Recreational data precision and fisheries management – Council perspective

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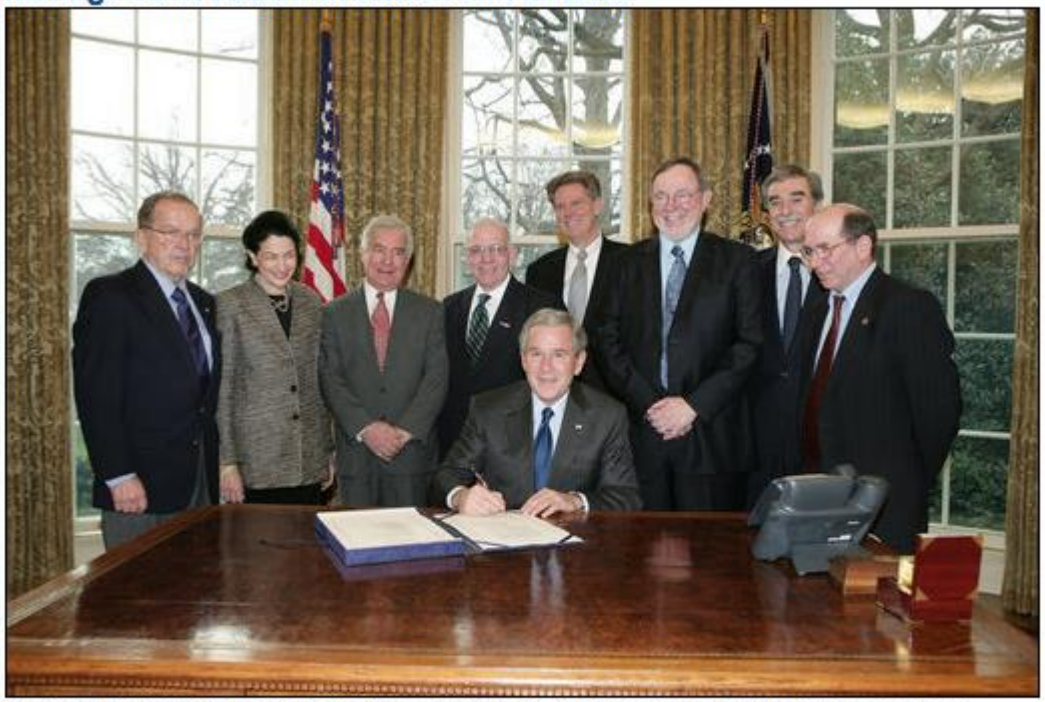
Mid-Atlantic Fishery Management Council

MID-ATLANTIC
FISHERY MANAGEMENT COUNCIL

Magnuson_Stevens Fishery Conservation and Reauthorization Act of 2006

President Bush Signs the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006



President George W. Bush prepares to sign H.R. 5946, the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, Friday, Jan. 12, 2007 in the Oval Office at the White House. President Bush is joined by, from left, Sen. Ted Stevens of Alaska, Sen. Olympia Snow of Maine, Rep. Nick Rahall of West Virginia., Rep. Jim Saxton of New Jersey, Rep. Frank Palloneof New Jersey; Rep. Don Young of Alaska, U.S. Commerce Secretary Carlos Guiterrez and Rep. Wayne Gilchrest of Maryland. White House photo

End and Prevent Overfishing

Annual Catch Limits

- New requirement for Fishery Management Plans
- Sets catch levels to prevent overfishing, based on scientific advic
- Increased accountability
- Required for each managed fishery by
  - 2010 for stocks "subject to overfishing"
  - 2011 for all others
  - Exceptions: annual life cycles, international agreements

STAY INVOLVED

NMFS will develop guidelin for the new requirements through an open public process, started in Februar 2007.

