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FINAL REPORT

PORT SUSAN 2013 DERELICT FISHING GEAR PROJECT

PREPARED FOR:

NORTHWEST STRAITS FOUNDATION

PREPARED BY:

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Introduction

Abandoned, lost and discarded crab pots can present economic and environmental impact issues in marine waters. Every year pot gear is lost due to entanglement with debris, vessel hits and vandalism. Identification, location and safe removal of derelict crab pots can reduce these destructive impacts of derelict fishing gear, as has been demonstrated in derelict gear removal projects previously conducted in Washington waters of the Salish Sea within the Northwest Straits Foundation (NWSF) operation area.

This project was conducted as mitigation for temporal impacts to marine habitat from replacement of a marine outfall by the Mukilteo Water and Wastewater District. Funding from the Mukilteo Water and Wastewater District was provided to the NWSF for derelict crab pot survey and removal operations. The NWSF contracted with Natural Resources Consultants, Inc. (NRC), to manage the project. The removal operations were coordinated with the WDFW, Snohomish County Marine Resources Committee, the Tulalip Tribes, NOAA, the U.S. Fish and Wildlife Service (USFWS) and the U.S. Coast Guard (USGC).

Scope of Work

The original project plan consisted of a total of one day of sidescan sonar fieldwork and 0.5 day post-survey processing, followed by three days of dive removal work for derelict crab pot targets. However, this plan was altered based on the less-than-expected number of pot targets identified on the first day of surveys. Therefore, a total of two days of sidescan sonar field work, 0.66 day post-survey processing and two days of dive removal operations were conducted in the commonly fished areas near Kayak Point and Cavalero Beach in Port Susan. Data collected from the survey and removal operations were entered into the WA State derelict fishing gear database, managed by NWSF, and the findings were summarized for the final report.

Methodology

Sidescan Sonar Survey

Fenn Enterprises performed the sidescan sonar surveys on May 19 and 20, 2013, in Port Susan followed by 0.5 days of post-survey processing. A Marine Sonic sidescan sonar system operating at 600 kHz with a differential global positioning system (DGPS) was used during the survey to locate derelict fishing gear. The sonar system employed a heavy towfish, towed off the bow of a 26-foot survey vessel. A hydraulic winch and cable controlled the depth of the towfish. The sidescan sonar image was projected on a monitor onboard the vessel and recorded onto a computer hard drive for later processing.

Generally, the sidescan sonar survey was conducted at 5.0 km/hr (2.7 knots) with a path width of 50 m on both sides of the boat for an approximate area swept of 90 to 100 m (295 to 328 ft). The survey path width was occasionally decreased to 30 m on either side of the boat in shallow water (less than 8 m deep), and increased to 75 m on either side in relatively featureless, flat areas when there were no objects or relief to block and/or distort the extended travel of the sonar signal. Survey depths in Port Susan generally ranged from about 3 m (10 ft) to 32 m (105 ft) in order to identify derelict fishing gear within the dive depth capabilities of the recovery team.

The intent of the Port Susan survey was to locate derelict crab pots in a known heavy fishing effort and high vessel traffic area. Since derelict pot removals have not taken place in Port Susan since 2008, regional stakeholders, resource managers and derelict gear project managers were interested in removals to occur in this area again. Especially after several actively fishing crab pots were reported to have become derelict due to a large ice-sheet that flowed through the Port Susan area in December 2009, either cutting the buoy lines below the buoy or dragging the pots into deeper waters.

Counts and precise locations of derelict fishing gear were recorded during post-survey processing of the data. The products from the sidescan sonar survey included a trackline file of the area surveyed, calculation of the area covered and the positions (latitude and longitude) of likely derelict fishing gear targets found (Figure 1).

