

# BLUE CRAB 2014



*Status of the Chesapeake Population and its Fisheries*

## Introduction

In January 2001, the Chesapeake Bay Commission's Bi-State Blue Crab Advisory Committee released its report, *Taking Action for the Blue Crab: Managing and Protecting the Stock and Its Fishery*. The report and associated management actions were based on extensive scientific review and five years of deliberation among fisheries managers and stakeholders alike. Simply stated, a Baywide goal was adopted to double the size of the blue crab spawning stock.

Twice each year since that time, the Bi-State Blue Crab Technical Advisory Committee (BBTAC), the expert technical committee that advises the Commission, has met to review the status of the population and its fishery and to assess our progress. This report represents the 2004 findings of the BBTAC.

## Mixed Year and Uncertain Future

When it comes to crabs, the year 2004 can be characterized as “mixed with an uncertain future.” Though harvests were up slightly in 2004, concern continues for the Chesapeake Bay blue crab. According to an analysis released by the Chesapeake Bay Stock Assessment Committee (CBSAC) in June 2004, “low abundance combined with a high exploitation rate indicates a stock condition that warrants concern for the seventh consecutive year.”<sup>1</sup> While preliminary reports from the 2005 winter dredge survey show that adult female crabs appear to be returning to average levels of abundance, other studies have suggested a decline in spawning stock in the southern Bay's spawning grounds. Meanwhile, the Bay's blue crab population of market-sized crabs continues to hover at a level below the long-term average. These trends and findings are described in greater detail below.

On a positive note, fishery-independent surveys found some evidence of stock improvement in 2003, and preliminary data for 2004 also suggest a rise in crab harvests for Maryland, Virginia and the Potomac River. Baywide, this puts the 2004 crab harvest above the low catches of 2003, and a little higher than the level seen in 2002.

As for blue crab management measures, the Bay jurisdictions adopted no major regulatory changes in 2004, as resource managers continued to track and evaluate earlier crabbing reductions adopted in accordance with the Bi-State Blue Crab

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Advisory Committee's (BBCAC) 2001 Action Plan.<sup>2</sup>

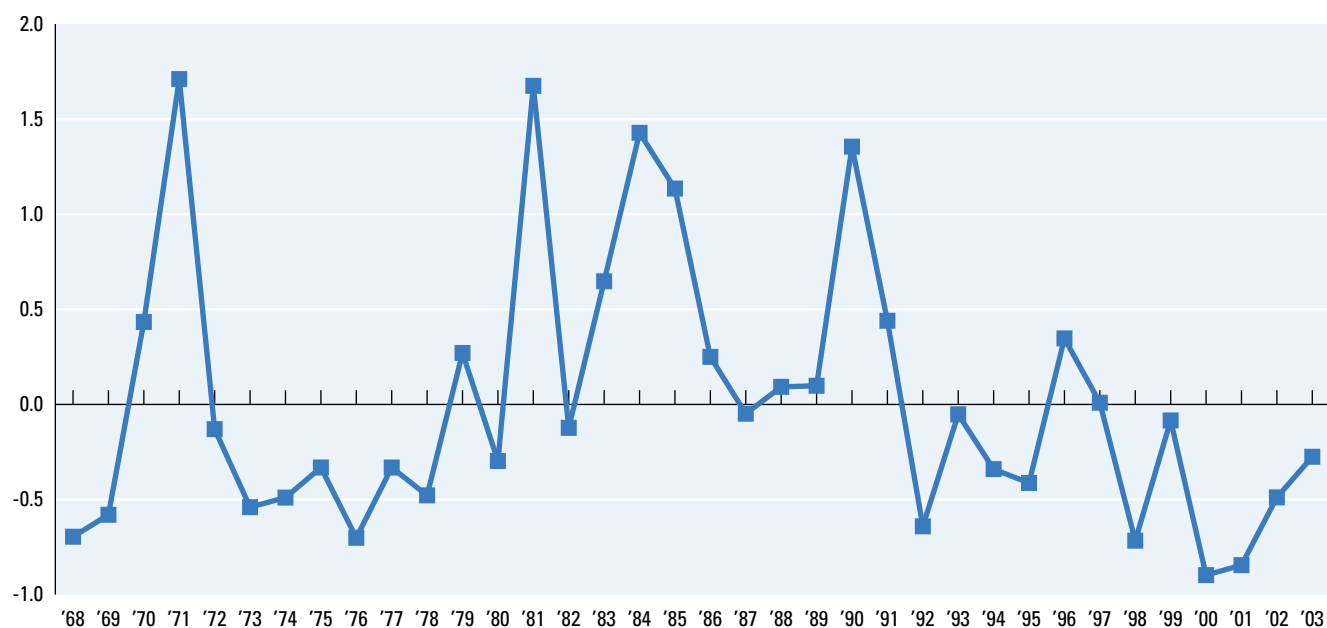
Given the indeterminate effects of weather events such as Hurricane Isabel in September 2003, and the unevenness of survey results (especially with regard to the abundance of female crabs), considerable uncertainty remains concerning the Bay's blue crab stock.

