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FINAL REPORT

SNOHOMISH COUNTY MRC 2008 DERELICT FISHING GEAR PROJECT

PREPARED FOR:

NORTHWEST STRAITS INITIATIVE
AND
SNOHOMISH COUNTY MARINE RESOURCES COMMITTEE

PREPARED BY:

NATURAL RESOURCES CONSULTANTS, INC.

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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 Snohomish and other counties within the Northwest Straits Initiative (NWSI) operation area.

The goals of the 2008 Snohomish County Marine Resources Committee (MRC) derelict gear project were to locate and remove derelict fishing gear from a specific study area in the commonly fished commercial, Tribal and recreational crab fishing area of Port Gardner and to use this area for crab pot loss rate measurements by conducting future surveys and removal operations. The Snohomish County MRC has recently initiated an education program designed to inform the public of the importance of using escape cord (rot cord) on crab pots, and encourage these practices. Future derelict gear surveys and removal in the area will evaluate the effectiveness of such educational programs.

Funding from the NOAA Marine Debris Program and other sources was provided by the NWSI. The NWSI contracted with Natural Resources Consultants, Inc. (NRC), to manage the derelict fishing gear project. The removal operations were coordinated with the Washington Department of Fish and Wildlife (WDFW), Snohomish County, Tribal governments, NOAA, the U.S. Fish and Wildlife Service (USFWS) and the U.S. Coast Guard (USGC).

Scope of Work

Survey and removal of derelict crab and shrimp pots; designation of study area.

Previous surveys and derelict crab and shrimp pot removal projects conducted by the Snohomish County MRC and the NWSI have documented the location of derelict pots in the commonly fished commercial, Tribal and recreational crab fishing area of Port Gardner. Clearing a specific study area of derelict pots will provide a baseline from which future derelict gear surveys of the same area will allow estimation of the loss rate of derelict pots in these fisheries. This information is valuable to WDFW and Tribal fishery managers in assessing the overall impact of derelict fishing gear in the area

and provides additional information for public information programs aimed to reduce fishing gear loss.

Methodology

Sidescan Sonar Survey

Fenn Enterprises performed the sidescan sonar surveys for the project on February 23, 2008. 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 24-foot survey vessel. A hydraulic wench and cable controlled the depth of the towfish. The survey 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 4.63 km/hr (2.5 knots) with a path width of 50 m on either side of the boat for an approximate area swept of 90 m (295 ft). The survey path width was occasionally decreased to 10 to 20 m on either side of the boat in shallow water (less than 5 m deep) or when a more detailed image of an object was desired. Survey depths in Port Gardner 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 sidescan sonar survey in Port Gardner was to locate derelict crab pots to be removed in a specific study area. After removal this area will be re-surveyed on a yearly or bi-yearly basis with corresponding removals in order to determine loss rates of crab pots.

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

Gear Recovery

Doug Monk Diving was contracted to conduct the dive recovery operations on crab pots in Port Gardner. Two divers equipped with surface supplied air operated off a 40-foot dive support and gear recovery vessel, the F/V *Bet-Sea*. 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 using a wide area augmentation (WAAS) GPS and electronic chart software (Nobeltec®). Derelict gear target locations derived from the sidescan sonar survey were transferred into the Nobeltec charting software as waypoints and plotted over a navigation chart of Port Gardner.

Using the WASSGPS system, the dive support vessel was directed to the exact location of the potential derelict gear target identified by the sidescan sonar survey. As the vessel arrived at the target location a clump weight with a line and float were deployed as near as possible to the derelict gear location. The dive support vessel was then anchored in the vicinity of the clump weight or drifted nearby and a single diver was deployed. The other diver stood by on deck as a safety backup diver. A 30 m (100 ft) length of rope was passed through a loop on the rope near the clump weight and the other end was held by the diver. 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.

Prior to recovery of the derelict fishing pot a variety of information was reported to the biologist on board the support vessel by the diver. Information collected included whether the derelict pot was commercial or sport, whether it was fishing or disabled, whether it was equipped with rot 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. Gear to be recovered was freed by hand by the diver, a recovery line from the vessel was attached and it was hauled aboard the recovery vessel by the aid of a hydraulic winch. The onboard biologist further inspected the gear at the surface and looked for owner identification information.

