EFFECTS OF MODIFICATIONS TO COD-FISHING POTS IN REDUCING CATCH RATES OF TANNER CRAB *CHIONOECETES BAIRDI*

by

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INTRODUCTION

Pot gear accounts for a large and increasing amount of the Tanner crab *Chionoecetes bairdi* bycatch in the Gulf of Alaska Pacific cod *Gadus macrocephalus* fishery. Estimated bycatch of Tanner crabs in the Gulf of Alaska cod pot fishery was 71,226 crabs during the 1996 season and 182,314 during the 1997 season (Zhou and Kruse MS). Similarly, the percentage of the Pacific cod catch taken by pots has grown from 0% in 1984 to 16% in 1997 (National Marine Fisheries Service Alaska Regional Office Home Page, Jackson and Urban 1998). The need to develop crab-bycatch reduction measures in the cod pot fishery is indicated by the depressed status of affected crab stocks coupled with expected effort increases in the pot fishery, and provisions in the Magnuson-Stevens Fishery Conservation and Management Act that place increased emphasis on reduction of incidental catch (NOAA 1997). In response, the Scientific and Statistical Committee of the North Pacific Fishery Management Council (NPFMC) has identified expanded research on gear modifications and other methods for reducing bycatch as the top research priority relative to bycatch problems. Fortunately, pots offer more design options for reducing bycatch than most other fishing gear (Miller 1996). In particular, testimony presented to the NPFMC in 1996 suggested that significant reductions in crab bycatch in the cod pot fishery could be effected by simple alterations to cod pots.

In this report we present results of a study on the effectiveness of some low-cost modifications to standard cod-fishing pots in reducing Tanner crab catch rates. We also present our results on the catch rates of Pacific cod that were incidentally captured during this study. However, results from a separate phase of our study that focuses on the effects to catch rates of Pacific cod of these same pot modifications will be presented in another report.

METHODS

Pot Design and Modifications

All known pot fishermen and pot manufacturers participating in Alaskan crab or cod fisheries were solicited during June through August 1997 for ideas on alterations to standard cod pots that would reduce Tanner crab bycatch but maintain catch rates of cod. Three designs were chosen based on presumed effectiveness, on corroborative information supplied by designers, and on feasibility of the alterations for use in a commercial fishery. All alterations chosen for study were designed to inhibit the entry of Tanner crabs into cod pots.

All designs studied in this project involve modifications to standard cod pots, i.e., rectangular king crab pots with tunnel eyes modified for groundfish consistent with
5 AAC 28.050 (e) (ADF&G 1997). Each of the three modified cod pots were evaluated against the standard cod pot and each of the three modified pots were fitted as standard cod pots prior to modification as described below.

Standard Cod Pot: A commercial size crab pot measuring 198 cm x 198 cm x 76 cm (6½ ft x 6½ ft x 2½ ft), with two opposing 20.3 cm x 91.4 cm (8 in x 36 in) vertically-placed tunnel eye openings. Each tunnel eye was fitted with cod triggers. Halibut-excluder devices were placed vertically in each tunnel eye every 22.9 cm (9 in) (Figure 1). Each pot was webbed with 7.6 cm (3 in) stretched mesh.

False Tunnel Modification: A standard cod pot fitted with a trapezoidal web panel attached to the lower edge of the tunnel eye, extending horizontally and parallel to the bottom of the pot, outward to the tunnel sides at a height of 25.4 cm (10 in) from the base of the pot (Figure 2).

Slick Tunnel Ramp Modification: A standard cod pot fitted with a trapezoidal panel of 2-mm thick hard plastic attached flush to the tunnel ramp from the lower edge of the tunnel eye outward to the base of the tunnel and extending 10.2 cm (4 in) up the tunnel sides (Figure 3).

Vertical Board Modification: A standard cod pot fitted with 2.5 cm x 20.3 cm x 19.8 m (1 in x 8 in x 6½ ft) planed pine boards installed lengthwise across the bottom of each tunnel and flush with the bottom frame and lower 20.3 cm (8 in) of each side of the tunnel (Figure 4).

A total of 20 individual pots, five of each of the four pot types, were made for use in this study by modifying existing king crab pots.

Sampling Design

The study was performed in an area of known Tanner crab concentrations within Chiniak Bay, Kodiak, Alaska. Depths fished ranged from 130 m (71 fm) to 165 m (90 fm). A total of 16 pots (four standard cod pots and four of each of the three modification types) were fished concurrently. Each pot was baited with two hanging net bags, each containing 2.2 kg (5 lb) of chopped frozen herring. The 16 pots were set in four groupings of four pots each. Each group of four pots (referred to in this report as a "quad") consisted of a standard pot and one of each of the three modification types. Pots in a quad were set at the corners of a square with 0.24 km (0.13 nm) sides. The arrangement by pot type within each quad was determined randomly and independently of other quads (Watson et al. 1998). The separate quads were spaced a minimum of 0.93 km (0.5 nm) apart and in any array (e.g., square, rectangle, line, or curved.) necessary to enable placement within concentrations of Tanner crab. An example deployment of the 16 pots is provided in Figure 5. Sampling took place aboard the 27.4-m (90-ft) research vessel RV *Resolution* in a 17 day period from November 4 through 21, 1997. A total of 176 pot lifts in 44 quads were successfully performed (Appendix A).

The target soak time for pots in each quad was 1 d. Interviews with commercial cod pot fishermen in the Kodiak Area state waters fishery indicated that soak times in the commercial fishery are typically less than 1 d, generally in the range of 6 to 12 h. Since all the pot modifications examined in this study were designed to inhibit the entry of Tanner crab (rather than to promote their escape once captured), the longer 1 d soak time should allow for greater discrimination of the efficacy of the modifications in reducing Tanner crab catch. Soak time for pots in 24 quads met the 1 d target. However, soak times greater than 1 d were common; pots in

7 quads soaked 2 d and pots in 8 quads soaked 3-4 d due to poor weather or weekends when sampling was not conducted. Pots in 5 quads were soaked for less than 0.2 d (< 5 h) to check if trends observed for 1 d or longer soak times were maintained at soak times shorter than are typically used in the commercial fishery.

Catch Sampling and Data Recording

Catch of each species (or species group) was enumerated as detailed in Watson et al. 1998. Any Tanner crabs that were retained on the outside surface of the pot were enumerated separately from crabs captured inside the pot. Crabs were separated by species and sex. Sex, shell age, carapace width (CW), legal ($\geq$ 140 mm CW, including spines) or sublegal status of males, juvenile or adult status of females, and reproductive condition of females were recorded from Tanner crabs. Tanner crabs from a single pot were subsampled within sexes for measurements, legal status of males, and reproductive characteristics of females when conditions required, generally when the catch of Tanner crab exceeded 150 animals. All captured Pacific cod were counted and measured (fork length). All captured animals were returned to the sea near the pot lift site after sampling.

Data Analysis

Statistical Tests for Significance of Variation in Tanner Crab Catch Rates Among Pot Types. Only data from quads in which at least one Tanner crab was captured were included in the analysis of Tanner crab catch rates. Catch per pot (CPUE), including any crabs retained on the outside of the crab pot, was first examined for each pot type by soak time (.1-.2 d, 1 d, 2 d, or 3-4 d) prior to performance of statistical tests to determine if any trends attributable to soak time existed that would have warranted blocking by soak time.

Tanner crab CPUE was analyzed according to a repeated measure model in which the data from a single quad was treated as a four-variate random variable (with CPUEs for each of the four pot types as the four components of the random variable). Results for one quad were assumed to not influence the results of any other quad (that is, the four-variate random variables were assumed to be mutually independent). Pot types within each quad were ranked on the basis of Tanner crab catch from 1 (lowest catch of Tanner crabs for quad) to 4 (highest Tanner crab catch for quad). Friedman's test (Conover 1971) was used to test the null hypothesis,

H_0: Each ranking of pot type by Tanner crab CPUE within a quad is equally likely,

against the alternative hypothesis,

H_1: At least one of the pot types tends to yield larger Tanner crab CPUEs than at least one other pot type.

If the above null hypothesis was rejected at p=0.05 by Friedman's test, the procedure for multiple comparisons following Friedman's test (Conover 1971) was used to test the significance of

differences in Tanner catch between pairs of pot types. Two pot types were considered to differ significantly in Tanner crab catch if the null hypothesis of no effect due to pot type was rejected at p=0.05 by the multiple comparison test.

Statistical Tests for Significance of Variation in Pacific Cod Catch Rates Among Pot Types. The same procedures and tests described above for the Tanner crab catch data were applied to the data on catch of Pacific cod. Only data from quads in which at least one Pacific cod was captured were included in our analysis of the Pacific cod catch data.

