

**STATE OF WASHINGTON
DEPARTMENT OF FISH AND WILDLIFE**

January 16, 2025

TO: Puget Sound Dungeness Crab Fishery Managers

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SUBJECT: Summer 2024 Dungeness Crab Recreational Catch Estimates

This memo summarizes the summer 2024 recreational Dungeness crab catch produced from three data sources: Catch Record Cards (CRCs) returned through the mail, CRCs reported through the internet, and catch estimated from non-respondent CRC holders.

Catch is reported for Puget Sound Marine Areas 4 through 13. During the summer 2024 crab season, Area 13 and Area 12 south of Ayock Point were closed for the entire season (Table 1). Areas 10 and 11 were open July 1 through August 26 and crabbing was only allowed on Sundays and Mondays. Area 7 South (7S) was open July 18 through September 2 and crabbing was allowed Thursday through Monday. Area 7 North (7N) was open August 15 through September 2 and crabbing was allowed Thursday through Monday. All remaining areas were open July 1 through September 2 and crabbing was allowed Thursday through Monday. In all areas except 10, 11, 12 (South of Ayock Point), and 13, crabbing was allowed on Tuesday, August 27, and Wednesday, August 28.

Each year separate summer and winter Dungeness crab catch record cards (CRCs) are issued. CRCs are issued only to fishers who purchased a crab endorsement and are required only in Puget Sound marine areas. Each Dungeness crab CRC is independent from the CRC for all other species. Summer crab CRCs were valid for the period June 1 through September 2, 2024 (Labor Day). Fishers purchasing crab endorsements before August 15 were only issued a summer CRC. Winter CRCs were available at no charge at license vendors on or after August 15. Fishers who purchased crab endorsements after August 15 could obtain both summer and winter CRCs if they chose to. Fishers were required to return their summer CRCs to the Department by October 1, 2024. Each fisher has the option to mail their CRC back to the Department, drop their card off at a regional office, or report their catch online through a site developed by the Department. The online reporting option was only available from September 3 through October 1, 2024. Fishers reporting online were required to enter a document number unique to their CRC to verify they were reporting from their card rather than from memory.

Crab fishers were informed that they would be assessed a \$10.00 penalty in the form of an administrative fee on their next license purchase if they failed to report their summer catch by the

deadline. Four rounds of e-mail reminders were sent to crabbers with an e-mail address on file. The email reminders were sent on September 11, 19, 25 and 30. Postcard reminders were mailed to those without e-mail addresses on September 6. Fishers were also reminded to return their card through social media ads and a WDFW blog post.

Census data from reported CRC's

A total of 187,214 fishers were issued summer Dungeness crab CRCs for the 2024 license year. 81,091 fishers returned their cards by mail, dropping them off at a regional office, or by reporting their catch online by October 1, 2024. Overall, 43.3% of fishers reported their summer CRC (Table 2). Harvest from all the summer CRCs reported by mail and reported online were compiled into a single catch file and a harvest quantity was generated for each Puget Sound Marine Area from the reported CRCs and summarized into three catch categories based on the date of harvest (in-season catch, out of season catch, and catch reported with an unknown date; Table 3). In-season catch includes all reported catch that occurred during and between each area-specific opening and closing dates (see Table 1 for area-specific opening and closing dates). In-season catch also includes all catch from trips that reported a month of harvest that was open for the duration of the month but did not specify the day on their card. Out-of-season catch includes all reported catch that occurred before the area-specific opening date or after the area-specific closing date. Out-of-season catch also includes all catch from trips that reported a month that was closed for the duration of the month but did not specify the day on their card. Unknown date catch includes all reported catch that did not report a month of harvest and all catch that reported a month that was partially open but did not specify the day.

Any catch reported from a coastal Marine Area (Areas 1, 2, 2-1, 2-2, 3) was excluded from the catch estimate. Reported catch in MA8 that did not specify 8-1 or 8-2 was distributed into 8-1 and 8-2 based on catch proportions for the three catch categories (in-season, out-of-season, and unknown date). Additionally, reported catch with an unknown area was distributed into a known Puget Sound area based on catch proportions calculated across all known areas (Table 4). These harvest data constitute a “census”, or known catch, assuming all catches were recorded on each harvester’s CRC and were correctly reported online.

Estimating Catch for Non-Reported CRCs

The total catch for crabbers that did not return their catch record cards (‘non-respondents’) was estimated based on the average catch per non-respondent determined through a summer 2023 telephone and email survey conducted by the research firm [Responsive Management](#). Following the 2023 summer season, randomly selected non-respondents were contacted via phone or email to acquire their summer season harvest. The average catch per card for the non-respondent group was less than the returned card group because of a higher proportion of “zero catch cards” due to the angler’s perception that zero catch cards do not need to be returned. Summary details used for generating the catch estimate for summer 2024 non-respondents based on the 2023 survey data are shown below.