Derelict Fishing Gear Removal

Fenn Enterprises was contracted to conduct the dive recovery operations of crab pots in the Port Susan area. Two divers equipped with SCUBA operated off a 40-foot dive support and gear recovery vessel, the R/V *Surveyor II*. A list of the precise locations of derelict crab pots detected during the sidescan sonar survey was used by the onboard biologist and dive team to locate derelict pots. This was done by plotting the pot targets as waypoints over navigational charts in an electronic navigation software package (Nobeltec®) connected to a wide area augmentation (WAAS) GPS.

Using the WAASGPS system, the dive support vessel was directed to the exact location of the potential derelict gear target identified by the sidescan sonar survey. When the vessel arrived at the target location, a clump weight with a line and float was deployed at the target location. The dive support vessel was then anchored in the vicinity of the clump weight or drifted nearby and a single diver was deployed. A second, safety backup diver stood by on deck. A 30 m (100 ft) length of rope was passed through a loop on the rope near the clump weight and the diver held the other end. Typically the clump weight, and therefore, the diver, landed within two meters of the derelict gear target, however when poor water visibility conditions were encountered, the diver would drag the 30 m rope around the clump weight in a circle until it tangled with the derelict fishing gear and then the diver worked back along the rope to the gear.

A variety of information about the derelict crab pot was reported by the diver to the biologist or observed directly onboard the support vessel. Information collected included whether the derelict pot was from the commercial fishery or sport fishery, whether it was equipped with legal escape cord, whether the gear was actively fishing or not, the number of live and dead Dungeness crab, and other crab and fish entrapped. Also reported was information about the overall condition of the gear and the depth and type of seabed where the gear was located. The derelict gear was freed by hand by the diver, a recovery line from the vessel was attached and it was hauled aboard the recovery vessel with a hydraulic winch. The onboard biologist further inspected the gear at the surface and looked for owner identification information.

During removal operations at Port Susan, the derelict fishing gear was stored in a locked secure box truck in the parking lot of the 11th street public boat ramp in the Port of Everett until disposal at the Snohomish County solid waste facility. If the owner of the pot could be determined, the owner was contacted and allowed the opportunity to recover his/her fishing gear at no cost. All pots with Tulalip Tribal identification tags were stored separately, to be retrieved by the Tulalip Fisheries Enforcement officers and eventually returned to their owners.

Results

Sidescan Sonar Survey and Target Investigation

In the 2 days of sidescan sonar surveys conducted in Port Susan on May 19 and 20, 2013, 4.48 km^2 were covered and 59 potential derelict crab pot targets were detected or 13.2 targets/km^2. One crab pot target was investigated but nothing was found, two targets were not investigated as they were found to be in water depths beyond maximum allowable diver safety depths (BMDD) of approximately 33 meters (108 ft), and 12 targets were not investigated due to the completion of operational dive days. A total of 44 of the 45 original targets investigated were found to be derelict fishing gear (44 crab pots) that were removed by divers, and two additional gear items (one crab pot, one crab ring) were found within close proximity to sidescan targets and removed during dive operations for a total of 45 derelict crab pots and one derelict crab ring removed (Table 1)(Figure 2). Table 1 provides the characteristics of pots removed in Port Susan.

Derelict Crab Pot Removal

Derelict fishing gear was removed from Port Susan on May 22 and 23, 2013. A total of 45 crab pots and one crab ring were removed. A total of 44 of the derelict crab pots removed were identified in the sidescan sonar surveys, and one derelict pot and one crab ring, not identified in the survey were found adjacent to surveyed pots and removed. Derelict crab pots were removed from water depths ranging from 7.6 m (25 ft) to 27.4 m (90 ft) from mud and mixed sand/mud substrate.

Of the 45 derelict pots removed, 16 (36%) were commercial pots and 29 (64%) were sport pots (Table 1). Eleven (24%) pots were determined to be still actively fishing and 34 (76%) were no longer fishing. Of the 45 pots removed, four (9%) were not equipped with legal escape cord and 41 (91%) had legal escape cord. Of the 41 pots equipped with legal escape cord, the escape cord had disintegrated on 37 (90%) and was still intact on 4 (10%) pots.

