2018 Blue Crab Advisory Report Preview

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Chair, Chesapeake Bay Stock Assessment Committee

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Sustainable Fisheries GIT Meeting

Chesapeake Bay Program
Science. Restoration. Partnership.

Results of 2017/18 Winter Dredge Survey

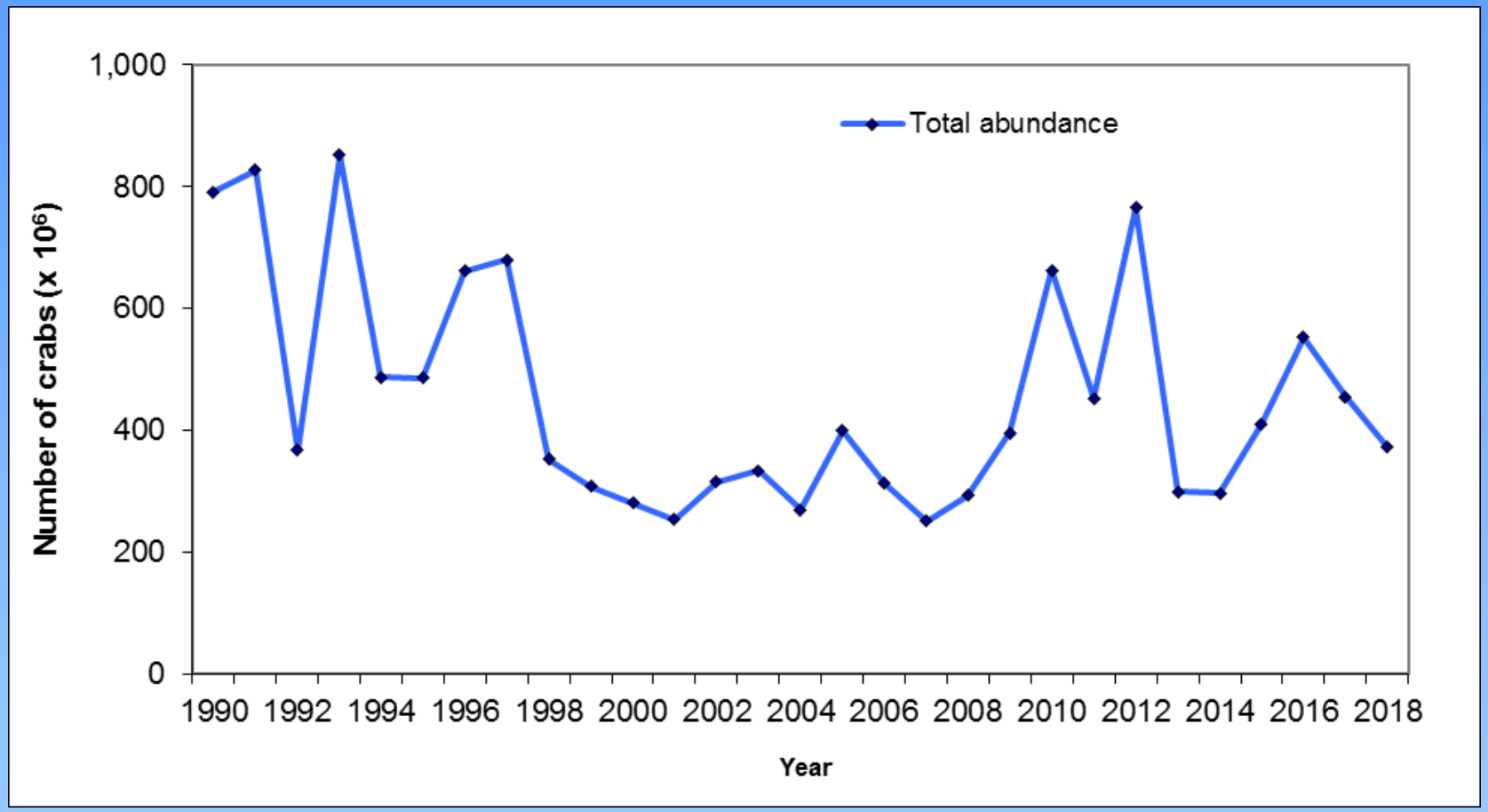
2017 Harvest

Status of the Stock

Recommendations

Winter Dredge Survey 2018

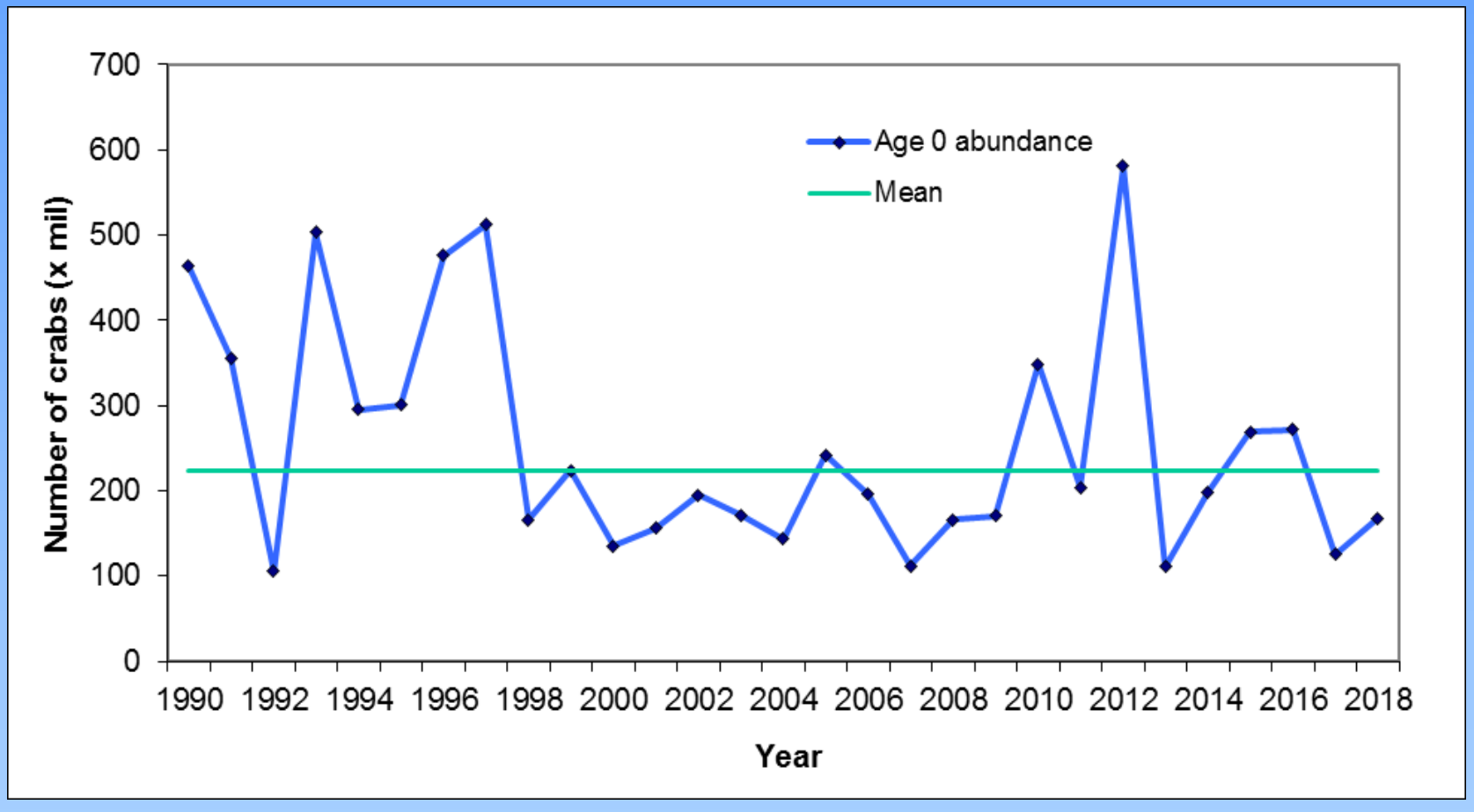
Total abundance



Abundance of all crabs, both male and female, all ages, 1990-2018.

