

ABC Estimation for Blueline Tilefish North of Cape Hatteras using DLMTool

Joint MAFMC/SAFMC SSC Blueline Tilefish
Subcommittee

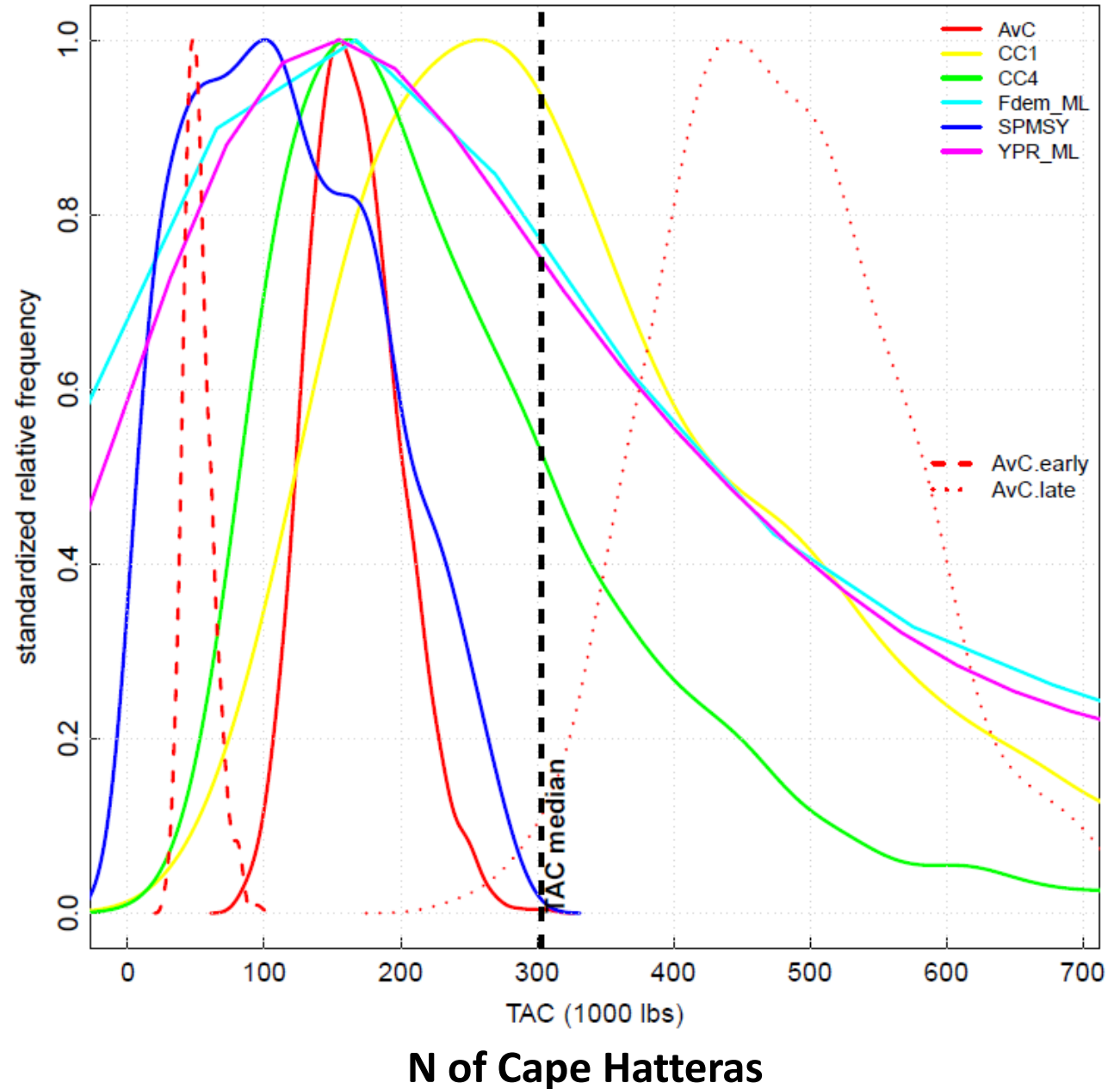
February 2018

DLMTool

- Package in R developed and maintained by Carruthers and Hordyk
- Includes over 85 data-limited management procedures (MP)
 - Includes but not limited to assessment models
- Two main functions:
 - Management Strategy Evaluation (MSE) – not conducted for N of Cape Hatteras BLT
 - **Total Allowable Catch (TAC) Estimation**
 - Proxy for MSY
 - DLMTool determines applicable MPs from types of input data
 - Bootstrapping used for each MP to generate many TAC values
 - Distribution fitted to bootstrap results by kernel density estimation