RESULTS

Effects of Pot Types on Tanner Crab Catch

Of the 44 four-pot quads that were successfully set and retrieved during the study, 43 produced a catch of at least one Tanner crab; five with soak times of .1-.2 d, 23 with soak times of 1 d, 7 with soak times of 2 d, and 8 with soak times of 3-4 d. We report here only on the results from the 172 pot lifts in those 43 quads. A total of 9,682 Tanner crabs were captured in this study. Only 34 Tanner crabs out of the total catch were retained on the outside of the pot. In our analyses we included the catch of all Tanner crabs without distinguishing if they were caught inside a pot or retained on the outside of a pot. Crabs retained on the outside of pots accounted for a negligible portion of the total catch of each pot type and there was no indication that such retention was associated with pot type.

Tanner Crab CPUE. Pooling data from all soak times, vertical board pots had the lowest overall Tanner crab CPUE for 43 pot lifts at 18.0 crabs per pot, followed in ascending order by false tunnel pots (27.5), slick tunnel ramp pots (63.6), and standard cod pots (116.1) (Table 1). Within-quad ranking of pot types by catch of Tanner crabs showed the same trends as CPUE. On the 1-to-4 scale of ranking pot types by catch of Tanner crabs, the within-quad ranks of the vertical board pots averaged lowest over the 43 quads at 1.8, followed in ascending order by the false tunnel pots (2.1), slick ramp pots (2.7) and standard cod pot (3.4). Although catch of Tanner crabs tended to increase with soak time, the trend in Tanner crab catch by pot types was generally consistent across soak time categories (Table 1).

Maximum observed Tanner crab catch for a single pot lift by pot type followed the same trend as CPUE by pot type. The highest catch of Tanner crab in any single pot lift occurred when a standard cod pot soaked for 2 d captured 678 crabs (Table 1). The highest catch of Tanner crab in a single lift of a slick tunnel ramp pot was 410. Maximum Tanner crab catches for false tunnel pots (127) and vertical board pots (121) were well below those for standard cod pots and slick tunnel ramp pots.

Another notable trend was revealed in a comparison of the number of quads that each pot type failed to capture Tanner crabs. Standard cod pots and slick tunnel ramp pots both produced a catch of Tanner crab in all but two quads. False tunnel pots failed to catch Tanner crabs in four quads. By comparison, vertical board pots were notable in failing to capture Tanner crabs in 17

quads. Failure to catch Tanner crab in a vertical board pot was also associated with failure to catch Pacific cod in the same pot (see ***Effects of Pot Types on Pacific Cod Catches***, below).

Since similar trends in ranking of pot types by Tanner crab catch were exhibited at all soak times, we pooled the data from all 43 quads that produced a catch of Tanner crabs regardless of soak time for performing statistical tests. The null hypothesis of no trend in ranking of pot types by Tanner crab catch within quads was rejected by Friedman's test (Friedman test statistic = 17.69, $p<0.000001$ assuming F distribution with d.f.=3,126). The tendency for standard cod pots to have the highest catch of Tanner crab in each quad was statistically significant ($p < 0.05$) in each pair-wise comparison of the standard cod pot with one of the three modified pot types. The tendency for higher Tanner crab catches in the slick ramp pots than in either of the false tunnel or vertical board pots was also statistically significant. Although there was a trend of higher Tanner crab catch in the false tunnel pots than in the vertical board pots, that trend was not statistically significant.

Tanner Crab Catch Composition. A total of 6,961 male and 2,721 female Tanner crabs were caught during the study for an overall male:female ratio of 2.6:1 (Table 2). Sex ratios of captured crabs varied among pot types. Tanner crab catch in the standard cod pots showed the lowest male:female ratio (1.9:1), followed in ascending order by slick tunnel ramp pots (3.2:1), vertical board pots (4.5:1) and false tunnel pots (5.0:1). Roughly two-thirds of the male Tanner crabs captured in this study were sublegal-sized; sublegal males accounted for an estimated 4,692 crabs, whereas legal males accounted for an estimated 2,269 crabs. The lowest proportion of sublegal males was observed for males captured by vertical board pots (61%), whereas the highest proportion of sublegal males occurred in the males captured by standard cod pots (71%). The smallest male Tanner crab measured during this study was 88 mm CW and the largest was 168 mm CW. Most males were between 105 mm CW to 150 mm CW, however (Figure 6), and the majority would be considered adult-sized relative to the 110-115 mm size at 50% maturity that has been estimated for Tanner crab in Kodiak (Stevens et al. 1993). Females captured during this study were exclusively adults and ranged from 79 mm CW to 117 mm CW (Figure 7).

Effects of Pot Types on Pacific Cod Catches

A total of 1,156 Pacific cod were captured during this study. Each of the 44 four-pot quads that were successfully set and retrieved during the study produced a catch of at least one Pacific cod; five with soak times of .1-.2 d, 24 with soak times of 1 d, 7 with soak times of 2 d, and 8 with soak times of 3-4 d. We report here on the results from the 176 pot lifts in those 44 quads.

Pacific Cod CPUE. Combining all soak times, standard cod pots had the highest CPUE at 8.4 cod per pot, followed closely by the false tunnel pots at 8.1 cod per pot (Table 1). Overall cod CPUE for the slick tunnel ramp pots was much lower at 5.4 crab per pot, whereas vertical board pots had the lowest CPUE at only 4.4 cod per pot. CPUE of Pacific cod tended to increase from a .1-.2 d soaks to 1 d soak, but showed little influence of increased soak times after 1 d.

Trends in cod CPUE among pot types were generally consistent across soak time categories and data from all 44 four-pot quads were pooled for statistical tests. The null hypothesis of no trend in ranking of pot types by Pacific cod catch within quads was rejected by Friedman's test (Friedman test statistic = 7.21, $p<0.0005$ assuming F distribution with d.f.=3,129). The tendencies for each of the standard cod pots and false tunnel pots to have higher catches of Pacific cod than either slick tunnel ramp and vertical board pots were statistically significant ($p<0.05$). On the other hand, no statistically significant difference in Pacific cod catch could be shown between the standard cod pots and false tunnel pots or between slick tunnel ramp pots and vertical board pots.

As well as having the lowest overall Pacific cod CPUE, the vertical board pots showed the highest frequency of pot lifts that failed to catch any Pacific cod. In 14 out of the 44 quads the vertical board pot failed to catch a single cod. Failure to catch Pacific cod occurred at appreciably lower frequencies in the remaining pot types; cod were absent in three lifts of false tunnel pots, one lift of a slick tunnel ramp pots, and in no lifts of a standard cod pot. Notably, in 12 of the 14 pot lifts that a vertical board pot failed to catch a cod, the pot also failed to catch any Tanner crab. It was only in vertical board pots that failure to catch both Tanner crab and Pacific cod in the same pot lift was observed. Failure to catch Pacific cod or Tanner crab by the vertical board pots could not be attributed to a single or a few pots. Each of the five vertical board pots used in this study failed to catch either a Tanner crab or Pacific cod in at least one pot lift and four of those failed to catch both Tanner crab and Pacific cod in at least one pot lift.

Pacific Cod Size Composition. There was no indication of difference in cod fork length distributions among pot types. Cod ranged in size from 42 cm to 90 cm, but most (90%) were between 55 cm and 80 cm (Figure 8).

Incidental Species Composition

Sunflower starfish *Pycnopodia helianthoides* dominated incidental species catches in all pot types, with highest catches observed in slick tunnel ramp pots (47 of 147 total), and were also the most common species retained on the outside of pots. Yellow Irish Lords *Hemilepidotus jordani* were fairly numerous in all pot types, ranging from 8 individuals caught in false tunnel pots to 18 in standard cod pots. Octopus *Octopus dofleini* were caught in all pot types; however, more were caught in standard and slick tunnel ramp pots (9 and 5 animals, respectively) than in false tunnel and vertical board pots (2 and 3 animals, respectively). A summary of incidental species caught during the study is shown in Table 3.

DISCUSSION

Zhou and Kruse (MS) reported on laboratory observations of male Tanner crabs approaching and attempting entry into cod pots modified to reduce Tanner crab catch. The crabs used in Zhou and Kruse's experiment were similar in size to the male Tanner crabs captured in the present study (88 mm CW to 170 mm CW) and the experimental pots were configured similar to the standard

cod pots, false tunnel pots, and slick tunnel ramp pots used in the present study. Their observations indicated that the halibut excluders and cod triggers of a standard cod pot alone are effective in deterring Tanner crabs from entering the pot (only 7% of the 383 occasions that crabs were observed reaching into a standard cod pot tunnel eye during their study resulted in a successful entry into the pot). Observations from the commercial cod pot fishery and the field study we report on here, however, demonstrate that standard cod pots can still be highly effective in capturing Tanner crabs in areas of high crab abundance. Our results showing that the false tunnel and the slick tunnel ramp modifications to a standard cod pot significantly reduce Tanner crab catch are, nonetheless, in general agreement with the observations of Zhou and Kruse, who found that the false tunnel and slick tunnel ramp modifications greatly reduced the ability of Tanner crabs to reach the tunnel eye.