OMNIBUS AMENDMENT

AMENDMENT 13 TO THE
ATLANTIC MACKEREL, SQUIDS, AND BUTTERFISH FISHERY MANAGEMENT PLAN

AMENDMENT 3 TO THE
BLUEFISH FISHERY MANAGEMENT PLAN

AMENDMENT 2 TO THE
SPINY DOGFISH FISHERY MANAGEMENT PLAN

AMENDMENT 15 TO THE
SUMMER FLOUNDER, SCUP, AND BLACK SEA BASS FISHERY MANAGEMENT PLAN

AMENDMENT 16 TO THE
SURFCLAM AND OCEAN QUAHOG FISHERY MANAGEMENT PLAN

AMENDMENT 3 TO THE
TILEFISH FISHERY MANAGEMENT PLAN

(Includes Environmental Assessment and Essential Fish Habitat Assessment)

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Mid-Atlantic Fishery Management Council
in cooperation with
the National Marine Fisheries Service

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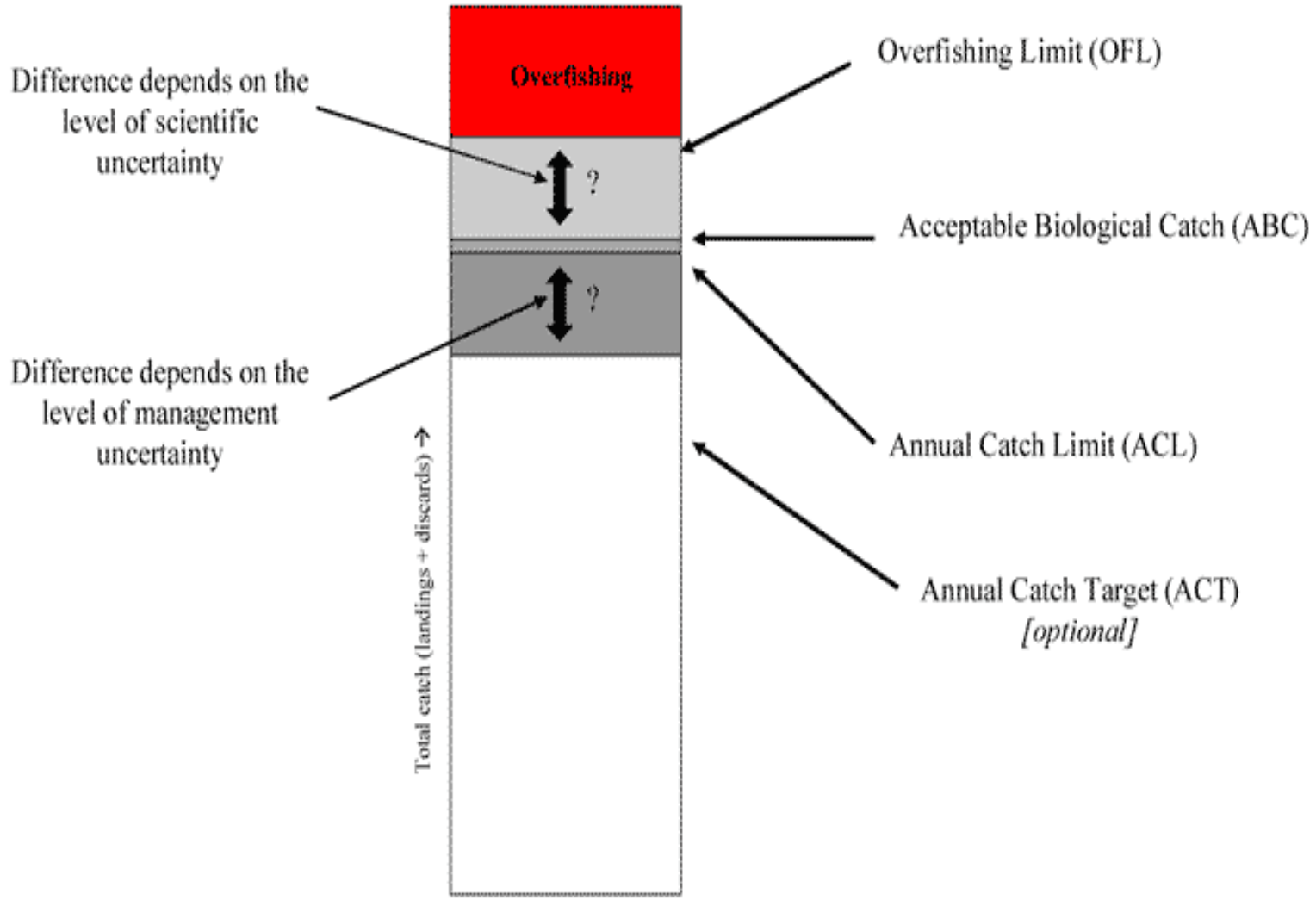
MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

