

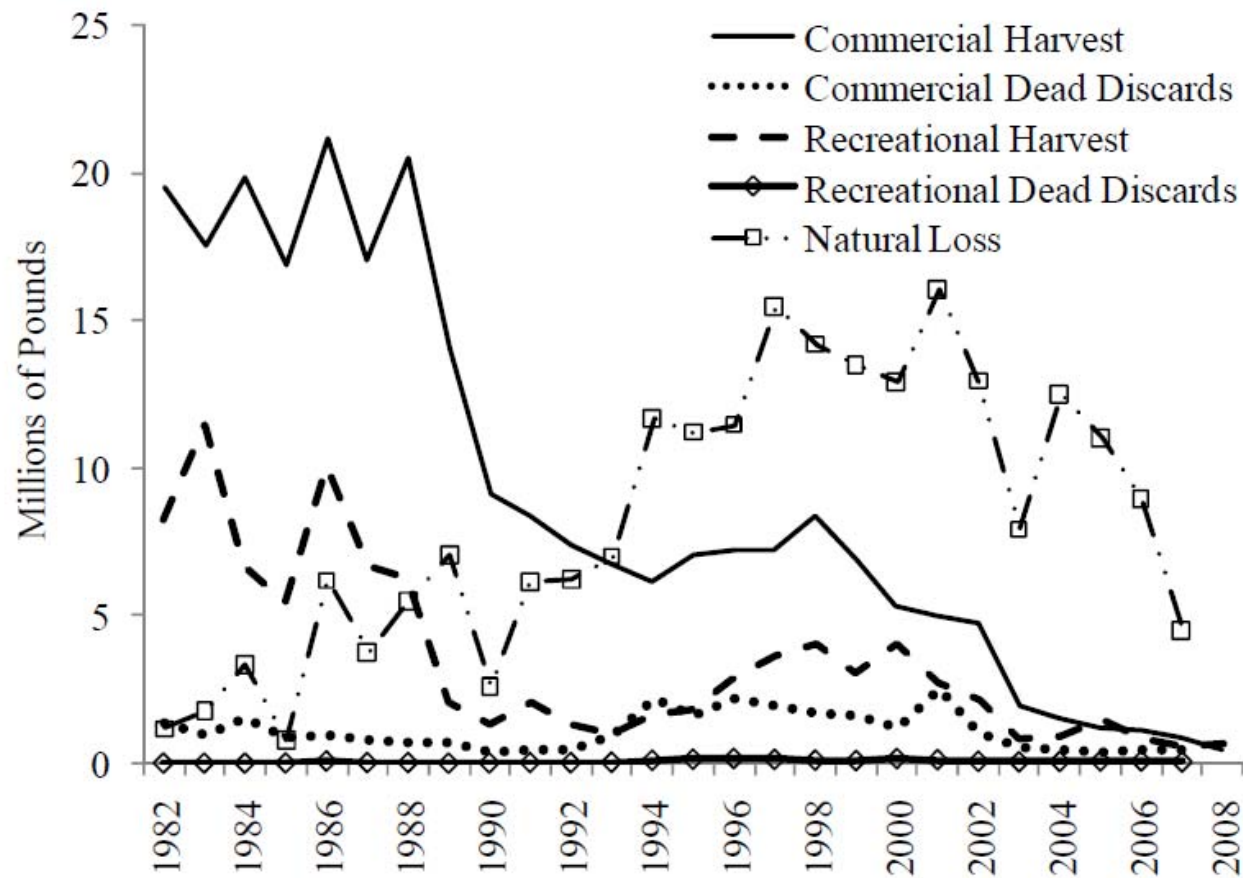
Improving Certainty In Management of Recreational Fisheries

Robert L. O'Reilly

Virginia Marine Fisheries Commission

Mortality sources in fisheries include commercial and recreational harvest, natural loss, and recreational dead discards

Figure 6. Fishery removals by sector and loss attributed to natural mortality (2009 State Compliance Reports, NOAA Fisheries Statistics Division 2009; NMFS 2009b).

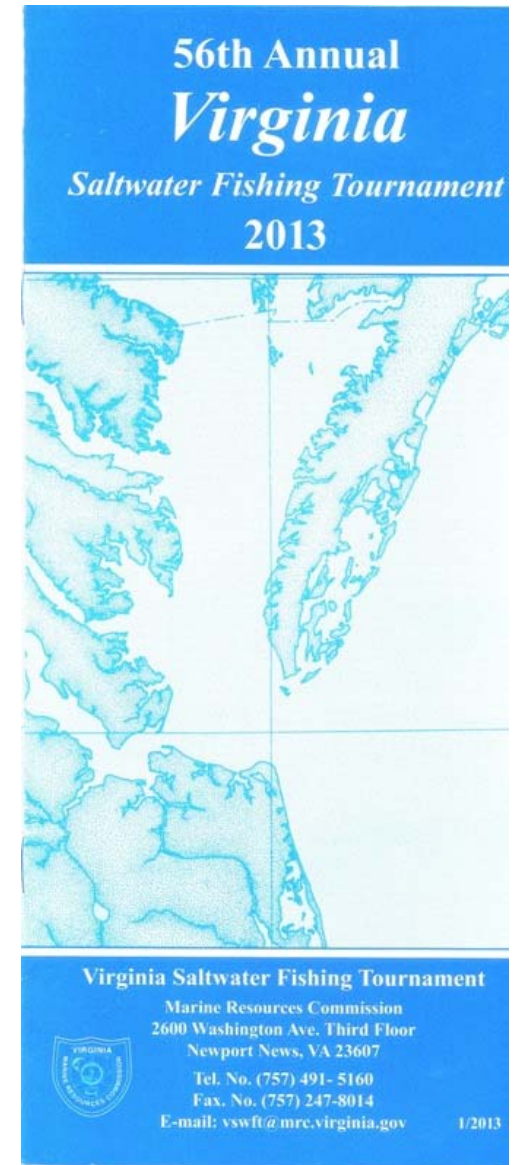


Current fisheries management

- Directed recreational fisheries typically managed with minimum size limits
 - May target larger, older fish while protecting younger fish
- Trophy fisheries and citation programs encourage anglers to target the largest fish
 - Recreational striped bass in Virginia
- Virginia's Saltwater Fishing Tournament has operated consistently since 1958

Catch and release

- Release citations reward anglers for impressive sizes of released fish during closed seasons
- Release mortality is dependent upon angler handling