Although Zhou and Kruse (MS) showed a significant reduction in Tanner crab catch probability due to the false tunnel and slick tunnel ramp modifications to standard cod pots, a significant difference between the Tanner crab catch probabilities of false tunnel pots and slick tunnel ramp pots could not be demonstrated in their laboratory observations. In the present field study, however, the greater effectiveness of the false tunnel modification than the slick tunnel ramp modification in reducing Tanner crab catch was clearly demonstrated. Over all soak times examined in our study Tanner crab CPUE for the slick tunnel ramp pots was roughly half that of the standard cod pot, whereas the overall Tanner crab CPUE for the false tunnel pots was roughly half that of the slick tunnel ramp pots.

Zhou and Kruse (MS) did not include a pot comparable the vertical board pot used in this study. The vertical board pot had the lowest overall Tanner crab CPUE of any pot type examined in our study and was considered to differ significantly from all but the false tunnel pot in Tanner crab catch. The vertical board pots also had the lowest catch rates of Pacific cod and were distinguished by a high incidence of failure to catch either crab or cod. Presently, it is not clear how the vertical boards have such a detrimental influence on catch of both crab and cod. We suspect that it reflects the vertical boards acting to deflect the bait plume (see Zhou and Kruse MS for example), present a physical barrier, and cause the pots to flip in descent and land upside down (see Chiasson et al 1993 for example). It is possible that the vertical board pot fishes best when it lands upside down.

Data collected by observers from on-board commercial fishing vessels (provided to us by M. Lofstadt, NMFS) indicate that the Tanner crab captured as bycatch in the Gulf of Alaska cod pot fishery during 1997 was largely composed of males and females 20-150 mm CW. Crabs of the size captured during our study (males 88-168 mm CW and females 78-117 mm CW) were well represented in the fishery observer data. We did not intend to study the effectiveness of the pot modifications in reducing Tanner crab catch by sex or size class. Nonetheless, sex and size frequencies by pot type in our study suggests that much of the reduction in Tanner crab catch in modified pots may be attributable to greater effectiveness at excluding smaller sublegal-sized males and, especially, females. Male:female ratios in the Tanner crab captured by pot types generally followed the same trend as Tanner crab CPUE by pot type, with highest values in the standard cod pot catch and lowest values in the false tunnel pot and vertical board pot catches. The disparity in sex ratios among pot types may have been due to the inability of the predominantly smaller female crabs to reach the top of the false tunnel, to climb over the vertical

board barrier, or scale up the slick ramp. Likewise, although sizable differences in sublegal-legal composition of males among pot types were not indicated, the highest proportion of sublegal-sized males occurred in standard cod pots whereas lowest proportion of sublegal-sized males occurred in vertical board pots. Zhou and Kruse (MS) observed that the false tunnel modification was significantly more effective in deterring sublegal-sized males than legal-sized males.

The cod captured during this study were similar to the size distributions from dockside sampling of 1997 commercial catches by pot fishermen in state waters (Jackson and Urban 1998). We did not choose our study area on the basis of expected Pacific cod catch, however, and the CPUE during our study was lower than the 15 to 30 cod per pot that occurred in the 1997 GOA state waters cod pot fishery. Nonetheless, significant effects in reducing CPUE of Pacific cod due to the slick tunnel ramp and vertical board modifications could be demonstrated with the data collected during our study. Catch of Pacific cod in the false tunnel pots was, on the other hand, comparable to the catch in the standard cod pots.

In conclusion, this study indicates that the false tunnel modification is highly effective in reducing CPUE of Tanner crab in areas of adult-sized Tanner crab abundance without reducing catch of Pacific cod. The vertical board modification was effective in reducing Tanner crab catch, but also significantly reduced catch of Pacific cod. The slick tunnel ramp modification was not as effective as the false tunnel modification in reducing Tanner crab catch and yet it produced significantly lower catches of Pacific cod. It is important to recognize that our conclusions concerning effects on Pacific cod catch remain provisional until our study in an area of high cod concentrations using soak times comparable to the commercial fishery is completed. It is also important to recognize that, while the false tunnel modification was effective in reducing Tanner crab catch relative to a standard cod pot, the false tunnel modification cannot be expected to completely eliminate bycatch of Tanner crabs if fishing is performed in areas of high Tanner crab density.

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Table 1. Tanner crab and Pacific cod catch per pot type and soak time from the November 1997 Alaska Department of Fish and Game modified cod pot study conducted in Chiniak Bay, Alaska.

	Tanner Crab Catch Per Pot					Pacific Cod Catch Per Pot				
	Number of Soak Days					Number of Soak Days				
	.1-.2	1	2	3-4	All Soaks	.1-.2	1	2	3-4	All Soaks
Pot Type	(n[a]=5)	(n=23[b])	(n=7)	(n=8)	(n=43)	(n[a]=5)	(n=24)	(n=7)	(n=8)	(n=44)
Standard Cod Pot	26.0	90.2	216.0	159.4	116.1	4.6	9.5	7.0	8.6	8.4
	(8-58)[c]	(0-405)	(0-678)	(3-338)	(0-678)	(2-10)	(2-20)	(3-12)	(6-15)	(2-20)
False Tunnel Pot	7.4	21.7	45.1	41.4	27.5	4.4	8.4	7.4	10.3	8.1
	(1-25)	(0-92)	(0-127)	(0-88)	(0-127)	(0-11)	(2-21)	(4-12)	(6-16)	(0-21)
Slick Tunnel Ramp Pot	13.0	49.0	93.3	111.4	63.6	5.0	5.7	5.6	4.5	5.4
	(1-42)	(0-340)	(2-241)	(3-410)	(0-410)	(0-11)	(1-18)	(2-9)	(2-8)	(0-18)
Vertical Board Pot	4.0	14.0	9.4	45.5	18.0	2.0	4.1	3.9	7.3	4.4
	(0-16)	(0-104)	(0-55)	(0-121)	(0-121)	(0-3)	(0-22)	(0-9)	(0-15)	(0-22)

[a] Number of pots pulled for each pot type.

[b] One quad of 4 pots had no Tanner crab catch and was not included in the analysis.

[c] Minimum and maximum catch for a single pot lift.

Table 2. Catches of male and female Tanner crabs by pot type from the November 1997 Alaska Department of Fish and Game modified cod pot study conducted in Chiniak Bay, Alaska.

Pot Type	Males		Females	
	Number	Percent	Number	Percent
Standard Cod Pot	3,252	65	1,739	35
False Tunnel Pot	984	83	195	17
Slick Tunnel Ramp Pot	2,088	76	647	24
Vertical Board Pot	637	82	140	18
All Pot Types	6,961	72	2,721	28

Table 3. Incidental species caught inside and retained outside of pots during the November 1997 Alaska Department of Fish and Game modified cod pot study conducted in Chiniak Bay, Alaska.