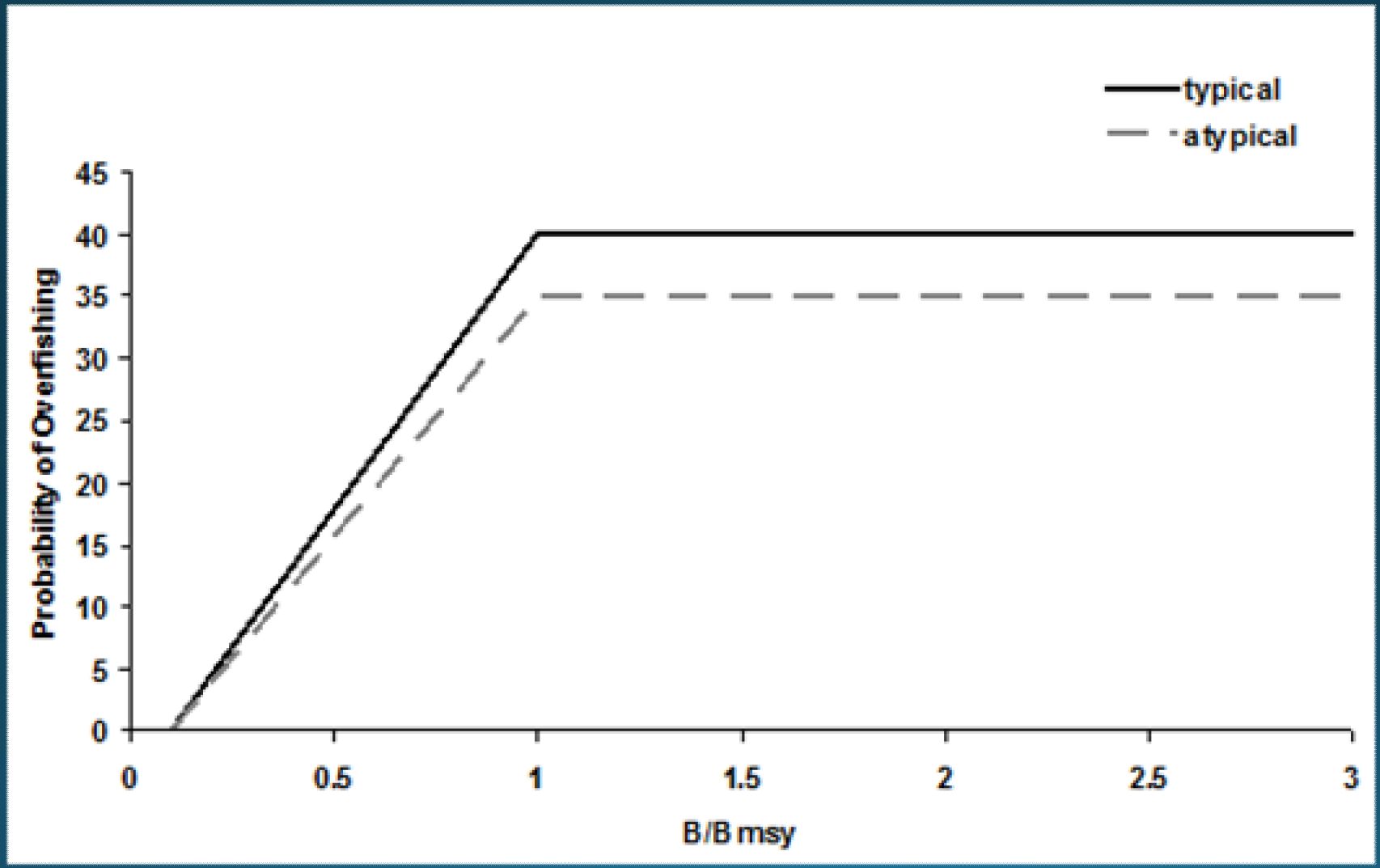
Effective Jan 1, 2012


Overfishing
Overfishing Limit (OFL)
Difference depends on the level of scientific uncertainty
?
Acceptable Biological Catch (ABC)
?
Difference depends on the level of management uncertainty
Annual Catch Limit (ACL)
Annual Catch Target (ACT)
[optional]
Total catch (landings + discards) →