The derelict fishing gear was stored in the fish hold of the recovery vessel until offloaded at a secure location and either returned to the owner, stored for use in future research projects, or disposed of in a landfill.

Results

Survey and removal of derelict crab pots; designation of study area.

The 2008 sidescan sonar survey covered a 2.61 km^2 area in the commonly fished commercial, Tribal and recreational shallow water (3 to 105 ft) fishing area of Port Gardner, detecting 166 potential derelict gear targets or 63.6 targets/km^2 (Figure 1).

Derelict Crab Pot Removal

Derelict fishing gear was removed from Port Gardner on May 6 – 9 and June 24, 2008 (Figure 2). A total of 142 (86%) of the 166 derelict gear targets identified during the February 2008 sidescan sonar survey were investigated. Ten sport crab pots and five commercial crab pots were found adjacent to survey targets and removed for a total of 145 removed crab pots. Three crab rings were removed, one was a target from the survey and two were found during recovery operations. One target removed was a wheeled mechanical painting apparatus. One gillnet segment attached to a commercial crab pot was removed. Four targets were not found by divers, two of which were assumed to be duplicates of nearby crab pots detected on adjacent sonar survey tracklines. Six targets were identified as debris and left in place. Twenty four (14%) of the surveyed targets were not investigated due to operational time limitations and/or being deeper than dive depth capabilities of 105 ft.

Of the 145 derelict pots removed, 54 (37%) were determined to be still actively fishing and 91 (63%) were no longer fishing (Table 1). Commercial crab pots totaled 71 (49%) and sport pots (including three shrimp pots) totaled 74 (51%). Of the 145 pots recovered, 16 (11%) were not equipped with rot cord or had illegal synthetic rot cord, 128 (88%) had legal rot cord and one (1%) pot was too deteriorated to determine whether rot cord was used or not. Of the 128 pots equipped with legal rot cord, the rot cord had disintegrated on 120 (94%) and was still intact on eight (6%) pots.

All 74 sport crab pots recovered were equipped with proper rot cord. Sixteen (23%) of the 71 commercial pots recovered where not equipped with proper rot cord. Of the 54 crab pots found to still be fishing, 11 (20%) were not equipped with proper rot cord and seven (13%) had legal rot cord that had yet to deteriorate.

Of the 145 derelict pots recovered, 54 (37%) pots contained a total of 112 Dungeness crab (*Cancer magister*), and 25 red rock crab (*Cancer productus*) (Table 1). Of the 112 Dungeness crab recovered, 72 (64%) were live and 40 (36%) were dead. Twelve (50%) of the red rock crab recovered were live and 13 (50%) were dead. Derelict pots determined to be still actively fishing contained 99 Dungeness crab (61 live and 38 dead), and 23 red rock crab (11 live and 12 dead). Pots determined to be no longer actively fishing contained 13 Dungeness crab (11 live and two dead), and two red rock crab (one live and one dead). Crab pots without legal rot cord contained 41 (37%) Dungeness crab (34 live and seven dead), and five (20%) of the red rock crab (three live and two dead) recovered.

Eight Dungeness crab (six live and two dead) were found entangled in the portion of gillnet found entangled with two of the crab pots. Three live northern kelp crab (*Pugettia producta*) were recovered in two commercial pots, both equipped with proper rot cord and not actively fishing.

One crab pot recovered was returned to the owner and the remaining 144 crab pots, gillnet and marine debris removed were disposed of at the Clallam County solid waste transfer station. The total weight of the derelict gear and marine debris removed was 2,320 lbs.

Conclusions

This project successfully cleared the majority (86%) of derelict fishing gear targets from the study area in Port Gardner. The location of the remaining targets and debris is known from the sidescan sonar survey. This area will be used as the study site for future surveys and removals in the coming years to determine the loss rate of derelict crab pots and the effectiveness of local escape cord education programs in the area. A total of 150 derelict gear targets were removed in the shallow water area (3 to 105 ft) of Port Gardner. Of the uninvestigated targets remaining, many are in depths beyond diver capabilities (> 105 ft). The crab pots removed contained 140 crab (87 live and 53 dead). The sixteen crab pots found fishing illegally with no rot cord contained 46 (33%) of the crab found in all of the pots removed, indicating the importance of compliance with rot cord regulations. The remaining 94 (67%) of the total crab were found in pots equipped with proper rot cord.

