Biodegradable Cull Ring Panels Decreases Lethality of Lost and Abandoned Blue Crab Traps

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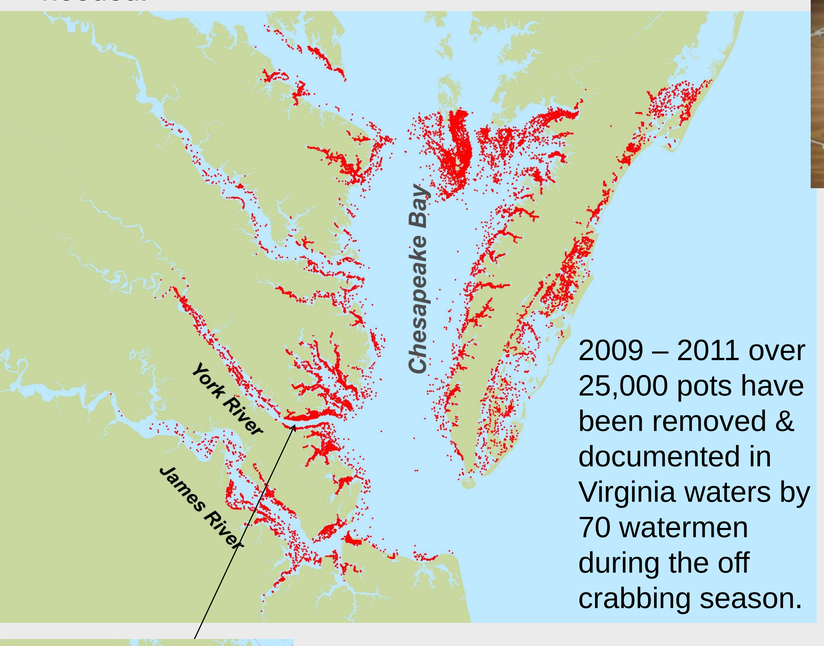
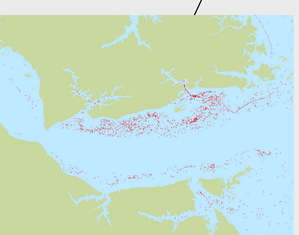
Introduction

Derelict traps are a source of mortality to blue crabs and other by-catch.

- Traps become lost when a boat propeller severs the buoy line, a storm rolls the trap or when traps are abandoned.
- The derelict traps are self baiting.
- There are 368,900 licensed blue crab traps in Virginia (VMRC 2009). Annual loss of traps is estimated to be ~ 20% of deployed traps.
- Traps continue to fish for 2-6 years depending on the salinity, fouling and the material used to make the traps.
- Derelict traps catch 50.6 crabs per trap per season (Havens et al. 2008), for a potential loss of millions of crabs.
- Since derelict traps are continually added to the Chesapeake Bay a method to disarm the lost traps is needed.



2009 – 2011 over 25,000 pots have been removed & documented in Virginia waters by 70 watermen during the off crabbing season.



In 2005, 676 derelict traps were identified using side scan sonar in 33.5 km^2 of the lower York River. Over 500 traps per year were removed in this area from 2009-11.

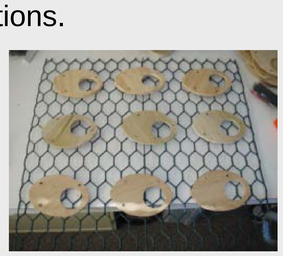
Objectives

Investigate different degradable materials to determine which material performs the best, does not effect catch rate and meets the following criteria;

1. Modification should render the trap ineffective of capturing marine life within one season of the trap being loss.
2. The material, once degraded, must be environmentally neutral.
3. The modification must be relatively inexpensive in order to be of practical use.
4. The modification must be relatively easy to install and enforce.

Testing of the Biodegradable Material

Multiple types of degradable materials were tested including those that are currently required in other states regulations.



Pine, luan and poplar wood panels were tested and failed within seven months.

Cotton, Jute, Sisel and metal wire ”rot cords” were all tested and failed in less than eight months.

Two types of environmentally friendly marine degradable plastics polymers were tested

- PCL (Polycaprolactone)
- PHA (Polyhydroxyalkanoate)

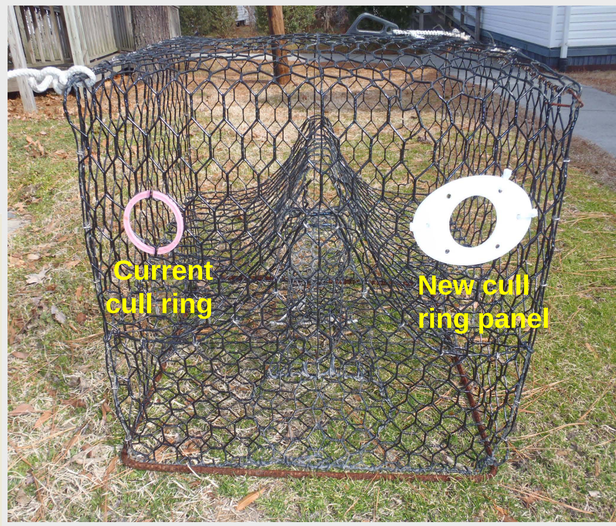
Panels were soaked in different salinity regimes to test degradation rates simulating a lost trap while commercial watermen tested the panels in their traps recording catch and degradation rates.

- There was no evidence that the biodegradable plastic cull ring panels adversely affected crab catch (*Bilkovic et al. in review*).
- Plastic polymers retained over 50% of their weight and did not fail during the eight month crabbing season.
- The biodegradable cull ring panels are an effective method of disarming a lost trap and allowing a trap to become habitat.

Recommendations

Every state with fisheries that use traps/ pots should have a environmentally friendly marine biodegradable escape panel.

- Degradable cull panels should be the same size as the entrance funnels.
  - This will allow any organism that can enter a trap to exit.
- The cull panel should last for only one season.
  - Reduces cost and effort to the watermen but if the trap is lost it will disarm the trap.
- 2 panels should be required.
  - Placed on opposite walls which allows for escape even if the trap rolls on it’s side.
- If the trap is lost, the degradable cull panel would minimize the by-catch while still allowing the trap to become habitat for bivalves, juvenile crabs and small fish.



- Degradable plastic cull ring panels are estimated to cost under one dollar.

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