All 16 (100%) of the commercial pots recovered were equipped with proper escape cord. Four (14%) of the 29 derelict sport pots were not equipped with legal escape cord and 25 (86%) did have legal escape cord. Of the 11 crab pots found to still be fishing, 4 (36%) were not equipped with proper escape cord and 7 (64%) had legal escape cord that had either yet to deteriorate (4 pots), or were still fishing even after the escape cord had disintegrated (3 pots) due to the pot lid being stuck closed. One of these was a style of pot manufactured and typically used in southern California lobster fisheries, and had not yet been encountered in NWSF derelict pot removals prior to this occurrence (Exhibit 1). One commercial pot was not disabled after escape cord deterioration because the bait jar was clipped to the central meshes of the door, supplying enough weight to keep the door closed (Exhibit 2).

Of the 45 derelict pots recovered, 26 (58%) pots contained a total of 73 Dungeness crab and two red rock crab (Table 1). Of the 73 Dungeness crab recovered, 66 (90%) were live and 7 (10%) were dead. Twenty-five (34%) of the Dungeness crab recovered were females (25 live) and 48 (66%) were males (41 live and 7 dead). Both of the red rock crabs recovered were live (one female and one male). Derelict pots determined to be still actively fishing contained 43 Dungeness crab (37 live and six dead), and two live red rock crab. Pots determined to be no longer actively fishing contained 30 Dungeness crab (29 live and one dead), and no red rock crab. Crab pots without legal escape cord contained 18 (25%) Dungeness crab (15 live and three dead), and one (50%) of the red rock crab recovered. Crab pots with legal escape cord contained 55 (75%) Dungeness crab (51 live and four dead), and one (50%) of the red rock crab recovered. Figure 3 shows the locations of removed crab pots and the associated magnitude of Dungeness crab per removed pot encountered.

Other animals found in the crab pots removed included two live sunflower stars (*Pycnopodia helianthoides*).

Ten crab pots recovered with Tulalip Tribal identification were transferred to the Tulalip Fisheries enforcement officers at the Everett Marina on the final day of gear recovery. Degraded pots not returned to owners, along with the crab ring removed from Port Susan were disposed of at the King County solid waste facility, where the total weight of gear disposed was approximately 1,640 lbs. Salvageable derelict gear items without identification were stored in by project personnel for future use in either research projects or potential fund raising opportunities.

Discussion and Conclusions

Surveys identified less derelict pot targets than were expected in the northern Port Susan area. Expectations were based on survey and removal operations conducted in 2004, 2007 and 2008. A variety of reasons could contribute to these results, such as: less pot loss events due to increased fisher behavior, heavy sediment deposition burying pots or increased area sweeps by fisheries enforcement officers following fishery closures. Nevertheless, derelict pots were present and impacting the Dungeness crab resource in the area.

This project successfully removed 44 (77%) of the 57 derelict fishing gear targets within diver depth range found during the sidescan sonar surveys, along with one additional crab pot and one crab ring that were not identified in the surveys. The 91% overall rate of legal escape cord use on pots removed is higher than the average (77%) escape cord compliance seen in derelict pots since the NWSF derelict fishing gear removal program began. However, when analyzed by fishery, the data from Port Susan 2013 shows that the only non-compliance of escape cord regulations occurred in the recreational sector, while all commercial pots encountered were properly equipped with legal escape cord. Nevertheless, the compliance within the recreational sector of 86% was higher than the historical recreational compliance of 79%. One of the sport pots not equipped with legal escape cord was equipped with a line similar in appearance to degradable escape cord, but was made of nylon. This could be an example of proper intent, but improper execution of escape cord use. On the other hand, one of the sport pots was strapped closed with a bungee cord with no sign of intent to comply with escape cord regulations.