Winter Dredge Survey 2018

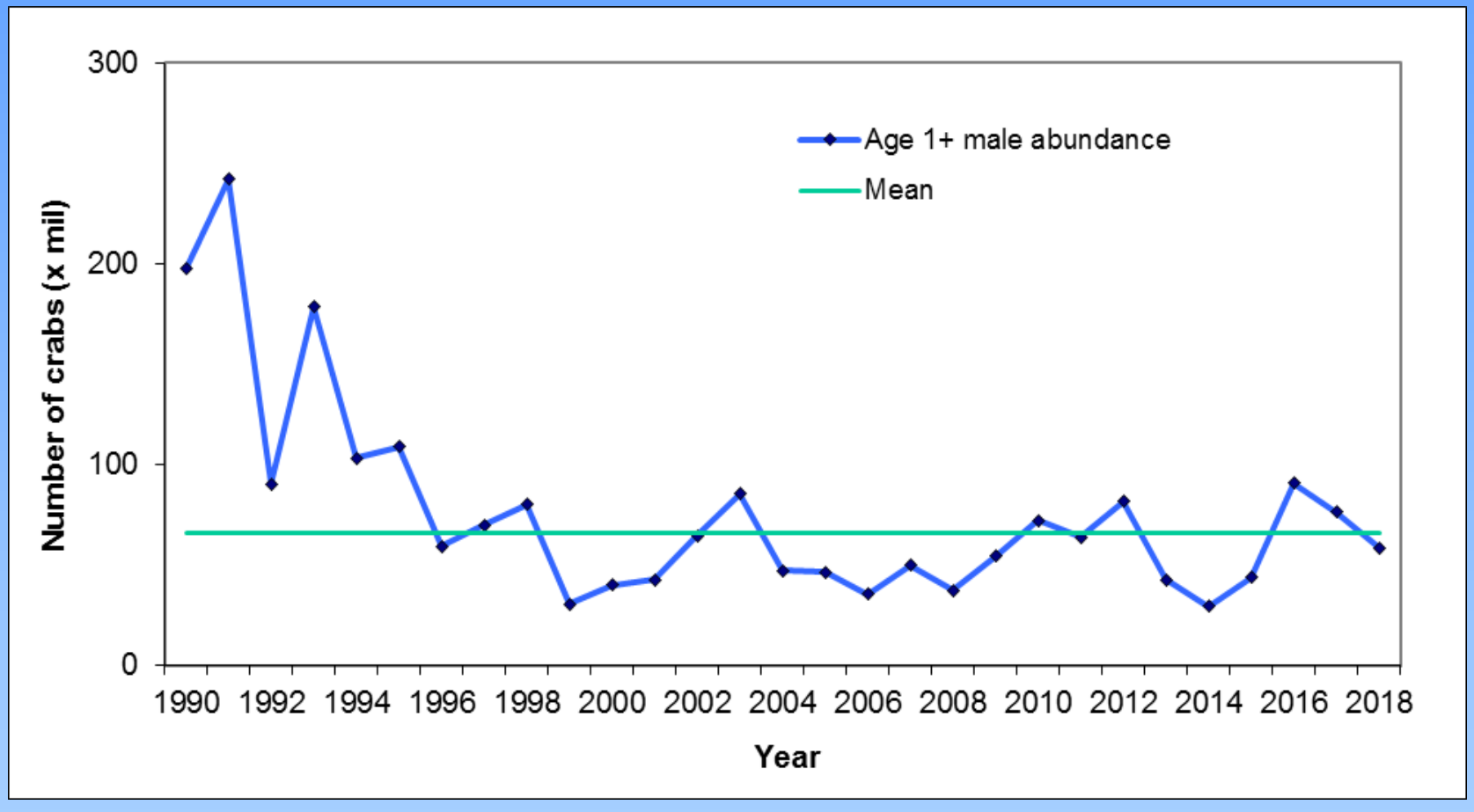
Juvenile abundance



Abundance of Age 0 crabs (<60 mm CW), both male and female, 1990-2018. Most of these crabs will become available to the fishery by Fall.