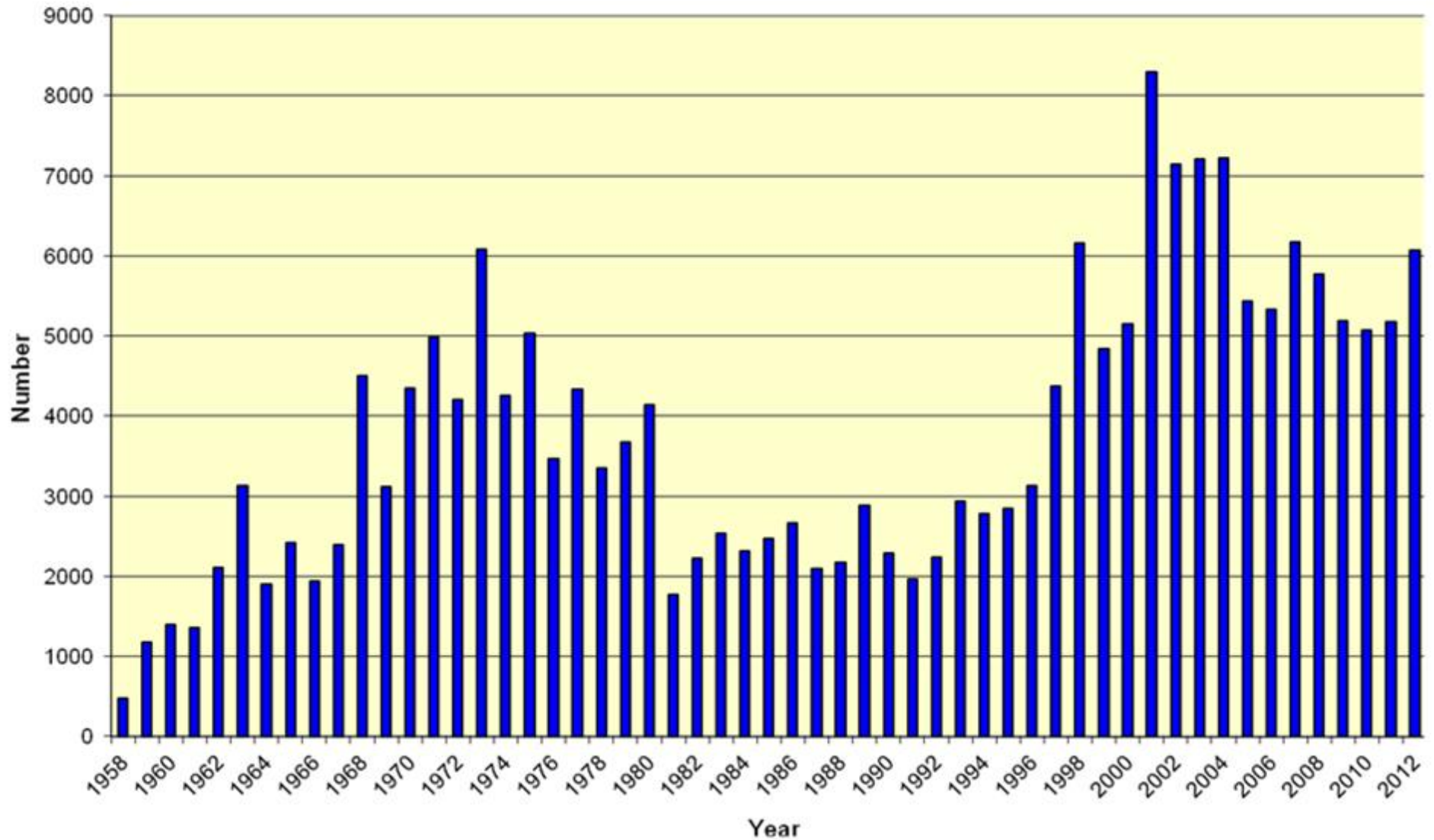
Virginia Saltwater Tournament Release citations

ELIGIBLE SPECIES AND REQUIREMENTS FOR RELEASE CITATIONS

Billfish*.....	No Required Minimum Length (Marlin, Sailfish, Spearfish, Swordfish)	
Sharks (any)*	72 inches	
Tuna, Bluefin*.....	60 inches	
Cobia	50 inches	
Amberjack.....	50 inches	
Drum, Black or Red	46 inches	
Striped Bass	44 inches	
Crevalle Jack.....	40 inches	
Bluefish.....	36 inches	
Tarpon*.....	36 inches	
False Albacore	32 inches	*
Gray Trout.....	30 inches	
Flounder.....	26 inches	
Spanish Mackerel.....	26 inches	*
Speckled Trout	24 inches	
Sheepshead.....	24 inches	
Tautog	23 inches	
Spadefish.....	22 inches	
Gray Triggerfish.....	20 inches	
Croaker.....	20 inches	
Kingfish (Roundhead).....	16 inches	
Pompano	16 inches	
Spot	13 inches	

