Derelict Blue Crab Trap & Marine Debris Location and Removal

Center for Coastal Resources Management
Virginia Institute of Marine Science

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EXECUTIVE SUMMARY

Marine debris is a global problem that injures and kills marine life, interferes with navigational safety, causes economic losses to fishing and coastal industries, and poses a threat to human health. The Chesapeake Bay is continually polluted with a wide variety of marine debris including derelict crab traps. Derelict (lost or abandoned) blue crab traps (pots) can continue to capture and kill animals for several years depending upon salinity and wave climate. Removal of marine debris, particularly derelict pots, can result in a natural resource and economic benefit if conducted in a structured and environmentally sensitive manner. A number of issues (legal, insurance, liability, planning, data recording, and disposal) need to be addressed prior to launching a large-scale removal operation. The Center for Coastal Resources Management at the Virginia Institute of Marine Science can assist in training, removal area targeting, map production, quality assurance, data collection and data analysis.

INTRODUCTION

This document outlines a program for 1) scanning and identification of debris 2) removal of marine debris in the intertidal of shallow waters and 3) removal of marine debris with special retrieval equipment in deeper waters. This document also outlines potential issues regarding the removal of marine debris including derelict crab pots from the waters of the Commonwealth of Virginia and guidance for the environmentally acceptable removal and disposal from five regions (Eastern shore, Tangier Island, Mid Peninsula, Northern Neck, and Tidewater). Specific zones targeted for survey and removal include areas of known potting activity and are depicted in Figure 1. The project will start in December when all crab potting activity has ceased. Any crab pot found between December and March 15 will either be lost or illegal. By surveying for derelict crab pots during this time frame, conflicts with commercial potting activity can be avoided. In addition, the commercial crab dredgers, whose season was closed by VMRC and would normally be working during this time frame, will be employed at a critical time.

Description of Problem

Discarded debris such as tires, gill nets, appliances, and crab pots can be found throughout the tidal waters of Virginia. Derelict crab pots may remain in the environment for years and continue to entangle and kill fish, shellfish, birds and marine mammals including endangered or threatened species (Guillory 1993, Guillory et al. 2001, Virginia General Assembly 2008, and see NOAA Marine Debris Program website: http://marinedebris.noaa.gov/). It is estimated that around 20% of crab pots deployed are lost each season and each functional lost crab pot can continue to capture about a bushel of market-sized crabs per season (Havens et al. 2008).

There is an environmental benefit in removing marine debris from Virginia's waters if the removal can be accomplished safely and without damaging the marine habitat and ecosystem. This document provides a framework for the safe and environmentally sensitive removal and proper disposal of marine debris with particular emphasis on derelict crab pots.

This document addresses the circumstances under which removal should be attempted, common methods that may be employed, procedures for determining that the project can be conducted in an environmentally responsible manner, disposal or recycling options, and the removal and disposal documentation and reporting process.

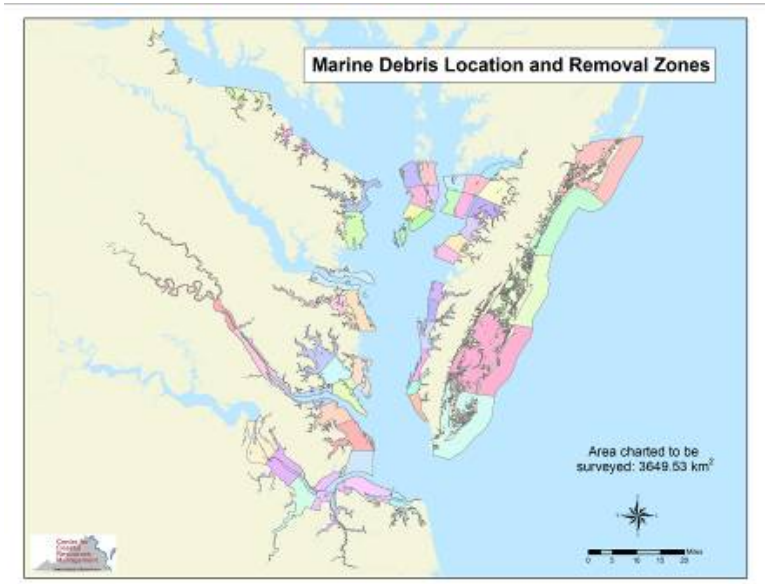

Figure 1. Derelict crab pot and marine debris survey and removal zones (approximately 3650 km^2).

ENVIRONMENTAL ISSUES

Care must be taken to prevent damage to marine habitat and loss of marine species during the removal operation. In some cases where damage to the environment from the removal operation will exceed the damage caused by the debris, it is more appropriate to leave the item in place or to disable the item (in the case of pots) in place instead of removing it. The removal operation includes evaluation of this option, particularly in areas of sensitive habitat such as known beds of submerged aquatic vegetation or oysters. VIMS will provide participants with specific maps of sensitive habitats in each region.