ABC Control Rules

- SSC lead on development of alternative (using SUN Subcom); Council reviewed and established in FMP
- Four level process to describe methods for deriving ABC
- Specific criteria for each level
- SSC determines to which level a stock belongs (Levels 1-4)

Level	OFL Distribution	Mids Stock Assessments in Each
1	Produced by stock assessment model and used as is; all relevant sources of uncertainty characterized; probabilistic	None
2	Comes from stock assessment model, but with some adjustments made by assessment workgroup; some relevant sources of uncertainty missing; probabilistic	Summer flounder, scup, tilefish, surfclams, bluefish, butterfish, spiny dogfish
3	Produced by SSC based on best information available; substantial gaps in information about stock; probabilistic, but may apply 75% of F(MSY) as default	
4	Not available; substantial gaps in information about stock; ad hoc types of control rules; failed assessment	Black sea bass, squids, Atl. mackerel, ocean quahog


typical
atypical
Probability of Overfishing
45
40
35
30
25
20
15
10
5
0
0
0.5
1
1.5
2
2.5
3
B/B msy

Overfishing Limit

- Ideally we would like Catch @ F_{MSY} (OFL)

$$OFL = \overline{B} \times F_{MSY}$$

- Uncertainty in biomass in last year and F_{msy}
- Var(OFL)=Cov(B,F)^2 + 2*Cov(B,F)*B*F + F^2*VB + B^2*VF + VF*VB

Conclusions

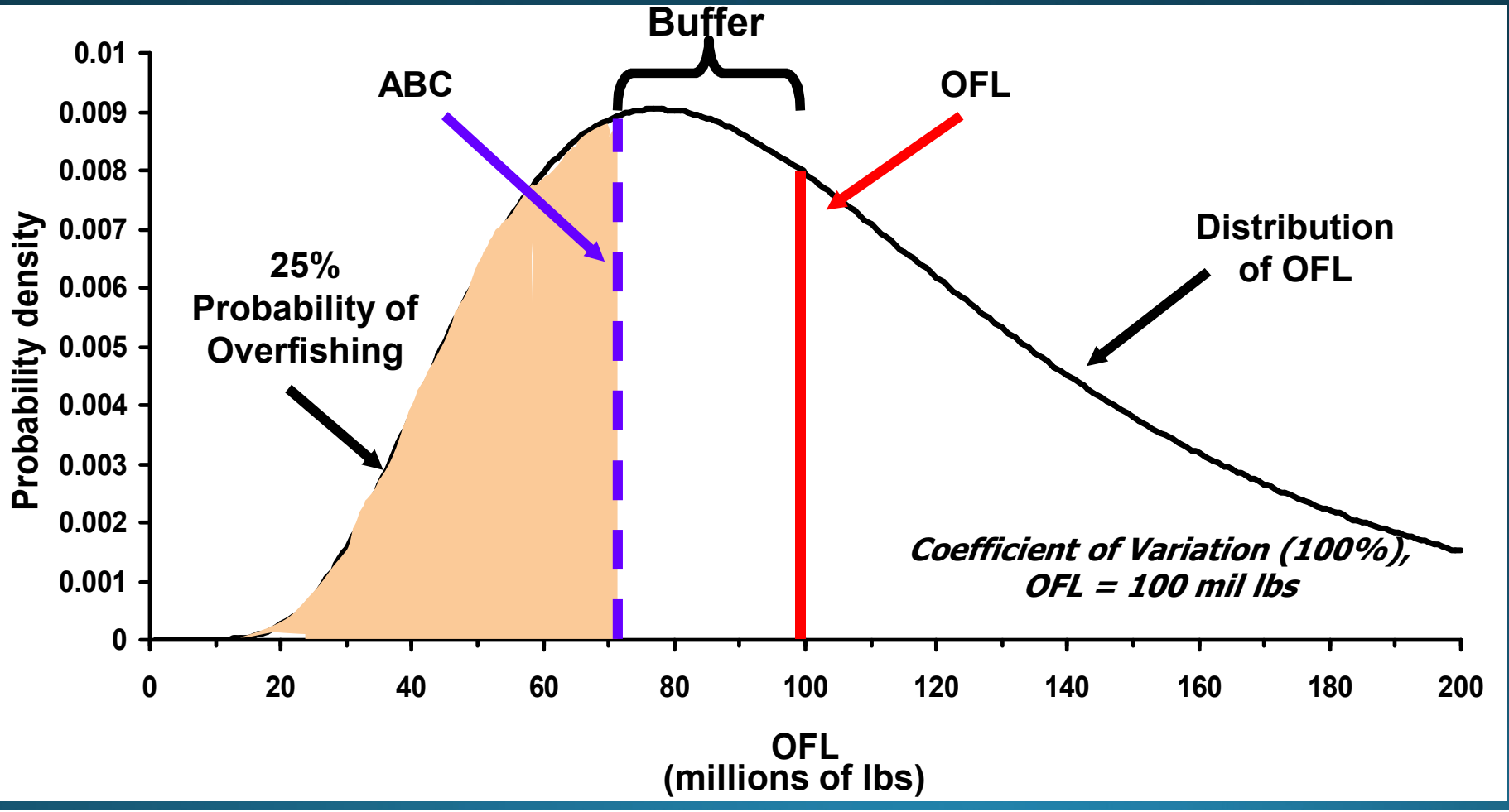
- Lognormal distribution for OFL appears to be reasonable
- CVs of B (or log-scale SDs) in the range of 35-60% seem reasonable given the assessment methods
- Uncertainty in F_{lim} should be about the same magnitude as for B