The 2008 survey found a derelict pot target density of 63.6 targets/km^2 within the study area. This represents less than one half the density of 136.0

targets/ km^2 found during a similar survey conducted in 2004 covering most of the pot fishing grounds in Port Gardner.

Recommendations

Based on the observations and results of the derelict gear removal project, the following are recommendations to further reduce the impacts of derelict fishing gear on the marine environment.

- **The use of legal escape cord on crab pots should continue to be enforced and escape cord education programs should continue in Snohomish County.**

- **The study area should be surveyed and gear removed annually for the next three years to determine crab pot loss rates and measure the effectiveness of crab pot fishing education programs being conducted by the Snohomish County MRC.**

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 organisms observed during the 2008 Snohomish County MRC derelict fishing gear project. Source: NRC.

Fishing/Not Fishing	Actively Fishing			Not Fishing				All Pots*			
	Rot Cord	No Rot Cord	Total	Rot Cord	No Rot Cord	Unknown	Total	Rot Cord	No Rot Cord	Unknown	Total
Commercial											
# Pots Recovered	25	11	36	29	5	1	35	54	16	1	71
# Dungeness Crab Dead	18	6	24	1	1	0	2	19	7	0	26
# Dungeness Crab Alive	21	31	52	5	3	0	8	26	34	0	60
# Red Rock Crab Dead	7	1	8	0	1	0	1	7	2	0	9
# Red Rock Crab Alive	5	3	8	0	0	0	0	5	3	0	8
# Northern Kelp Crab Dead	0	0	0	0	0	0	0	0	0	0	0
# Northern Kelp Crab Alive	0	0	0	3	0	0	3	3	0	0	3
# Total Crab Dead	25	7	32	1	2	0	3	26	9	0	35
# Total Crab Alive	26	34	60	8	3	0	11	34	37	0	71
Sport											
# Pots Recovered	18	0	18	56	0	0	56	74	0	0	74
# Dungeness Crab Dead	14	0	14	0	0	0	0	14	0	0	14
# Dungeness Crab Alive	9	0	9	3	0	0	3	12	0	0	12
# Red Rock Crab Dead	4	0	4	0	0	0	0	4	0	0	4
# Red Rock Crab Alive	3	0	3	1	0	0	1	4	0	0	4
# Northern Kelp Crab Dead	0	0	0	0	0	0	0	0	0	0	0
# Northern Kelp Crab Alive	0	0	0	0	0	0	0	0	0	0	0
# Total Crab Dead	18	0	18	0	0	0	0	18	0	0	18
# Total Crab Alive	12	0	12	4	0	0	4	16	0	0	16
All Pots											
# Pots Recovered	43	11	54	85	5	1	91	128	16	1	145
# Dungeness Crab Dead	32	6	38	1	1	0	2	33	7	0	40
# Dungeness Crab Alive	30	31	61	8	3	0	11	38	34	0	72
# Red Rock Crab Dead	11	1	12	0	1	0	1	11	2	0	13
# Red Rock Crab Alive	8	3	11	1	0	0	1	9	3	0	12
# Northern Kelp Crab Dead	0	0	0	0	0	0	0	0	0	0	0
# Northern Kelp Crab Alive	0	0	0	3	0	0	3	3	0	0	3
# Total Crab Dead	43	7	50	1	2	0	3	44	9	0	53
# Total Crab Alive	38	34	72	12	3	0	15	50	37	0	87
# Total Crab	81	41	122	13	5	0	18	94	46	0	140

* The status of rot cord on 1 commercial pot recovered could not be determined.

Figure 1. Location of sidescan sonar survey effort and derelict crab pot targets found in Port Gardner during the 2008 Snohomish County MRC derelict fishing gear project. Source: Fenn Enterprises and NRC, Inc.