Gear used in the removal process has been designed to minimize disruption of the bottom sediments. The VIMS Derelict Crab Trap Removal Mechanism (see attached photo) and the crab pot drag line (a rope with crab pot stables or bent 10-penny nails attached every 3 feet) are designed to capture pots with minimal bottom disturbance (a couple of cm impact at most). However, it must be recognized that some minor disruption of the bottom sediments will occur.

Habitats of Concern

- Submerged Aquatic Vegetation.
- Tidal vegetated wetlands.
- Oyster beds.

The Virginia Institute of Marine Science will identify sensitive areas using GIS technology and provide that information to participants for targeting marine debris and derelict crab trap removal efforts.

Timing of activities is critical to avoid periods of important use of such habitats. Removal activities will take place during the non-potting season of approximately December 1 through mid-March.

Contaminated Sediments

Derelict crab pot removal gear will result in minimal bottom disturbance (no more than a couple cm disturbance). In addition, the regions mapped for survey do not contain areas of known contaminated sediments.

INSURANCE AND LIABILITY ISSUES

Any individual or organization that undertakes derelict crab trap removal and disposal activities should have proper insurance coverage for the participants as required by the Commonwealth of Virginia and the federal government.

MARINE DEBRIS AND DERELICT CRAB POT REMOVAL AND DISPOSAL PLAN

Prior to undertaking any removal operation, the following information should be provided:

1. Who will be participating in the removal operation and their qualifications/experience,
2. Where the removal operation will be conducted (in latitude and longitude to the nearest second or GPS coordinates to five decimal places),
3. Documentation showing avoidance of sensitive habitats or justification for impacting area (sensitive habitat area maps),
4. Proposed procedure for documenting and reporting of activities, and
5. Proposed disposal/recycling options.

DERELICT CRAB POT REMOVAL METHODS

There are two main methods that are recommended for removal of derelict crab pots. Derelict crab pots found in intertidal areas can be removed by hand at low tide or abandoned pots which still retain a connecting rope can be removed by boat. Derelict crab pots in deeper water which no longer have surface ropes or buoys require sonar for identification and require grappling for capture and removal.

Whatever method is employed to remove derelict crab pots, above all, the safety of the removal personnel must be considered. The impact of the gear removal operation on the environment must also be considered and weighed against the environmental impact of the derelict crab pots if not removed. A thorough understanding and implementation of the proper methods and procedures should be employed in any derelict crab pot removal operation.

Removal of Intertidal or Buoyed pots

Derelict crab pots may occur above the low water line and be accessible by foot from the beach or with a shallow draft vessel from the water. It is also important to contact the proper land management organization and/or private landowners to gain approval to access the property and conduct the operation before undertaking derelict crab pot removals on land above mean low water. Abandoned pots that still retain a buoy or rope can be removed by pulling the pot onto a vessel.

Although intertidal or buoyed removal of derelict crab pots is probably the safest and most straight forward removal operation, certain safety procedures should be followed to assure protection of the participants. Since removal activities will be conducted during the cold weather months, cold water exposure concerns need to be addressed with appropriate protocols. In addition, Derelict crab pots can be encrusted with sharp barnacles and have sharp or pointed exposed metal. Heavy gloves should be worn and a basic medical kit should be available in case of an injury.

Removal of Derelict Crab Pots lacking buoys or ropes

In deep waters it is necessary to reconnoiter for derelict pots using side-scan sonar prior to undertaking actual removal operations. Once the location of the derelict pots has been ascertained, the derelict pots can be captured using the GPS location and a properly designed grappling device. Blind grappling from a surface vessel is not an acceptable derelict crab pot removal method. Conventional grappling may do more environmental damage to the marine habitat than leaving the derelict crab pot in place, depending upon the type and condition of the derelict crab pot, its location and the type of habitat in which it is located. Conventional grappling can damage marine habitats, particularly submerged aquatic vegetation areas. It can also impact soft bottom habitats and damage or kill bottom dwelling organisms. Blind grappling for derelict traps should be avoided.

The Virginia Institute of Marine Science will train participants in the proper use of side-scan sonar for the identification of derelict crab pots and proper derelict crab pots capture techniques using the modified grappling device. VIMS experts compared bottom imaging capabilities between their Marine Sonics Sea Scan 600-kHz transducer with the Humminbird ™ side imaging unit and confirmed its effectiveness in identifying bottom marine debris including crab pots. It also has the ability to be programmed for quality control by recording track lines and marking and saving a screen shot image of each marked object (Figure 2).

