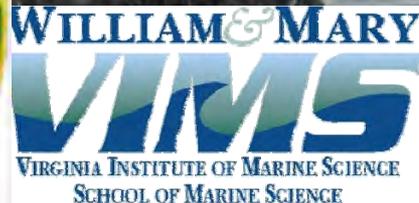


'Ghost' Blue Crab Pots in the the Chesapeake Bay

Kirk J. Havens, Donna Marie Bilkovic, David Stanhope, Kory Angstadt
Center for Coastal Resources Management
Virginia Institute of Marine Science



CAN SONAR BE USED TO LOCATE DERELICT TRAPS?

York River Marine Debris Survey- Jan/Feb 2006 (Off-season)

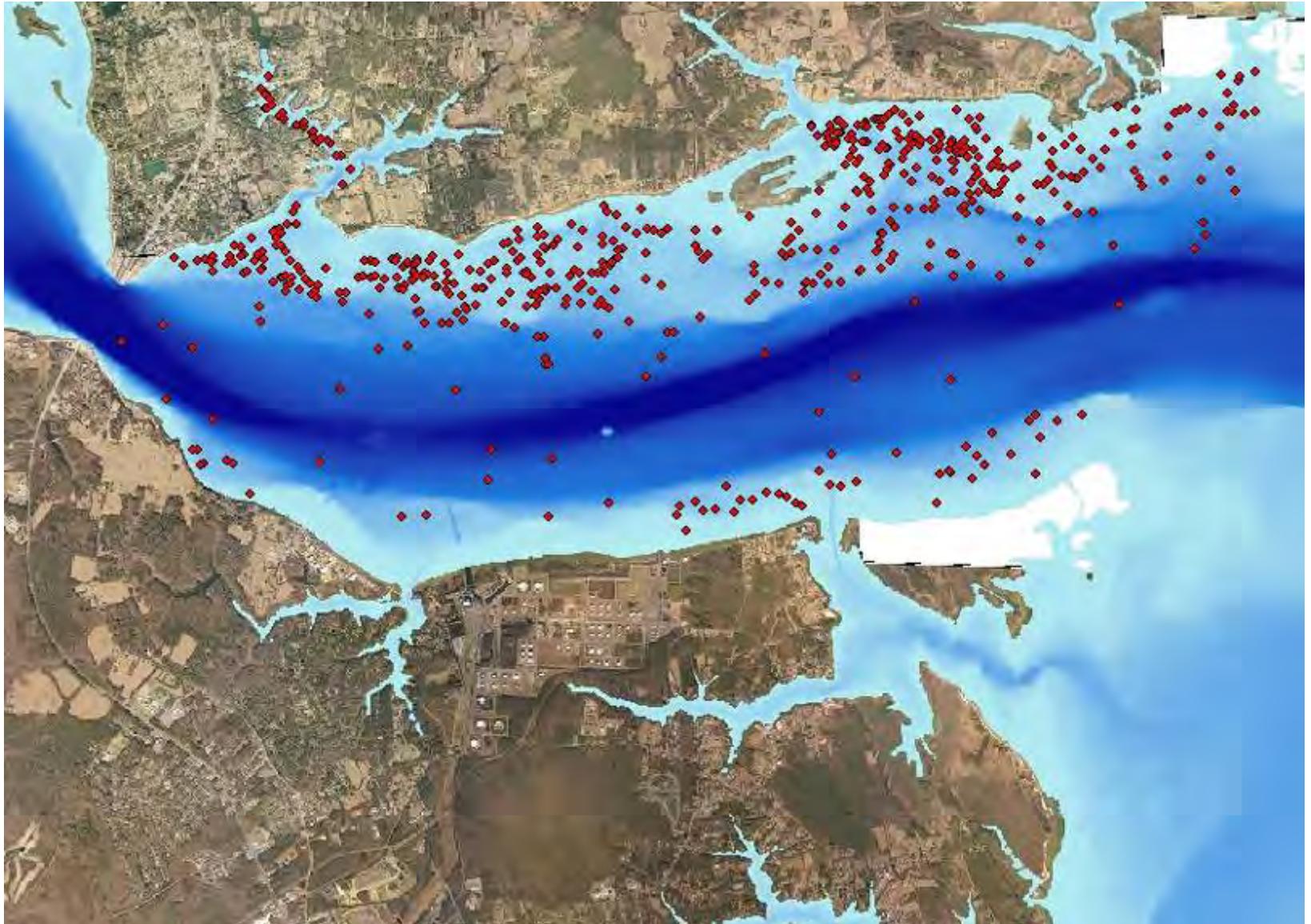
33.5 km² surveyed



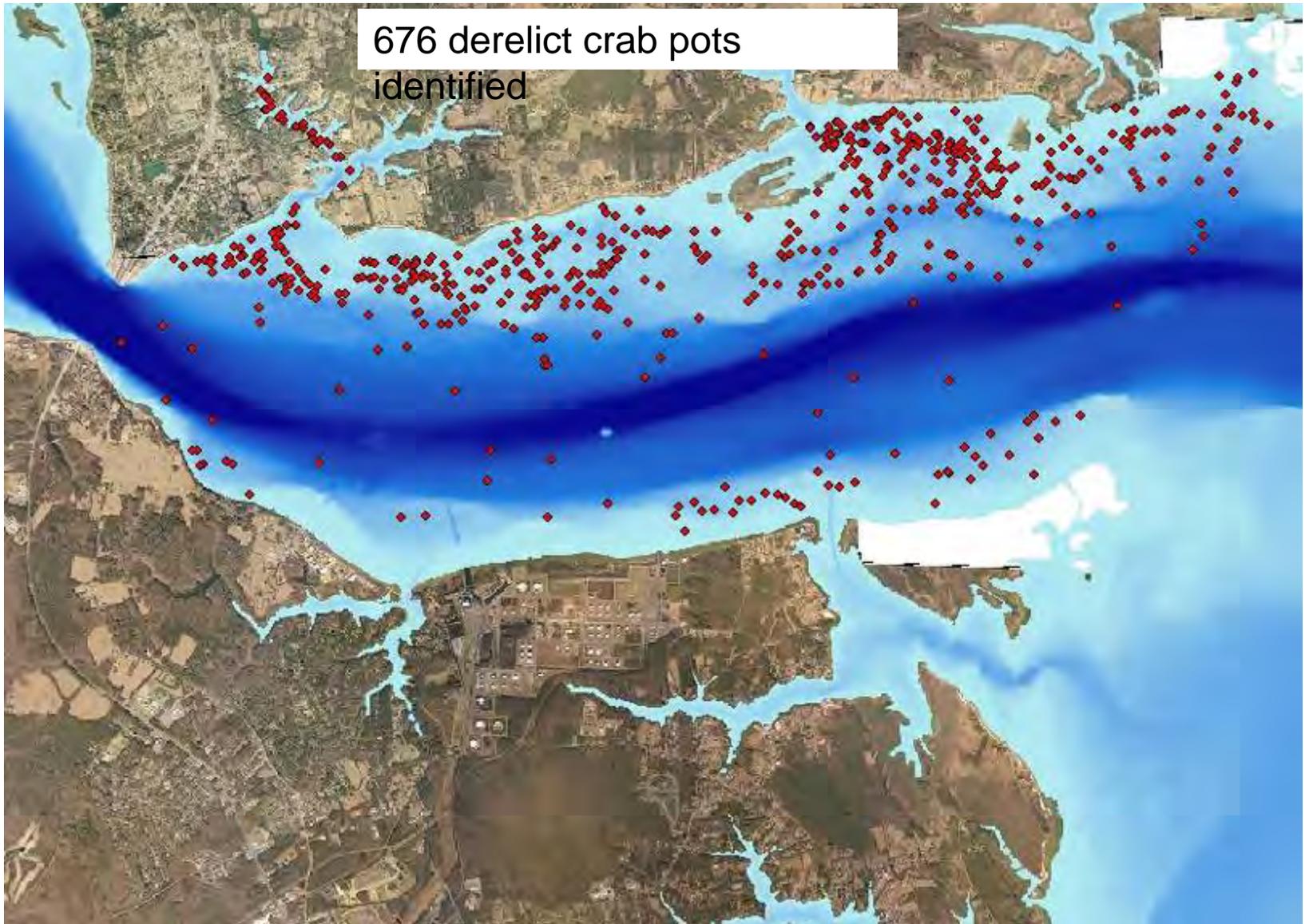
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Havens, K.J. et al. 2008. NAJFM 28:1194-1200.





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676 derelict crab pots
identified

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About 50 market size crabs are captured per season per derelict pot.