	No. Captured Inside Pot					No. Captured Outside Pot				
	Pot Type[a]					Pot Type[a]				
Species	1	2	3	4	Total	1	2	3	4	Total
Yellow Irish Lord	18	8	16	11	53	0	0	0	0	0
Giant Sculpin	2	2	7	1	12	0	0	0	0	0
Plain Sculpin	0	0	0	1	1	0	0	0	0	0
Myoxocephalus sp.	0	1	1	0	2	0	0	0	0	0
Walleye Pollock	2	1	6	5	14	0	0	0	0	0
Sablefish	0	0	0	1	1	0	0	0	0	0
Giant Wrymouth	5	0	4	1	10	0	0	0	0	0
Arrowtooth Flounder	0	1	0	0	1	0	0	0	0	0
Flathead Sole	0	1	2	1	4	0	0	0	0	0
Dungeness Crab	1	0	0	0	1	0	0	0	0	0
Hermit Crab sp.	1	1	1	2	5	0	0	0	0	0
Decorator Crab	0	0	1	0	1	0	0	0	0	0
Lyre Crab	0	0	1	0	1	0	0	0	0	0
Octopus	4	2	5	3	14	0	0	0	4	4
Sunflower Starfish	39	38	47	23	147	1	9	2	2	14
Green Sea Urchin	1	1	2	0	4	0	0	0	0	0

[a] Pot Type: 1-Standard Cod Pot; 2-False Tunnel Pot; 3-Slick Tunnel Ramp Pot; 4-Vertical Board Pot

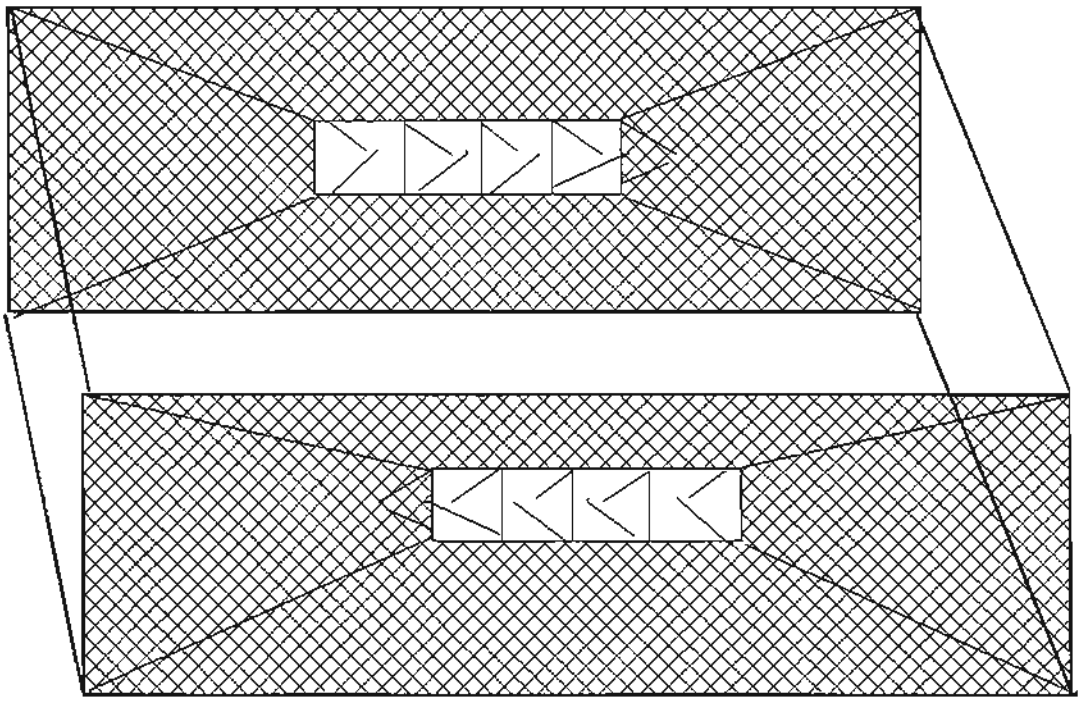


Figure 1. Standard cod pot with cod triggers and vertical halibut excluders installed in each tunnel eye.

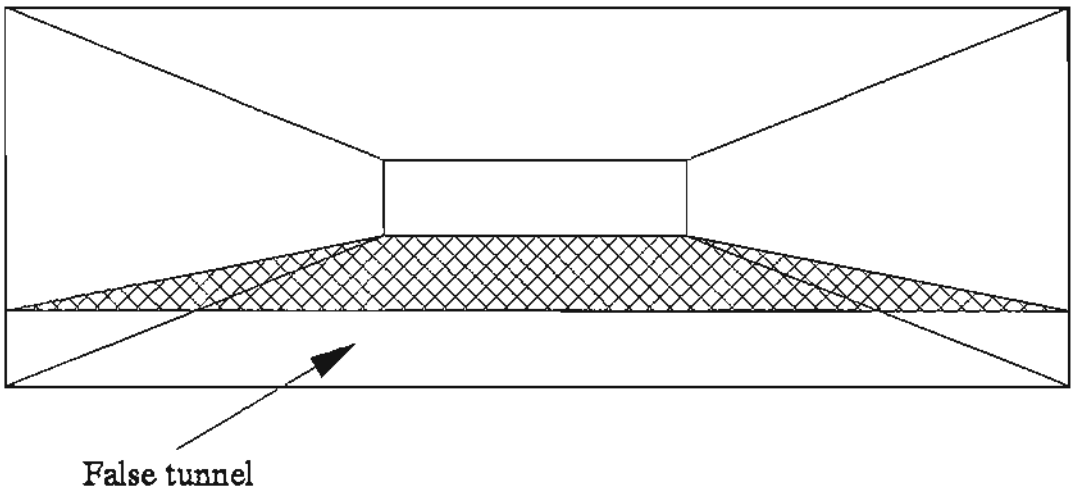


Figure 2. False tunnel modification to a standard cod pot. Cod triggers and halibut excluders are not shown so that the trapezoidal web panel is clearly shown.

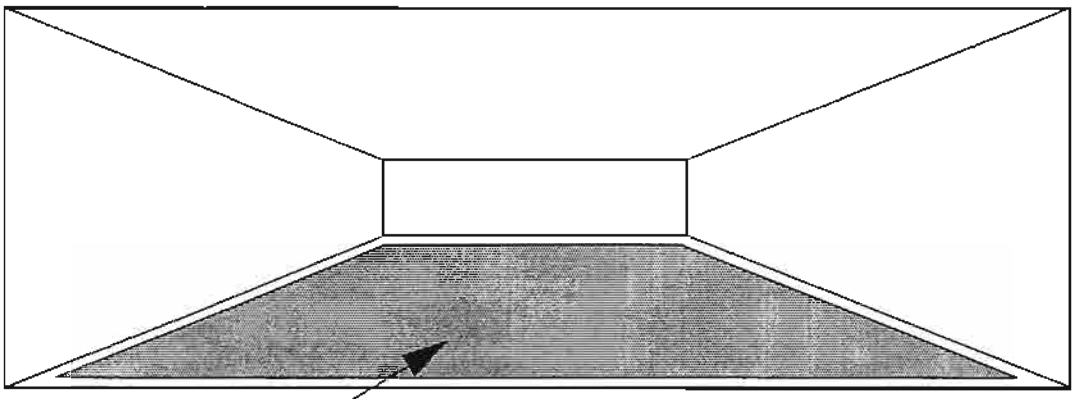


Figure 3. Slick tunnel ramp modification to a standard cod pot. Cod triggers and halibut excluders are not shown so that the trapezoidal plastic tunnel ramp is clearly shown.