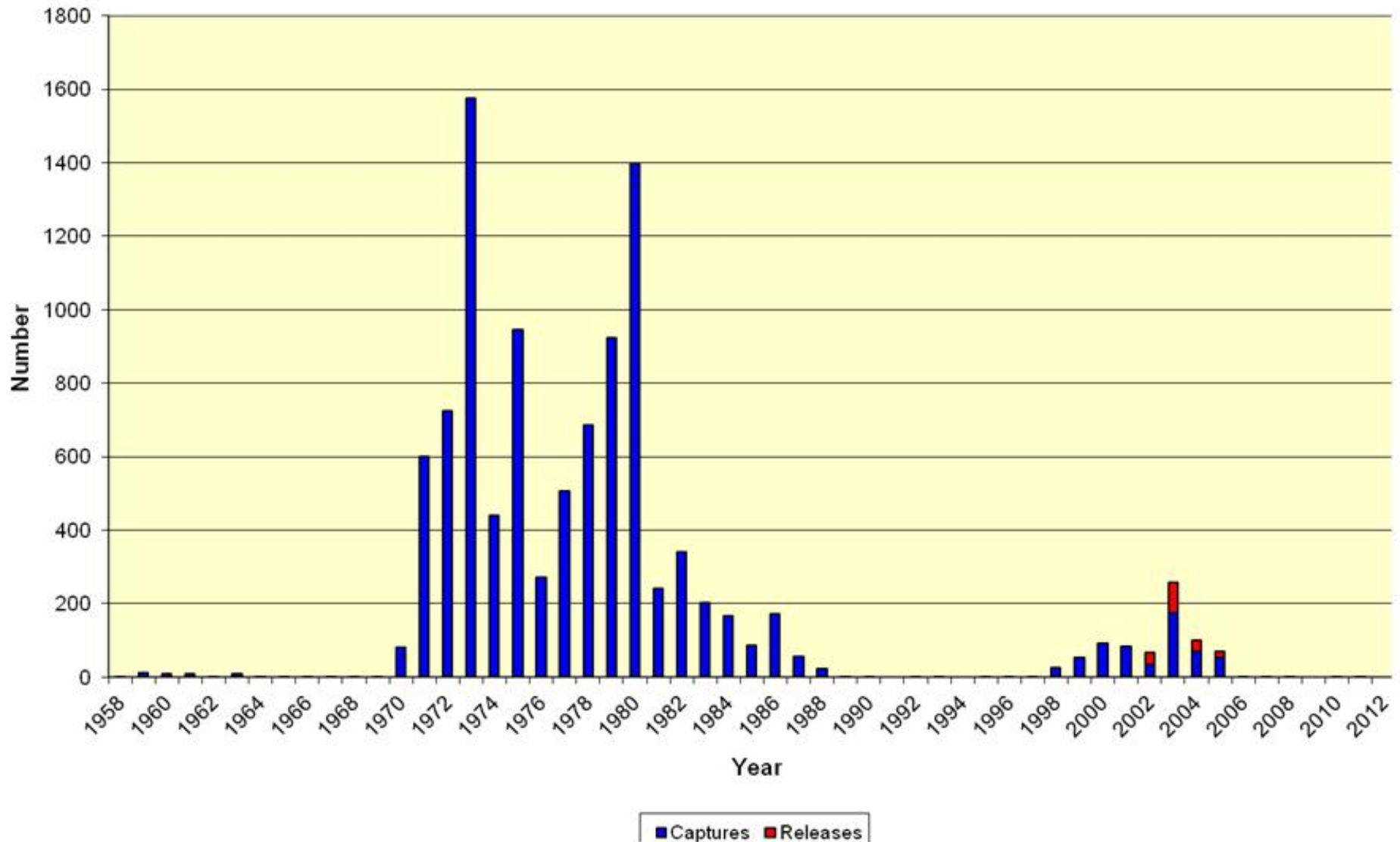
Actual measured lengths required for all species except for those marked with asterisk (). Estimated length may be used for species marked with asterisk.*

Virginia Saltwater Tournament Citations



Virginia Saltwater Tournament Citations

Weakfish



Release citations added in 2002

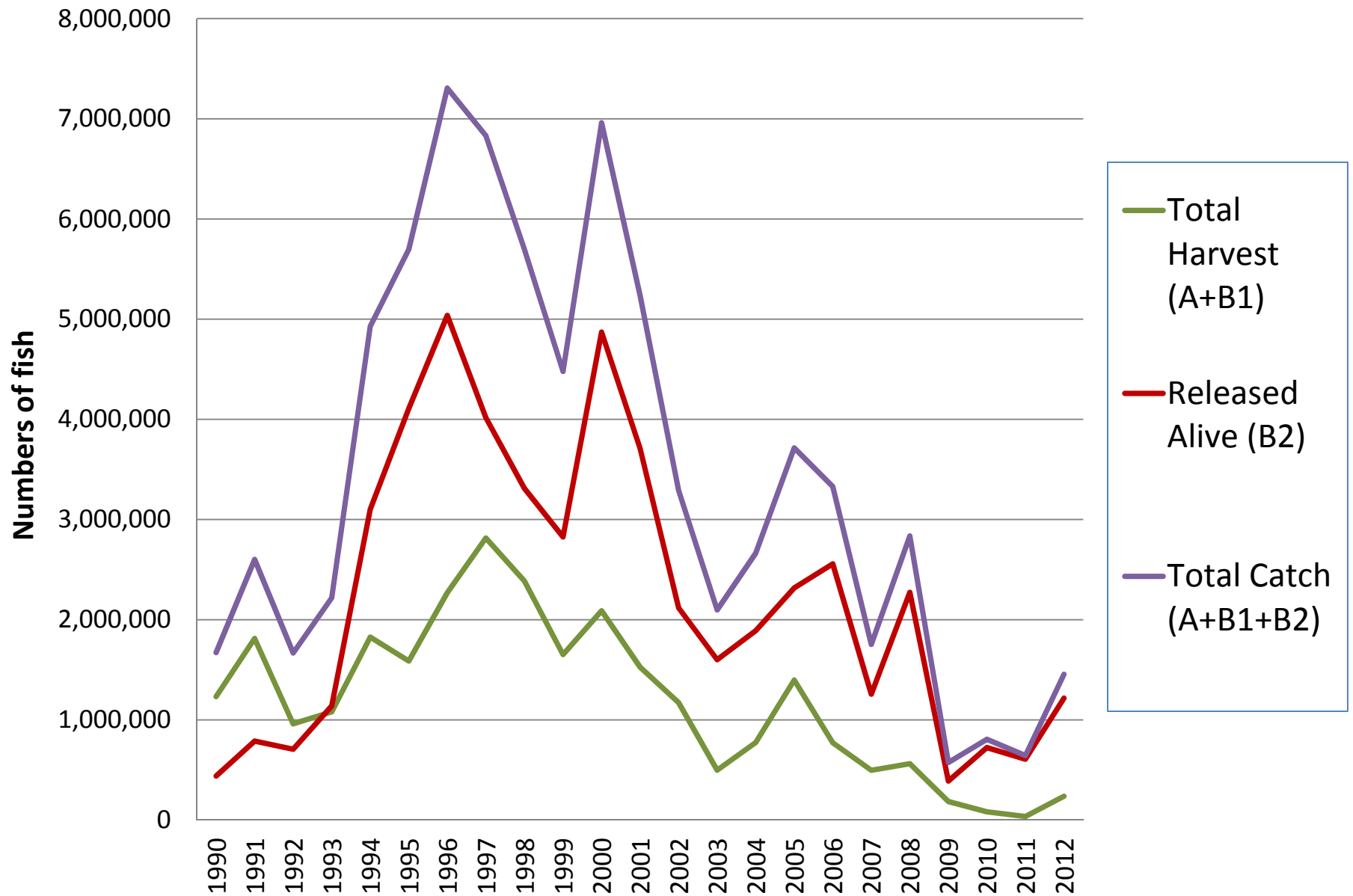
Release mortality estimates used in stock assessments may be under-estimated

Species	Release mortality
Atlantic croaker	10%
Atlantic striped bass	8%
Black sea bass	25%
Bluefish	15%
Red drum	8%
Scup	15%
Summer flounder	10%
Tautog	2.5%
Weakfish	10%