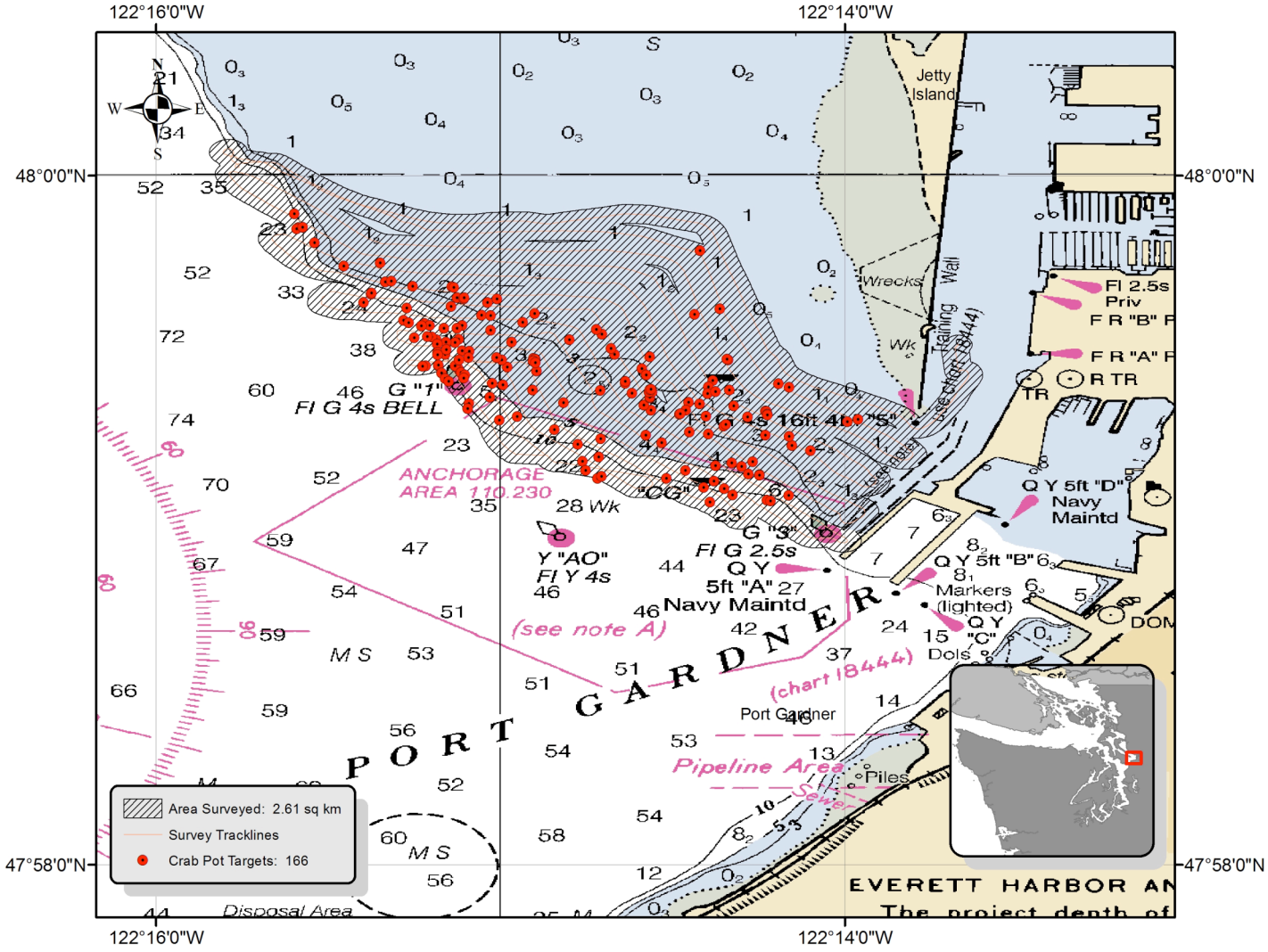

Figure 2. The location of crab pots removed and remaining in Port Gardner after the 2008 Snohomish County MRC derelict fishing gear project. Source: NRC, Inc.