Although an analysis comparing the Dungeness crab catch from crab pots removed during this study to that from pots removed previously is not provided here, the number of Dungeness crabs found in the Port Susan 2013 pot removal indicate that derelict pots account for a significant impact to the resource.

Acknowledgements

The Port of Everett kindly provided free moorage for the dive support vessel during the project. Their assistance is greatly appreciated. A special thanks to Jim Dougherty of Gray and Osborne, who identified this project as a valuable mitigation tool. Tulalip Tribal marine enforcement personnel assisted the dive support vessel and retrieved the Tulalip Tribal pots that were returned to owners. Their assistance is also greatly appreciated. We also wish to thank the Snohomish County MRC for their support of a derelict pot removal project in Port Susan. Don Velasquez from WDFW, Mike McHugh and Cathy Stanley from Tulalip Tribes provided valuable insight to the planning of the surveys and removals.

Table 1. Number of derelict pots recovered, type of pot (commercial or sport), fishing status (actively fishing or not), rot cord use and numbers of live and dead crab observed in Port Susan 2013 derelict fishing gear project. Source: NRC.

Fishing/Not Fishing	Actively Fishing			Not Fishing			All Pots		
	Escape Cord Used	Escape Cord Not Used	Total	Escape Cord Used	Escape Cord Not Used	Total	Escape Cord Used	Escape Cord Not Used	Total
Commercial									
# Pots Recovered	2	0	2	14	0	14	16	0	16
# Dungeness Crab Dead	3	0	3	1	0	1	4	0	4
# Dungeness Crab Alive	14	0	14	18	0	18	32	0	32
# Red Rock Crab Dead	0	0	0	0	0	0	0	0	0
# Red Rock Crab Alive	0	0	0	0	0	0	0	0	0
# Total Crab Dead	3	0	3	1	0	1	4	0	4
# Total Crab Alive	14	0	14	18	0	18	32	0	32
Sport									
# Pots Recovered	5	4	9	20	0	20	25	4	29
# Dungeness Crab Dead	0	3	3	0	0	0	0	3	3
# Dungeness Crab Alive	8	15	23	11	0	11	19	15	34
# Red Rock Crab Dead	0	0	0	0	0	0	0	0	0
# Red Rock Crab Alive	1	1	2	0	0	0	1	1	2
# Total Crab Dead	0	3	3	0	0	0	0	3	3
# Total Crab Alive	9	16	25	11	0	11	20	16	36
All Pots									
# Pots Recovered	7	4	11	34	0	34	41	4	45
# Dungeness Crab Dead	**3**	**3**	**6**	**1**	**0**	**1**	**4**	**3**	**7**
# Dungeness Crab Alive	**22**	**15**	**37**	**29**	**0**	**29**	**51**	**15**	**66**
# Red Rock Crab Dead	0	0	0	0	0	0	0	0	0
# Red Rock Crab Alive	1	1	2	0	0	0	1	1	2
# Total Crab Dead	3	3	6	1	0	1	4	3	7
# Total Crab Alive	23	16	39	29	0	29	52	16	68
# Total Crab	26	19	45	30	0	30	56	19	75

Table does not include the 1 crab ring removed during operations

Figure 1. Port Susan 2013 sidescan sonar survey tracklines, area swept and crab pot targets. Source: Fenn Enterprises and NRC, Inc.