Winter Dredge Survey 2018

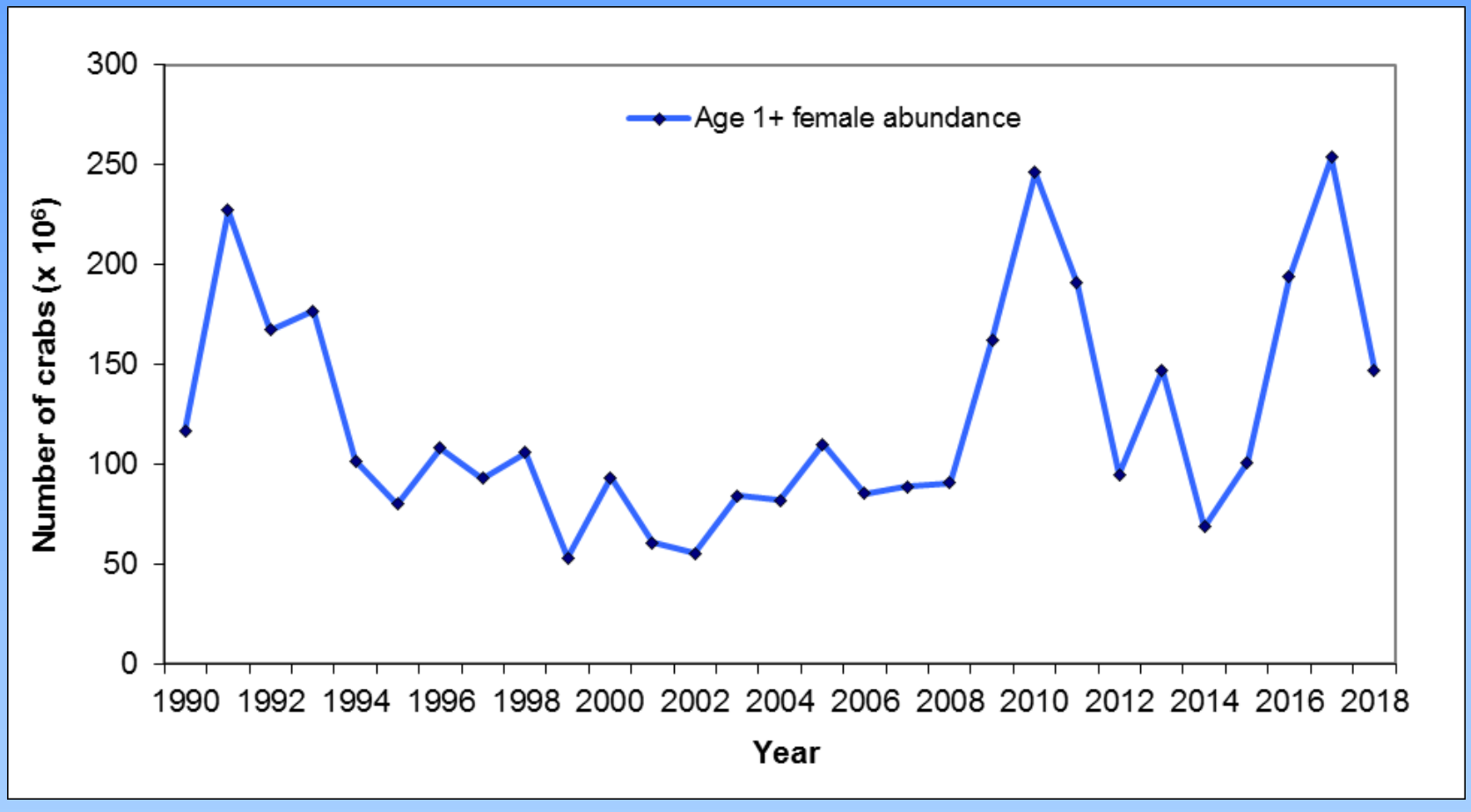
Adult male abundance



Abundance of adult males (Age 1+) ≥ 60 mm carapace width. Considered the ‘exploitable stock’, capable of mating within the coming year

Winter Dredge Survey 2018

Adult female abundance



Abundance of adult females (age 1+) , ≥ 60 mm carapace width.
These are crabs that will spawn within the coming year.

Overwintering Mortality

Overwintering mortality in 2018 was above average, but lower than the highest values of the time series – 1996, 2003, 2015.

Bay-wide Age/sex group	1996-2018 average	2013	2014	2015	2016	2017	2018
All crabs	4.84%	4.00%	3.79%	15.68%	1.95%	1.15%	6.37%
Juveniles	1.30%	0.00%	0.89%	10.84%	0.50%	0.00%	0.87%
Adult Females	8.70%	3.00%	7.68%	19.25%	2.99%	1.37%	11.06%
Adult males	9.74%	13.88%	13.58%	28.11%	1.06%	2.29%	13.66%