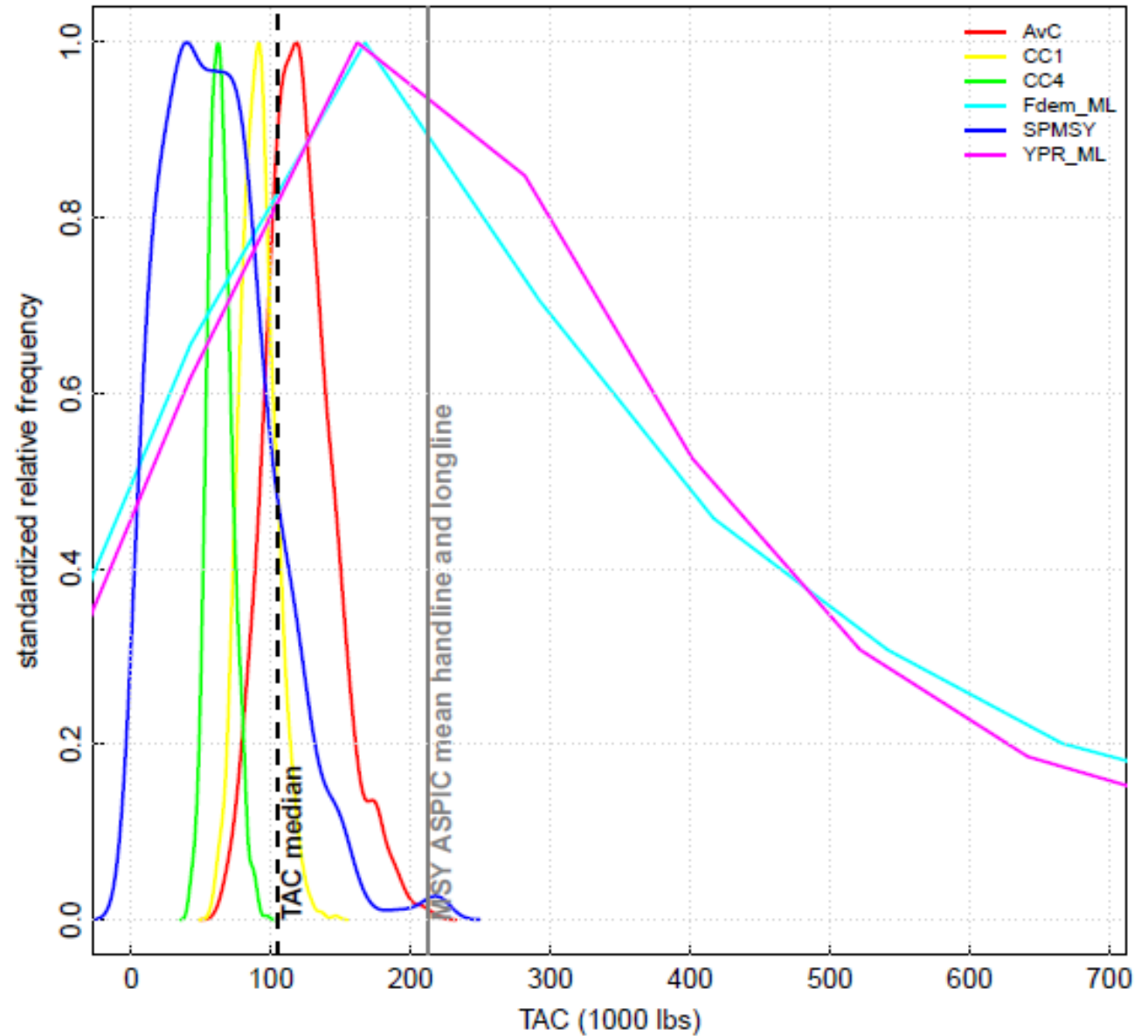
SEDAR 50 Results

- 2017 Benchmark Assessment of blueline tilefish
- No abundance indices for N of Cape Hatteras
- Fig. 61 from SEDAR 50 – DLMTool TAC results for N of Cape Hatteras
 - Coastwide biological data estimated at SEDAR 50
 - Com_LL length comp
 - Removals time series 1978-2015
- No stock status determination