A conservative estimate of blue crabs trapped by derelict traps in the Lower York River is between 25,000 to 50,000 crabs per year (approximately 500-1000 bushels).

Loss of croaker in the lower York River is estimated at over 7,000 per year.



Derelict Crab Pot & Marine Debris Removal Program Specifics

Participants outfitted & trained on Humminbird side imaging units for locating marine debris

Boat track lines recorded on Side Imaging unit

Participants use unit to 'mark' marine debris with GPS location & unit takes a picture of scanned object

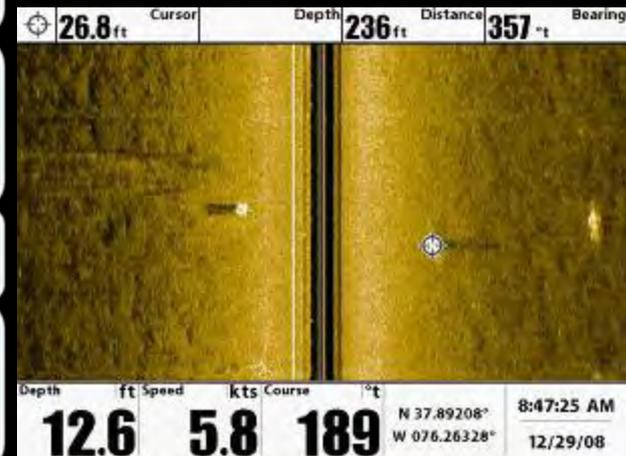
Participants return to GPS marked item & recover it using approved grappling device

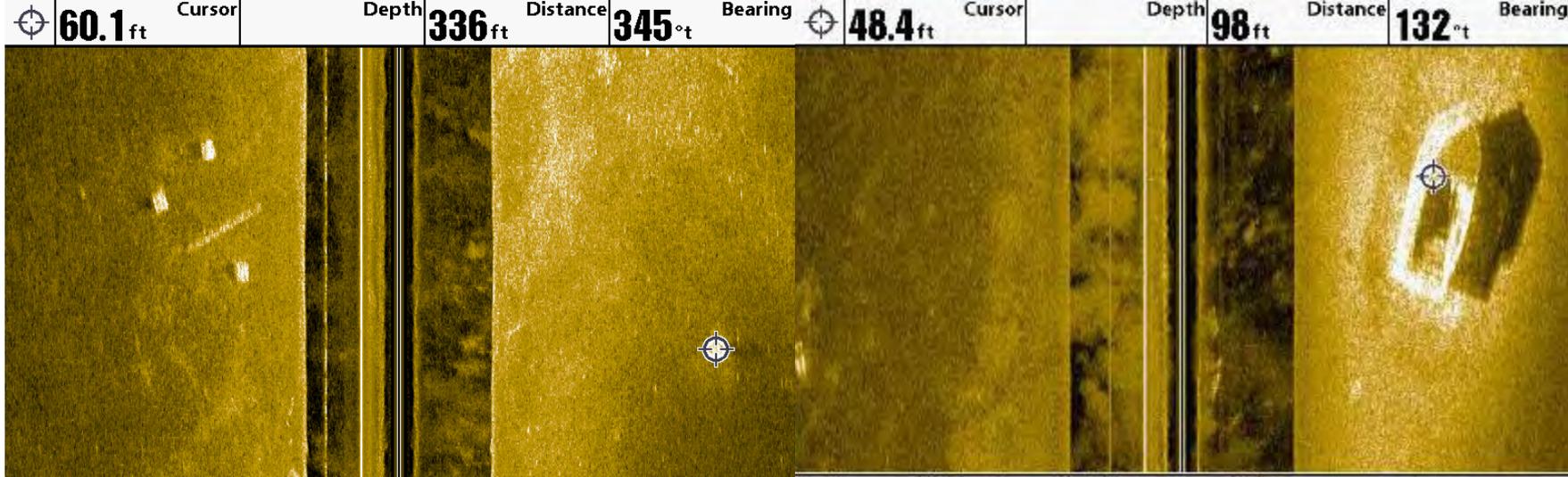
Participants provided with detailed map of sensitive habitat zones to avoid oyster reefs & SAV

