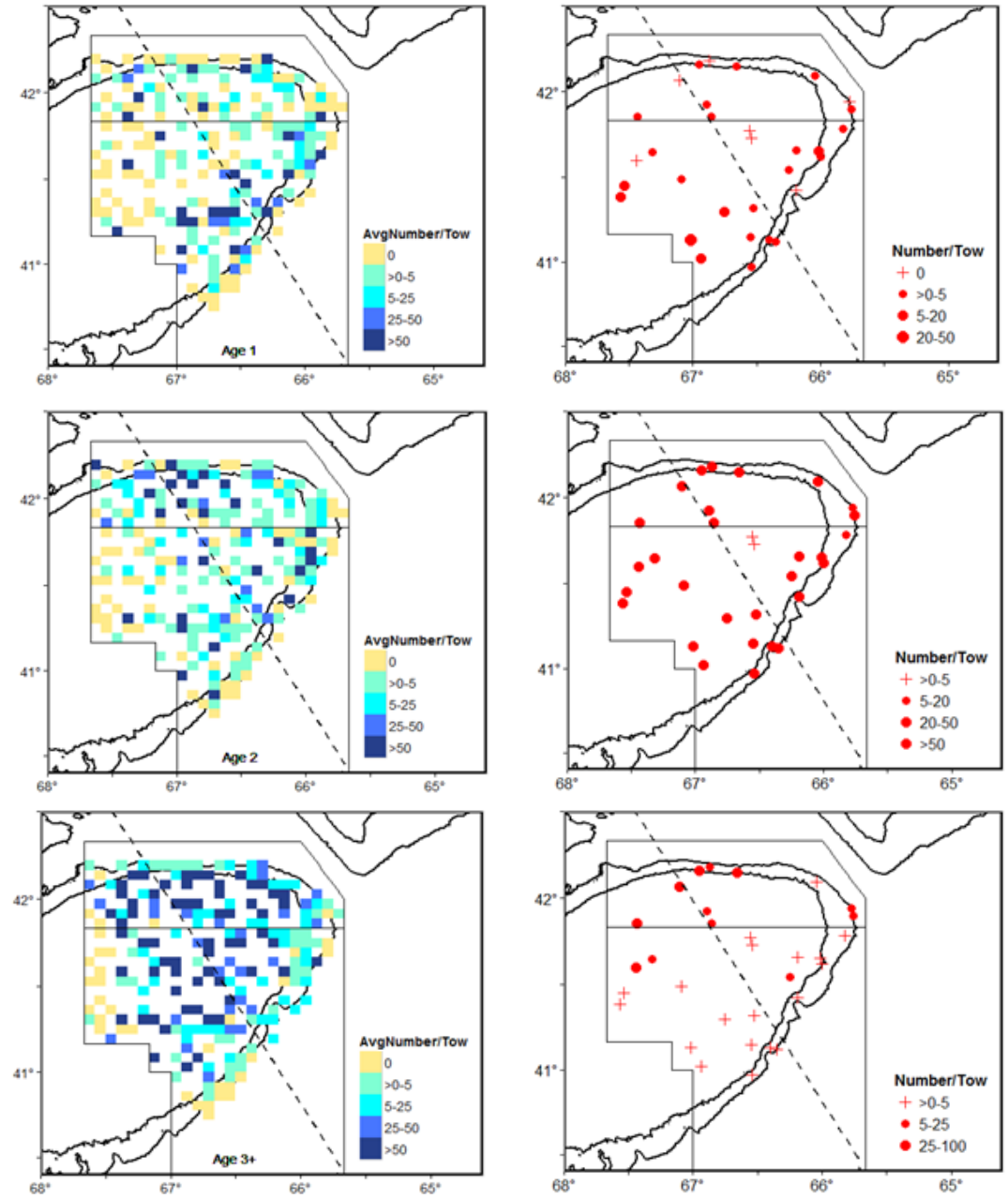
3. EGB Haddock: 2015 DFO Survey Distribution



Left Panel: 10 year Avg #/tow
Right Panel: 2015 survey #/tow
Note different scales