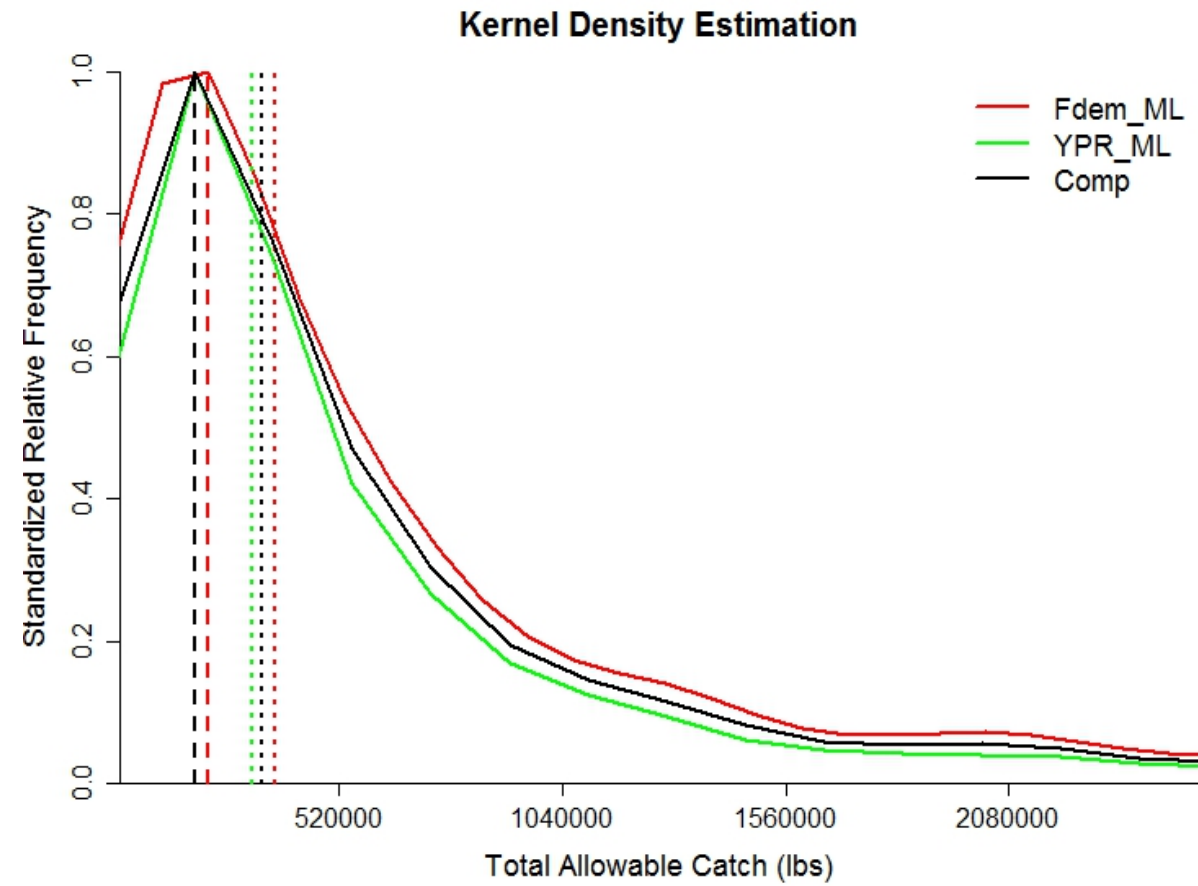
SEDAR 50 Results

- Fdem_ML and YPR_ML selected
 - Use more data than just removals
 - Most accurate estimators of MSY from ASPIC for S of Hatteras
- Composite (Comp) MP selected as combination method
 - Distribution fitted to TACs from multiple MPs
 - Coded outside of DLMTool but same estimation technique
- Mode selected as ABC estimate