Digital photo taken of all items removed

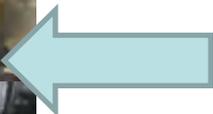
Participants log item & condition, bycatch, etc. on data sheet developed in cooperation with NOAA Marine Debris Program

Traps were disposed of OR recycled





Depth	ft	Speed	kts	Course	°t	Depth	ft	Speed	kts	Course	°t	Depth	ft	Speed	kts	Course	°t	
16.6		4.4		074	N 37.82978° W 076.28154°	21.5		5.3		336	N 37.82029° W 076.29806°							
					12:21:45 PM 12/22/08						7:51:56 AM 1/02/09							



Designed to ride above the bottom with only the hooks dragging through the sediment.

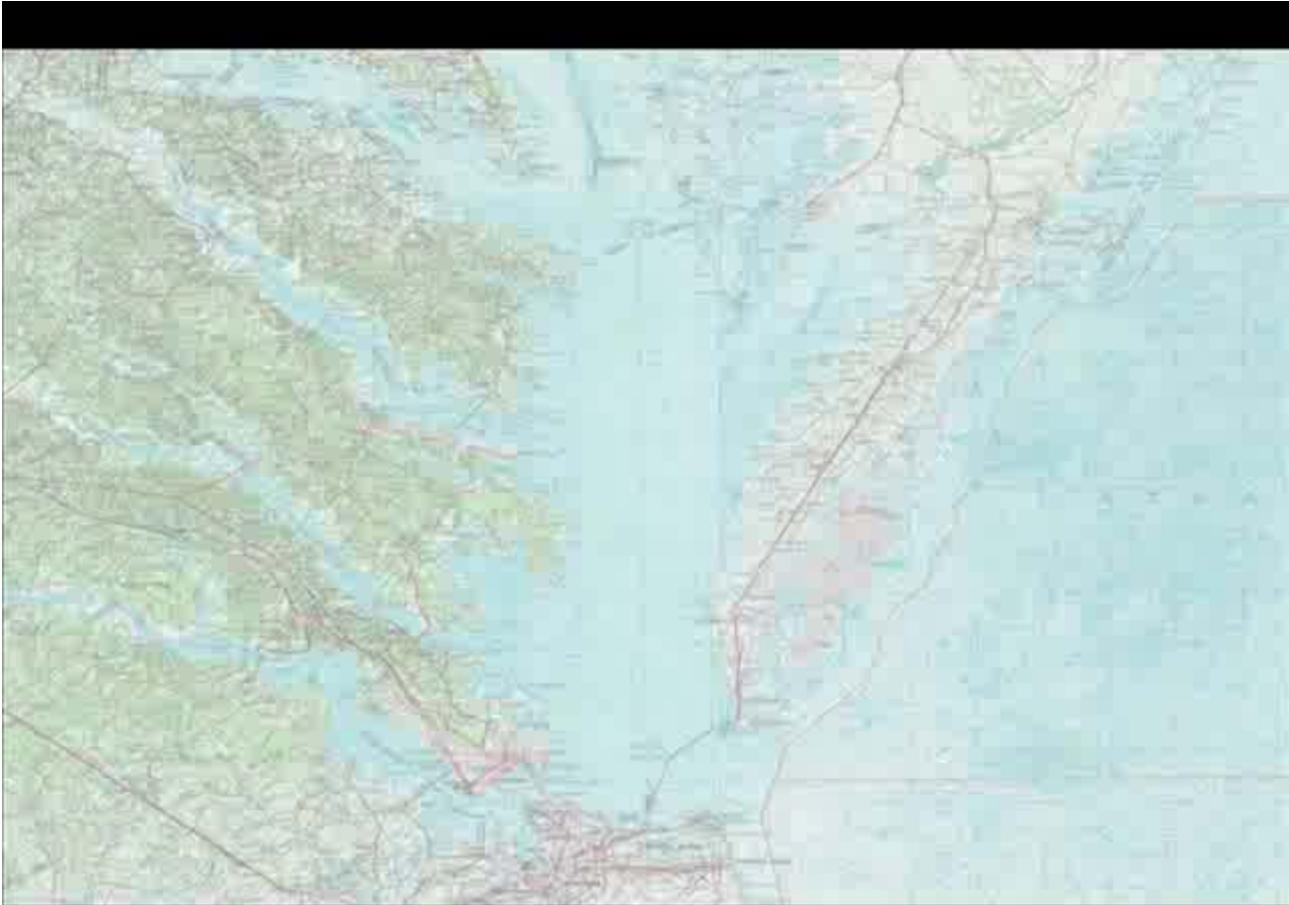


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Photo credit: Matt Stewart



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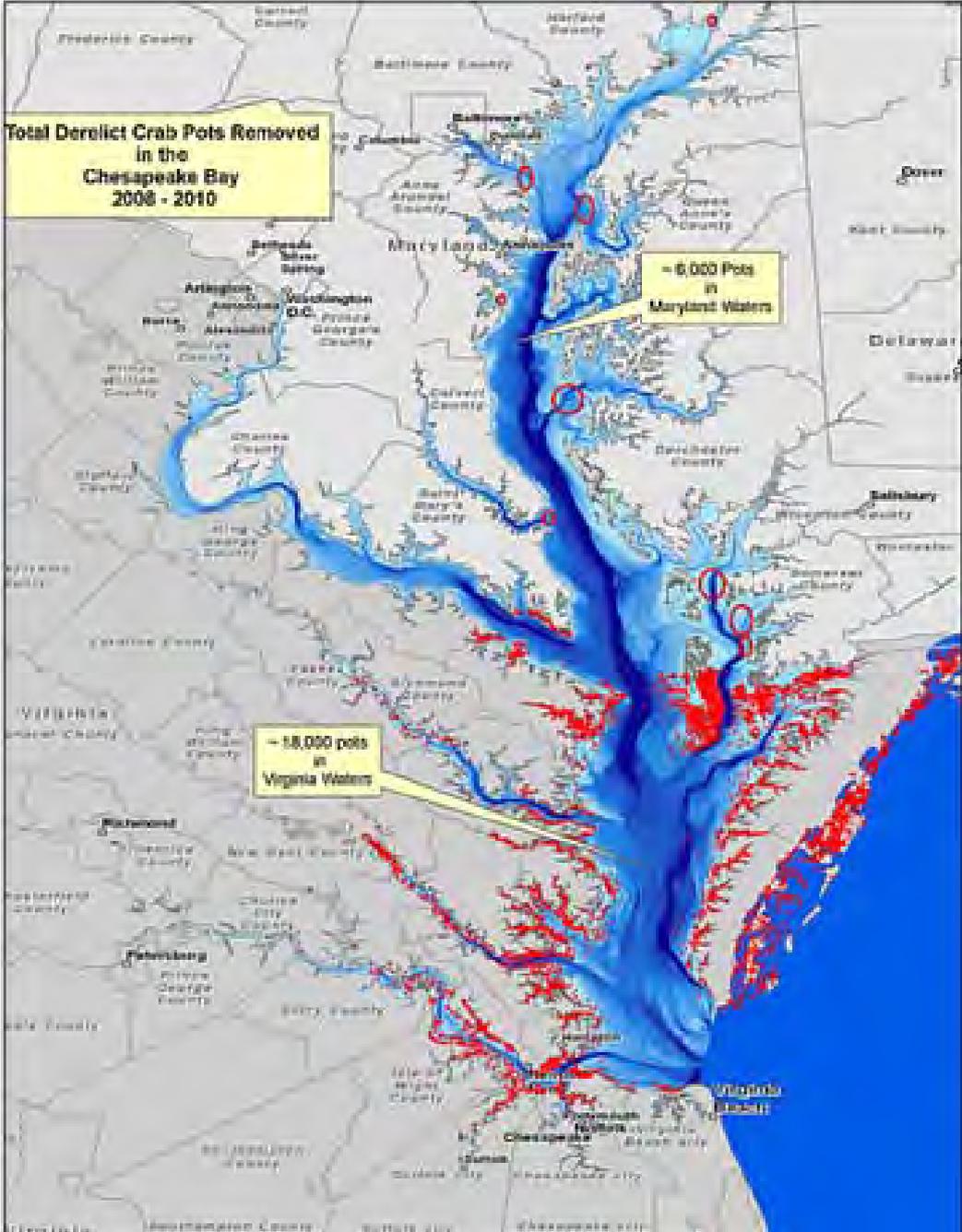
2009-2010 Season Debris
Collection Counter
(Final)

Total crab pots removed:	8,089
Total peeler pots removed:	1,277
Total eel pots removed:	113
Total nets removed:	37
Total other debris removed:	535
* Total items removed:	10,051
Sunken vessels identified:	8

2008-2009 Season Debris
Collection Counter
(Final)

Total crab pots removed:	7,865
Total peeler pots removed:	829
Total eel pots removed:	96
Total nets removed:	62
Total other debris removed:	191
* Total items removed:	9,043
Sunken vessels identified:	5

**Total Derelict Crab Pots Removed
in the
Chesapeake Bay
2008 - 2010**





ns, V

Animal Photos	Animals Found in Pots	'08/'10 Season	'08/'09 Season
	Female blue Crab	4526	1875
	Male blue Crab	3504	1414
	Clypeid foodfish	797	856
	Whale	360	300
	Black Seabass	218	63
	Atlantic Croaker	120	27
	White Perch	51	65
	Cathfish	64	27
	American eel	44	22
	Spot	31	15
	Flounder sp.	28	9
	Turtle (loggerhead)	18	18
	Lutjan	20	6