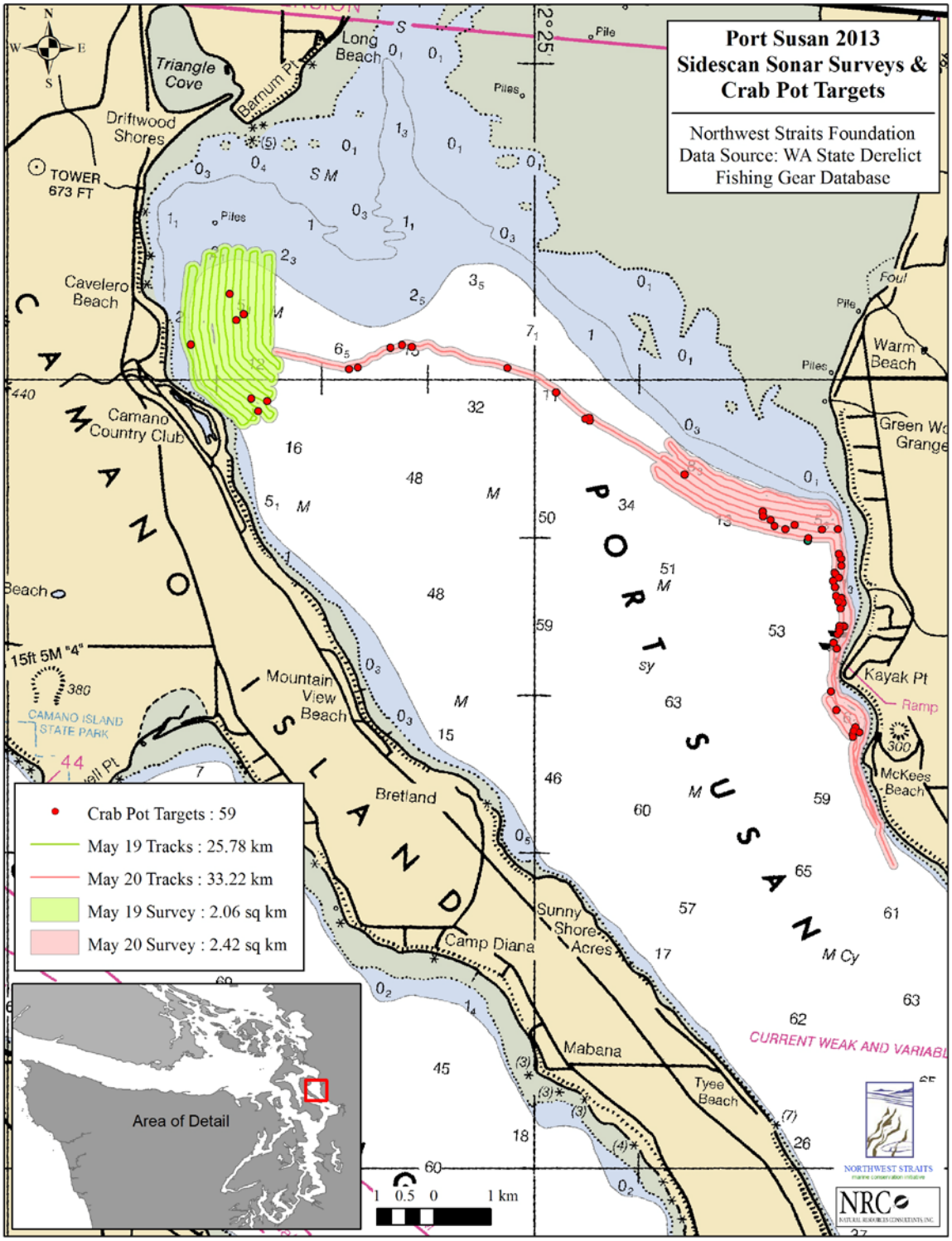

Figure 2. Derelict crab pot targets disposition in Port Susan following removal operations during the Port Susan 2013 derelict fishing gear project. Source: NRC, Inc.