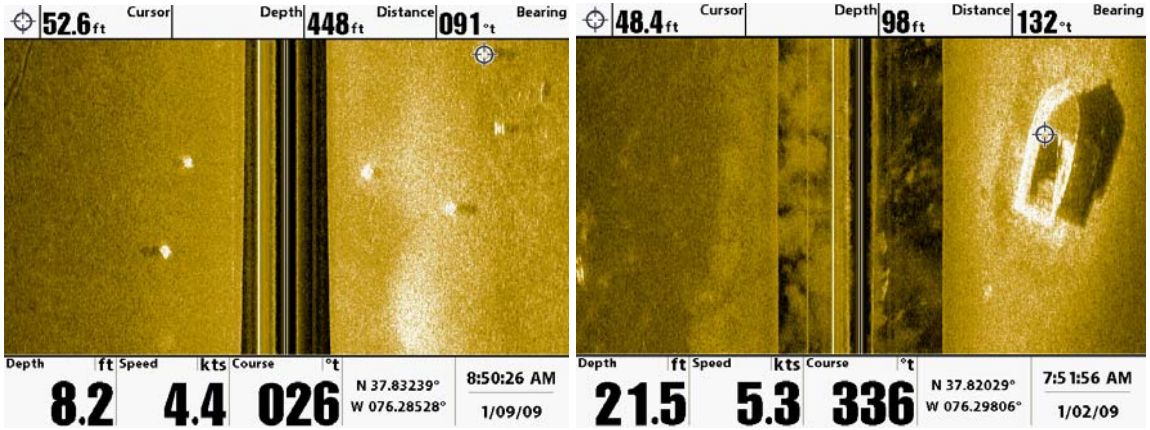

Figure 2. Humminbird™ unit images of derelict crab pots and derelict boat.

DISPOSAL

Marine debris and derelict crab pots must be disposed of properly, or preferably recycled, after removal from the marine environment. Disposal or recycling arrangements should be made before the removal operation. Arrangements will be necessary for transport and final handling of the debris in a timely manner.

Every effort should be made to handle the disposal or recycling of the derelict crab pots in a timely manner since organic materials on the gear can cause an odor or even a public health issue the longer the pots are exposed out of water.

In the higher salinity waters, if the derelict crab pot has been in the marine environment for any significant amount of time, it will have significant growth of algae and other marine plants and animals and will very likely be difficult to recycle. Some pots may be of commercial value and, if the owner can be identified, the owner that originally lost the pot may have a legal opportunity to reclaim it.

However, most derelict crab pots may be of such condition that disposal is the only alternative. Prior arrangements should be made with a municipal, county or private company for disposal of derelict crab pots. Coordination with landfill operations for the issuance of disposal receipts should be arranged.

SPECIFIC TASKS FOR THREE YEAR PROGRAM

Each Year:

- Five initial training sessions on the use of side-scan sonar technology will be conducted for participants in five main regions (Eastern Shore, Tangier, Middle Peninsula, Northern Neck, and Tidewater).
- Follow-up training sessions will be conducted with individual participates as needed within one month after the preliminary use of the equipment for quality assurance.
- Production of specific survey project area maps including sensitive habitat zones.
- Data sheets and data collection procedures will be developed and disseminated with instruction on proper use.
- Regular quality assurance and quality control surveys will be conducted in concert with contracted survey crews.
- Regular (bi-weekly) data collection procedures will be established with survey crews.
- Regular coordination with survey crews will be conducted.
- Data analysis will be conducted.

- Storage of digital library of marine debris items.
- Collection and tabulation of disposal receipts.

RECORD KEEPING AND REPORTING

Record keeping and reporting the results of removal operations is important in order to continually assess the potential problem. The collection and reporting of removal and disposal information provides background information on the marine debris and derelict crab pot problem and its solution and allows program managers to keep track of marine debris in Virginia's waters. Information from derelict crab pot removal operations will allow for analysis of the derelict pot problem, and provide the basis for strategic efforts to reduce the loss of, and timely removal of, derelict crab pots.

The following list is a guideline regarding the type of data that should be collected and reported for any derelict crab pot removal operation. In addition, a waterproof digital camera will be provided to each participant to visually document each item recovered.

1. Who conducted the removal operation
2. Date and Time
   - Date(s) and time of removal
   - Hours of effort and number of individuals
3. Location
   - Latitude and longitude of removal location(s) (to the nearest second) or GPS coordinates (to five decimal places)
   - General description of location (i.e. Smith Creek or east shore of Jones Island)
4. General Debris Removed (Checklist developed in cooperation with NOAA Marine Debris Program)
5. Derelict Pots Removed

Number

Condition of pot (good – still able to fish, bad – no longer capable of fishing)

Line, cull rings, or rebar present

6. Removal Method(s) Employed

Grappled

Pulled abandoned pot

7. Environmental Consequences

List of entrapped animals (species & number)

Data on dead animals (species & number)

8. Disposal Method

Returned: to whom

Recycled: where and how

Disposal: where and how

References

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Guillory, V. 2001. A review of incidental fishing mortalities of blue crabs. Pages 28-41 in V. Guillory, H. M. Perry, and S. Vanderkooy, editiors. Proceedings of the blue crab mortality symposium. Gulf States Marine Fisheries Commission, Ocean Springs, Mississippi.

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Virginia General Assembly. 2008. Report of the Center for Coastal Resources Management, Virginia Institute of Marine Science, College of William and Mary To the Governor and the General Assembly “Study on Abandoned and Discarded Blue Crab Traps”. House Document 7.

Appendix 1.

VIMS Derelict Crab Pot Removal Mechanism