MAFMC SSC CV Default for Level 3

- Assume lognormal distribution of OFL with 100% cv for all stocks in level 3, except summer flounder where 60% was used
- 100% value based on literature review conducted by SSC SUN Subcommittee
- Based on joint probability distribution of OFL proxy (Fmsy) and biomass (Bcurrent)

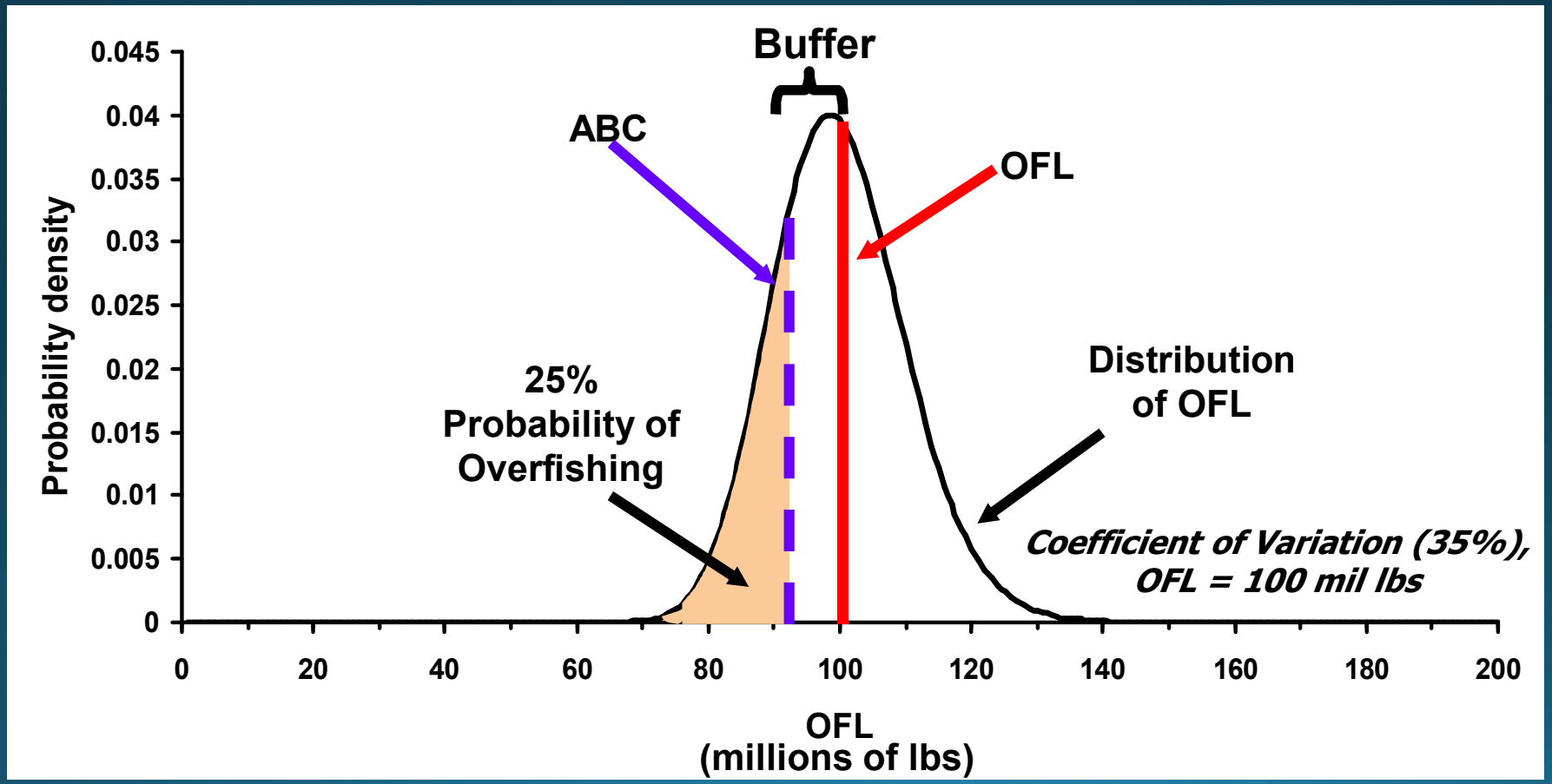
ABC Control Rule Methods

- Top three levels utilize an explicit combination of an overfishing limit (OFL) dist. and probability of overfishing (p*)
- E.g., 25% prob. of overfishing @ ABC = 71 million lbs