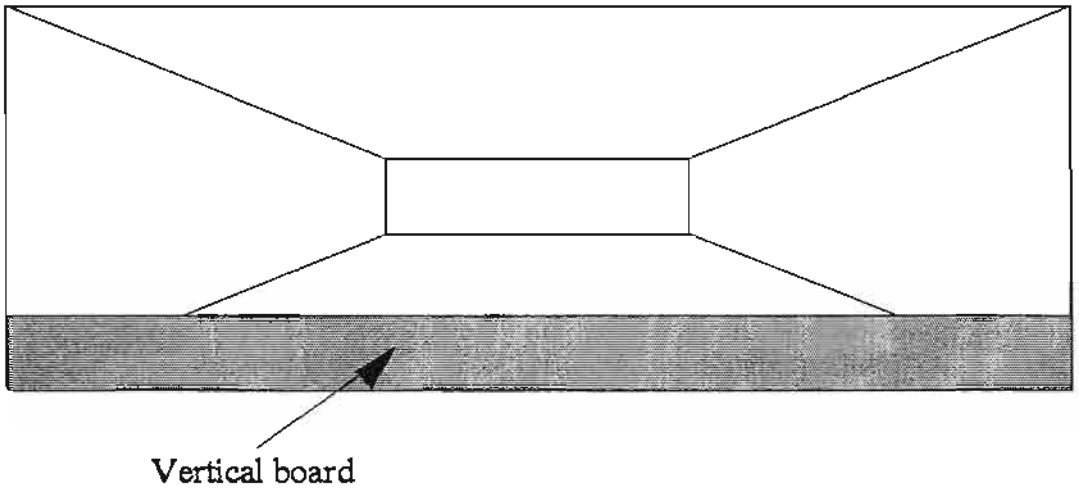
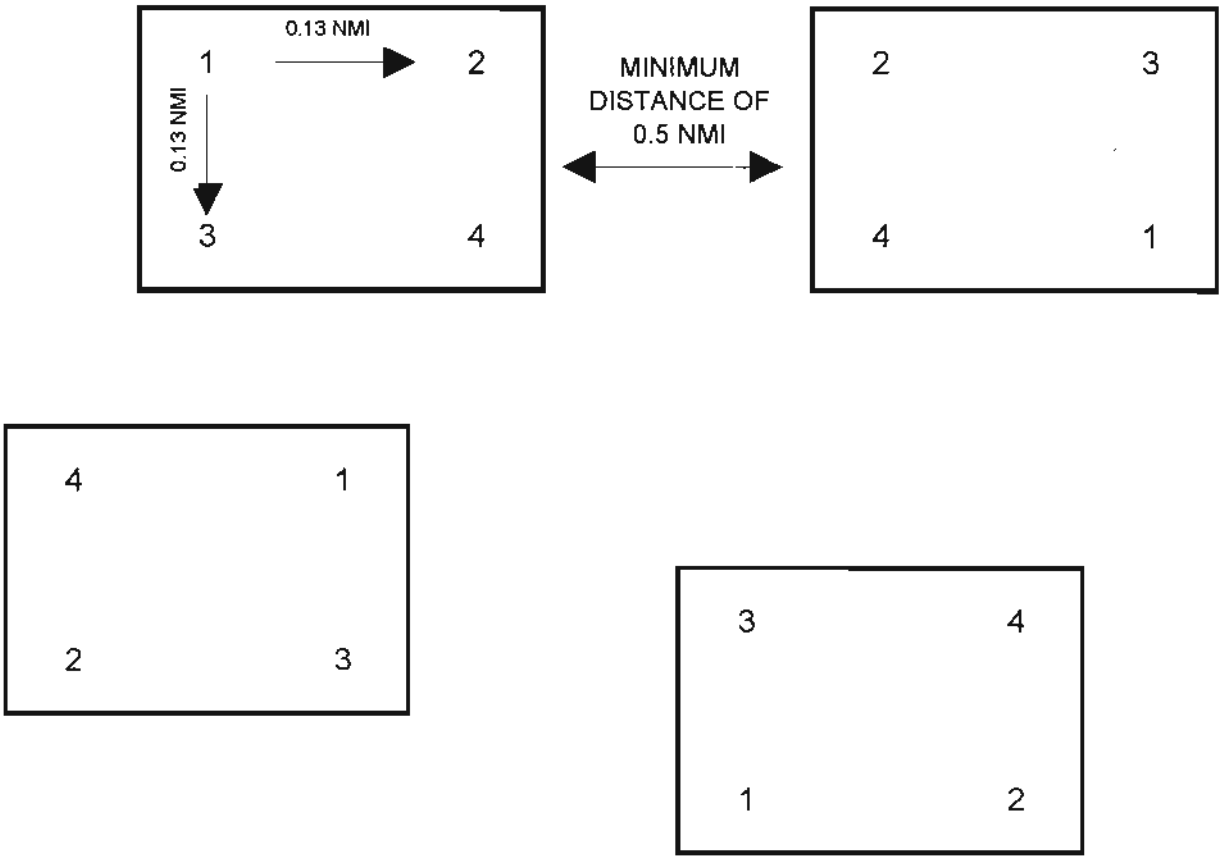


Figure 4. Vertical board modification to a standard cod pot. Cod triggers and halibut excluders are not shown so that the vertical board is is clearly shown.



1 = Standard Cod Pot (King crab pot modified for cod fishing)

2 = False Tunnel Pot (Standard Cod Pot with reverse angle web panel)

3 = Slick Tunnel Ramp Pot (Standard Cod Pot with slick tunnel ramp insert)

4 = Vertical Board Pot (Standard Cod Pot with vertical board at base of tunnel mouth)

Figure 5. Sample pot deployment pattern showing placement of 16 pots. One of each pot type per quad is randomly placed approximately 0.24 km (0.13 nmi) apart. The quads are a minimum distance of 0.93 km (0.5) nmi apart but can be laid out in any direction from each other.

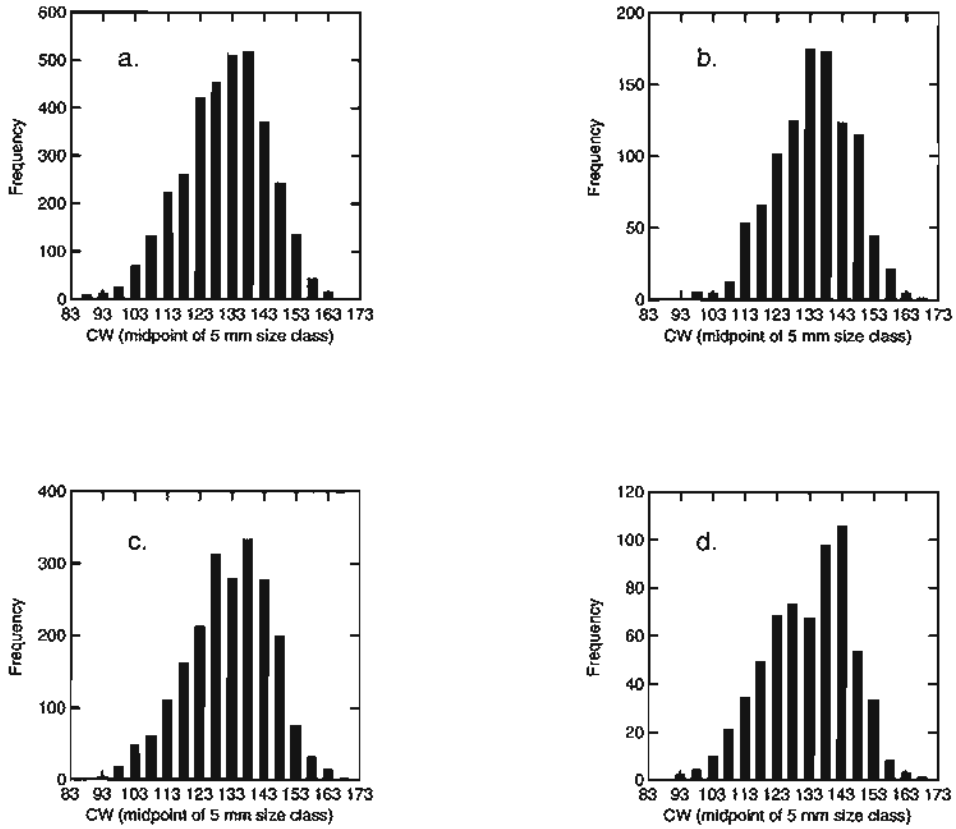


Figure 6. Size (CW) frequency bar charts for male Tanner crab captured by pot type from the November 1997 Alaska Department of Fish and Game modified cod pot study conducted in Chiniak Bay, Alaska: a) standard cod pot; b) false tunnel pot; c) slick tunnel ramp pot; and d) vertical board pot.

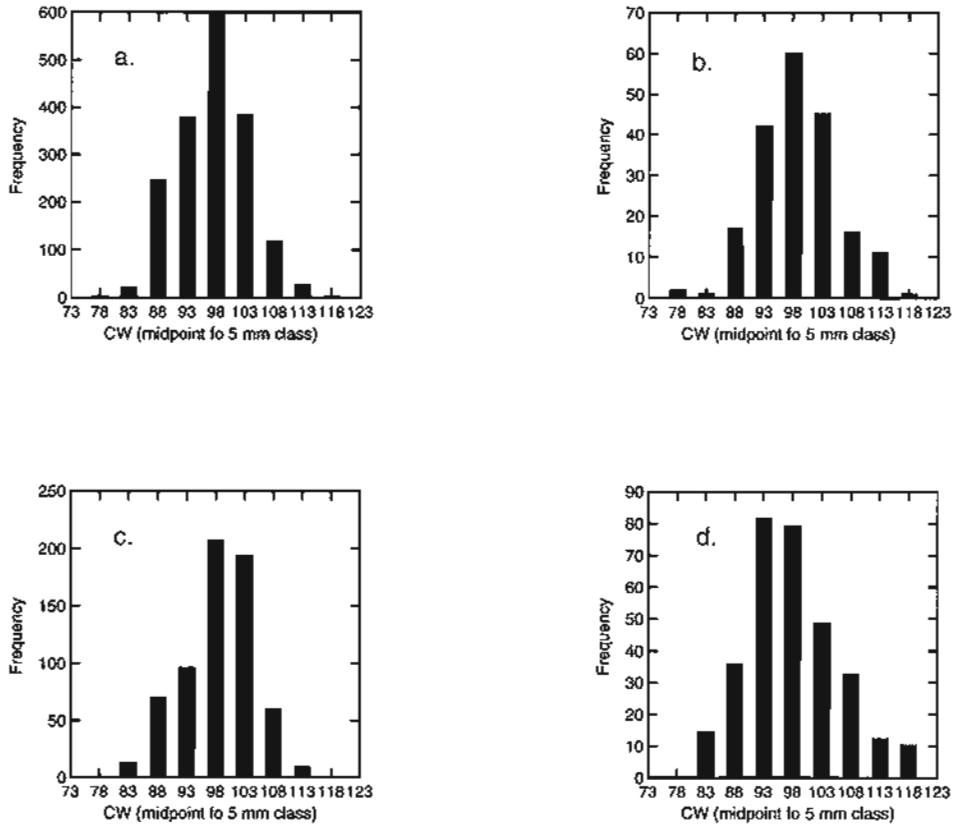


Figure 7. Size (CW) frequency bar charts for female Tanner crab captured by pot type from the November 1997 Alaska Department of Fish and Game modified cod pot study conducted in Chiniak Bay, Alaska: a) standard cod pot; b) false tunnel pot; c) slick tunnel ramp pot; and d) vertical board pot.