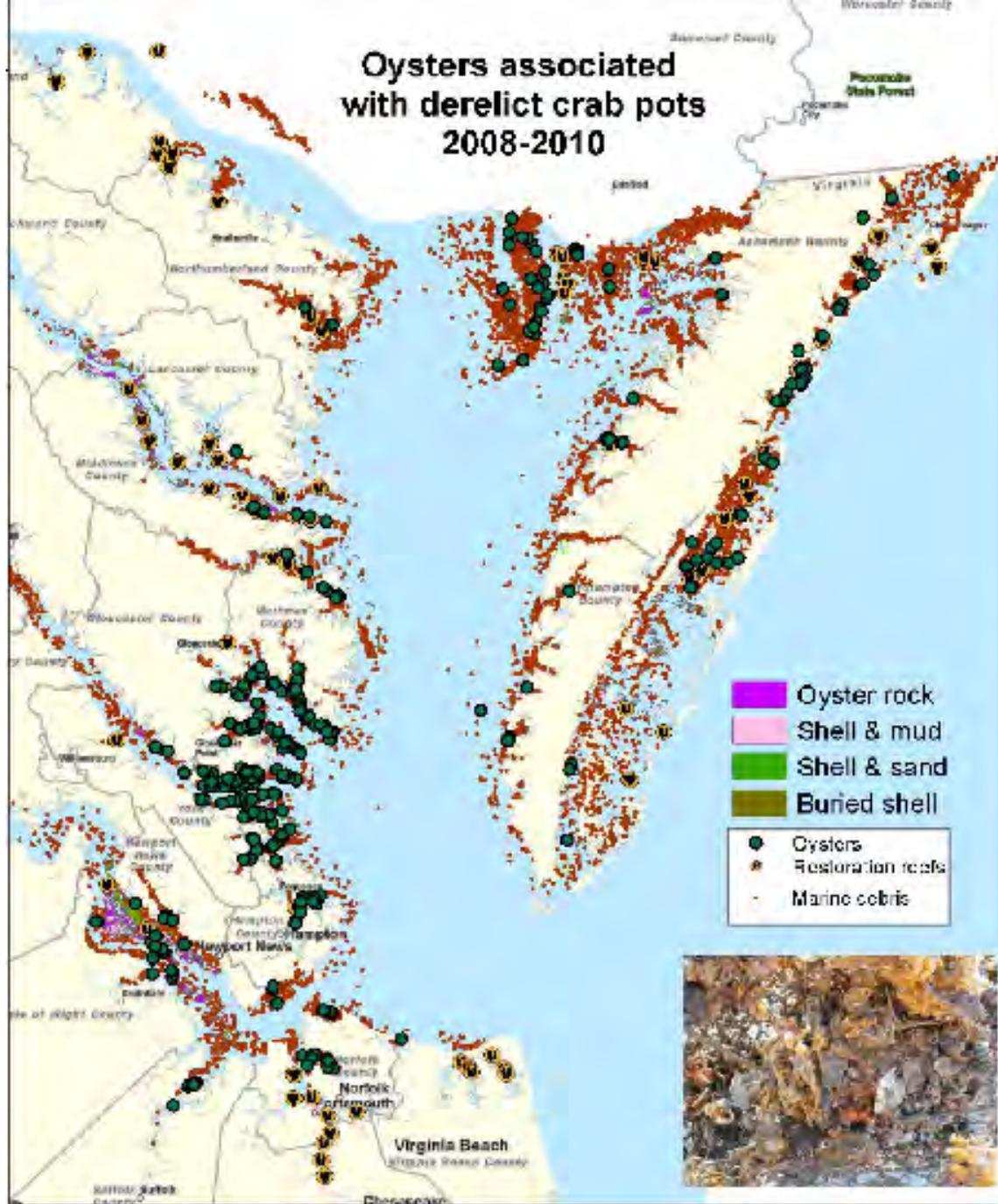
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Bowfin	1	0
Cunner	1	0
Duck (general unknown)	2	0
Hogchoker	2	0
Horseshoe Crab	0	3
Lobster	0	1
Menhaden	0	1
Merganser (diving duck)	0	1
Mullet	4	0
Muskrat	0	1
Pigfish	8	0
Puffer	4	0
Rappa Whelk	1	3
Red Drum	1	4
Sheepshead	0	7
Stargazer	1	0
Striped Bass	1	6
Unknown Species	18	65



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Oysters associated with derelict crab pots 2008-2010