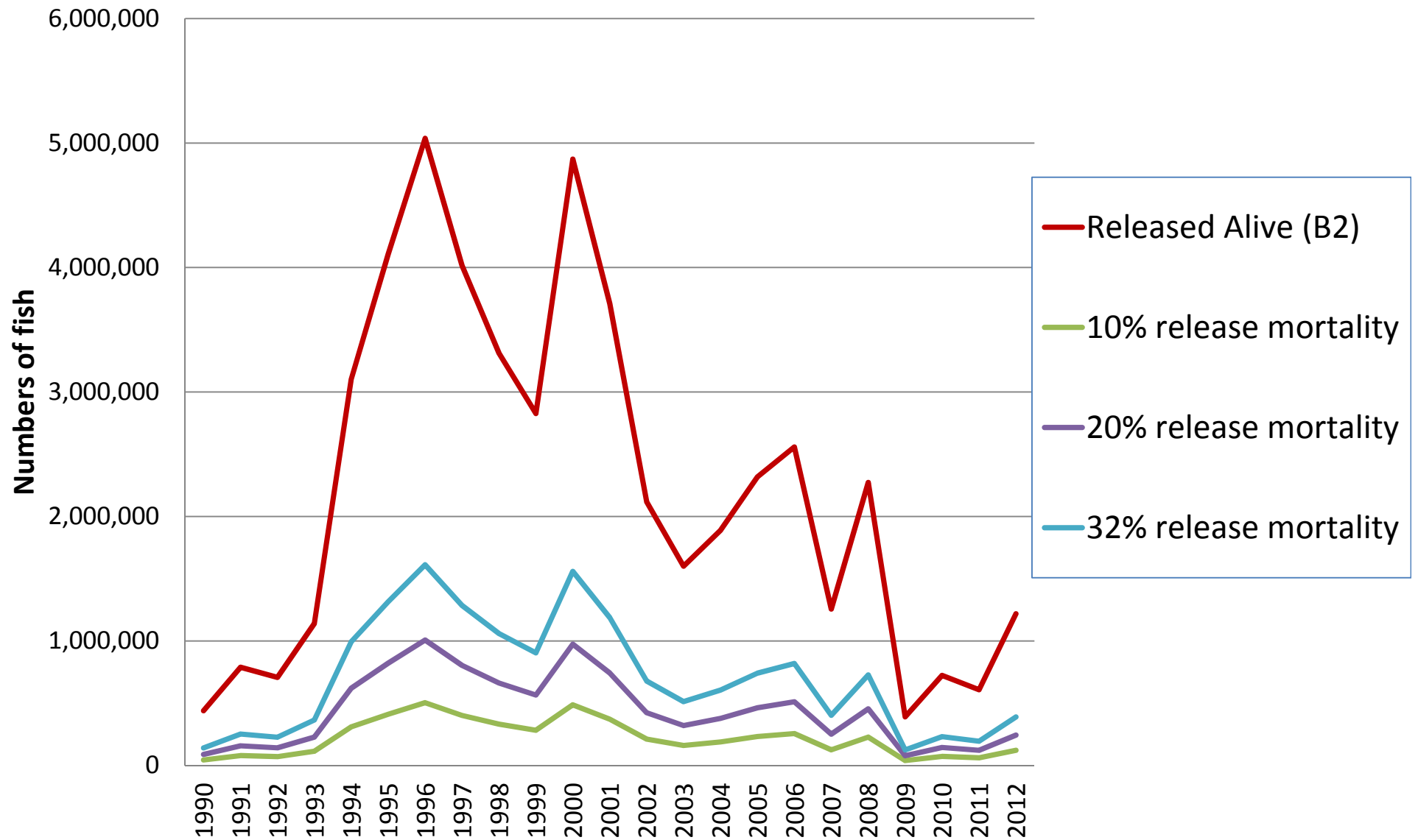
From Loftus and Radonski
(2011)

Delayed mortality
remains unknown

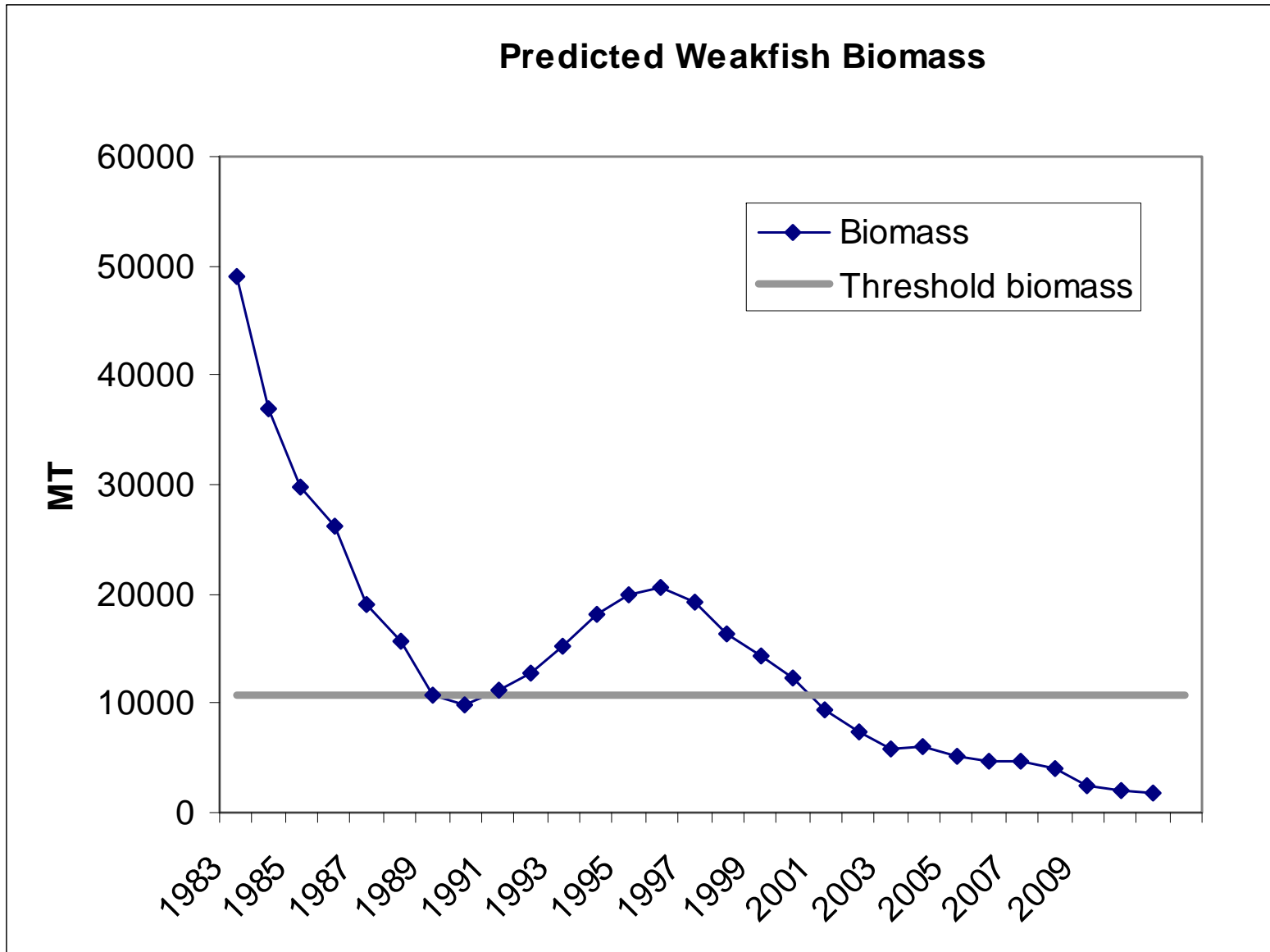
Weakfish – Recreational total catch, releases, and harvest for Atlantic coast



