2019 Blue Crab Advisory Report Preview

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Chair, Chesapeake Bay Stock Assessment Committee
June 26, 2019
Sustainable Fisheries GIT Meeting

Chesapeake Bay Program
Science. Restoration. Partnership.

Results of 2018/19 Winter Dredge Survey

2018 Harvest

Status of the Stock

Recommendations

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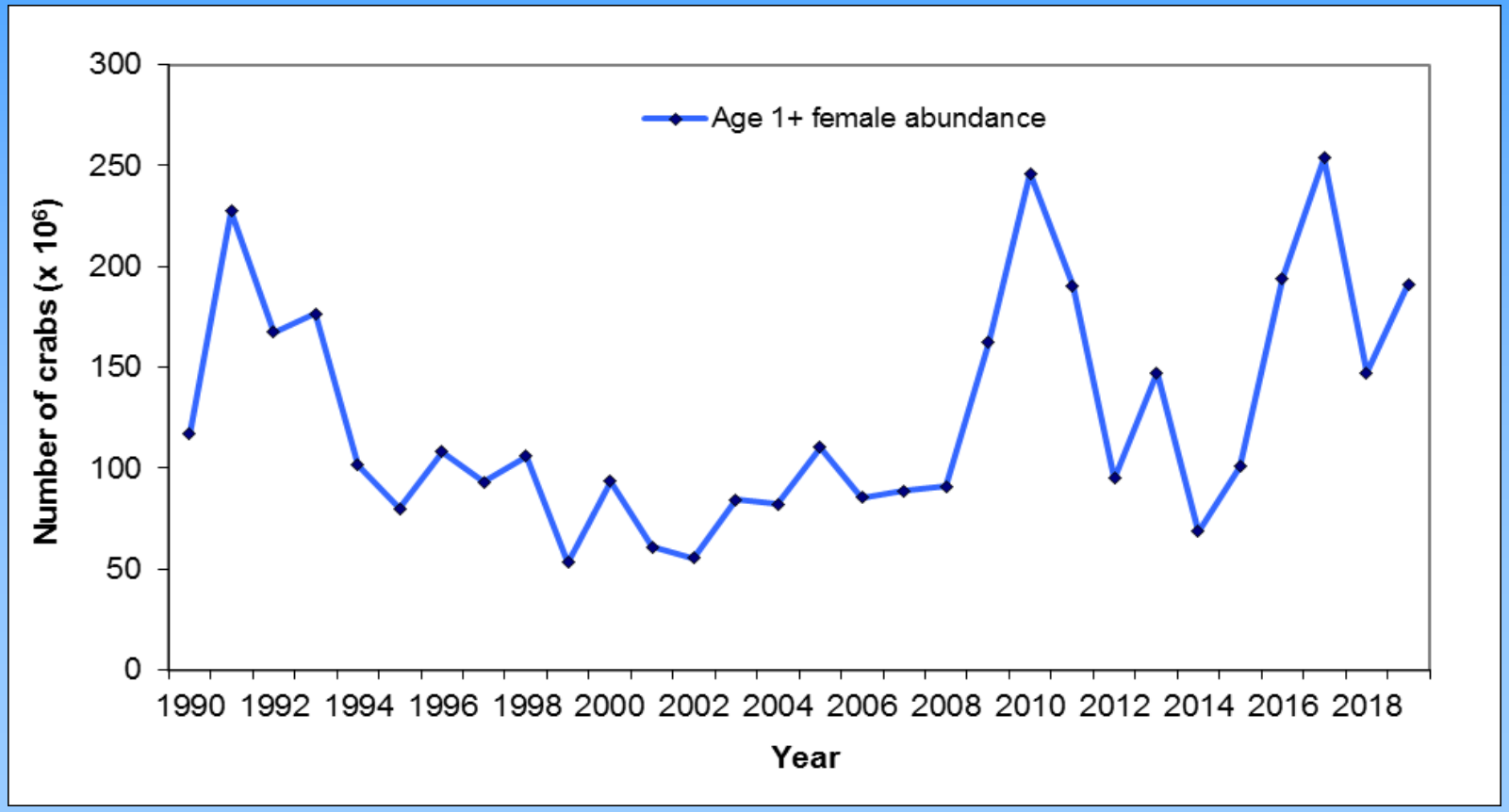
Winter Dredge Survey 2019

