Cumulative Discard Methodology Review for Haddock and River Herring/Shad Catch Caps in the Atlantic Herring and Mackerel Fisheries

Brant McAfee
Statistician
Analysis and Program Support Division

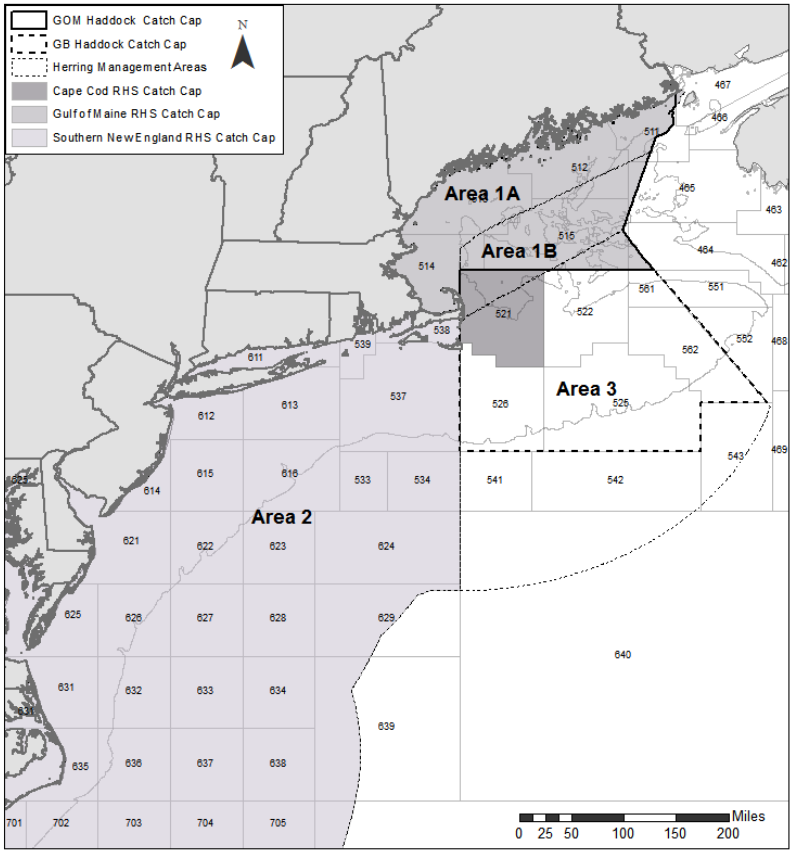
Catch Caps Analyzed

Haddock Catch Cap

- Gulf of Maine (GOM) Midwater Trawl
- Georges Bank (GB) Midwater Trawl

River Herring/Shad (RHS) Catch Cap

- Herring (trips >6.6k)
  - Gulf of Maine Midwater Trawl
  - Cape Cod Midwater Trawl
  - Southern New England (SNE) Midwater Trawl
  - Southern New England Bottom Trawl
- Mackerel (all trips >20k)



Analysis Scope

- Only years when catch caps implemented
  - Haddock: 2011-2015 (May-Apr)
  - RHS Herring: 2015 (Jan-Dec)
  - RHS Mackerel: 2014-2015 (Jan-Dec)

- Cumulative Method: Running ratio of incidental catch to kept-all for period applied to total landings within strata
  - $\frac{total\ observed\ incidental\ catch\ (kept+discard)}{total\ observed\ kept\ all}$ *x Kept All*

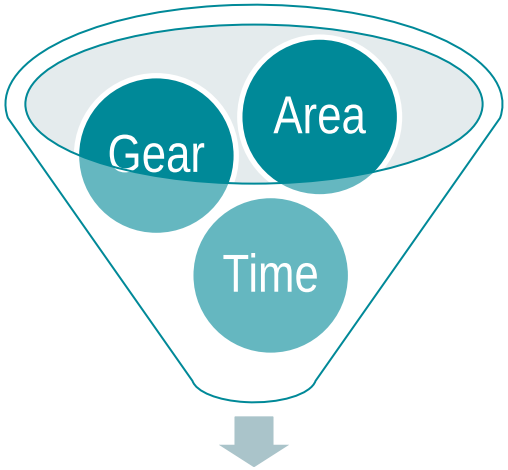
- Coincident data elements in VTR and observer data collections only
- 100% ratio estimator extrapolation
  - No replacement methodology
- Two transition rate treatments

Stratification Alternatives

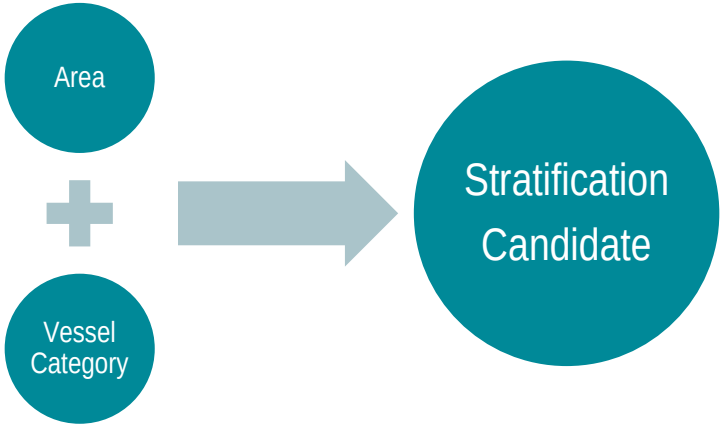
- Five broad categories evaluated
  - Temporal
  - Statistical Reporting Area
  - Gear
  - Vessel length category
  - Trip landings category (i.e. size of trip)