Weakfish – Released fish and current mortality estimate (10% of discards) compared to past mortality estimates (20% and 32%)

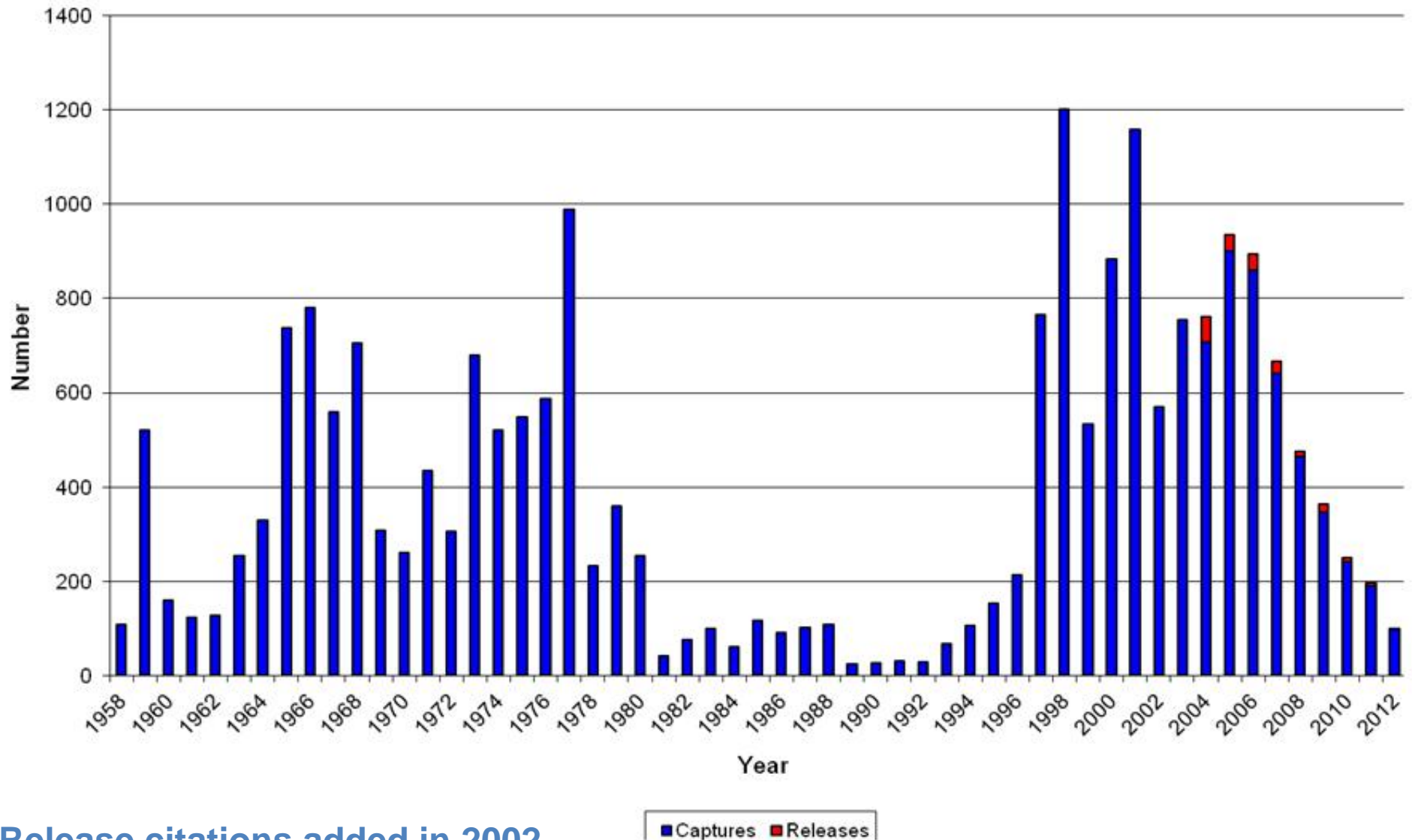


Weakfish continue to decline below biomass threshold