Summary details used to estimate the summer 2024 catch for non-respondents

Number of non-respondents surveyed in 2023	4,684
Number of surveyed non-respondents retaining crab in 2023	1,105
Number of crabs retained by surveyed non-respondents in 2023	9,598
Average catch per surveyed non-respondent in 2023	2.05
Total number of non-respondents in summer 2024	106,123
Total estimated number of crabs caught by non-respondents in 2024	217,457

Calculating total harvest for the summer recreational crab fishery by Marine Area.

The total harvest for the summer was calculated by combining the census catch from reported CRCs with the estimated catch of the non-respondents. The total non-respondent catch was distributed among each Marine Area based on the relative amount of catch reported on CRCs in each Marine Area (Table 6). A weight conversion of 1.8 pounds per crab was used to convert number of crab to pounds harvested. The mean pounds per crab estimate is based on previous individual weight per crab data collected during dockside sampling of recreational catch.

Calculating total harvest for the summer recreational crab fishery by Crab Management Regions (and subregions).

Crab Management Regions (CMRs) are the primary spatial management areas used for Puget Sound Dungeness crab quota management. Some of these quota areas do not exactly align with the Marine Areas that crabbers use for reporting catch on CRCs, therefore total catch by CMR needs to be calculated for harvest tracking. Data from post-season surveys of crabbers who reported catch in Marine Areas 6, 7, and 9 was used to estimate the proportions used to convert catches from Marine Areas to the CMRs used for management.

Updated MA9, MA6, and MA7 Catch Surveys

The catch estimate for Marine Area 9 is divided into two portions. The portion of Marine Area 9 north of the Hood Canal bridge and south of a line from Foulweather Bluff to Olele Point is combined with Marine Area 12 for management purposes (Crab Management Region 5) and is identified as Area 25C in this document. Marine Area 9 (non-25C portion) refers to the remainder of Marine Area 9 including Port Townsend Bay and Admiralty Inlet (see Figure A6 for area details). Previously, the percentage of Marine Area 9 catch taken from Area 25C was estimated using a ratio derived from a random telephone survey conducted in 2011 of fishers who reported catch from Marine Area 9. Results of the 2011 survey estimated that 28% of crab harvested in Marine Area 9 is taken from Area 25C. The same survey was conducted in 2024 by sending fishers who reported catch from Marine Area 9 an online survey form to complete. Results of the online survey conducted in 2024 estimated that 15.2% of crab harvested in Marine Area 9 was taken from Area 25C.

The catch estimate for Marine Area 6 is divided into four crab management subregions (6A [Region 1 portion of MA 6], 6B [Region 3-1], 6C [Region 3-2], and 6D [Region 3-3]; Figure A7). The Region 1 portion of MA6 is combined with Marine Area 7 for management purposes (Crab Management Region 1) and is identified as Area 6A in this document. Results of the 2024 online survey estimated that 5.7% of Dungeness crab harvested in Marine Area 6 is taken from

the 6A portion of MA6 (Region 1 portion), 5.1% from the 3-1 portion (6B), 87.8% from the 3-2 portion (6C), and 1.4% from the 3-3 portion (6D).

The catch estimate for Marine Area 7 is divided into two crab management subregions (7A [Region 3-1 portion of MA 7 and the remainder of MA7 [Region 1]]). The Region 3-1 portion of MA7 is combined with Crab Management Region 3-1 and is identified as Area 7A in this document. Results of the 2024 online survey estimated that 5.3% of Dungeness crab harvested in Marine Area 7 were taken from the 7A portion.

Table 6 shows how the catches by Marine Area are combined or partitioned to determine the catch by CMR based on data from crabber surveys and/or overlap with established Marine Area boundaries. The final harvest totals as shown in Table 7 reflect the conversion of catch from Marine Areas to CMRs and includes the addition of an expansion factor of 9.97% (Hankin et al., 2021) to account for the Estimated Unrecorded Catch (EUC; harvested crabs that are not recorded on CRCs or crabs harvested illegally). A total of 1,467,603 pounds of crabs were estimated to be harvested during the Puget Sound recreational crab fishery during the 2024 summer season.

Total harvest for the complete 2024 season (summer and winter seasons combined) will be available once the recreational harvest is assessed after the winter reporting period closes on February 1, 2025.

References

Hankin, D., Armstrong, D., Sampson, D. *Report of the Technical Review Panel: Unreported Catch in the Puget Sound Recreational Fishery for Dungeness crab*. Final Dispute Resolution Report (US v. Washington – Subproceeding No. 89-3 Shellfish Implementation Plan). March 2021.

Table 1. Summary of recreational seasons by Puget Sound marine area for the summer 2024 crab fishery.