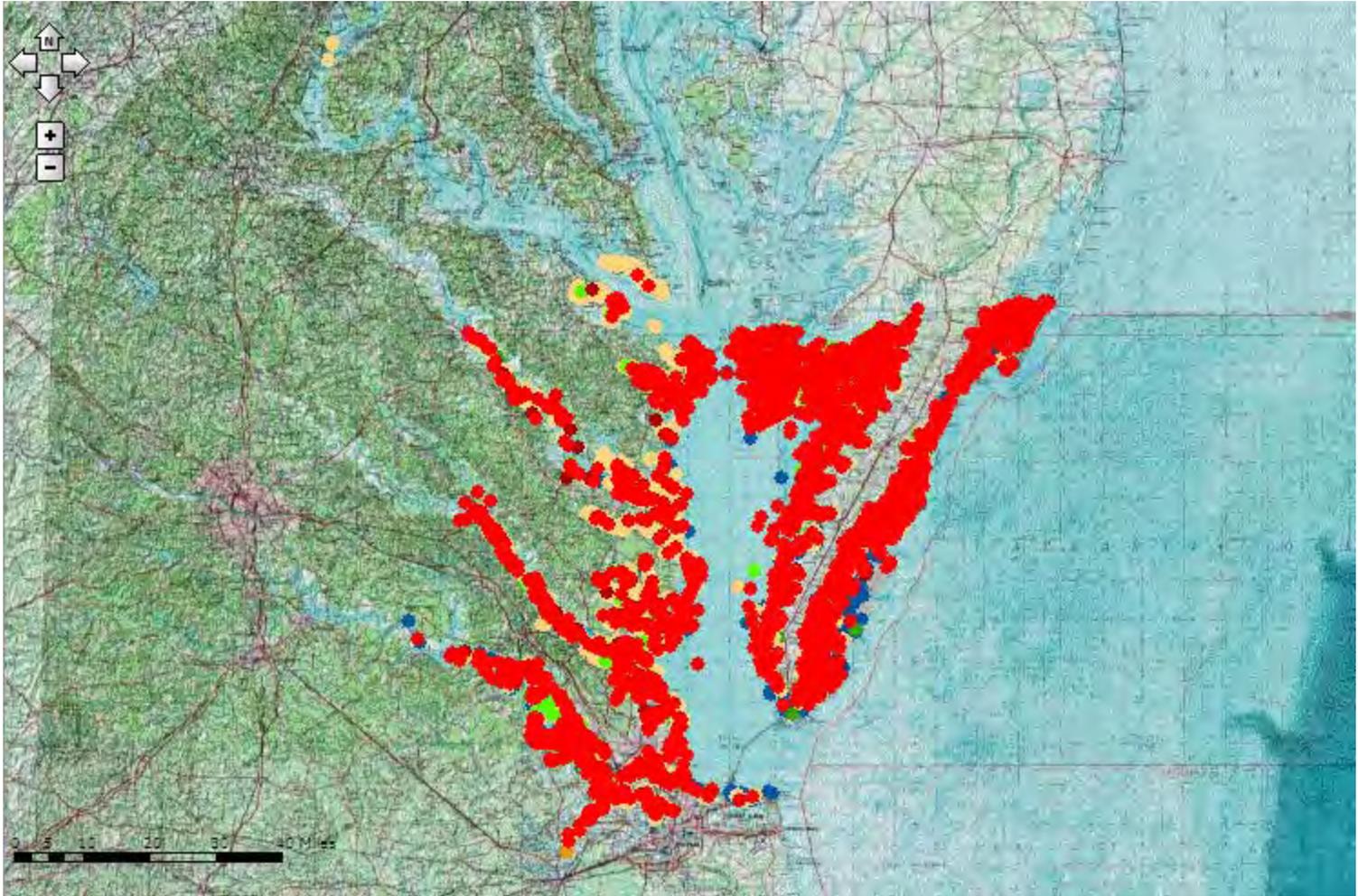


2008/2009 Project Participant Post- Survey

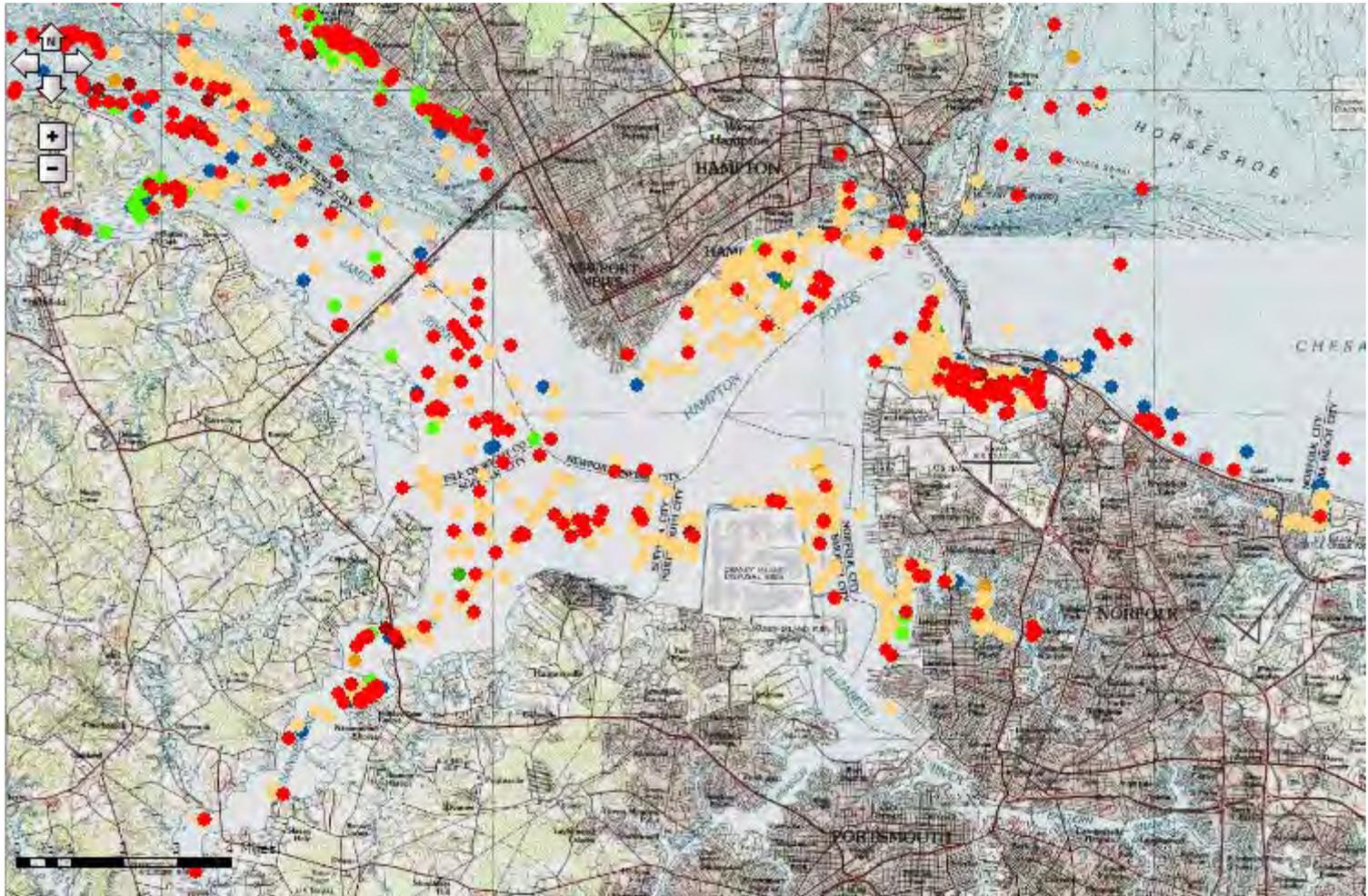
Participants Comments	# of responses	VIMS/VMRC Response
Would change nothing	19	NA
Change start date to December 1 st	10	Implemented
Allow 6 day work weeks	4	Implemented
Allow money for oil and propane for boat	1	Implemented – shifted money from disposal costs
Allow 9 hour work days	1	Implemented - to make up time due to inclement weather
Add more days to the program	3	No change – due to financial constraints
Provide money for mates on boat	5	No change – due to financial constraints
Provide money for winches to pull up pots	3	No change – due to financial constraints
Keep sonar units at end of program	1	No change – State property restrictions
Limit program to Virginia crabbers	1	NA – all hold VA commercial licenses