- Ages 1 (2014 yc) & 2 (2013 yc) throughout stock area in 2015
- More Age 2 on southern half compared to 10 yr average
- Older fish (3+) generally occur northern edge; 2015 survey caught on northern half (5Zj)

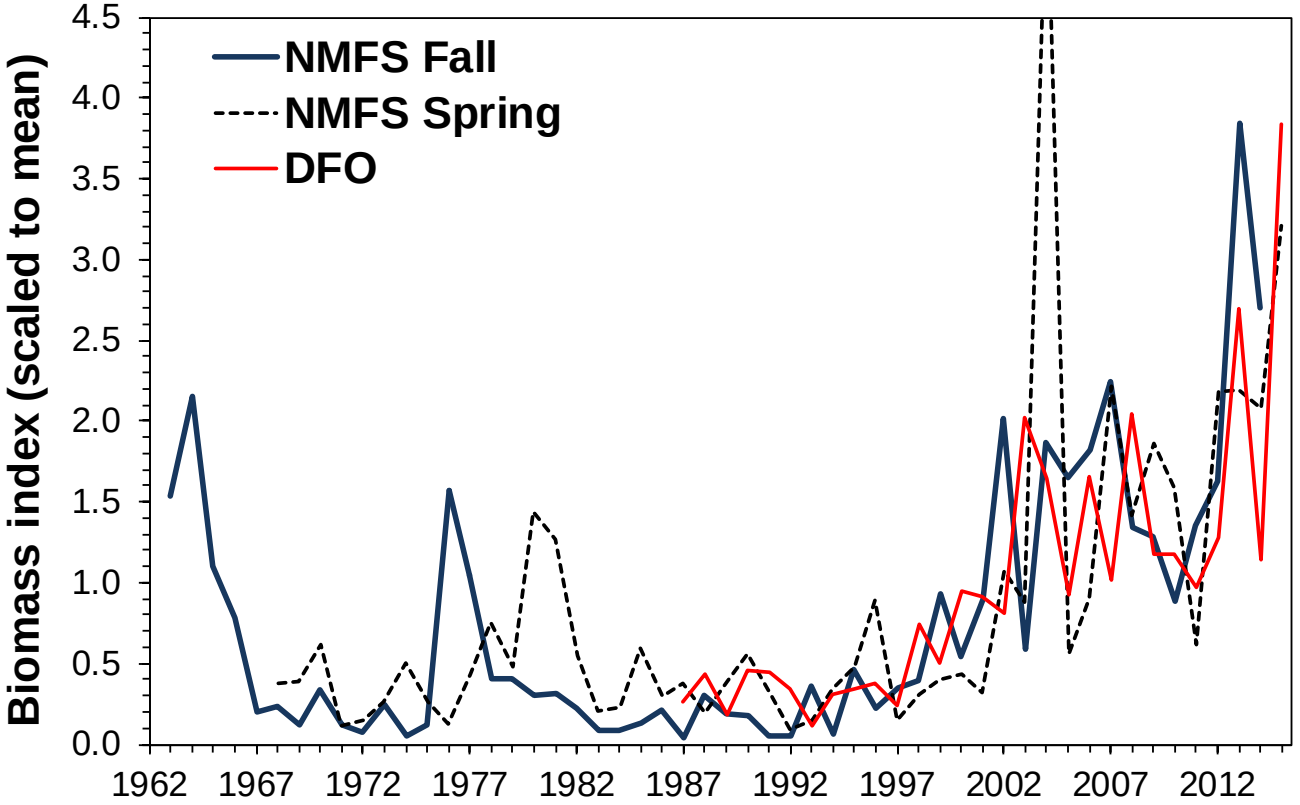
3. EGB Haddock: 2015 NMFS Spring Survey Distribution



Left Panel: 10 year Avg #/tow
Right Panel: 2015 survey #/tow
Note different scales