Total abundance – **595 million**

Juvenile abundance – **324 million**

Adult males – **80 million**

Adult females – **191 million**



Overwintering Mortality

Overwintering mortality in 2019 was below average.

Bay-wide Age/sex group	1996-2019 average	2014	2015	2016	2017	2018	2019
All crabs	4.71%	3.79%	15.68%	1.95%	1.15%	6.37%	1.80%
Juveniles	1.25%	0.89%	10.84%	0.50%	0.00%	0.87%	0.15%
Adult Females	8.40%	7.68%	19.25%	2.99%	1.37%	11.06%	1.87%
Adult males	9.66%	13.58%	28.11%	1.06%	2.29%	13.66%	7.83%

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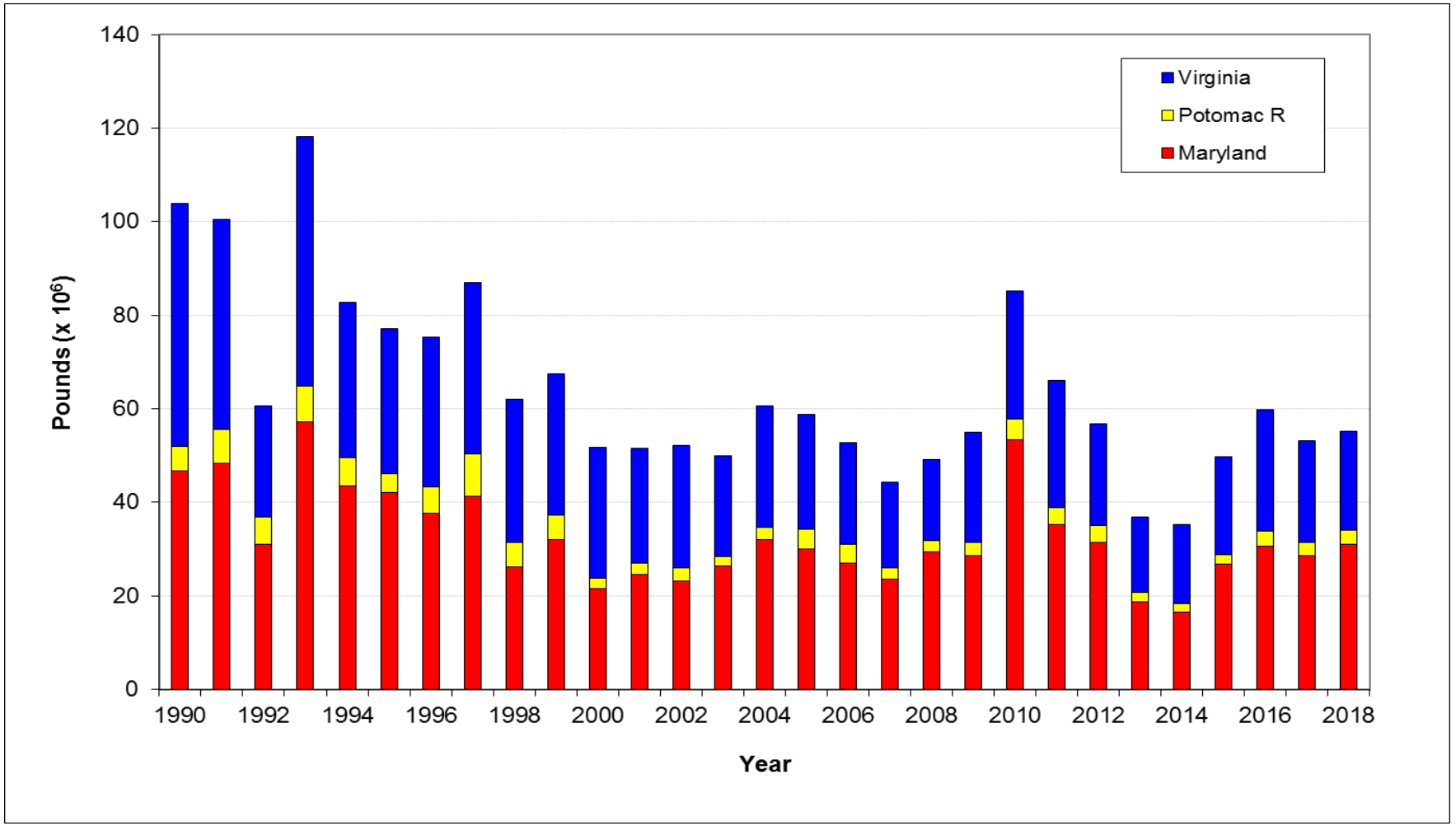
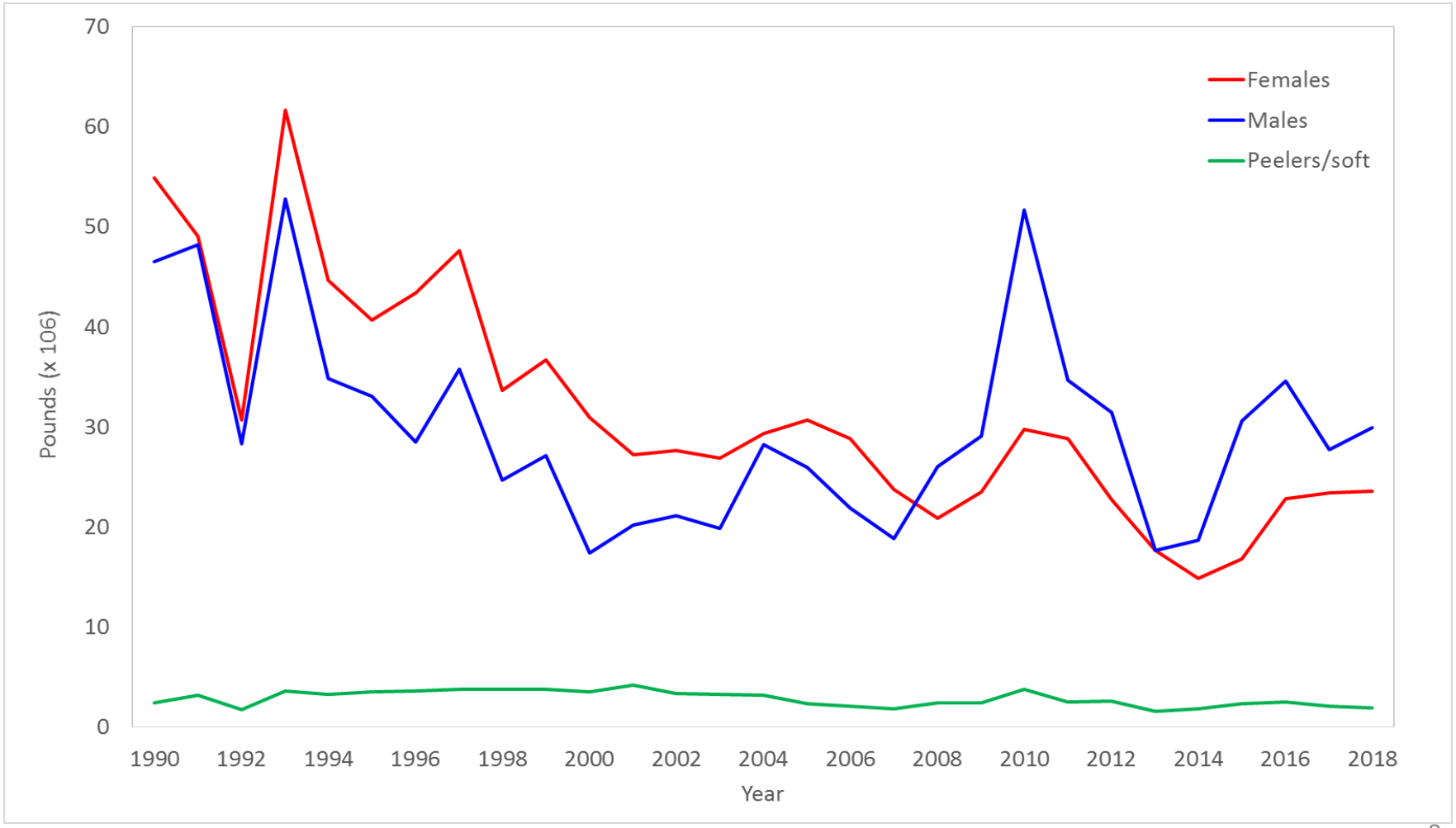
Commercial