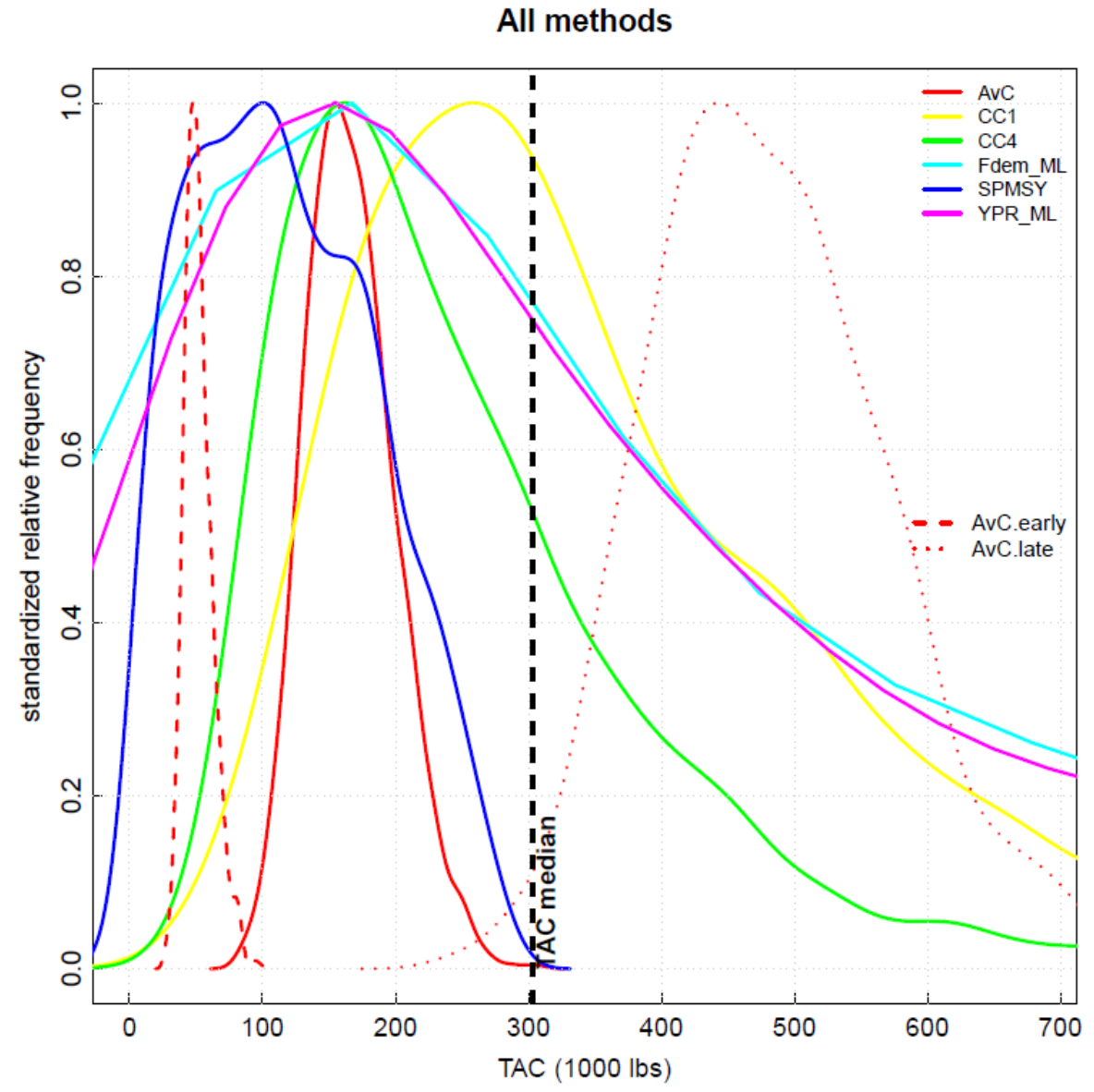


S of Cape Hatteras

SEDAR 50 Results



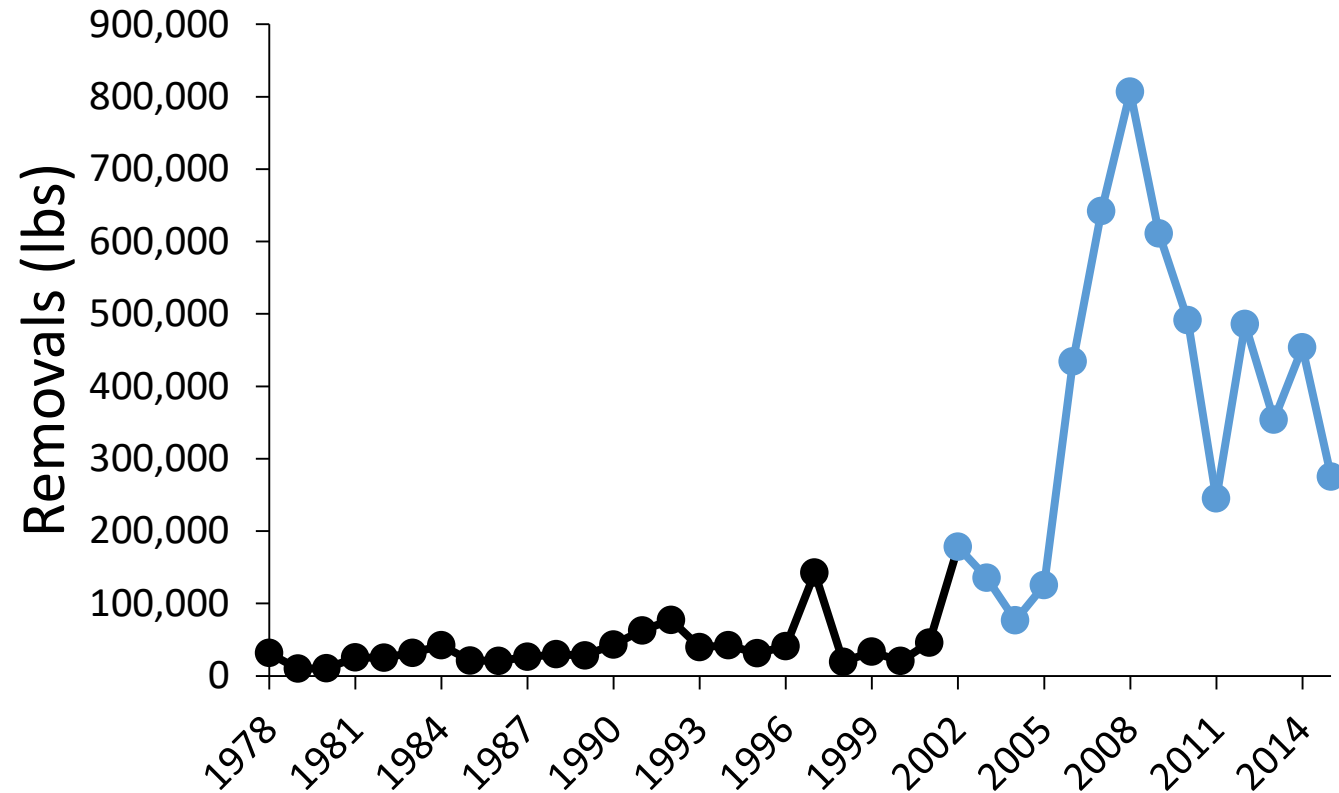
Comp Modal TAC: 183,354 lbs



Adjustments to SEDAR 50 TAC Estimation

1. Removals Time Series

- Reduced from 1978-2015 to 2002-2015
- Reduced CV from 1.30 to 0.58
- Minimal removals prior to 2002; not representative of current fleet capacity or behavior for N of Cape Hatteras