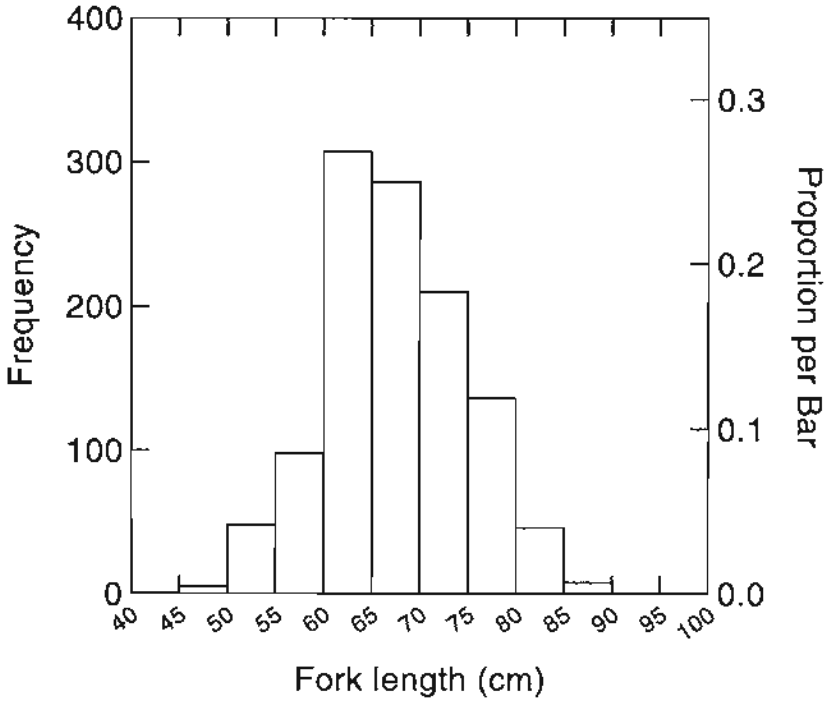


Figure 8. Size (fork length) frequency distribution histogram for all Pacific cod captured during the November 1997 Alaska Department of Fish and Game modified cod pot study conducted in Chiniak Bay, Alaska.

APPENDIX

Appendix A. Location data and catches of Tanner crabs and Pacific cod from 176 pots fished on the November 1997 Alaska Department of Fish and Game modified cod pot study conducted in Chiniak Bay, Alaska.

Sequential Pot No.	Quad No.	Pot Type[a]	Depth (fm)	Soak Days	Date		Gear Location N. Latitude		Gear Location W. Longitude		Number of Tanner Crabs				No. of Cod
					Gear Set	Gear Pick	Degrees	Minutes	Degrees	Minutes	Sublegals	Legals	Females	Total	
1	1	2	83	1.0	11/4/97	11/5/97	57	43.16	152	20.30	34	17	0	51	11
2	1	3	86	1.0	11/4/97	11/5/97	57	43.26	152	20.31	14	0	0	14	15
3	1	1	87	1.0	11/4/97	11/5/97	57	43.25	152	19.97	101	18	9	128	17
4	1	4	86	1.0	11/4/97	11/5/97	57	43.18	152	20.04	0	0	0	0	0
5	2	4	83	1.0	11/4/97	11/5/97	57	43.28	152	18.60	21	14	10	45	22
6	2	2	84	1.0	11/4/97	11/5/97	57	43.27	152	18.78	9	7	1	17	17
7	2	3	84	1.0	11/4/97	11/5/97	57	43.36	152	18.71	18	10	2	30	18
8	2	1	84	1.0	11/4/97	11/5/97	57	43.36	152	18.57	9	1	8	18	10
9	3	1	84	1.1	11/4/97	11/5/97	57	43.01	152	17.37	0	1	0	1	11
10	3	3	81	1.1	11/4/97	11/5/97	57	42.98	152	17.08	7	1	1	9	8
11	3	2	78	1.1	11/4/97	11/5/97	57	42.86	152	17.05	2	2	0	4	19
12	3	4	76	1.1	11/4/97	11/5/97	57	42.84	152	17.38	6	5	0	11	9
13	4	1	81	1.1	11/4/97	11/5/97	57	42.23	152	18.25	3	3	0	6	9
14	4	4	82	1.1	11/4/97	11/5/97	57	42.23	152	18.46	0	0	0	0	2
15	4	3	81	1.1	11/4/97	11/5/97	57	42.40	152	18.47	2	3	0	5	7
16	4	2	80	1.1	11/4/97	11/5/97	57	42.40	152	18.27	0	0	0	0	10
17	5	4	83	1.0	11/5/97	11/6/97	57	43.19	152	20.29	0	0	0	0	0
18	5	1	86	1.0	11/5/97	11/6/97	57	43.28	152	20.29	6	4	0	10	8
19	5	3	87	1.0	11/5/97	11/6/97	57	43.26	152	20.04	5	3	0	8	8
20	5	2	86	1.0	11/5/97	11/6/97	57	43.21	152	20.09	13	4	0	17	11
21	6	1	80	1.0	11/5/97	11/6/97	57	43.16	152	18.64	36	7	15	58	16
22	6	2	78	1.0	11/5/97	11/6/97	57	43.05	152	18.66	8	3	0	11	15
23	6	3	80	1.0	11/5/97	11/6/97	57	43.07	152	18.81	1	0	0	1	2
24	6	4	82	1.0	11/5/97	11/6/97	57	43.16	152	18.82	0	0	0	0	0

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Sequential Pot No.	Quad No.	Pot Type[a]	Depth (fm)	Soak Days	Date		Gear Location N. Latitude		Gear Location W. Longitude		Number of Tanner Crabs				No. of Cod
					Gear Set	Gear Pick	Degrees	Minutes	Degrees	Minutes	Sublegals	Legals	Females	Total	
25	7	4	84	0.9	11/5/97	11/6/97	57	43.00	152	17.71	13	2	11	26	3
26	7	1	82	0.9	11/5/97	11/6/97	57	43.00	152	17.47	45	19	11	75	13
27	7	2	77	0.9	11/5/97	11/6/97	57	42.87	152	17.43	8	1	2	11	4
28	7	3	76	0.9	11/5/97	11/6/97	57	42.84	152	17.69	14	6	0	20	2
29	8	2	77	0.9	11/5/97	11/6/97	57	41.55	152	19.58	0	2	0	2	8
30	8	4	78	0.9	11/5/97	11/6/97	57	41.57	152	19.34	1	2	0	3	2
31	8	3	78	0.9	11/5/97	11/6/97	57	41.46	152	19.26	0	0	0	0	3
32	8	1	78	0.9	11/5/97	11/6/97	57	41.43	152	19.56	0	0	0	0	2
33	9	2	87	0.2	11/6/97	11/6/97	57	43.31	152	19.84	16	4	5	25	11
34	9	3	86	0.2	11/6/97	11/6/97	57	43.33	152	19.59	25	7	10	42	11
35	9	4	86	0.2	11/6/97	11/6/97	57	43.20	152	19.56	0	0	0	0	0
36	9	1	86	0.2	11/6/97	11/6/97	57	43.21	152	19.79	22	8	4	34	10
37	10	4	83	3.9	11/6/97	11/10/97	57	43.15	152	18.90	20	8	21	49	5
38	10	2	84	4.0	11/6/97	11/10/97	57	43.32	152	18.85	30	12	10	52	15
39	10	3	83	4.0	11/6/97	11/10/97	57	43.33	152	18.63	3	0	0	3	4
40	10	1	82	4.0	11/6/97	11/10/97	57	43.18	152	18.61	69	29	43	141	15
41	11	3	87	4.0	11/6/97	11/10/97	57	43.03	152	17.76	60	26	5	91	5
42	11	4	89	4.0	11/6/97	11/10/97	57	43.05	152	17.52	16	9	10	35	15
43	11	2	79	4.0	11/6/97	11/10/97	57	42.94	152	17.47	26	6	1	33	16
44	11	1	78	4.0	11/6/97	11/10/97	57	42.96	152	17.73	120	48	35	203	7
45	12	1	72	4.0	11/6/97	11/10/97	57	40.99	152	20.54	3	0	0	3	6
46	12	3	72	4.0	11/6/97	11/10/97	57	40.98	152	20.39	2	3	0	5	4
47	12	2	71	4.0	11/6/97	11/10/97	57	40.86	152	20.36	0	0	0	0	8
48	12	4	70	4.0	11/6/97	11/10/97	57	40.87	152	20.58	1	0	0	1	5
49	13	2	88	4.0	11/6/97	11/10/97	57	43.35	152	19.82	44	19	25	88	11