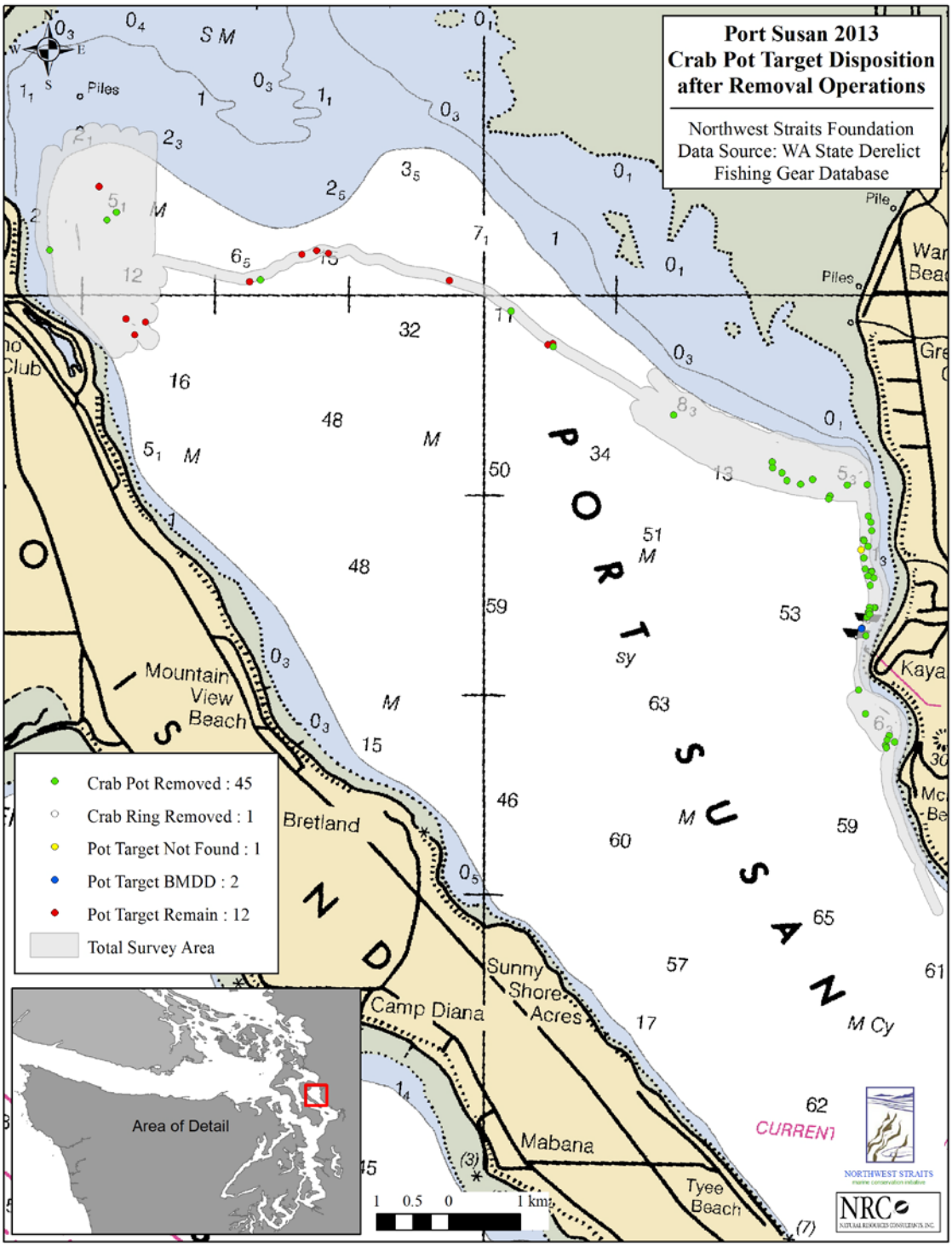

Figure 3. Location of removed derelict crab pots with graduated symbols depicting number of Dungeness crab encountered per pot during the Port Susan 2013 derelict fishing gear project. Source: NRC, Inc.