The members of the Bi-State Blue Crab Technical Advisory Committee therefore continue to promote a precautionary approach to the management of blue crabs. The scientists caution that a few months, or even seasons, of good crabbing in certain parts of the Bay do not signal a recovery of the entire population. Most important, the Committee reiterates the need to double the blue crab spawning stock — the original rationale for the Bi-State Action Plan's recommendation to reduce crabbing pressure by 15 percent.

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**FIGURE 1 Adult Female Abundance**

PERCENTAGE CHANGE FROM PREVIOUS YEAR



SOURCE: Chesapeake Bay Stock Assessment Committee; Maryland DNR

## Status of the Stock

According to the 2004 advisory published by CBSAC, “blue crab abundance improved in 2003, compared to the near historically low levels of the previous four years.” The report points out, however, that survey results “are not uniform” and that relatively low stock levels continue to create “a risk of recruitment failure.”

Measures of abundance put the Bay’s crab stock right on the “precautionary line” established by the Bi-State Blue Crab Advisory Committee in 2001. According to the winter dredge survey, which counts crabs of every age class, 2003 fishing mortality (crabbing pressure) moved away from the “danger line” (action threshold) for the first time since 1997. For several years CBSAC has advised moving toward the direct enumeration method (versus estimates based on measurements of length), and in the 2004 report they announced the adoption of that approach.

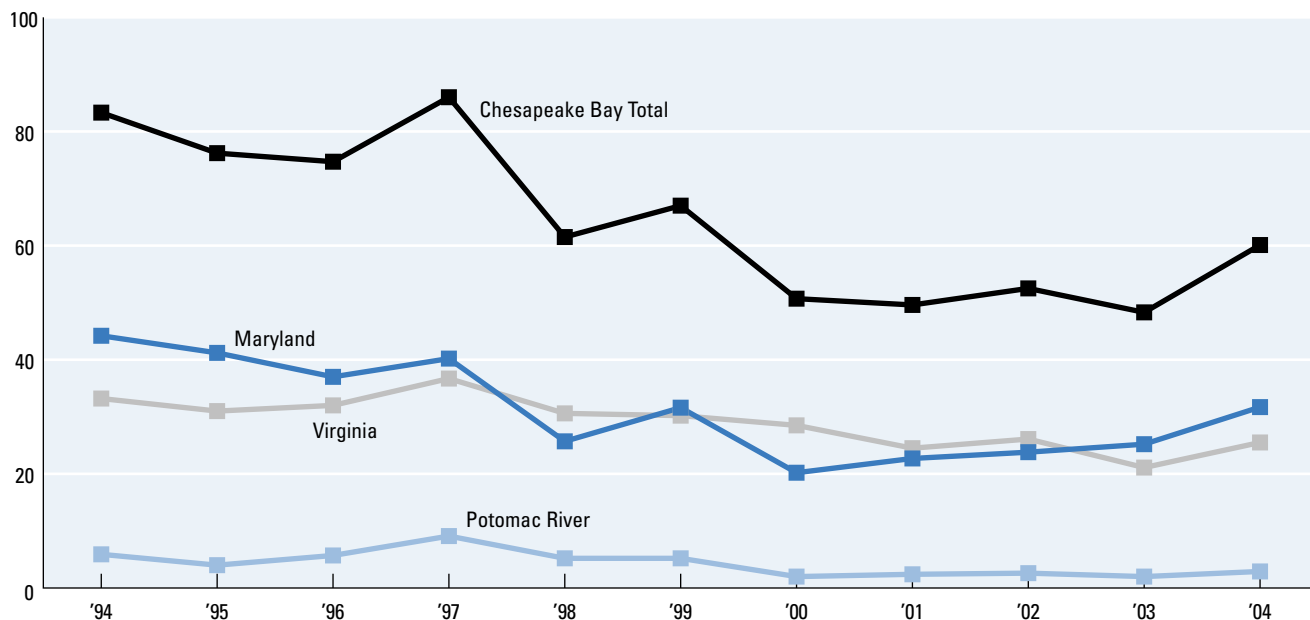
While fishing pressure registered well below the “danger” line established by BBCAC, it is important to note that in 2003 it was still slightly above (at 0.8) the desired target of 0.7. Though this represents only one’s year data point, it suggests that fishing pressure has fallen, though as mentioned the blue crab stock is not yet clear of the precautionary zone. Tracking these trends will become more precise given new measurement techniques (moving away from fishing mortality rate toward direct enumeration to calculate stock abundance).