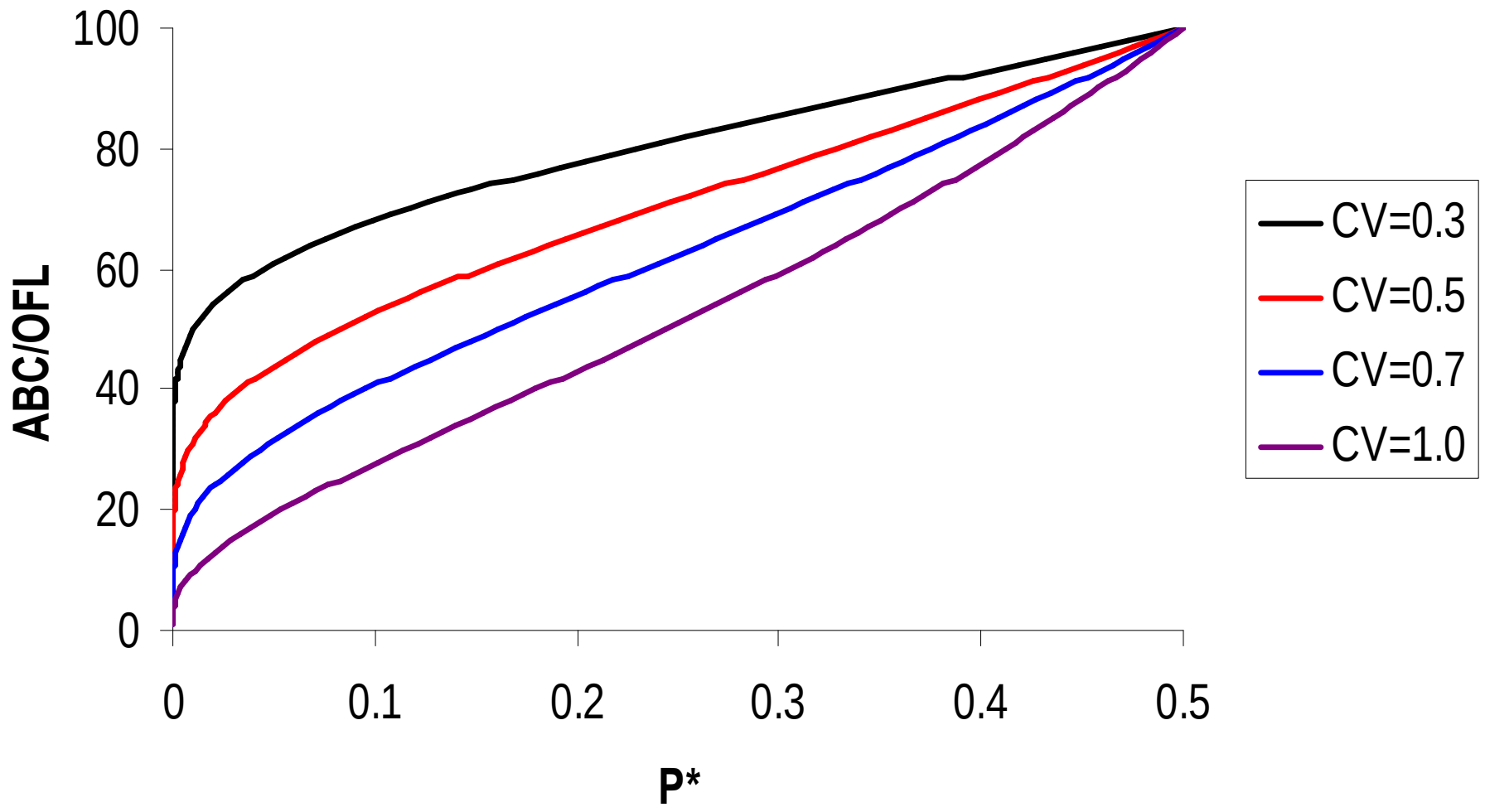


ABC Control Rule Methods

- Width and shape of distribution (CV) affects what ABC is associated with a specific probability of overfishing.
- 25% prob. of overfishing @ ABC = 92 million lb



Effect of uncertainty on buffer



How does variance of recreational catch estimate impact ABC determination?

- Under current ABC control rule and SSC assessment level designations, it doesn't come into play (all MAFMC assessments are level 3 or 4)
- Very small effect on the median of the OFL distribution from assessment used to make projections (negligible)
- In Level 1 assessment, uncertainty in the recreational catch is propagated through projections – would have some effect on ABC derived

How does variance of recreational catch estimate impact invocation of accountability measures (i.e., paybacks for overages)?

- No effect.
- Principle "effect" is the public perception that MRFSS/MRIP estimates are not accurate (or precise) and should not be used for managing recreational fishery
- Council attempted to develop system which scaled AM response based on (un)certainty of recreational catch estimates but was disapproved by NMFS
-

Recreational AM Omnibus

- Uncertainty in recreational catch estimates compelled Council and NMFS to remove in-season closure authority
- Incorporated stock status in recreational payback requirements