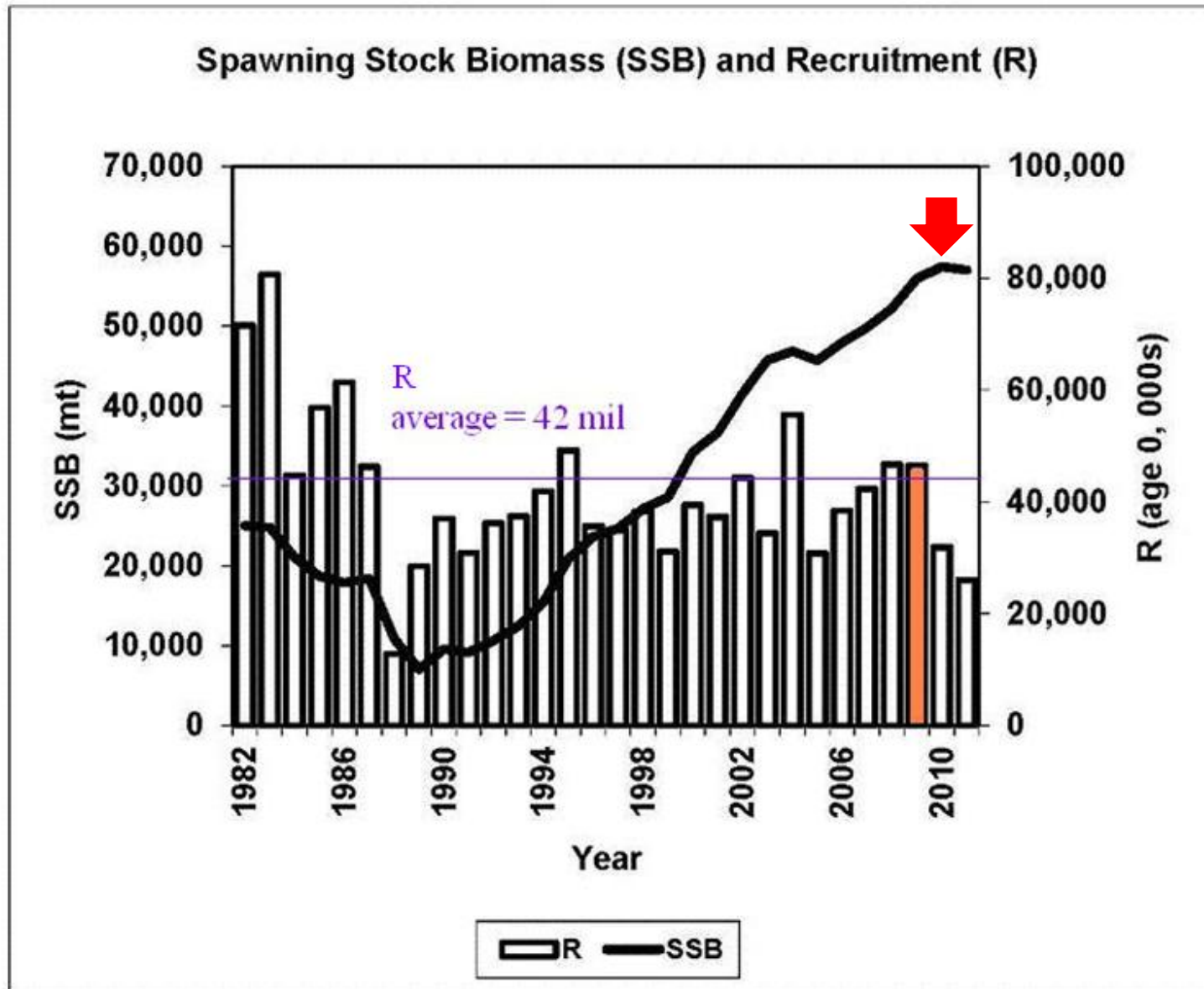
Virginia Saltwater Tournament Citations

Summer flounder

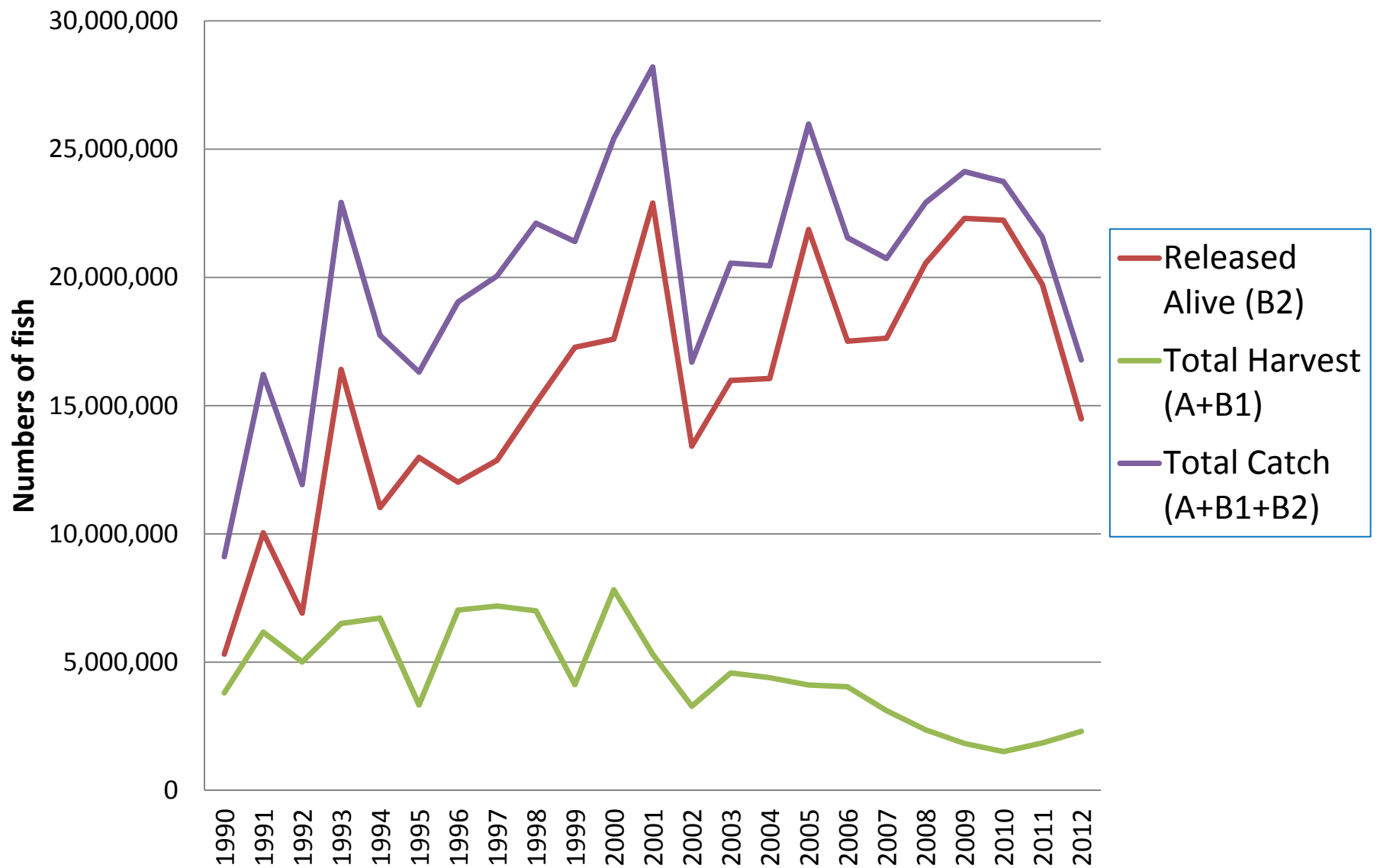


Release citations added in 2002

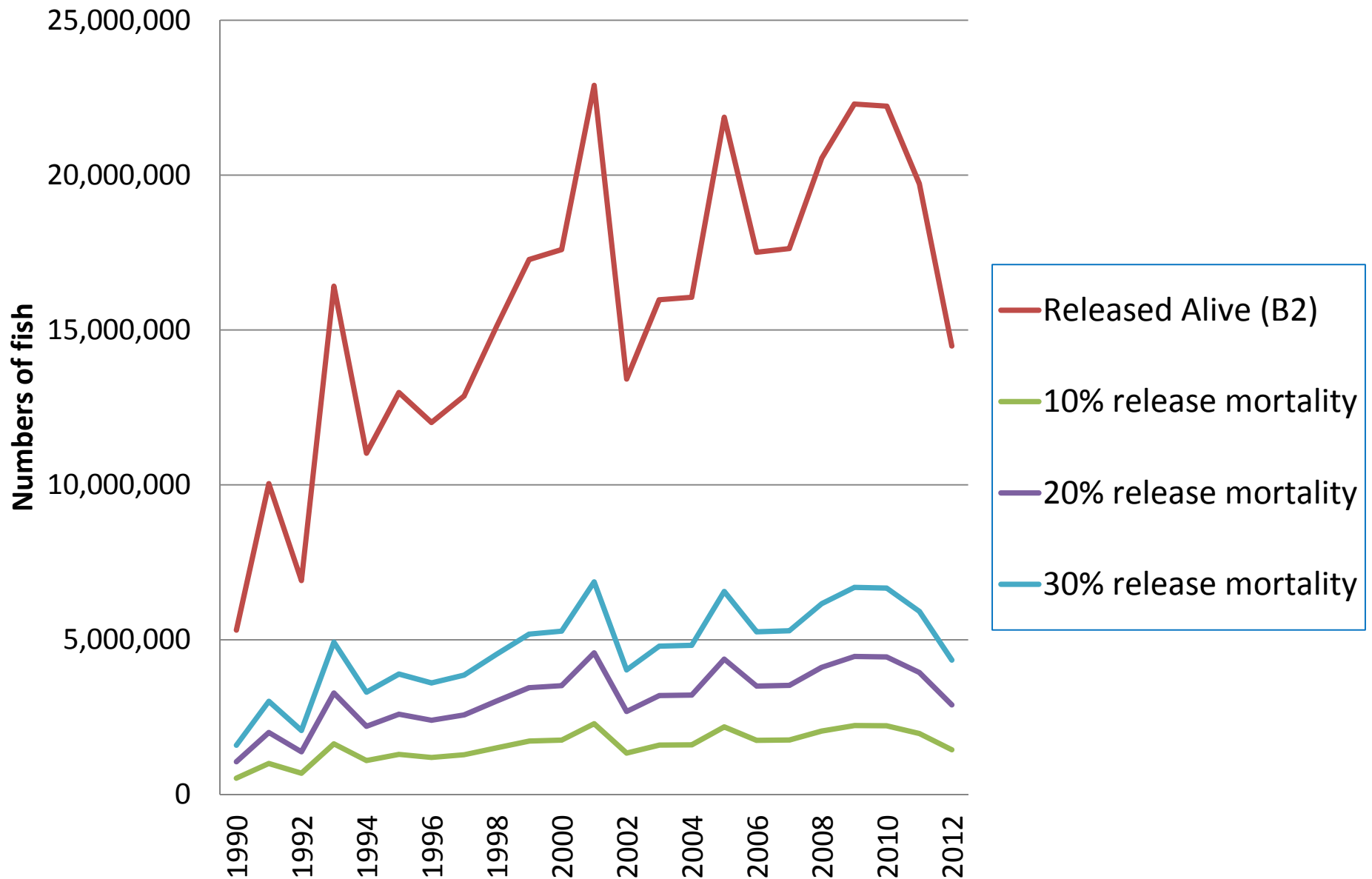
Summer flounder