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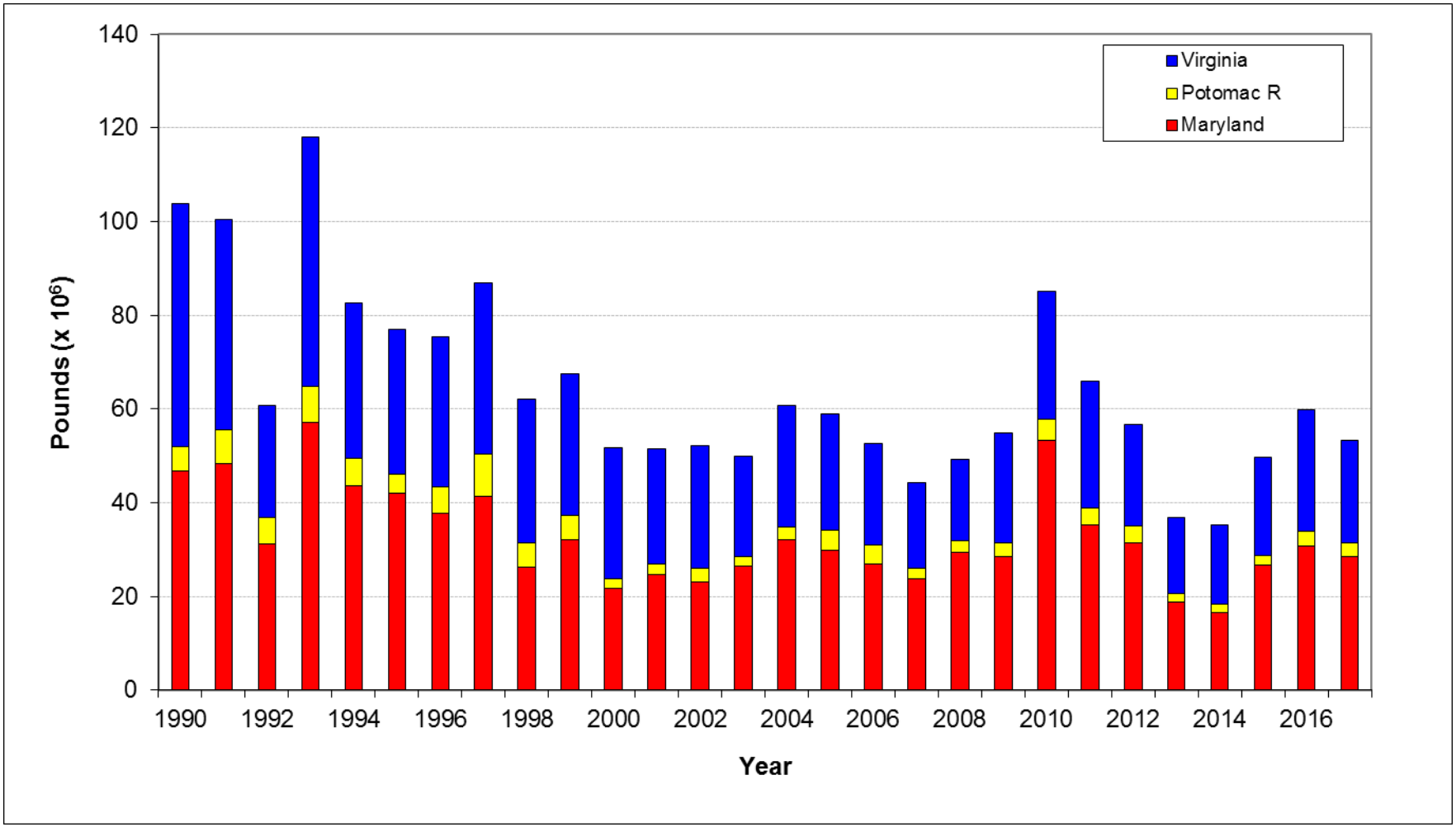
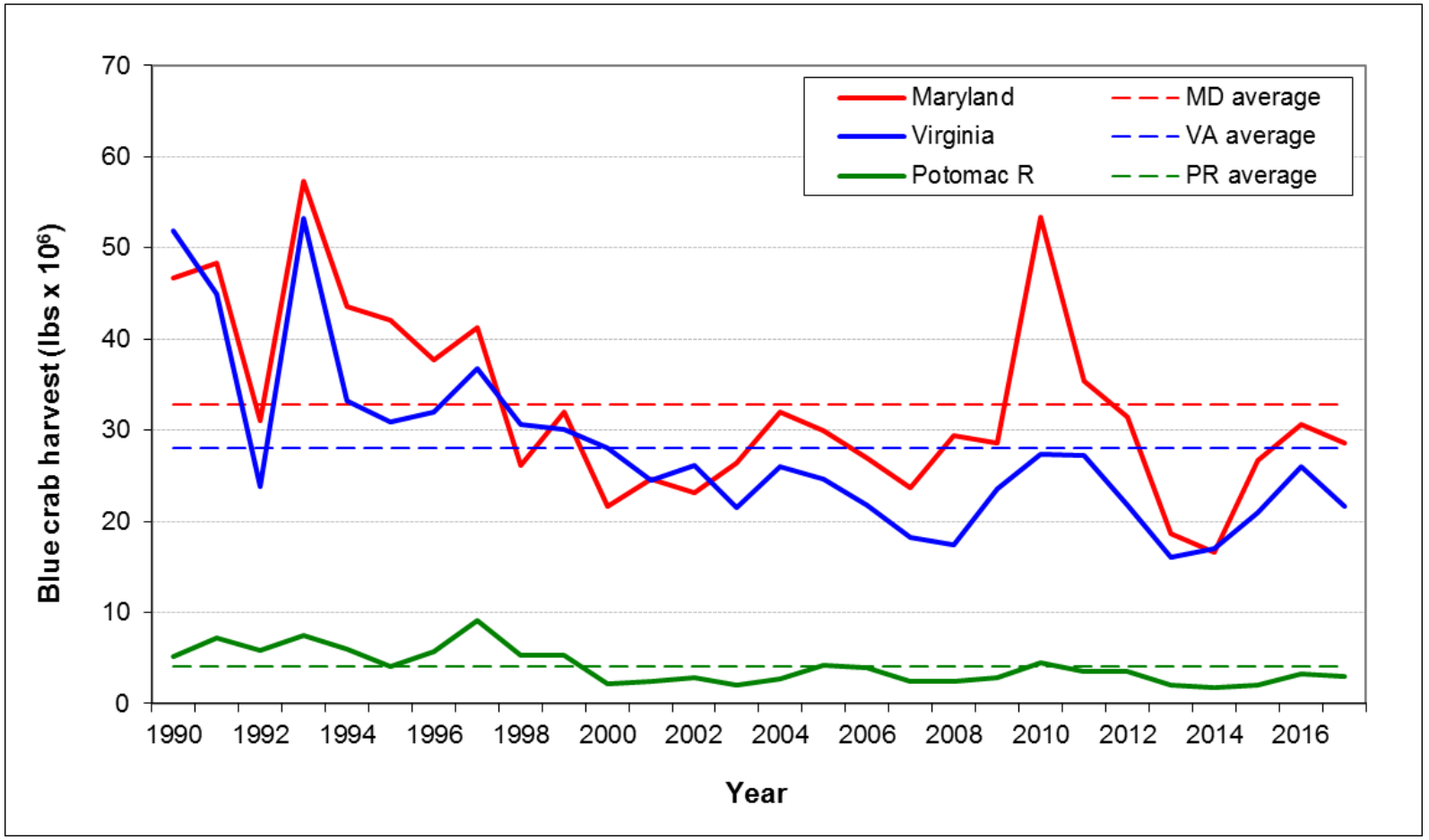
Commercial

Total commercial blue crab landings (all market categories) in Chesapeake Bay, 1990-2017.



Commercial

Maryland, Virginia and Potomac River commercial blue crab harvest in millions of pounds from Chesapeake Bay, all market categories, 1990-2017.