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Sequential Pot No.	Quad No.	Pot Type[a]	Depth (fm)	Soak Days	Date		Gear Location				Number of Tanner Crabs				No. of Cod
							N. Latitude		W. Longitude						
					Gear Set	Gear Pick	Degrees	Minutes	Degrees	Minutes	Sublegals	Legals	Females	Total	
50	13	3	87	4.0	11/6/97	11/10/97	57	43.24	152	19.60	175	111	124	410	4
51	13	4	86	4.0	11/6/97	11/10/97	57	43.24	152	19.82	66	39	16	121	15
52	13	1	87	4.0	11/6/97	11/10/97	57	43.35	152	19.61	174	68	96	338	6
57	14	1	80	2.0	11/10/97	11/12/97	57	42.95	152	17.67	83	42	27	152	5
58	14	2	90	2.0	11/10/97	11/12/97	57	43.06	152	17.64	17	10	3	30	12
59	14	4	90	2.0	11/10/97	11/12/97	57	43.06	152	17.46	0	0	0	0	8
60	14	3	81	2.0	11/10/97	11/12/97	57	42.99	152	17.41	29	9	4	42	5
61	15	4	80	1.9	11/10/97	11/12/97	57	43.79	152	19.01	0	0	0	0	0
62	15	3	84	1.9	11/10/97	11/12/97	57	43.67	152	19.00	2	0	0	2	9
63	15	1	84	1.9	11/10/97	11/12/97	57	43.61	152	19.29	0	0	0	0	12
64	15	2	80	1.9	11/10/97	11/12/97	57	43.76	152	19.29	0	0	0	0	12
65	16	1	88	1.9	11/10/97	11/12/97	57	43.35	152	19.84	165	95	306	566	10
66	16	2	87	1.9	11/10/97	11/12/97	57	43.36	152	19.63	59	38	30	127	4
67	16	3	86	2.0	11/10/97	11/12/97	57	43.24	152	19.65	135	80	26	241	6
68	16	4	87	2.0	11/10/97	11/12/97	57	43.26	152	19.84	30	20	5	55	5
69	17	3	84	1.0	11/12/97	11/13/97	57	43.31	152	18.74	11	4	3	18	5
70	17	1	87	1.0	11/12/97	11/13/97	57	43.30	152	18.55	21	0	1	22	3
71	17	4	83	1.0	11/12/97	11/13/97	57	43.22	152	18.52	5	1	1	7	4
72	17	2	84	1.0	11/12/97	11/13/97	57	43.22	152	18.73	2	1	1	4	4
73	18	3	77	1.0	11/12/97	11/13/97	57	42.85	152	17.71	60	25	9	94	3
74	18	2	82	1.0	11/12/97	11/13/97	57	42.97	152	17.77	15	6	2	23	9
75	18	1	79	1.0	11/12/97	11/13/97	57	42.96	152	17.51	32	10	4	46	6
76	18	4	78	1.0	11/12/97	11/13/97	57	42.87	152	17.50	6	3	5	14	5
77	19	2	79	1.0	11/12/97	11/13/97	57	43.65	152	17.76	0	0	0	0	15
78	19	1	86	1.0	11/12/97	11/13/97	57	43.57	152	17.71	2	0	0	2	18

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Sequential Pot No.	Quad No.	Pot Type[a]	Depth (fm)	Soak Days	Date		Gear Location N. Latitude		Gear Location W. Longitude		Number of Tanner Crabs				No. of Cod
					Gear Set	Gear Pick	Degrees	Minutes	Degrees	Minutes	Sublegals	Legals	Females	Total	
79	19	3	83	1.0	11/12/97	11/13/97	57	43.56	152	17.93	0	0	0	0	12
80	19	4	79	1.0	11/12/97	11/13/97	57	43.65	152	17.98	0	0	0	0	0
81	20	4	87	1.0	11/12/97	11/13/97	57	43.25	152	19.85	0	0	0	0	0
82	20	3	88	1.0	11/12/97	11/13/97	57	43.36	152	19.85	80	110	150	340	6
83	20	1	87	1.0	11/12/97	11/13/97	57	43.36	152	19.64	135	85	105	325	8
84	20	2	86	1.0	11/12/97	11/13/97	57	43.26	152	19.63	19	18	1	38	3
85	21	2	81	1.0	11/13/97	11/14/97	57	43.16	152	18.73	17	10	4	31	7
86	21	4	79	1.0	11/13/97	11/14/97	57	42.99	152	18.75	0	0	0	0	0
87	21	3	81	1.0	11/13/97	11/14/97	57	42.96	152	18.94	2	1	0	3	1
88	21	1	83	1.0	11/13/97	11/14/97	57	43.16	152	18.94	76	32	18	126	9
89	22	4	81	1.0	11/13/97	11/14/97	57	42.99	152	17.25	5	1	0	6	5
90	22	3	78	1.0	11/13/97	11/14/97	57	42.86	152	17.23	3	0	0	3	1
91	22	2	78	1.0	11/13/97	11/14/97	57	42.84	152	17.39	9	3	0	12	5
92	22	1	83	1.0	11/13/97	11/14/97	57	42.99	152	17.42	25	2	8	35	20
93	23	4	90	1.0	11/13/97	11/14/97	57	42.86	152	16.50	0	0	0	0	12
94	23	3	90	1.0	11/13/97	11/14/97	57	42.71	152	16.50	0	0	0	0	2
95	23	2	89	1.0	11/13/97	11/14/97	57	42.73	152	16.71	0	0	0	0	3
96	23	1	87	1.0	11/13/97	11/14/97	57	42.85	152	16.71	0	0	0	0	12
97	24	2	89	1.0	11/13/97	11/14/97	57	43.36	152	19.89	12	10	4	26	3
98	24	1	87	1.0	11/13/97	11/14/97	57	43.37	152	19.65	182	67	89	338	10
99	24	4	87	1.0	11/13/97	11/14/97	57	43.23	152	19.62	0	0	0	0	0
100	24	3	88	1.0	11/13/97	11/14/97	57	43.24	152	19.88	50	25	35	110	12
101	25	1	84	3.0	11/14/97	11/17/97	57	43.29	152	18.75	46	19	1	66	8
102	25	2	82	3.0	11/14/97	11/17/97	57	43.16	152	18.77	36	23	3	62	9
103	25	4	83	3.0	11/14/97	11/17/97	57	43.13	152	18.92	46	36	1	83	3