Total commercial blue crab landings (all market categories) in Chesapeake Bay, 1990-2018.



Commercial

Bay-wide commercial blue crab landings by market category (male and female hard crabs, soft/peeler crabs)



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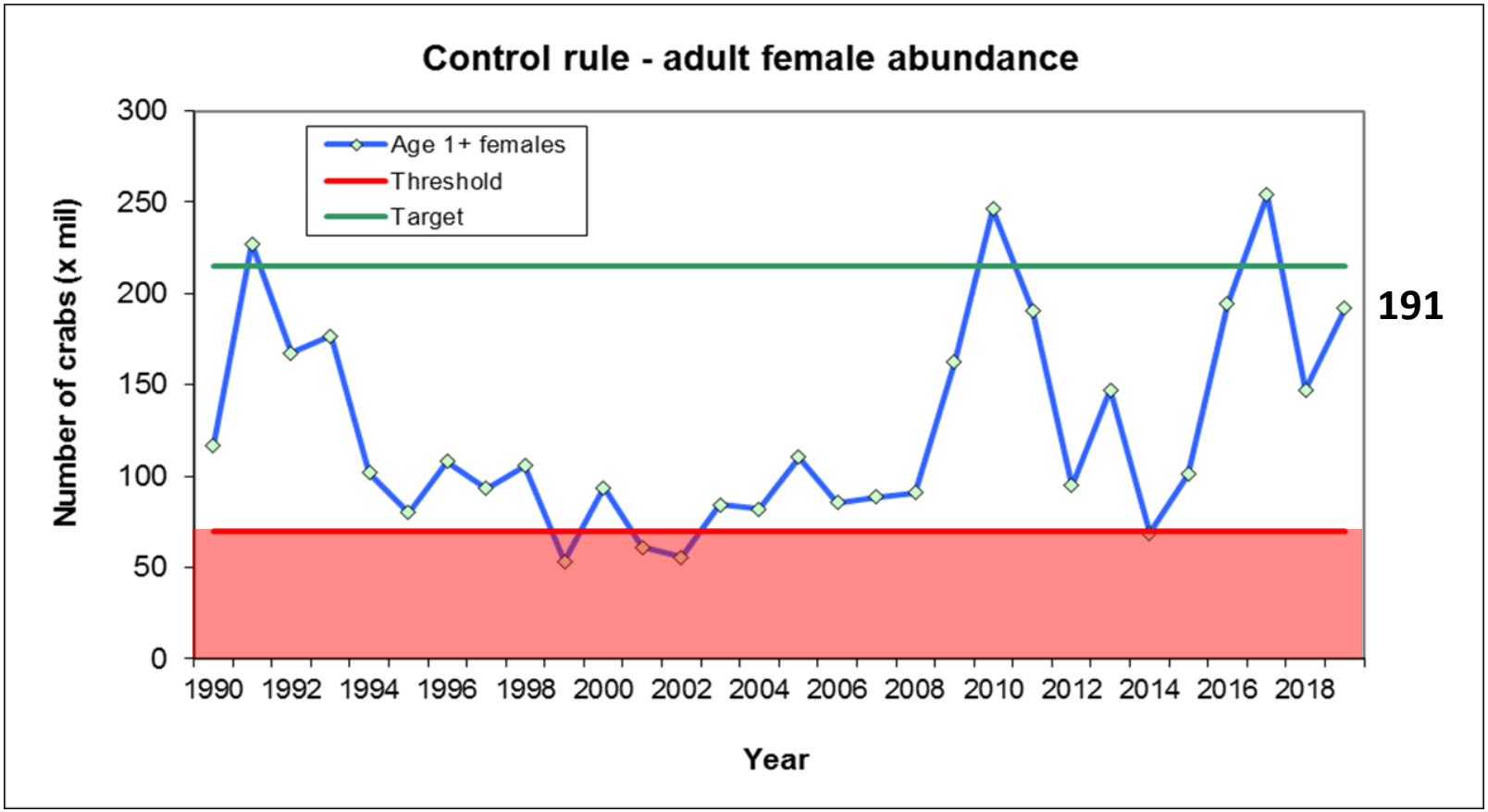
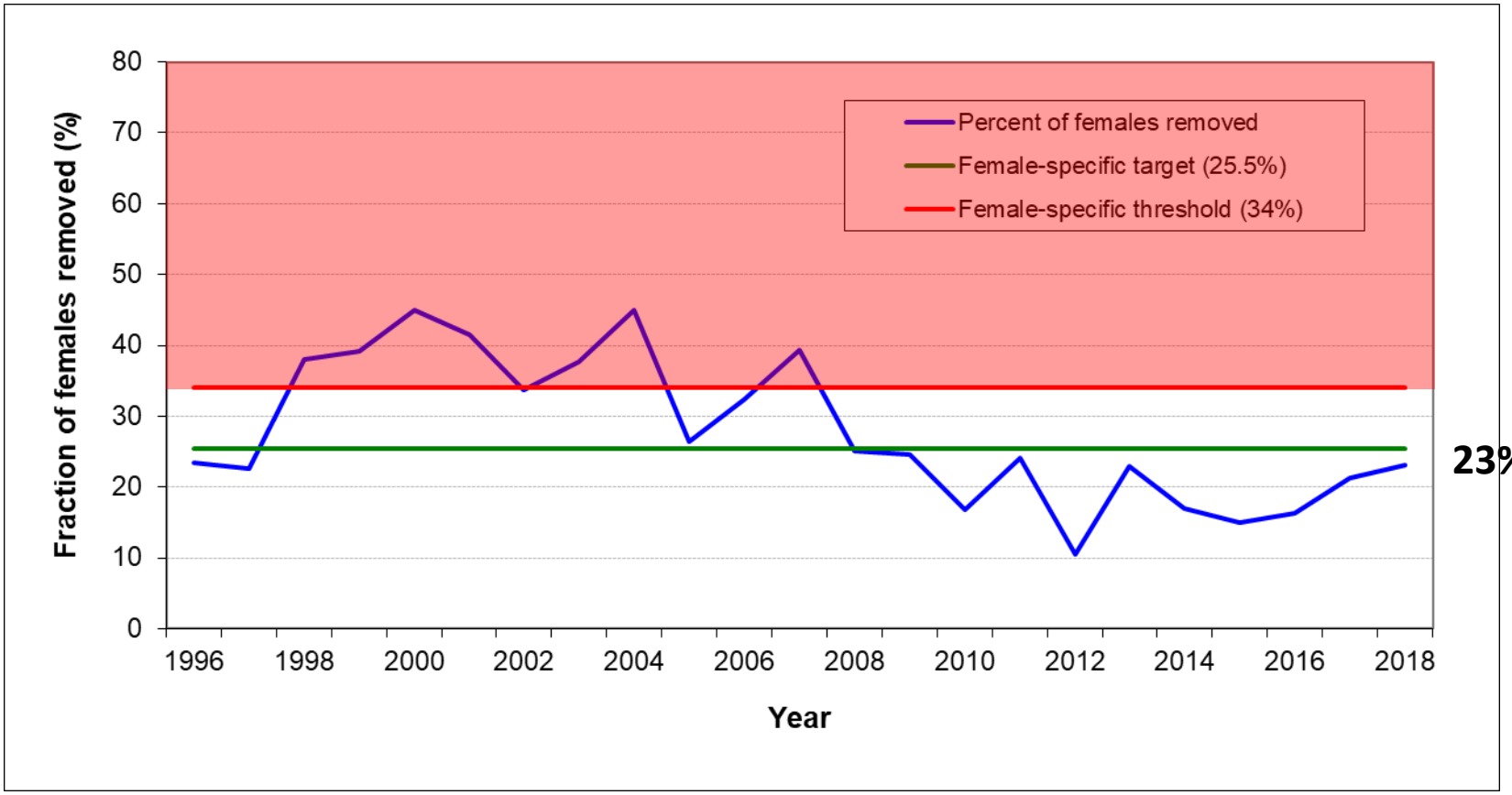
Adult Female Abundance