In terms of crabs large enough to be caught (“exploitable” crabs), CBSAC noted near historic lows in 1998, 2000 and 2001, and higher abundances in 2002 and 2003. Looking at the past decade, they point out that for nine of the past ten years the abundance of exploitable blue crabs has remained below the long-term average.

A comprehensive update of blue crab stock assessment is now under way and should be completed in 2005. This assessment will employ

**FIGURE 2 Chesapeake Bay Commercial Blue Crab Harvest**

IN MILLIONS OF POUNDS (2004 FIGURES ARE PRELIMINARY)



SOURCE: Maryland DNR; Virginia Marine Resources Commission; Potomac River Fisheries Commission

new analytical tools and should provide a valuable account of the Bay's crab population.

## Commercial Harvests

The Bay's blue crab harvest saw an increase in 2004, a welcome improvement over the low catches of 2003.

**Virginia:** Virginia's crab harvest was up from 2003, from 21.1 million to 25.5 million pounds in 2004 (preliminary). This gives a tick upward, after a fairly constant downward trend since 1997.

**Maryland:** While Virginia harvests were up 4.4 million pounds, Maryland harvests rose 6.5 million pounds, from 25.2 in 2003 to 31.7 in 2004 (preliminary).

**The Two States:** Over the years Maryland and Virginia have traded the lead in crab harvests. A decade ago, in 1994, Maryland's strong harvests put it about 10 million pounds ahead of its sister state. After 1997 both states saw a decline in crab harvests, with Maryland experiencing the sharpest

declines until 2000, putting Virginia in the lead almost every year until 2002. Since 2000, however, Maryland has seen a gradual increase, and in 2003 and 2004 Maryland moved ahead once more.