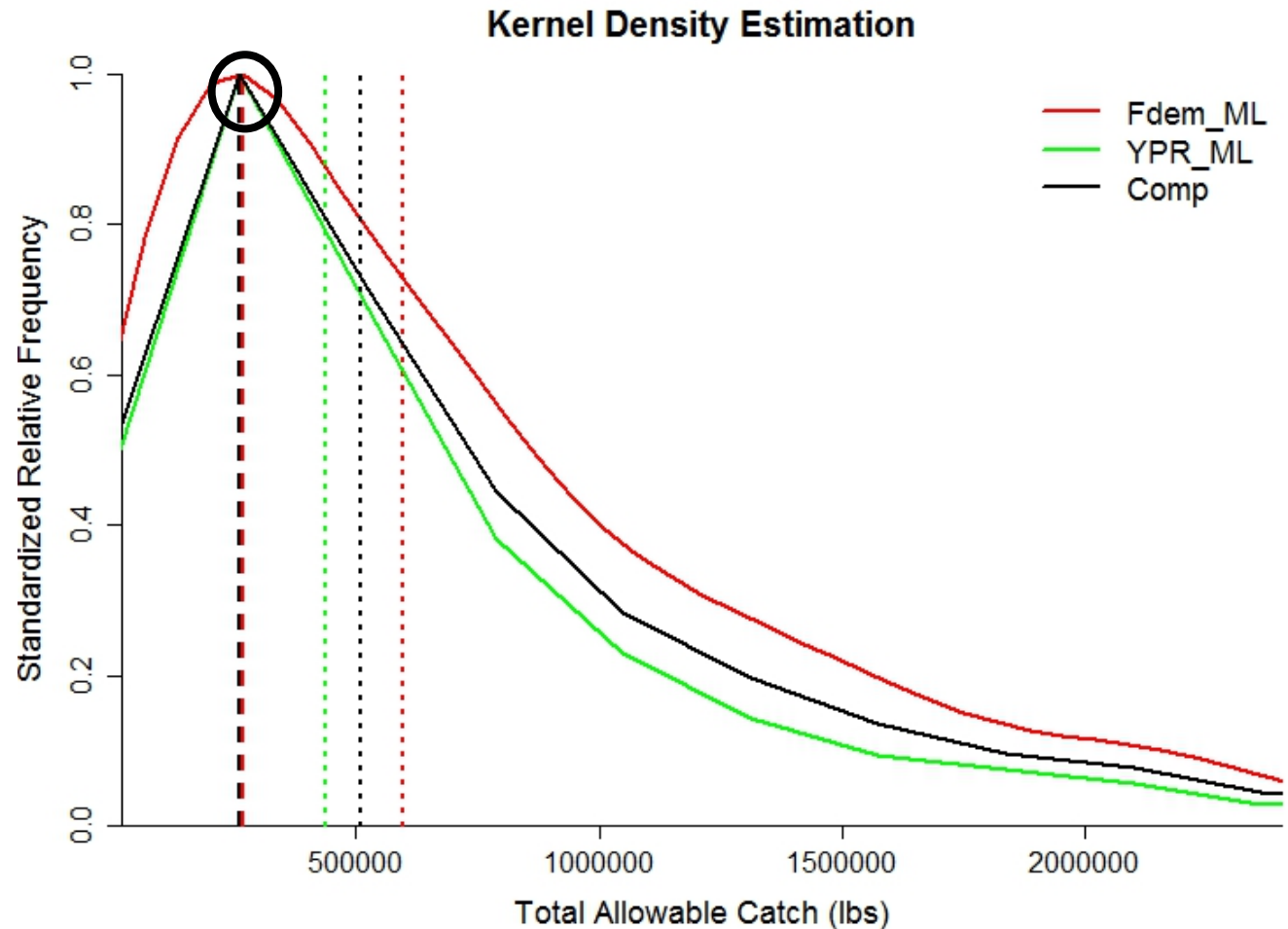


Comp Modal TAC: 262,363 lbs

Adjustments to SEDAR 50 TAC Estimation

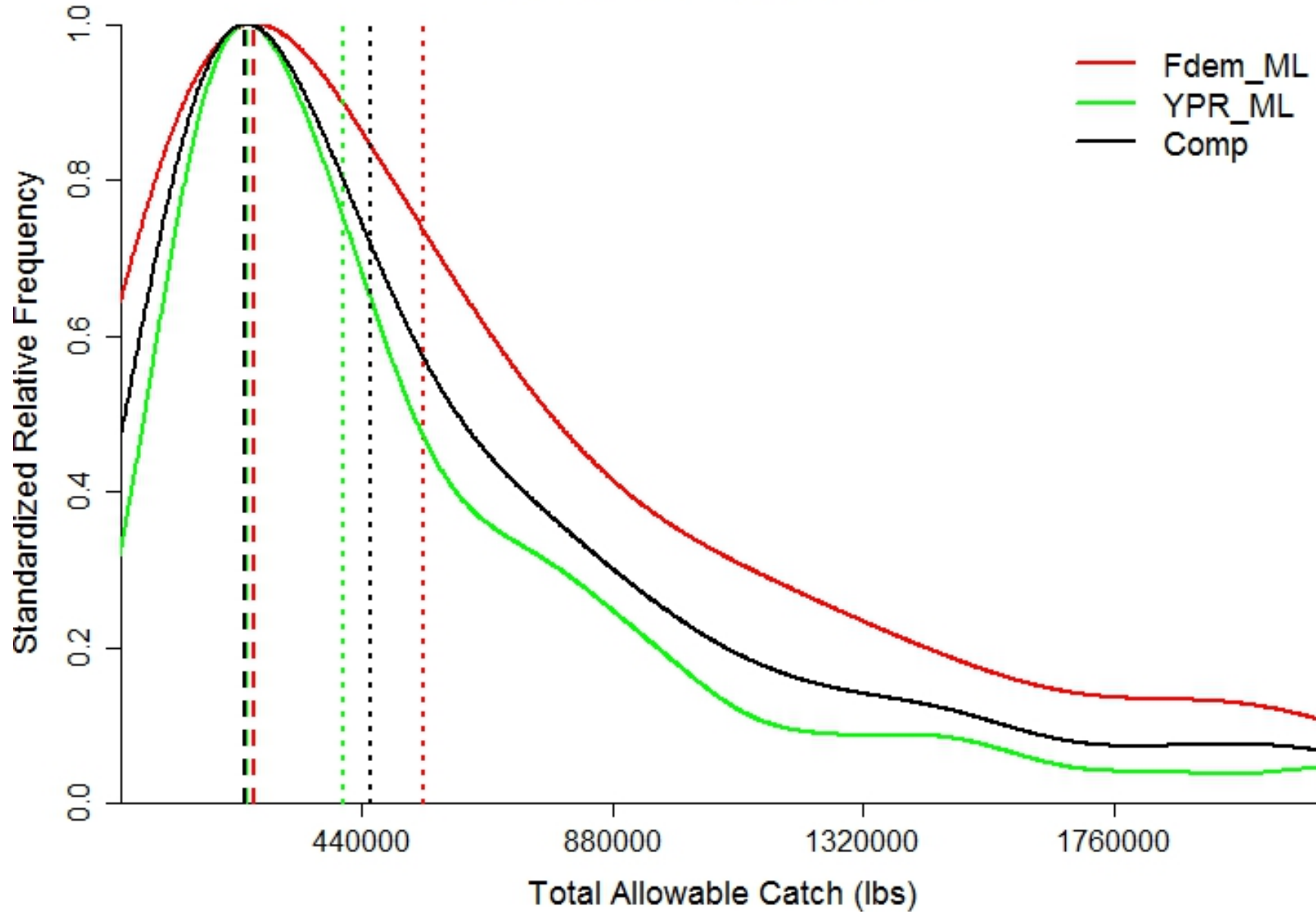
2. Modal TAC Estimation

- Circled point is first non-zero data point for YPR_ML and Comp
 - Mode is somewhere between 0 and 524,656 lbs
- If max TAC estimates are vastly different, Comp driven by MP with max bin size
 - Drives mode to 0 or towards mode of MP with greater max value
 - Due to estimation technique not data
- Increased # of bins from 512 to $2^{15}=32,768$
- Increased resolution to more consistently estimate mode (was $\pm \sim 260,000$ lbs, now $\pm \sim 4,100$ lbs)
- Smooths distribution, so also show with histogram to show variability