Virginia Institute of Marine Science (VIMS) Modifications for Year 2009/2010

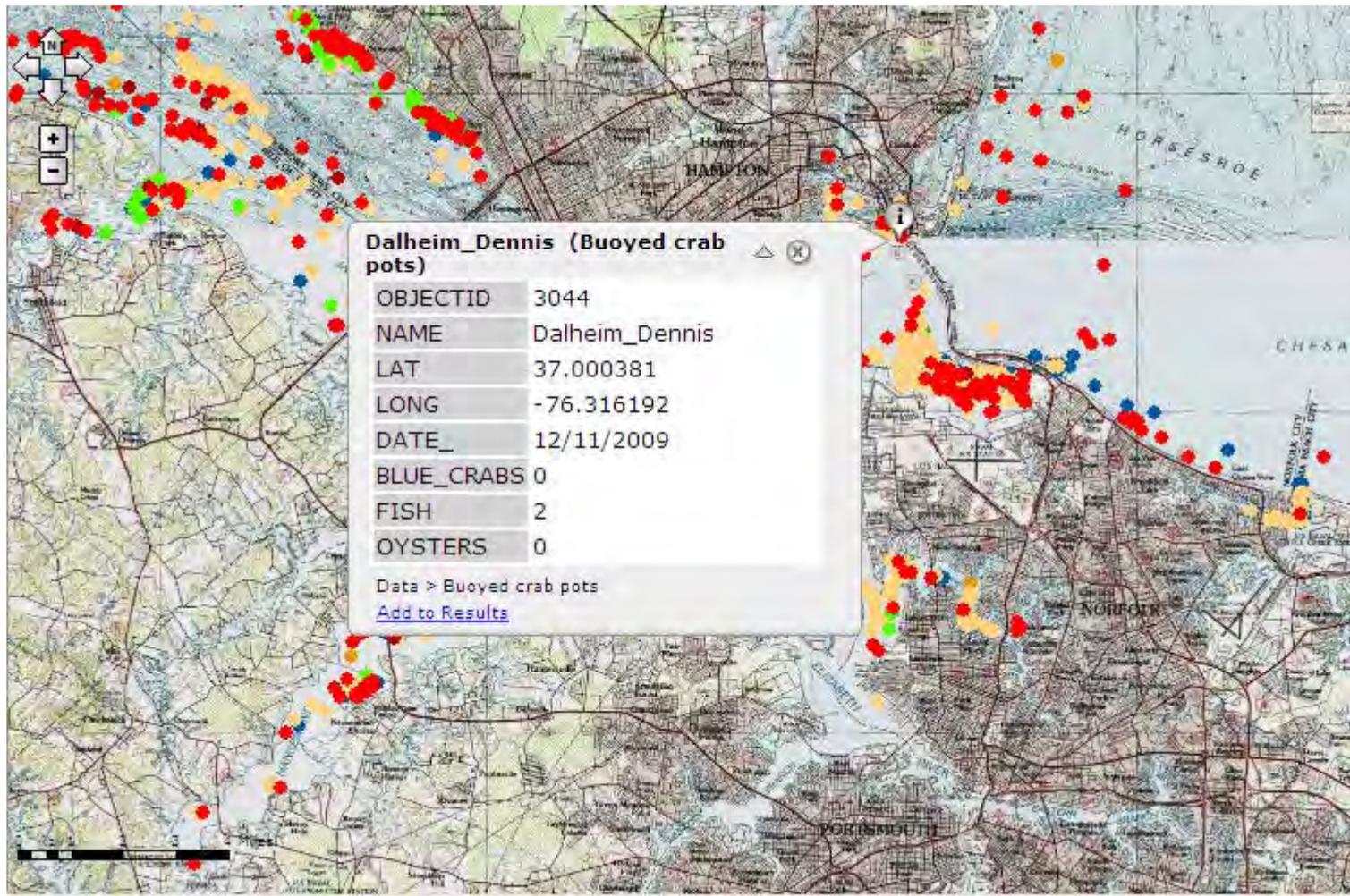
- o Information on oysters found on pots
- o Vinyl vs. galvanized pots
- o Pictures of all non blue crab bycatch
- o Add shallow water vessels to effort to expand survey area



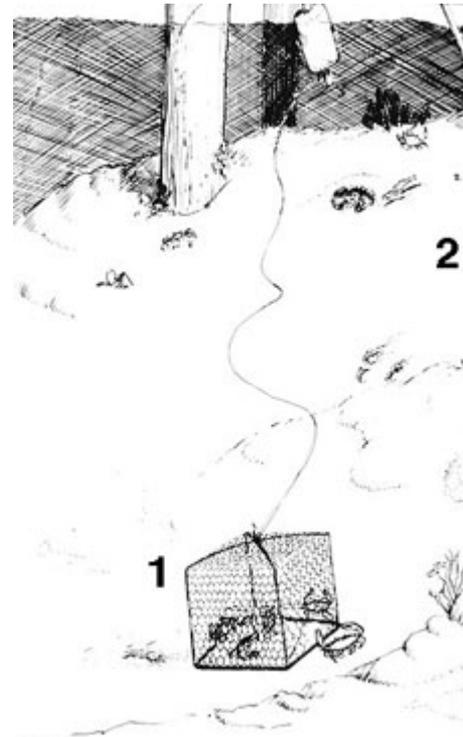
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Bridge DATA Series

Ghostbusting in the Chesapeake

Written by Christopher J. Petrone, Virginia Sea Grant, Virginia Institute of Marine Science
Created in cooperation with Drs. Kirk Havens and Corina Alcocer, Dave Stanfuss, and Kirby Ingelstad, Center for Coastal Resource Management

Summary

Even when crab pots are lost or abandoned at sea, they continue to catch animals. The unintended victims of the pots typically cannot escape, and are trapped until they die. This bycatch can include crabs, fish, diving birds and turtles. The pots or other gear will continue to fish until after many years on the sea floor they finally decay. Through a special program at the Virginia Institute of Marine Science, scientists are working with fishermen to collect derelict or "ghost" crab pots and fishing nets that have been lost or abandoned. Students will explore catch data collected by the fisherman from the ghost pots.