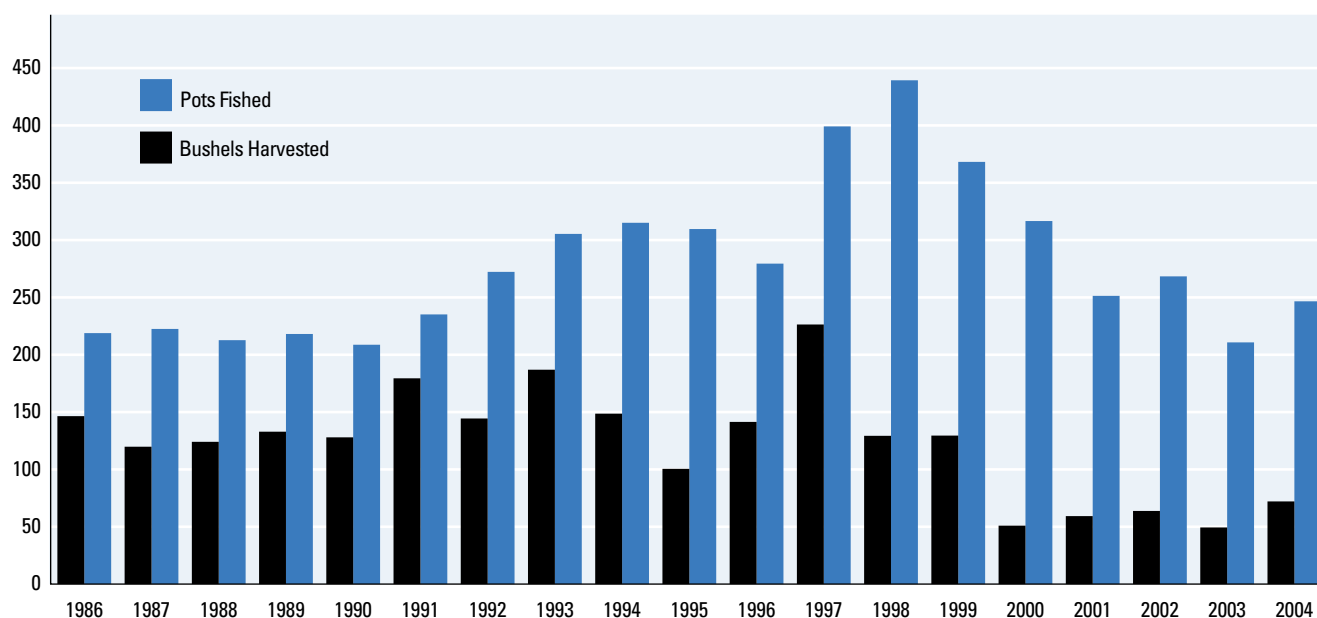
**Potomac:** The Potomac crab harvest also was up this year, from about 2 million pounds in 2003 to 2.9 million in 2004. The relationship of effort to catch (the catch per unit of effort, or CPUE) was up in the Potomac — the best since the low point of 2000.

**The Baywide Fishery:** Given the varying rise and fall of the two states — as well as the Potomac River — the Baywide crab harvest has fluctuated significantly during the past decade. In 1997, the crab harvest for the entire Bay reached a peak of nearly 86 million pounds (thanks to a strong year in all three jurisdictions at once), but dropped to a low of only about 48 million pounds in 2003.

Using preliminary estimates for 2004, the Baywide harvest stands at about 60.1 million pounds, including Virginia, Maryland and the Potomac. The biggest recent drop in Baywide

**FIGURE 3 Potomac River Catch Per Unit Effort**

IN THOUSANDS OF POTS FISHED, THOUSANDS OF BUSHELS HARVESTED (2004 FIGURES PRELIMINARY)



SOURCE: Potomac River Fisheries Commission

harvests occurred when crab production fell from nearly 86 million pounds in 1997 to 61.5 million pounds in 1998. Since then, instead of Baywide harvests in the 70 to 80 million pound range, totals have fallen to numbers in the 60 million range, then the 50 million range, and then to less than 50 million in 2003, before climbing again to over 60 million in 2004.

Given these figures, it is easy to see why, despite an increase in 2004, Baywide crab hauls remain below the long-term average.

**Female Crabs:** Baywide, female crabs have for years represented the greater proportion of the total catch. Between 1990 and 2003, on average, roughly 65 percent of the female crabs harvested came from Virginia, whereas roughly 65 percent of the male crabs harvested came from Maryland.

In some years Virginia's portion of the harvest of female crabs has measured around 70 percent. In those same years Maryland's part of the female crab harvest has hovered around 25 to 30 percent. (The Potomac's portion of the Baywide female

harvest is generally less than 10 percent.) In 2003, however, Virginia's portion of the female harvest declined and Maryland's increased, so that they both approached 50 percent. This is unusual, and further suggests that 2003 was, in one manager's words, "a funny year all the way around."

In the Potomac the percentage of females was down slightly in 2004: from a 7-year average of 37 percent (rising to 40 percent from 2001-2003) to about 33 percent.