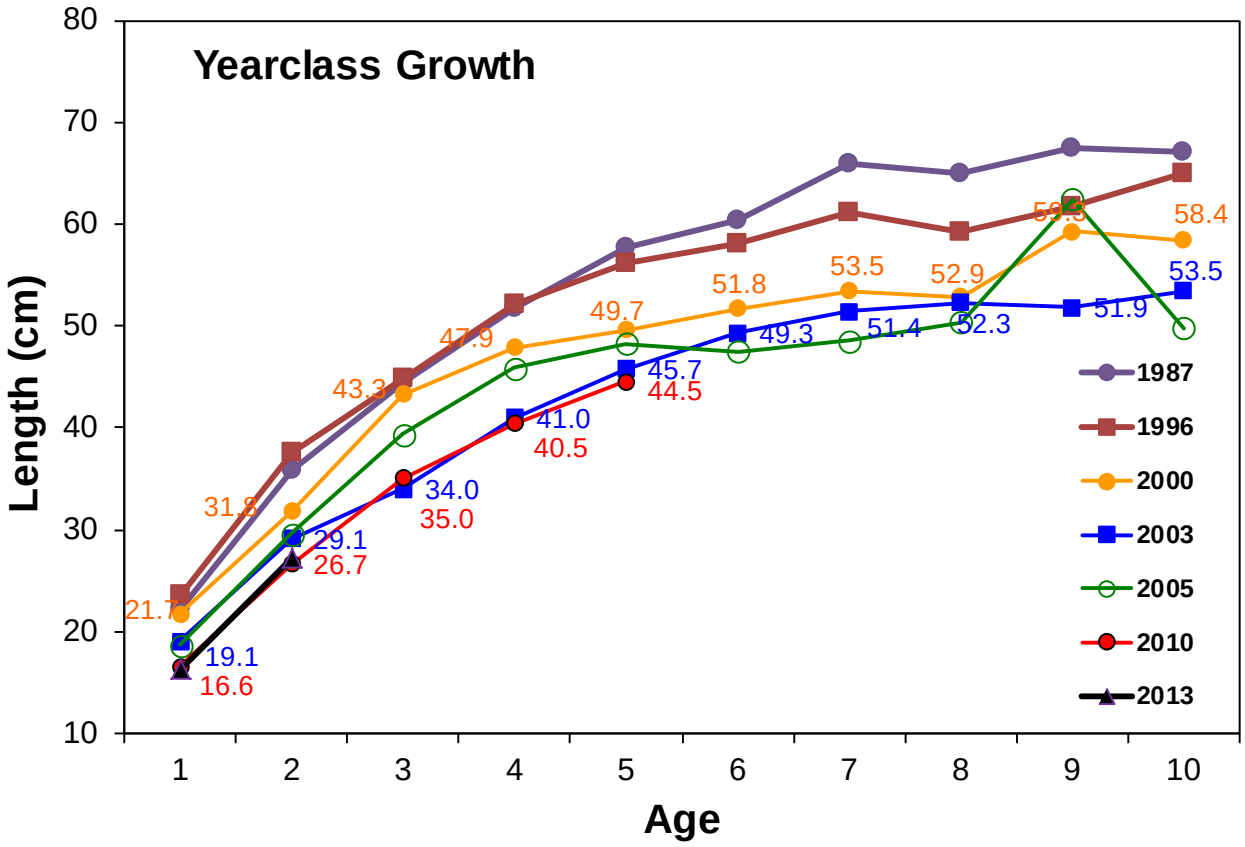
- Ages 1 and 2 throughout stock area in 2015, generally similar to 10-yr average
- Older fish (3+) captured mainly along northern edge in 2015; less widespread than 10-year average