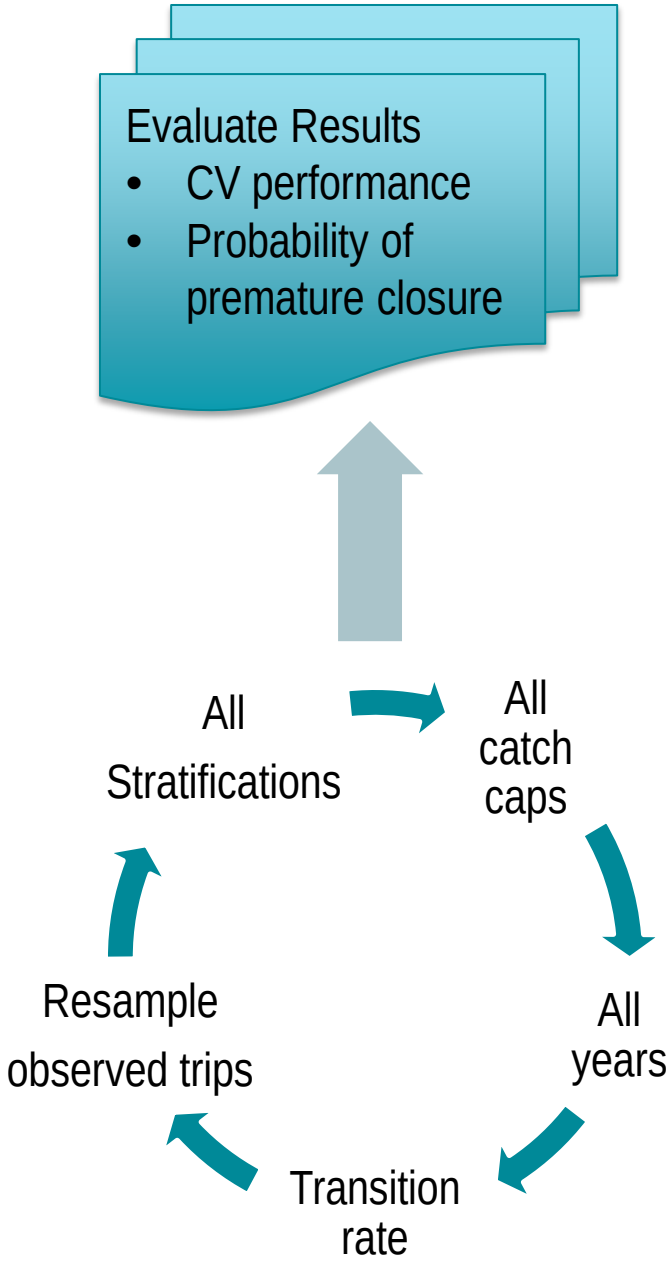
- Two transition rates (buffer small sample size)
  - 5 trip transition rate (current)
  - Moving window

Analysis Framework



Reduce Data Dimensionality





Summary

- 74 bootstrap model runs

Catch Cap	Category	Stratification
GB Haddock Midwater Trawl	Baseline	GB Stock Area
	Temporal	May-Oct / Nov-Dec
	Temporal	Quarterly (May-Jul, Aug-Oct, Nov-Jan, and Feb-Apr)
	Area	Statistical Area 522 and All Other GB
	Area ~ Vessel	Area 522/Other GB ~ Vessel Length <120' / >=120'
RHS Herring: GOM Midwater Trawl	Baseline	GOM Statistical Areas ~ Midwater Trawl Gear
RHS Herring: Cape Cod Midwater Trawl	Baseline	GOM Statistical Areas ~ Midwater Trawl Gear
RHS Herring: SNE Midwater Trawl	Baseline	SNE Statistical Areas ~ Midwater Trawl Gear
RHS Herring: SNE Bottom Trawl	Baseline	SNE Statistical Areas ~ Bottom Trawl Gear
	Temporal	Half Year (Jan-Jun/Jul-Dec)
	Vessel	Less than 90' and greater than 90'
RHS Mackerel	Baseline	All Areas and Gears
	Temporal	Half Year (Jan-Jun/Jul-Dec)
	Vessel	Less than 120' and greater than 120'

Conclusions

- Relatively narrow management definitions of catch caps limit potential stratification alternatives
- Small sample size inhibited RHS catch cap analysis
- Marginal CV performance improvements
- Robust transition rate may be more effective