Winter dredge survey estimate of **abundance of female blue crabs age one year and older** (age 1+) 1990-2019 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 1990-2018 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.

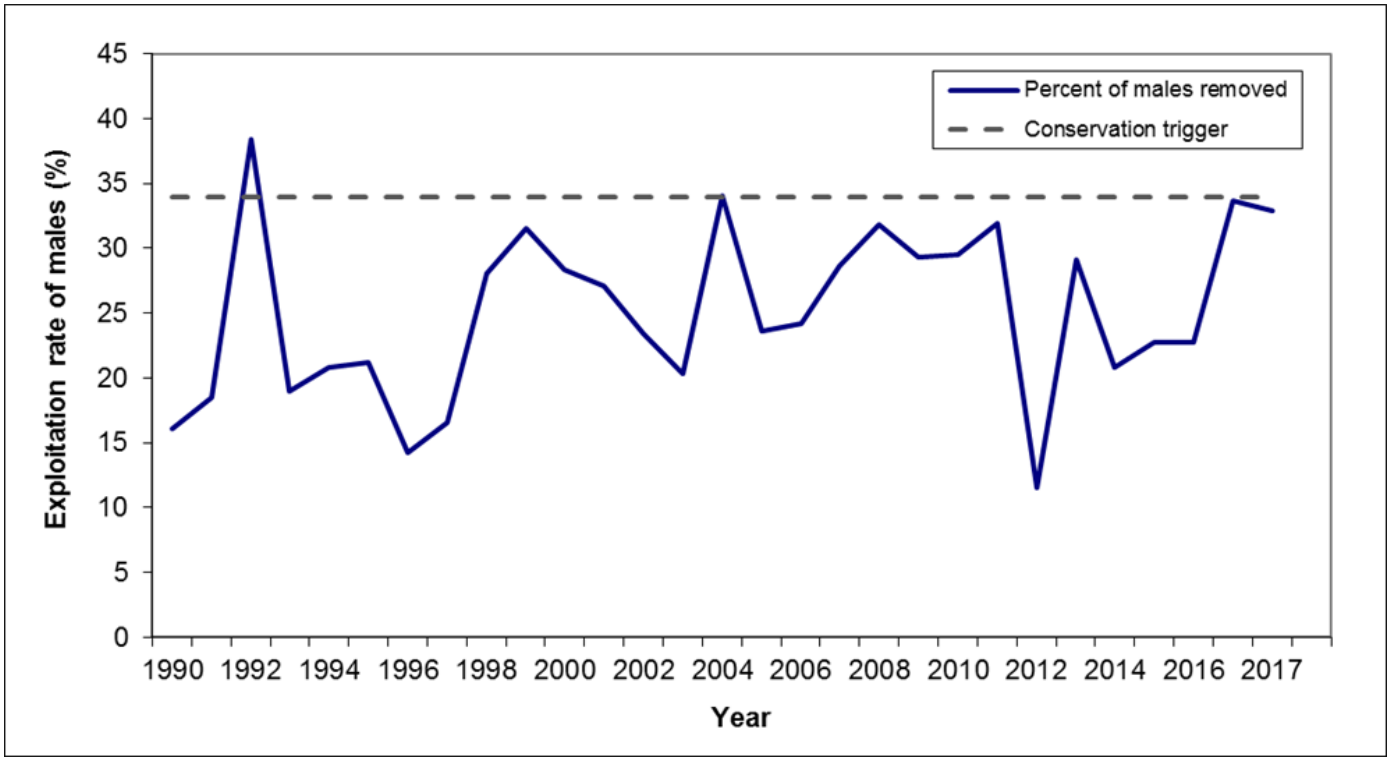


Control Rule	Reference Points			Stock Status						
	Period	Target	Threshold	2013	2014	2015	2016	2017	2018	2019
Exploitation Fraction (age 0+ female crabs)	Current, Female-specific	25.5%	34% (max)	23%	17%	15%	16%	21%	**23%**	TBD
Abundance (millions of age 1+ female crabs)	Current, Female-Specific	215	70 (min)	147	68.5	101	194	254	147	**191**

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

Male Conservation Trigger

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 2018 male exploitation fraction was 32%, so no immediate management action for male blue crabs is recommended, but exploitation remains high.

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Management Advice:

“Based on analysis of the 2019 winter dredge survey results, CBSAC recommends that the jurisdictions maintain a cautious, risk-averse approach in the 2019 season and no restrictions by management are warranted..”

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
- quantify effort from all sectors

Improved estimates of recreational harvest

- last ODU study was 2011
- SERC tagging study in MD

Critical Data and Analysis Needs:

1. Assess the efficacy of winter dredge survey estimates
   – compare current design and methods used to calculate abundance to others
   - workshop

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

3. Improved estimate of recruitment