3. EGB Haddock - Survey Total Biomass Indices



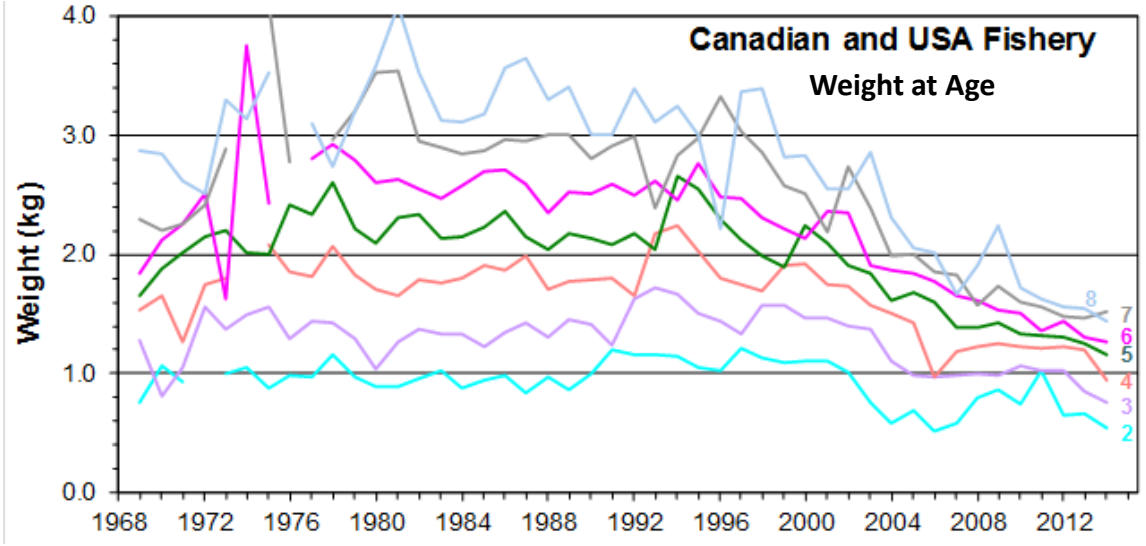
- Scaled series with various conversion factors (i.e. doors, vessels, nets) applied to NMFS surveys; track each other well
- Low biomass from the early 1980s to mid-1990s, increase from 1997-2007, then decline from 2007-2011, followed by strong increase to 2014-2015
- The 2015 DFO survey index is the highest for the time series; the 2014 NMFS fall and 2015 NMFS spring values are at the second highest level for the time series

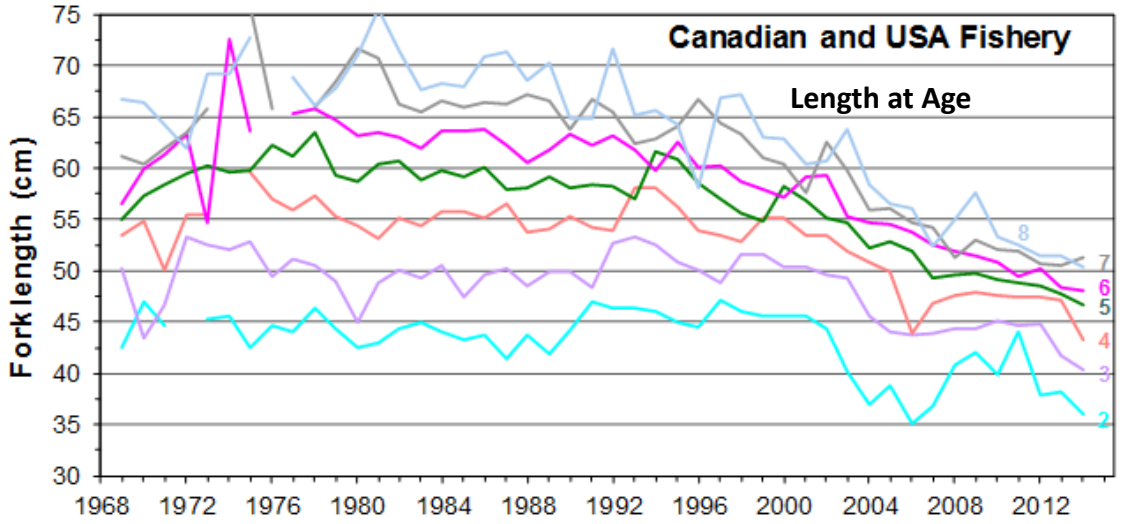
4. EGB Haddock:Yearclass growth



- DFO survey mean LAA for selected cohorts
- Maximum size has decreased compared to 1987 yc
- 2010 yc growth most similar to 2003 yc
- 2013 yc at age 1 and 2 similar to 2010 yc
- 2013 yc size at age 1 is 3rd lowest in survey; 2010 yc at age 2 is 2nd lowest

4. EGB Haddock Fishery WAA and LAA





- Declining trend in commercial fishery WAA and LAA since 2000
- Age 4 Haddock in 2000: 1.9 kg, 55 cm
- Age 4 Haddock in 2014: 0.9 kg, 43 cm
- 2014 WAA and LAA is at or near lowest value in time series (1969-2014)
- Use lowest values in time series for fishery WAA in projections