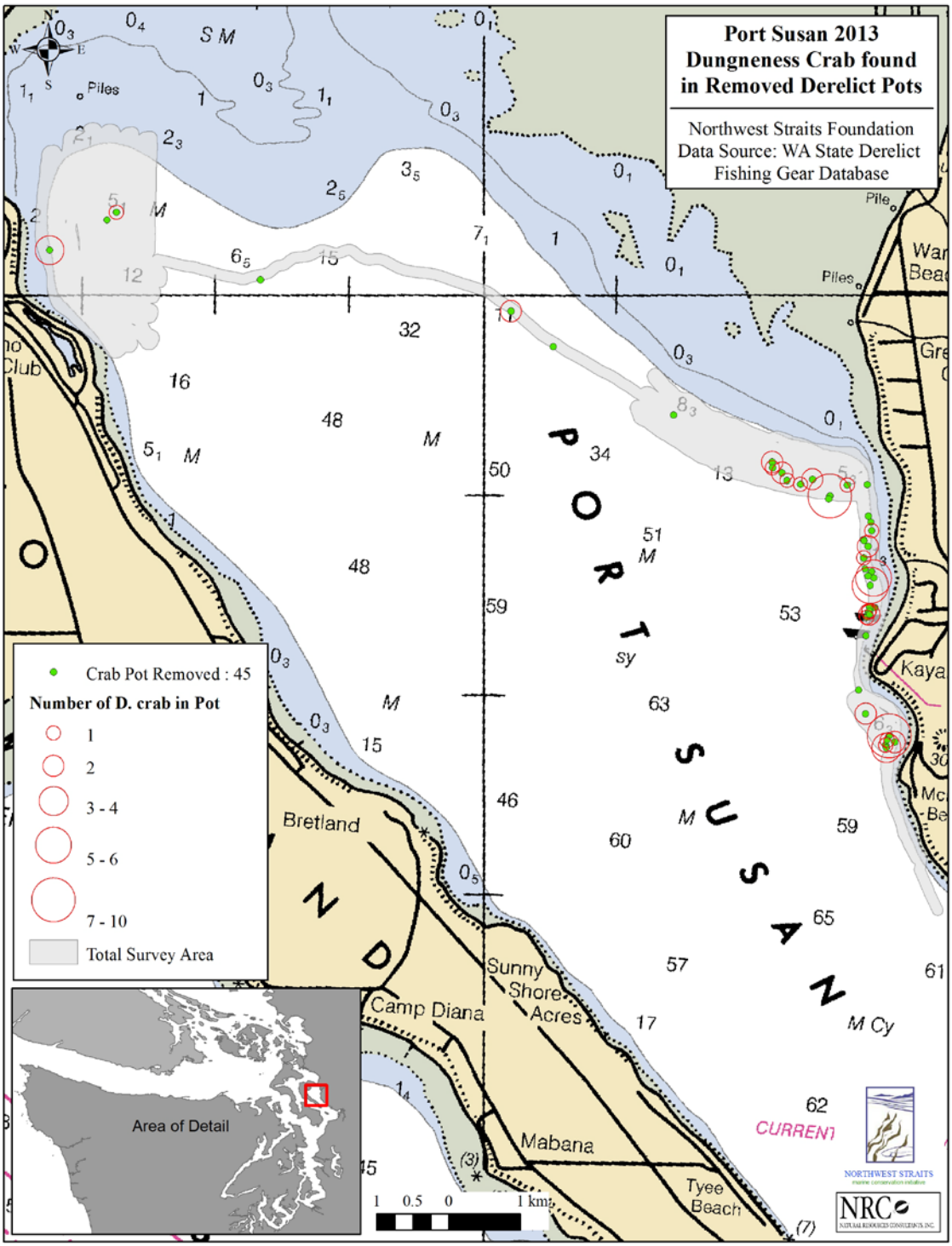

Exhibit 1. Removed derelict pot; manufactured and typically used in southern California. Style not previously encountered in NWSF Puget Sound derelict gear removals. Source: NRC, Inc.

Exhibit 2. Removed derelict crab pot; escape cord deteriorated, bait jar holding down pot door. Source: NRC, Inc.