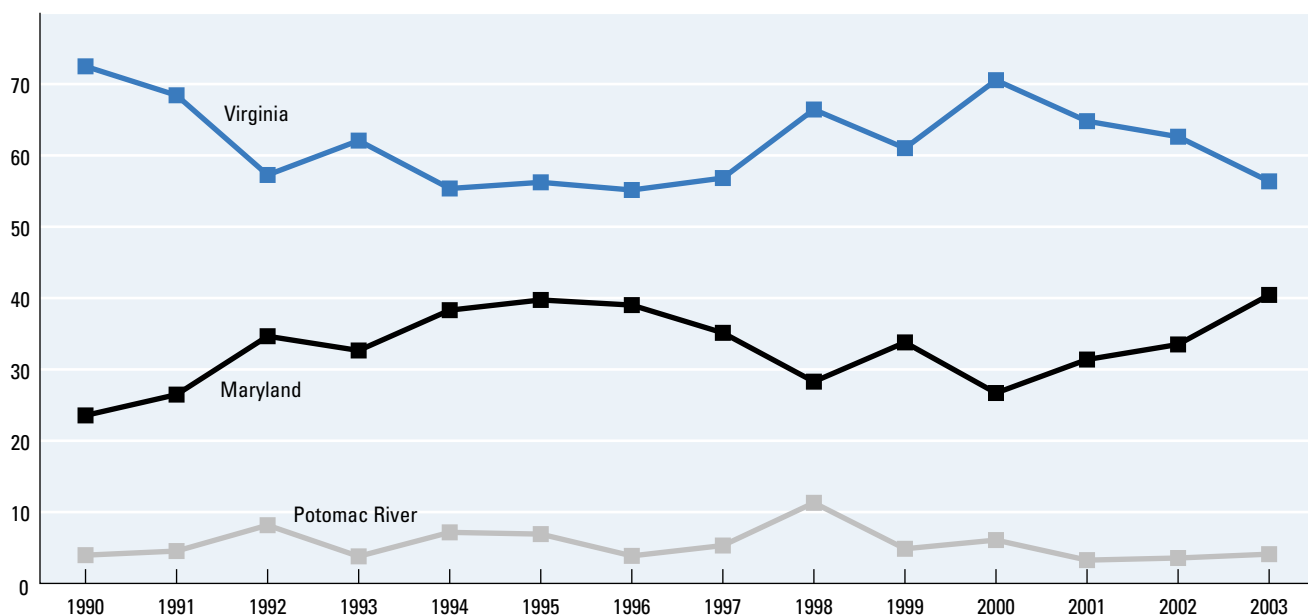
A key question is whether declines in female harvests in the Potomac and Virginia waters (and a simultaneous increase in Maryland's percentage of female crabs) signifies some shift in the population or in habitat, or whether these are simply anomalies. Future years should tell whether a new pattern is emerging — or not.

**Recreational Harvests**

The states have no new recreational harvest data for 2003, but they estimate that the proportion of

**FIGURE 4 Distribution of Harvest of Mature Females**

PERCENTAGE OF BAY-WIDE FEMALE CATCH (TOTAL FEMALE CATCH: 58 MILLION POUNDS IN 1993; 24 MILLION POUNDS IN 2003)



SOURCE: Maryland DNR

the total harvest taken by recreational fishermen will be about 5-8 percent, the same proportion calculated for 2001 and 2002. Maryland plans to conduct another recreational survey in 2005.

**Management in 2004**

The jurisdictions have implemented a number of conservation measures during the past several years. In 2004, they enacted no new measures, but are tracking the effects of measures in place. Fishing effort does in fact appear to be decreasing, though the precise links between current fishing effort and specific management actions (versus other factors) remain to be delineated.

Table 1 on the next page summarizes management actions taken since the Bi-State Action Plan was put in place.

**Trends, Concerns and Developments**

The coming year will be important for tracking

blue crabs in the Chesapeake. With the new stock assessment currently being completed and the move to direct counting of crabs (the direct enumeration method), the estimate of stock size should be more robust than ever.