   - VIMS was not able to obtain funding to conduct a shallow-water survey to run concurrently with the winter dredge survey.
   - other efforts are being explored

Critical Data and Analysis Needs:

4. 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.

5. Quantifying environmental factors related to recruitment variability

- prediction of future recruitment success based on environmental conditions

6. Blue crab data hub

- provide a consistent data platform for future research
- minimize QA/QC
- database work group to determine design and insure everyone's interests are protected.

Critical Data and Analysis Needs:

7. 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)

8. Fishery-dependent data
   - understand catch composition (sex, size, etc.)

9. 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

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

Results of 2016/17 Winter Dredge Survey

2016 Harvest

Status of the Stock

Recommendations

Final Report is currently available at:

http://www.chesapeakebay.net/groups/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
Alexa Kretsch	Virginia Marine Resource Commission
Eric Johnson	University of North Florida
Rom Lipcius	Virginia Institute of Marine Science
Genine McClair	Maryland Department of Natural Resources
Tom Miller	UMCES, Chesapeake Biological Laboratory
Amy Schueller	NMFS, Southeast Fisheries Science Center
Mike Seebo	Virginia Institute of Marine Science
Alexei Sharov	Maryland Department of Natural Resources
Mike Wilberg	UMCES, Chesapeake Biological Laboratory
Mandy Bromilow (Coordinator)	ERT/NOAA Chesapeake Bay Office