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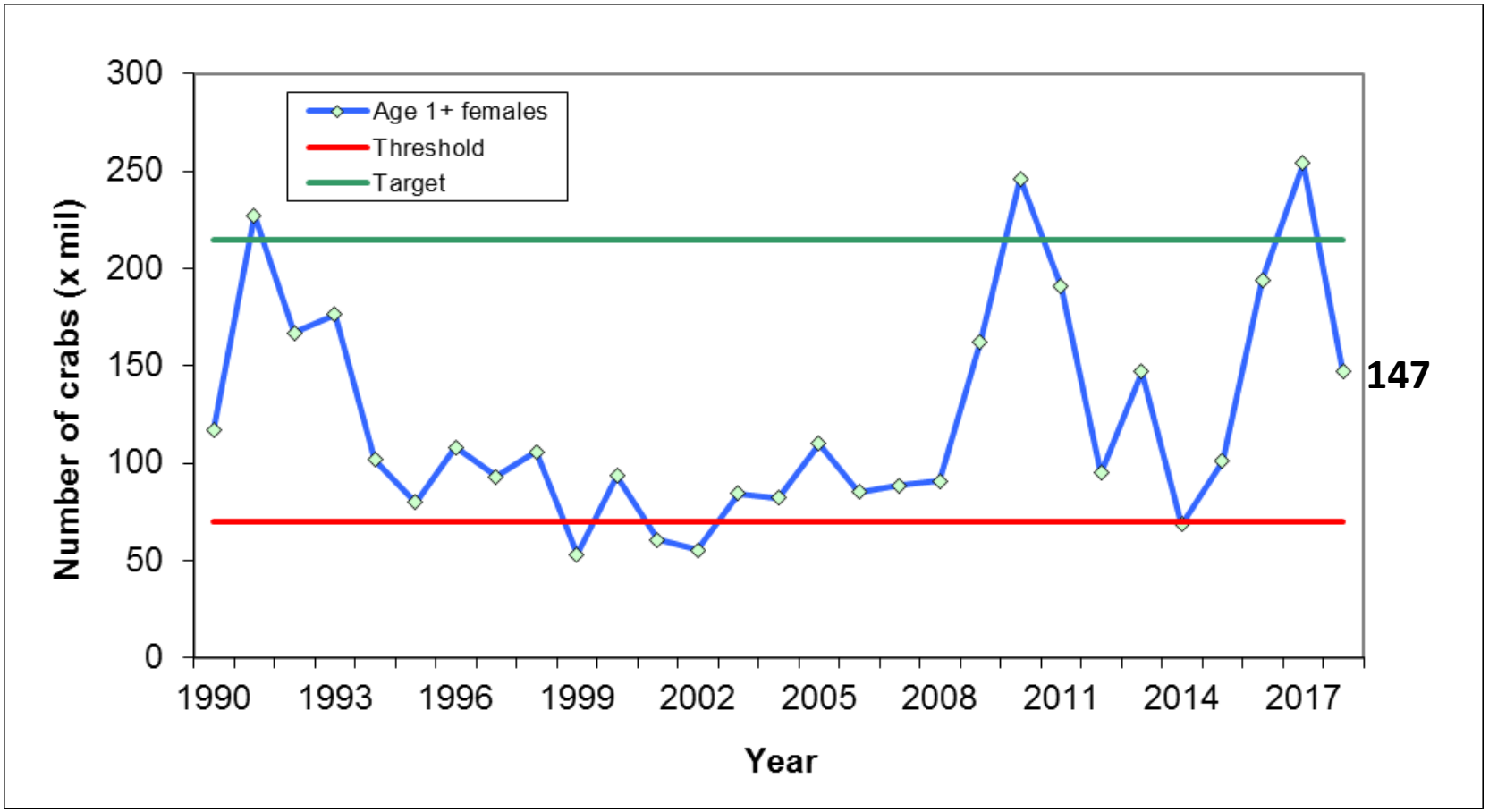
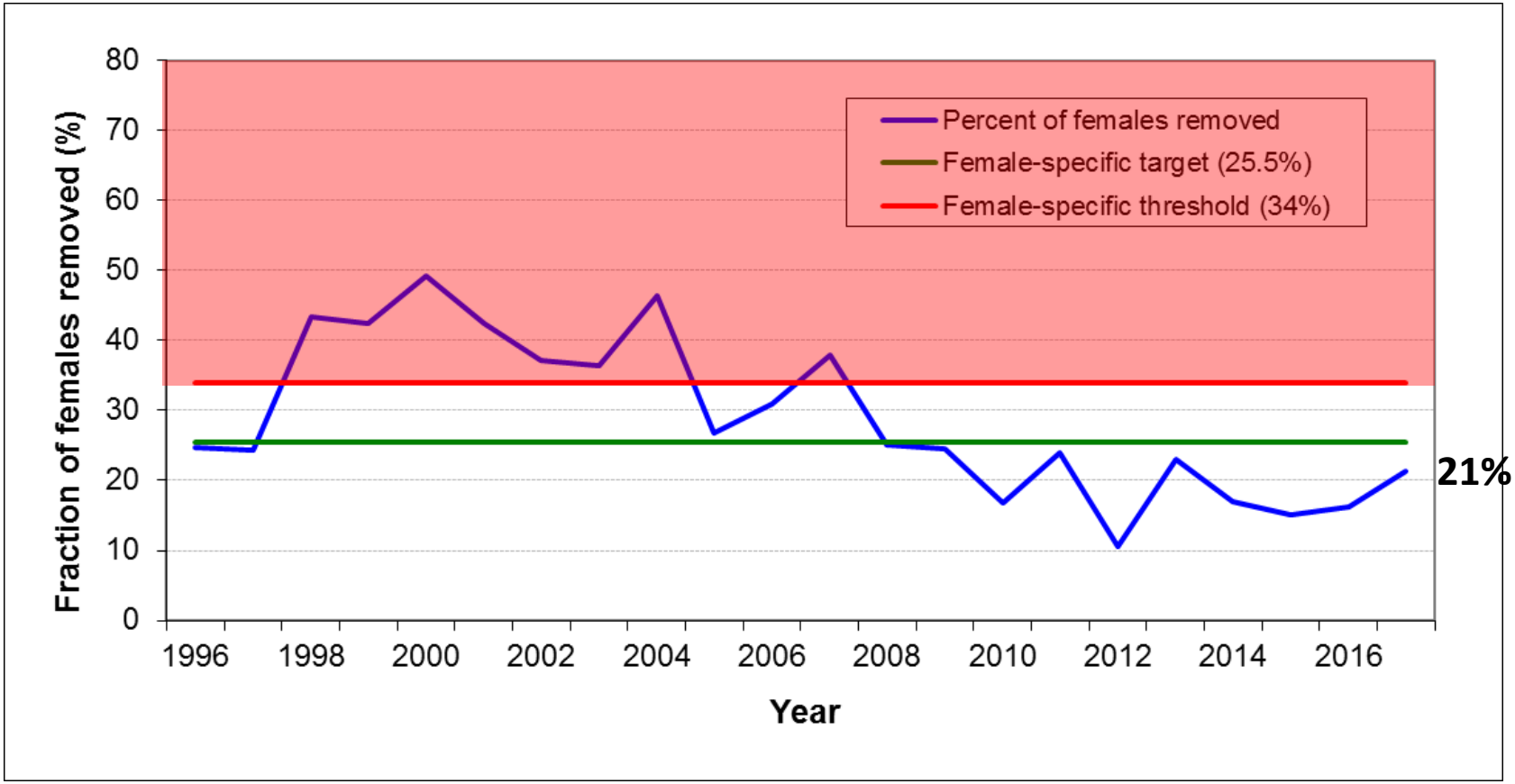
Adult Female Abundance