Also key in the coming year will be the tracking of current trends. For example, will the slow upward trend of Maryland's blue crab harvest continue? Will the share of female crabs harvested remain at about 50/50 between the two states, or will the traditional dominance of Virginia in this area return?

Of special interest will be the tracking of female crab abundance. Results from a study based on the Virginia trawl survey in the lower Bay's spawning grounds continue to suggest a downward trend in female spawning stock abundance, raising serious concerns about the spawning stock.<sup>3</sup> A separate tagging study, conducted in Virginia's spawning sanctuary, concludes that too few female crabs are now making it to the sanctuary's protected waters. The study suggests that rather than doubling

**TABLE 1 Comparison of Commercial Blue Crab Regulations (2004)**

	Virginia	Maryland	Potomac River
<b>Hard crab size limit</b>	5 inches	5 inches (April 1–July 14) 5.25 inches (July 15–Dec. 15)	5 inches (April 1–July 14) 5.5 inches (July 15–Dec. 15)
<b>Soft crab size limit</b>	3.5 inches	3.5 inches	None
<b>Peeler size limit</b>	3 inches	3.25 inches (April 1–July 14) 3.5 inches (July 15–Dec. 15)	3.25 inches
<b>Sponge crabs</b>	Permitted	Prohibited, import April 25–July 5	Prohibited
<b>8-hour workday</b>	Yes	Yes	1 hour before sunrise to sunset
<b>Season length</b>	April 1–Nov. 30	April 1–Dec. 15	April 1–Nov. 30
<b>Winter dredge</b>	Dec. 1–March 31	None	None
<b>Spawning sanctuary</b>	June 1–Sept. 15	None	None

the spawning stock, we appear to be witnessing a continuing decline.

While such stock dynamics are complex, and scientific consensus has not been reached, the committee will continue to closely monitor this data, and to compare it to other monitoring efforts, including the Baywide winter dredge survey.

Also important for the coming year will be the continued tracking of efforts to release crabs cultured from females captured in the Bay into the Chesapeake and its tributaries. The experiments are designed to gain knowledge of movements, growth and mortality. Already these cultured crabs have been used for laboratory experiments aimed at better determining age in crabs through the analysis of an age pigment (lipofuscin). These cultured crabs have also been retrieved from the open environment through tagging studies, demonstrating that at least some fraction can survive in the wild.

Finally, the coming year will further reveal whether harvest pressure on the blue crab will

“Our goal is to double the spawning stock of the Chesapeake Blue Crab. Even though we have turned the corner, we are not yet there. At this point, we can go backwards just as easily as forward — extra caution is important.”

— Delegate John Wood, Jr.  
Co-Chair, Bi-State Blue Crab Committee

continue to decline or at least flatten. Barring another hurricane or other anomaly, trends for both the blue crab population and fishing effort should continue to become more evident. Based on data from 2003 and 2004, it appears that while the stock remains at low levels, there is the potential for improvement, as long as female crabs in the spawning grounds do not decline.

### Footnotes

1. Chesapeake Bay Stock Assessment Committee. 2004. *The 2004 Chesapeake Bay Blue Crab Advisory Report*.
2. Bi-State Blue Crab Advisory Committee. 2001. *Taking Action for the Blue Crab: Managing and Protecting the Stock and Its Fisheries*. Chesapeake Bay Commission.
3. Lipcius, Romuald N. and John M. Hoenig. 2004. *Blue Crab Spawning Stock Abundance and Status (1988-2004)*. Virginia Institute of Marine Science, The College of William and Mary.

## CHESAPEAKE BAY COMMISSION

The Chesapeake Bay Commission is a policy leader in the restoration of the Chesapeake Bay. As a tri-state legislative assembly representing Maryland, Virginia and Pennsylvania, its mission is to identify critical environmental needs, evaluate public concerns and ensure state and Federal actions to sustain the living resources of the Chesapeake Bay.

The Commission maintains offices in Maryland, Virginia and Pennsylvania. Commission staff are available to assist any member of the general assembly of any signatory state on matters pertaining to the Chesapeake Bay and the Chesapeake Bay Program.

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