Marine Area	Season	Weekdays Open	Open Days
4	July 1 - September 2	Thursday - Monday	48
5	July 1 - September 2	Thursday - Monday	48
6	July 1 - September 2	Thursday - Monday	48
7 South	July 18 - September 2	Thursday - Monday	37
7 North	August 15 – September 2	Thursday - Monday	17
8-1	July 1- September 2	Thursday - Monday	48
8-2	July 1- September 2	Thursday - Monday	48
9	July 1- September 2	Thursday - Monday	48
10	July 1 – August 26	Sunday - Monday	17
11	July 1 – August 26	Sunday - Monday	17
12	July 1- September 2	Thursday - Monday	48
13	None	None	0

**The portion of Marine Area 12 south of Ayock Point was closed to recreational crabbing for summer 2024.*

**All areas except 10, 11, 12 (the portion south of Ayock Point), and 13 were open on August 27 (Tuesday) and August 28 (Wednesday).*

Table 2. Fishers issued CRCs and percent that reported their CRC by season, 2007-2024.

Summer	CRCs Issued	CRCs Reported Mail	CRCs Reported Online	CRCs Reported	CRCs Unreported	Endorsements Entire Year
2007	210,327	34,400 (16%)	32,373 (15%)	66,773 (32%)	143,554 (58%)	226,063
2008	210,893	26,037 (12%)	43,919 (21%)	69,956 (33%)	140,937 (67%)	215,643
2009	236,665	37,128 (16%)	72,172 (30%)	107,300 (45%)	129,365 (55%)	241,226
2010	208,462	29,406 (14%)	77,472 (37%)	107,418 (52%)	101,044 (48%)	213,013
2011	230,355	31,222 (14%)	89,095 (39%)	120,317 (52%)	110,038 (48%)	237,129
2012	200,711	26,504 (13%)	79,895 (40%)	106,399 (53%)	94,312 (47%)	209,957
2013	214,692	26,236 (12%)	90,379 (42%)	116,615 (54%)	98,077 (46%)	222,050
2014	213,741	25,296 (12%)	91,270 (43%)	116,566 (55%)	97,175 (45%)	223,184
2015	232,621	25,685 (11%)	94,336 (41%)	120,021 (52%)	112,600 (48%)	243,934
2016	216,977	23,734 (11%)	90,262 (42%)	113,996 (53%)	102,981 (47%)	223,443
2017	215,929	33,252 (15%)	72,601 (34%)	105,853 (49%)	110,076 (51%)	222,222
2018	200,962	31,316 (16%)	72,790 (36%)	104,106 (52%)	96,856 (48%)	207,557
2019	192,798	29,006 (15%)	69,087 (36%)	97,571 (51%)	95,227 (49%)	200,113
2020	213,831	23,716 (11%)	53,029 (25%)	76,745 (36%)	137,086 (64%)	222,181
2021	225,282	27,534 (12%)	75,254 (33%)	102,788 (46%)	122,494 (54%)	233,108
2022	210,725	20,545 (10%)	68,164 (32%)	88,709 (42%)	122,016 (58%)	221,150
2023	185,455	22,847 (12%)	59,100 (32%)	81,947 (44%)	103,508 (56%)	194,652
2024	187,214	20,475 (11%)	60,616 (32%)	81,091 (43%)	106,123 (57%)	<i>Pending</i>
Winter						
2007	157,905	10,281 (7%)	6,388 (4%)	16,669 (11%)	141,236 (89%)	226,063
2008	207,143	10,993 (5%)	10,871 (5%)	21,864 (11%)	185,279 (89%)	215,643
2009	89,259	11,909 (13%)	27,382 (31%)	39,291 (44%)	49,968 (56%)	241,226
2010	70,763	9,633 (14%)	27,346 (39%)	36,979 (52%)	33,784 (48%)	213,013
2011	28,514	4,675 (16%)	13,899 (49%)	18,574 (65%)	9,940 (35%)	237,129
2012	27,711	4,508 (16%)	13,357 (48%)	17,865 (65%)	9,846 (35%)	209,957
2013	29,638	4,419 (15%)	15,223 (51%)	19,642 (66%)	9,996 (34%)	222,050
2014	35,371	5,040 (14%)	17,401 (49%)	22,441 (63%)	12,930 (37%)	223,184
2015	36,398	5,039 (14%)	18,284 (50%)	23,323 (64%)	13,075 (36%)	243,934
2016	26,591	5,777 (22%)	10,577 (40%)	16,534 (62%)	10,057 (38%)	223,443
2017	23,277	4,431 (19%)	9,746 (42%)	14,177 (61%)	9,100 (39%)	222,222
2018	24,620	3,906 (16%)	9,896 (40%)	13,802 (56%)	10,818 (44%)	207,557
2019	23,578	4,178 (18%)	8,520(36%)	12,698 (54%)	10,880 (46%)	200,113
2020	36,459	5,015 (14%)	13,178 (36%)	18,193 (50%)	18,266 (50%)	222,181
2021	26,843	3,894 (15%)	9,591 (36%)	13,485 (50%)	13,358 (50%)	233,108
2022	37,900	5,173 (14%)	13,226 (35%)	18,399 (49%)	19,501 (51%)	221,150
2023	32,975	4,662 (14%)	10,542 (32%)	15,204 (46%)	17,771 (54%)	194,652