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Sequential Pot No.	Quad No.	Pot Type[a]	Depth (fm)	Soak Days	Date		Gear Location N. Latitude		Gear Location W. Longitude		Number of Tanner Crabs				No. of Cod
					Gear Set	Gear Pick	Degrees	Minutes	Degrees	Minutes	Sublegals	Legals	Females	Total	
104	25	3	84	3.0	11/14/97	11/17/97	57	43.29	152	18.92	33	12	0	45	5
105	26	1	76	3.0	11/14/97	11/17/97	57	42.88	152	17.86	167	56	10	233	12
106	26	3	76	3.0	11/14/97	11/17/97	57	42.86	152	18.03	55	34	2	91	4
107	26	2	81	3.0	11/14/97	11/17/97	57	42.99	152	18.05	26	14	1	41	6
108	26	4	82	3.0	11/14/97	11/17/97	57	43.00	152	17.85	19	11	1	31	8
109	27	1	73	3.0	11/14/97	11/17/97	57	42.35	152	17.58	17	7	0	24	6
110	27	4	76	3.0	11/14/97	11/17/97	57	42.33	152	17.91	25	19	0	44	7
111	27	2	76	3.0	11/14/97	11/17/97	57	42.43	152	17.92	18	17	0	35	10
112	27	3	74	3.0	11/14/97	11/17/97	57	42.45	152	17.64	7	0	0	7	2
116	28	3	88	3.0	11/14/97	11/17/97	57	43.36	152	19.89	120	45	74	239	8
117	28	4	88	3.0	11/14/97	11/17/97	57	43.38	152	19.64	0	0	0	0	0
118	28	1	87	3.0	11/14/97	11/17/97	57	43.25	152	19.64	147	60	60	267	9
119	28	2	88	3.0	11/14/97	11/17/97	57	43.26	152	19.90	9	6	5	20	7
120	29	3	84	0.2	11/17/97	11/17/97	57	43.33	152	18.65	5	2	0	7	4
121	29	2	82	0.2	11/17/97	11/17/97	57	43.19	152	18.66	6	2	0	8	11
122	29	4	83	0.2	11/17/97	11/17/97	57	43.17	152	18.86	0	0	0	0	1
123	29	1	84	0.2	11/17/97	11/17/97	57	43.31	152	18.90	12	5	3	20	4
124	30	4	84	0.9	11/17/97	11/18/97	57	43.04	152	17.92	20	10	0	30	7
125	30	3	82	0.9	11/17/97	11/18/97	57	43.02	152	17.65	34	6	1	41	3
126	30	2	76	0.9	11/17/97	11/18/97	57	42.84	152	17.69	16	8	2	26	6
127	30	1	75	0.9	11/17/97	11/18/97	57	42.85	152	17.88	35	16	10	61	10
128	31	3	72	0.9	11/17/97	11/18/97	57	42.43	152	17.55	8	3	0	11	3
129	31	4	71	1.0	11/17/97	11/18/97	57	42.29	152	17.54	3	1	0	4	9
130	31	1	74	0.9	11/17/97	11/18/97	57	42.27	152	17.78	31	11	2	44	3
131	31	2	74	0.9	11/17/97	11/18/97	57	42.43	152	17.76	5	11	0	16	6

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Sequential Pot No.	Quad No.	Pot Type[a]	Depth (fm)	Soak Days	Date		Gear Location N. Latitude		Gear Location W. Longitude		Number of Tanner Crabs				No. of Cod
					Gear Set	Gear Pick	Degrees	Minutes	Degrees	Minutes	Sublegals	Legals	Females	Total	
132	32	2	87	0.9	11/17/97	11/18/97	57	43.36	152	19.65	37	27	28	92	5
133	32	1	87	0.9	11/17/97	11/18/97	57	43.26	152	19.64	42	52	84	178	10
134	32	4	87	0.9	11/17/97	11/18/97	57	43.25	152	19.85	23	11	37	71	8
135	32	3	89	0.9	11/17/97	11/18/97	57	43.35	152	19.85	99	37	117	253	5
136	33	3	85	0.9	11/17/97	11/18/97	57	43.32	152	19.67	15	6	1	22	5
137	33	2	82	0.9	11/17/97	11/18/97	57	43.18	152	19.69	28	17	5	50	5
138	33	4	83	0.9	11/17/97	11/18/97	57	43.18	152	19.89	0	0	0	0	0
139	33	1	85	0.9	11/17/97	11/18/97	57	43.32	152	19.89	17	9	4	30	7
140	34	1	85	0.2	11/18/97	11/18/97	57	43.05	152	17.54	4	4	0	8	5
141	34	3	77	0.2	11/18/97	11/18/97	57	42.92	152	17.45	10	2	0	12	5
142	34	4	78	0.2	11/18/97	11/18/97	57	42.89	152	17.71	5	9	2	16	3
143	34	2	82	0.2	11/18/97	11/18/97	57	43.01	152	17.70	1	0	0	1	0
144	35	2	72	1.9	11/18/97	11/20/97	57	42.37	152	17.62	0	1	0	1	4
145	35	3	75	2.0	11/18/97	11/20/97	57	42.35	152	17.83	5	4	0	9	3
146	35	1	74	2.0	11/18/97	11/20/97	57	42.48	152	17.88	37	32	1	70	3
147	35	4	73	2.0	11/18/97	11/20/97	57	42.46	152	17.65	4	4	0	8	5
148	36	3	86	1.9	11/18/97	11/20/97	57	43.30	152	19.62	97	45	47	189	6
149	36	2	87	1.9	11/18/97	11/20/97	57	43.30	152	19.83	24	13	27	64	4
150	36	1	88	2.0	11/18/97	11/20/97	57	43.40	152	19.87	161	40	477	678	10
151	36	4	86	2.0	11/18/97	11/20/97	57	43.41	152	19.62	0	0	1	1	0
152	37	1	83	1.9	11/18/97	11/20/97	57	43.31	152	18.60	4	2	2	8	4
153	37	2	82	1.9	11/18/97	11/20/97	57	43.20	152	18.66	34	17	17	68	9
154	37	3	84	1.9	11/18/97	11/20/97	57	43.22	152	18.84	84	37	20	141	8
155	37	4	85	1.9	11/18/97	11/20/97	57	43.30	152	18.86	3	6	0	9	9
156	38	1	88	2.0	11/18/97	11/20/97	57	43.01	152	17.47	25	12	1	38	5

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Sequential Pot No.	Quad No.	Pot Type[a]	Depth (fm)	Soak Days	Date		Gear Location N. Latitude		Gear Location W. Longitude		Number of Tanner Crabs				No. of Cod
					Gear Set	Gear Pick	Degrees	Minutes	Degrees	Minutes	Sublegals	Legals	Females	Total	
157	38	3	78	2.0	11/18/97	11/20/97	57	42.87	152	17.46	13	14	2	29	2
158	38	4	77	2.0	11/18/97	11/20/97	57	42.86	152	17.77	0	0	0	0	1
159	38	2	84	2.0	11/18/97	11/20/97	57	42.99	152	17.76	11	7	1	19	6
160	39	4	75	0.2	11/20/97	11/20/97	57	42.34	152	17.91	1	0	0	1	0
161	39	1	76	0.2	11/20/97	11/20/97	57	42.49	152	17.92	4	3	3	10	2
162	39	3	75	0.2	11/20/97	11/20/97	57	42.49	152	17.69	1	2	0	3	5
163	39	2	73	0.2	11/20/97	11/20/97	57	42.35	152	17.69	1	2	0	3	3
164	40	4	88	0.9	11/20/97	11/21/97	57	43.39	152	19.90	49	36	19	104	10
165	40	2	87	0.9	11/20/97	11/21/97	57	43.39	152	19.70	18	8	15	41	7
166	40	3	86	0.9	11/20/97	11/21/97	57	43.29	152	19.70	29	17	11	57	6
167	40	1	87	0.9	11/20/97	11/21/97	57	43.29	152	19.90	103	35	267	405	4
168	41	4	81	0.9	11/20/97	11/21/97	57	43.15	152	18.59	0	0	0	0	0
169	41	1	83	0.9	11/20/97	11/21/97	57	43.16	152	18.87	85	27	16	128	6
170	41	3	84	0.9	11/20/97	11/21/97	57	43.28	152	18.87	14	3	0	17	1
171	41	2	82	0.9	11/20/97	11/21/97	57	43.27	152	18.58	13	9	0	22	21
172	42	2	87	0.9	11/20/97	11/21/97	57	43.03	152	17.72	1	2	0	3	6
173	42	1	86	0.9	11/20/97	11/21/97	57	43.03	152	17.50	25	2	0	27	12
174	42	4	79	0.9	11/20/97	11/21/97	57	42.94	152	17.50	0	1	0	1	0
175	42	3	79	0.9	11/20/97	11/21/97	57	42.94	152	17.72	36	26	2	64	4
176	43	4	75	0.9	11/20/97	11/21/97	57	42.35	152	17.85	0	0	0	0	1
177	43	1	75	0.9	11/20/97	11/21/97	57	42.50	152	17.85	5	1	5	11	3
178	43	3	73	0.9	11/20/97	11/21/97	57	42.50	152	17.58	6	0	0	6	4
179	43	2	72	0.9	11/20/97	11/21/97	57	42.35	152	17.50	3	0	0	3	2
180	44	1	87	0.1	11/21/97	11/21/97	57	43.31	152	19.67	30	14	14	58	2
181	44	3	88	0.1	11/21/97	11/21/97	57	43.31	152	19.85	0	0	1	1	0
182	44	2	88	0.1	11/21/97	11/21/97	57	43.40	152	19.87	0	0	2	2	0
183	44	4	87	0.1	11/21/97	11/21/97	57	43.40	152	19.71	1	0	0	1	3
Totals:											4,692	2,269	2,721	9,682	1,156

[a] Pot Type: 1-Standard Cod Pot; 2-False Tunnel Pot; 3-Slick Tunnel Ramp Pot; 4-Vertical Board Pot