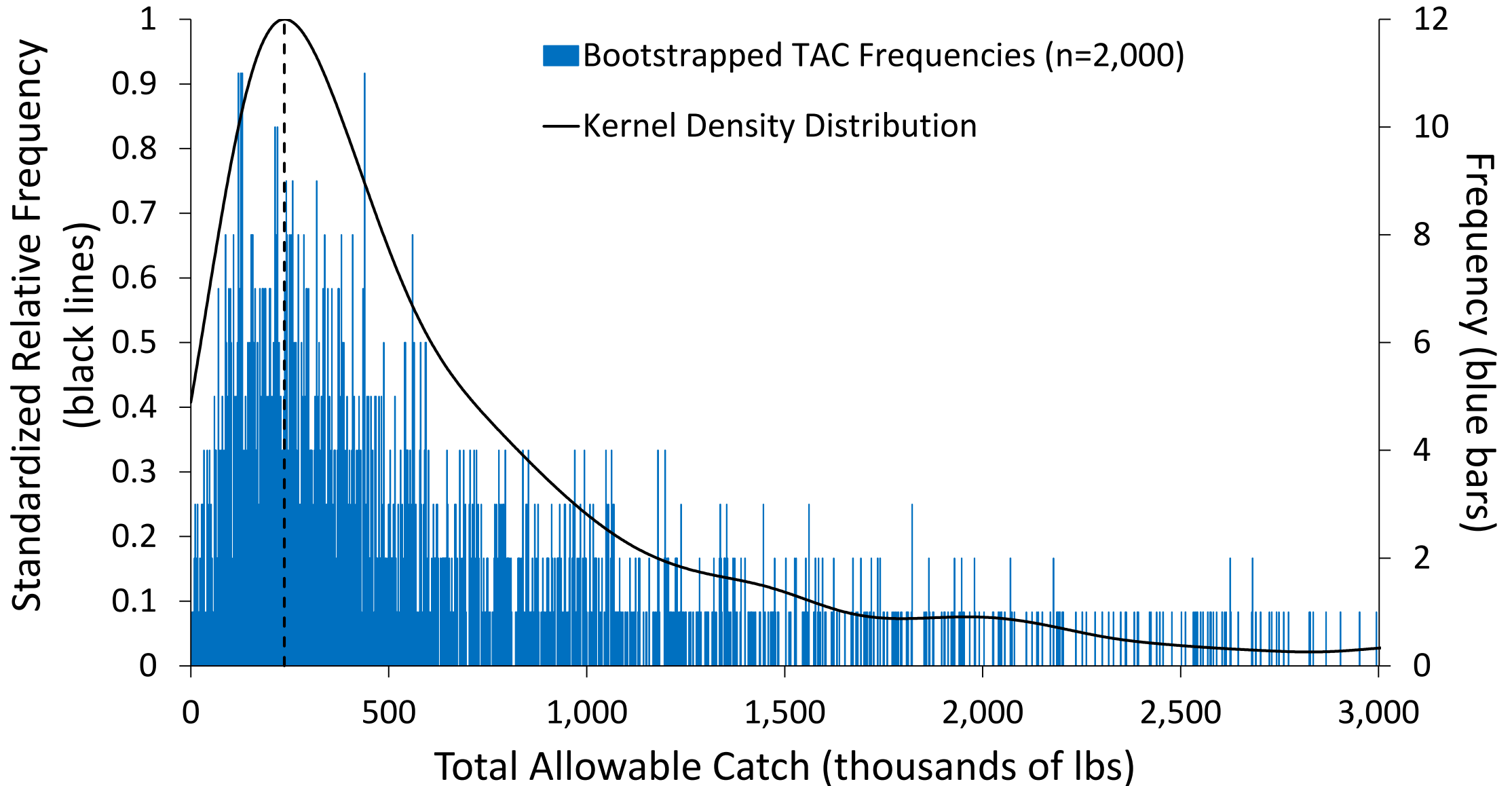
Comp Modal TAC: 262,363 lbs

TAC Distributions



Comp Modal TAC/Recommended ABC: 236,329 lbs

Comp TAC Distribution



Comp Modal TAC/Recommended ABC: 236,329 lbs

Allocation of N of Cape Hatteras ABC

- N of Cape Hatteras ABC = 236,329 lbs
- MAFMC-SAFMC jurisdictional boundary at VA-NC border – allocations of N of Cape Hatteras ABC needed
- 2017 – Tilefish Pilot Survey (Frisk et al.) sampled blueline & golden tilefish from Georges Bank to slightly north of Cape Hatteras
 - Stratified random sampling design (latitudinal and depth strata)
- Allocation percentages from stratified proportional estimates of blueline tilefish caught N & S of VA-NC border in Tilefish Pilot Survey
 - Weighting adjustment applied to account for region N of Cape Hatteras not part of sampling frame and difference between strata boundary (areas 8 & 9) and VA-NC border
 - Original percentages: 57% MAFMC & 43% SAFMC
 - **Adjusted proportions: 56% MAFMC & 44% SAFMC**

Allocation of N of Cape Hatteras ABC

- N of Cape Hatteras ABC = 236,329 lbs
- Adjusted proportions: 56% MAFMC & 44% SAFMC
- **Recommended N of Cape Hatteras ABCs – MAFMC: 132,344 lbs; SAFMC: 103,985 lbs**

Questions?