- Original ACL/AM Omnibus required 1:1 paybacks of any recreational overages.

Rec overage payback (1:1) required only if -

- Stock is overfished *or*
- Under rebuilding plan *or*
- Stock Status unknown *and*
- *ACL is exceeded*

Rec Overage Payback Requirements if -

- Stock is not overfished but below Bmsy
- Scaled payback based on stock biomass
- Overage*[(Bcurrent-Bmsy)/0.5Bmsy]
- If stock above Bmsy- no paybacks for recreational overages (only adjustments to management measures necessary to achieve next year's target catch)

Payback Alternatives

ÅAlternative 5D. Payback Scaled to B/Bmsy

Stock Status	Payback	
B/Bmsy > 1	0	
1 > B/Bmsy > 1/2	Scaled to B/Bmsy	BSB: 12,700/12,978, Overage coefficient = 0.04
B/Bmsy < 1/2	1:1	

$$\frac{\square\square\square\ \square\square\ \square\ \square\square}{\frac{1}{2}\ \square\square\ \square\square}$$

Discard/B2 Issue

- MSRA stock rebuilding and maintenance requirements require(d) significant reductions in fishing mortality compared to historical levels
- Council has implemented restrictive recreational measures resulting in a large portion of the recreational catch being discarded (80-90% of summer flounder discarded)
- Since a large portion of the recreational catch is discarded, most of the "catch" is estimated from B2 category
- Raises concerns about the robustness of these estimates (accuracy and precision of angler recall at end of trip)

Questions?