Objective

- Analyze column graphs of data from recovered derelict fishing gear
- Analyze pie charts of animal species caught in derelict fishing gear
- Calculate the loss of potential catch caused by derelict fishing gear
- Calculate percent composition and percent change

Vocabulary

Marine debris, derelict crab pot, ghost pot, bycatch

Introduction

The word *debris* comes in alliterations and abacs, from balloons and soda bottles, to *plastics* and even *poop*. Essentially, anything that has been lost or abandoned and is not supposed to be in the ocean or on the sea floor—naturally—the marine debris. Very often, marine debris can cause serious harm to the plants and animals that live in the ocean, injure or kill them, and cause problems for people swimming or boating.

Carried from land to the ocean by wind, streams, and rivers, debris can then be transported by ocean currents around the globe. During the [2009 International Coastal Cleanup](#), 466,616 volunteers picked up 7.4 million pounds of marine debris. Though this is a very impressive haul, there are still more millions of pounds of trash and debris that plague our ocean and coasts.

Commercial Crabbing in Virginia

The extraordinarily popular [blue crab](#), *Callinectes sapidus*, has been a staple in Chesapeake Bay's long fishing history. In Virginia, all crabbing (commercial and recreational) is regulated by the [Virginia Marine Resources Commission \(VMRC\)](#). As in most states where blue crabs are found, commercial crabbing requires a limited-quantity license. The license dictates how many crab traps, or pots, the fisherman is allowed to put into the water, the type of pot, and the time of year he or she is allowed to set out pots.

Two different types of pots are used in the blue crab fishery, depending on which life stage of crab the fisherman are targeting. The typical [dead-end pot](#) is very familiar to coastal residents and tourists in the US-MARIN. The [baited pot](#) is used to catch crabs preparing to molt, or call out of their existing shell (exoskeleton) as they grow in size. This pot has the same shape, but it has smaller openings and a slightly different architecture, due to the bait that is used. In one version of the baited pot, instead of using food to lure molting females, fisherman will place between one and three adult male crabs in the trap to attract females. Molting females are in season of a male and respond to chemical cues released by the male. Once captured the male is removed from the pot, they are transferred to land-based [grading tables](#) and left to shed their exoskeletons. The resulting soft-crabs is then processed, packaged, and sold.

Crab pots are set out on the Bay floor and have a tethered buoy so that the fisherman can find and retrieve them again. These buoy lines are occasionally cut if other boaters accidentally run over the buoys, or the lines can degrade with age. The result is an unmarked, and often irretrievable, lost pot. Lost pots can set sea lost due to strong storms. Rough seas may pull the pots out of the fisherman's view (lost area, or lost the pots), which causes the buoy lines to bang and results in the buoy floating below the water's surface, where it cannot be seen by fisherman. On average, fisherman may lose approximately 20% of their crab traps in a single season. In 2009, Virginia issued 1,657 commercial crab pot licenses. These 1,657 licenses accounted for 942,175

Grade Level:

5-11

Lesson Time:

45 min

Materials Required:

[Student Worksheet](#),
[Work Sheet Answer Key](#),
[Teacher Guide](#),
[Teacher Worksheet](#)

Natl. Science

Standards

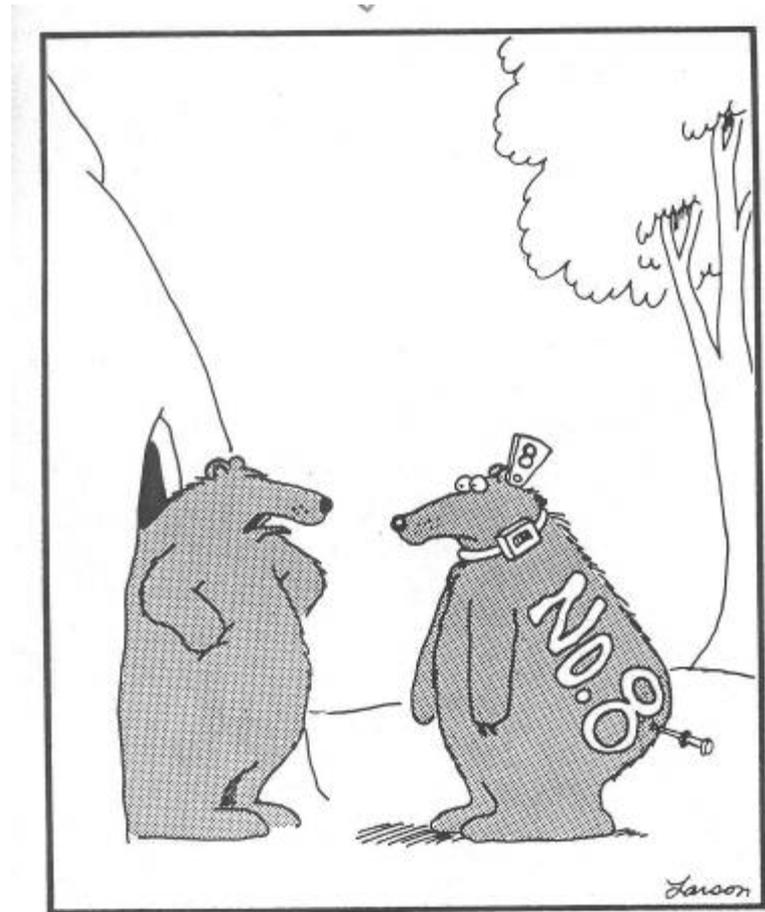
[Click here for a list of the linked National Science Education Standards.](#)

Related Resources:

[Education](#), [Fisheries](#),
[Science Center](#),
[System and Release](#)

Website: http://ccrm.vims.edu/marine_debris_removal/index.html

Questions?



"Late again! . . . This better be good!"

Kirk Havens, VIMS