Summer flounder – Recreational total catch, releases, and harvest for Atlantic coast



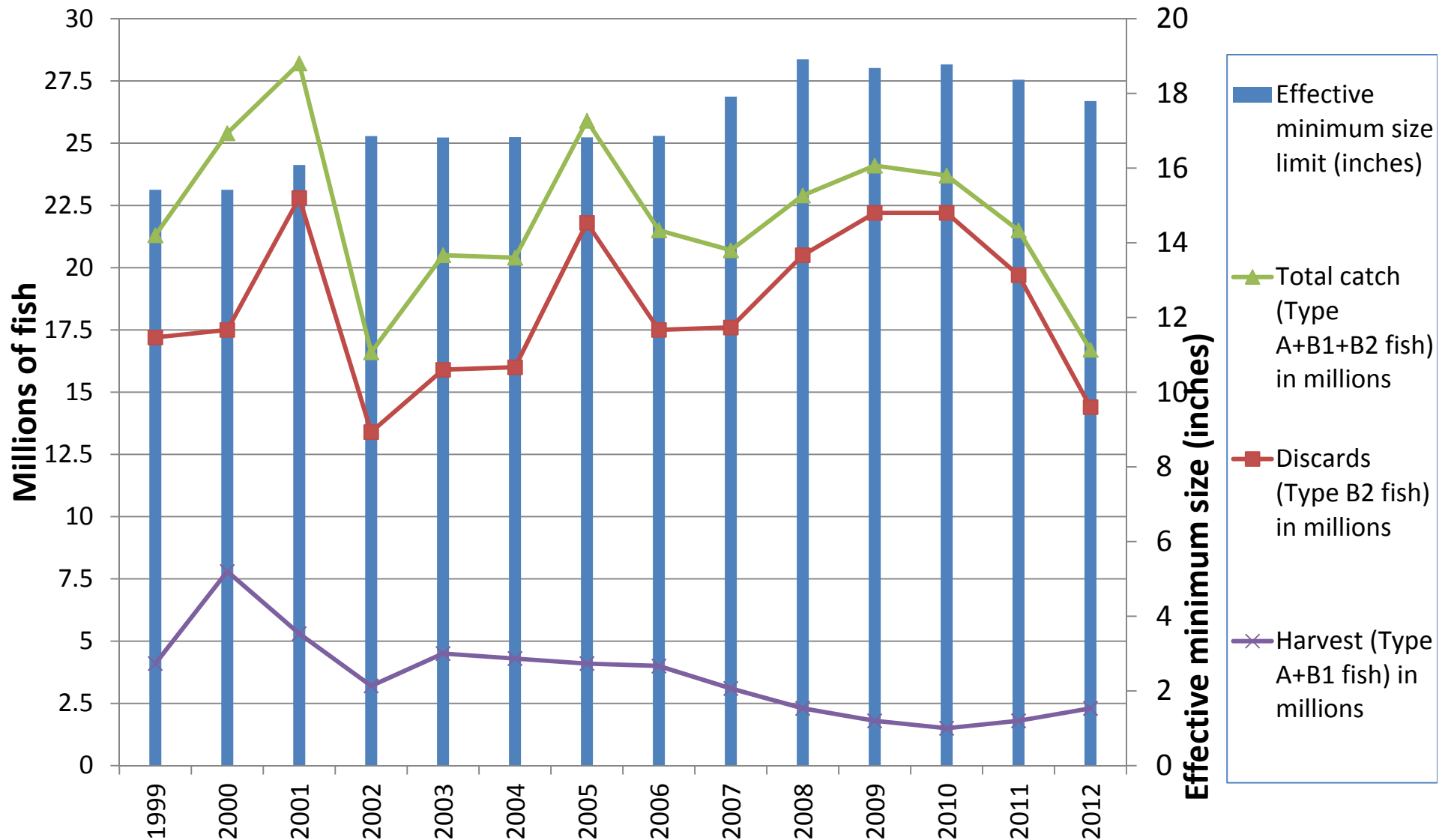
Summer flounder – Released fish and current discard mortality estimate (10%) compared to past discard mortality estimate (20%)
Could it be 30%?