Winter dredge survey estimate of **abundance of female blue crabs age one year and older** (age 1+) 1990-2018 with female-specific reference points. These are female crabs measuring greater than 60mm across the carapace and are considered the 'exploitable stock' that will spawn within the coming year.



Female Exploitation Rate

The percentage of all female blue crabs removed from the population each year from 1990-2017 by fishing relative to the female-specific reference points. Exploitation rate (% removed) is the number of female crabs harvested within a year divided by the female population (age 0 and age 1+) estimated at the beginning of the year. Below target and threshold for tenth consecutive year.

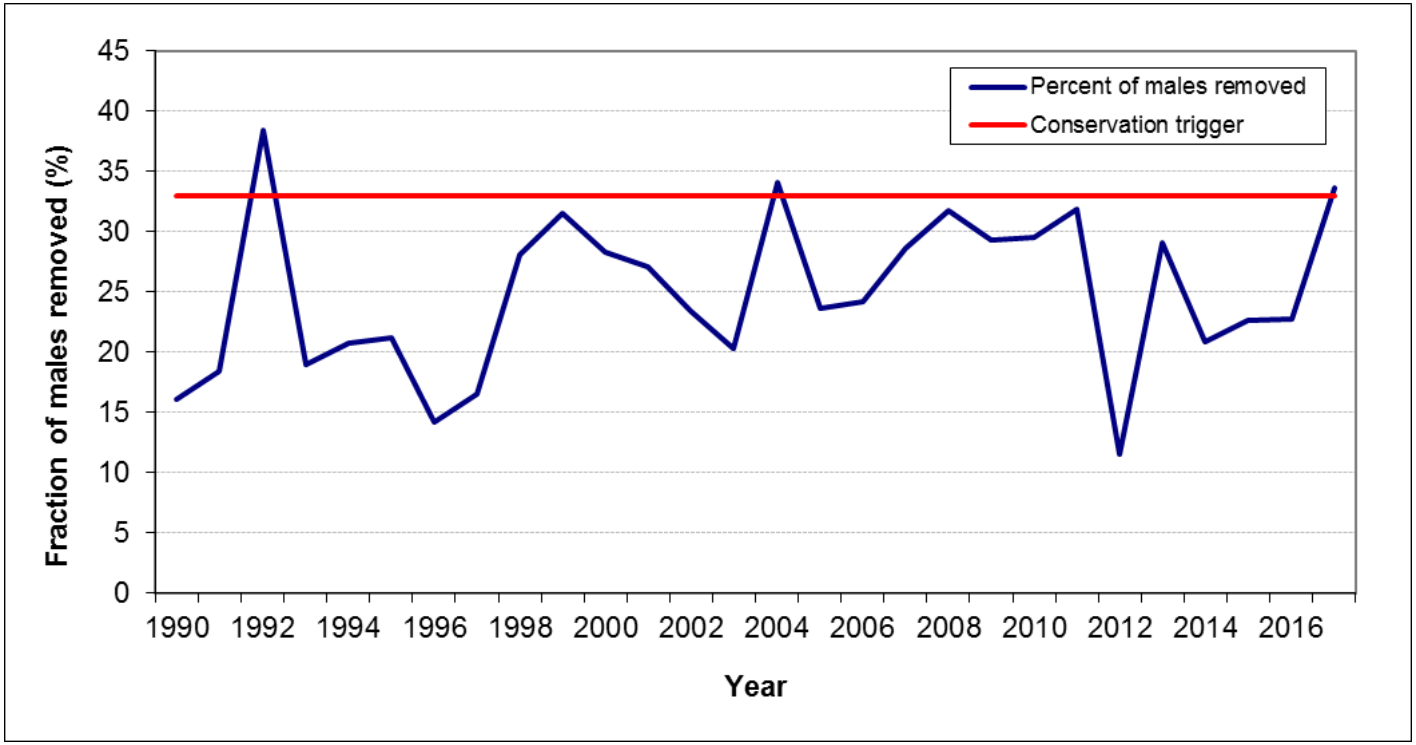


Control Rule	Reference Points			Stock Status						
	Period	Target	Threshold	2012	2013	2014	2015	2016	2017	2018
Exploitation Fraction (age 0+ female crabs)	Current, Female-specific	25.5%	34% (max)	10%	23%	17%	15%	16%	**21%**	TBD
Abundance (millions of age 1+ female crabs)	Current, Female-Specific	215	70 (min)	97	147	68.5	101	194	254	**147**

Stock Status: The Chesapeake Bay blue crab stock is **not depleted and overfishing is not occurring.**

Male Conservation Triggers

Conservation measures should be considered for males if the male exploitation rate exceeds 33%, which is the second highest exploitation fraction observed for male crabs since 1990.



The 2017 male exploitation fraction was 33%, so no immediate management action for male blue crabs is recommended, but may be warranted if exploitation remains high.

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Short-term Management Advice*:*

“Based on analysis of the 2018 winter dredge survey results, CBSAC recommends that the jurisdictions maintain a cautious, risk-averse approach in the 2018 season and no adjustments to management are warranted..”

Short-term Management Advice:

Continue efforts to improve quality of commercial catch data.

- electronic reporting that is accurate and accountable
- better estimates of exploitation
- determine biological characteristics of the catch

Improved estimates of recreational harvest

- last ODU study was 2009
- recent SERC study in MD

Long-term Management Advice:

Characterizing and quantifying effort

- in lieu of a verifiable reporting system…
- better estimates of amount and temporal/spatial characteristics of effort
- improvements to stock assessments

Evaluate latent effort

- Initial analysis of annual active licenses vs. annual abundance estimates indicates that latent effort has probably not had a significant impact in recent years.
- Need to continue analysis and consider socioeconomic influences and changes within each season (intra-annual).

Critical Data and Analysis Needs:

1. Increased accountability and improved harvest reporting
    - commercial electronic reporting that is verifiable
    - more accurate estimate of exploitation
    - improve estimates of recreational harvest

2. Improved estimate of recruitment
    - VIMS is actively pursuing funding to conduct a shallow-water survey to assess juvenile crabs that are potentially not sampled by the dredge gear.

3. The influence of male abundance on the overall population and fishery productivity
    - quantify the relationship between male abundance and reproductive success.
    - in lieu of biological metrics, develop criteria to replace the current male trigger.

Critical Data and Analysis Needs:

4. Quantifying environmental factors related to recruitment variability

    - prediction of future recruitment success based on environmental conditions

5. Application of fishery-independent data

    - Review existing survey data to provide additional information on blue crabs at other times of the year (VIMS, CHESMAP, CHESFIM, MDNR, SERC)

Critical Data and Analysis Needs:

6. Other sources of mortality
   - analyze the magnitude of incidental mortality, including sponge crab discards, unreported losses from peeler fishery
   - non-harvest mortality estimates will inform future stock assessments

7. Biological parameters
   - continue to improve understanding of longevity, fecundity, growth rates, etc. to inform future stock assessments

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Final Report will be available at:

http://www.chesapeakebay.net/who/group/sustainable_fisheries

under "Publications"

THANK YOU! QUESTIONS?

CBSAC Members:

Glenn Davis (Chair)	Maryland Department of Natural Resources
Alex Aspinwall	Virginia Marine Resources Commission
Ellen Cosby	Potomac River Fisheries Commission
Lynn Fegley	Maryland Department of Natural Resources
Pat Geer	Virginia Marine Resources Commission
Daniel Hennen	NMFS, Northeast Fisheries Science Center
John Hoenig	Virginia Institute of Marine Science
Eric Johnson	University of North Florida
Rom Lipcius	Virginia Institute of Marine Science
John McConaugha	Old Dominion University
Tom Miller	UMCES, Chesapeake Biological Laboratory
Rob O'Reilly	Virginia Marine Resource Commission
Amy Schueller	NMFS, Southeast Fisheries Science Center Virginia Institute of Marine Science
Mike Seebo	Maryland Department of Natural Resources
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