4. EGB Haddock: Where are we Now?

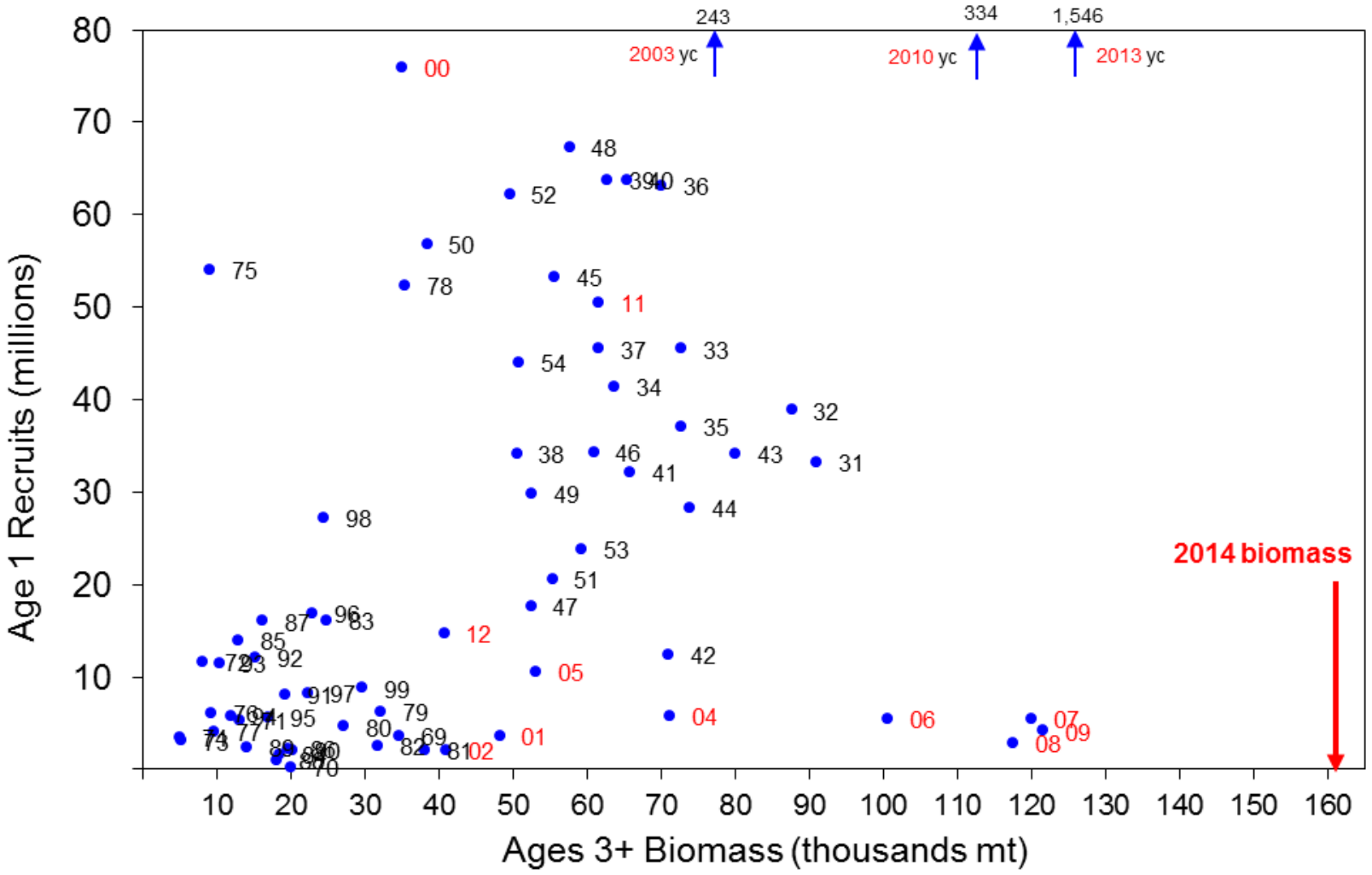


Figure 39 from TRAC 2014 report

Thank you for your attention