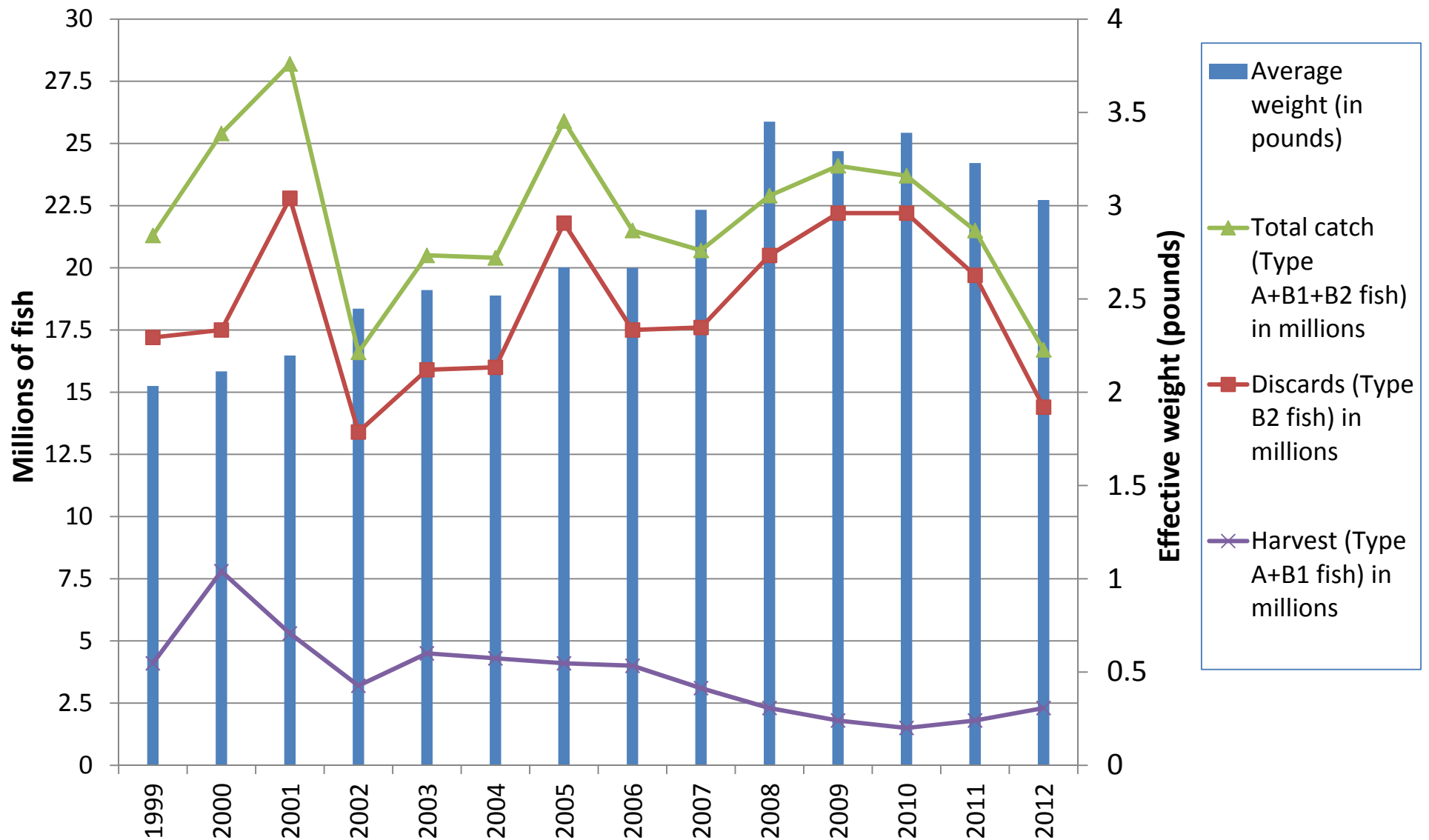
Summer flounder management strategy evaluation (MSE)

- States modify minimum size limits, possession limits and fishing seasons
- General trend over last decade of rebuilding stock through more restrictive regulations
- Increasing minimum size limits results in increased discards (over 90% of total catch in recent years)
- Model developed to compare current management strategy to alternatives

Recreational summer flounder total catch, harvest and discards for Atlantic coast (1999-2012) with effective minimum size limits by year



Recreational summer flounder total catch, harvest and discards for Atlantic coast (1999-2012) with effective weights by year



Study by Sugihara et al. (2008) concluded that exploited fish populations are not stable

- Fishing can alter the "age pyramid" by lopping off the few large, older fish that make up the top of the pyramid, leaving a broad base of faster-growing small younglings.
- Regulations based solely on biomass harvest targets are incomplete, and should also account for age-size structure in populations

Slot-size limits may reduce release mortality?

PROS

- Allows access to fishery by shore anglers
- For average anglers, will result in fewer discards
- Examples: Virginia, Connecticut, New Jersey and Maine recreational striped bass fishery
- ASMFC summer flounder technical committee considered slot limits in 2008/2009
 - Recommended waiting until stock has rebuilt given risks associated with accelerating F and the data limitations used in the analysis

CONS

- Can lead to high-grading by anglers
- If not configured with high separation, can lead to MORE discards (ME and CT as good separation)