**Percentages shown are rounded to the nearest full percent*

Table 3. Recreational harvest from all reported CRCs for summer 2024.

Marine Area	In-Season Catch (# crab)	Out-of-Season Catch (# crab)	Unknown Date Catch (# crab)	Total Crab
4	241	33	0	274
5	1,551	58	0	1,609
6	42,146	292	4	42,442
7	140,793	11,745	119	152,657
8	950	29	0	979
8-1	110,767	651	4	111,422
8-2	98,591	696	95	99,382
9	52,287	476	4	52,767
10	26,418	459	0	26,877
11	21,230	264	10	21,504
12	12,936	95	0	13,031
13	0	74	0	74
Unknown	846	17	80	943
Total	508,756	14,889	316	523,961

Table 4. Recreational harvest from all reported CRCs by Marine Area for summer 2024 after apportioning catch reported in MA8 without specifying 8-1 or 8-2 and catch reported in an unknown area.

Marine Area	In-Season Catch (# crab)	Out-of-Season Catch (# crab)	Unknown Date Catch (# crab)	Total Crab
4	241	33	0	274
5	1,554	58	0	1,612
6	42,216	292	5	42,513
7	141,028	11,758	159	152,945
8-1	111,455	666	5	112,126
8-2	99,203	712	127	100,042
9	52,374	477	5	52,856
10	26,462	460	0	26,922
11	21,265	264	13	21,542
12	12,958	95	0	13,053
13	0	74	0	74
Total	508,756	14,889	314	523,959

Table 5. Recreational harvest from all reported CRCs for summer 2024 after adding the amount of harvest estimated for non-respondents.

Marine Area	Total Census Crab (# Crab)	Census Catch Proportion	Non-Respondent Catch (# Crab)	Total Catch (# Crab)	Total Pounds (lbs.)
4	274	0.001	114	388	698
5	1,612	0.003	669	2,281	4,106
6	42,513	0.081	17,644	60,157	108,283
7	152,945	0.292	63,476	216,421	389,558
8-1	112,126	0.214	46,535	158,661	285,590
8-2	100,042	0.191	41,520	141,562	254,812
9	52,856	0.101	21,937	74,793	134,627
10	26,922	0.051	11,173	38,095	68,572
11	21,542	0.041	8,941	30,483	54,869
12	13,053	0.025	5,417	18,470	33,247
13	74	0.000	31	105	188
Total	523,959	1.000	217,457	741,416	1,334,549

Table 6. Conversion of Marine Areas to Crab Management Regions used for harvest quota management.

Crab Management Region	Marine Area(s)
1	7 (94.7%), 6 (5.7 %)
2E	8-1, 8-2
2W	9 (84.8%)
3-4	4, 5
3-1	6 (5.1%), 7 (5.3%)
3-2	6 (87.8%)
3-3	6 (1.4%)
3-4	4, 5
4	10
5	9 (15.2%), 12
6	11
7	13

Table 7. Complete recreational harvest from all reported CRCs by Crab Management Region after splitting and combining the Marine Areas as denoted in Table 6 and adding the Estimated Unreported Catch (EUC; 9.97%).

Crab Management Region	Marine Area(s)	Total Pounds (lbs.)	Estimated Unreported Catch (EUC; lbs.)	Total Estimated Crab Catch (lbs.)
1	6 (5.7%), 7 (94.7 %)	375,084	37,396	412,480
2E	8-1, 8-2	540,402	53,878	594,280
2W	9 (84.8%)	114,164	11,382	125,546
3-1	6 (5.1%), 7 (5.3%)	26,169	2,609	28,778
3-2	6 (87.8%)	95,072	9,479	104,551
3-3	6 (1.4%)	1,516	151	1,667
3-4	4, 5	4,804	479	5,283
4	10	68,572	6,837	75,408
5	9 (15.2%), 12	53,710	5,355	59,065
6	11	54,869	5,470	60,339
7	13	188	19	207
Total	-	1,334,549	133,055	1,467,603

Appendix A: 2024 Summer CRC Data Summaries

Figure A1: Total Dungeness crab reported per CRC holder as percentage of CRC respondents, Summer 2024.

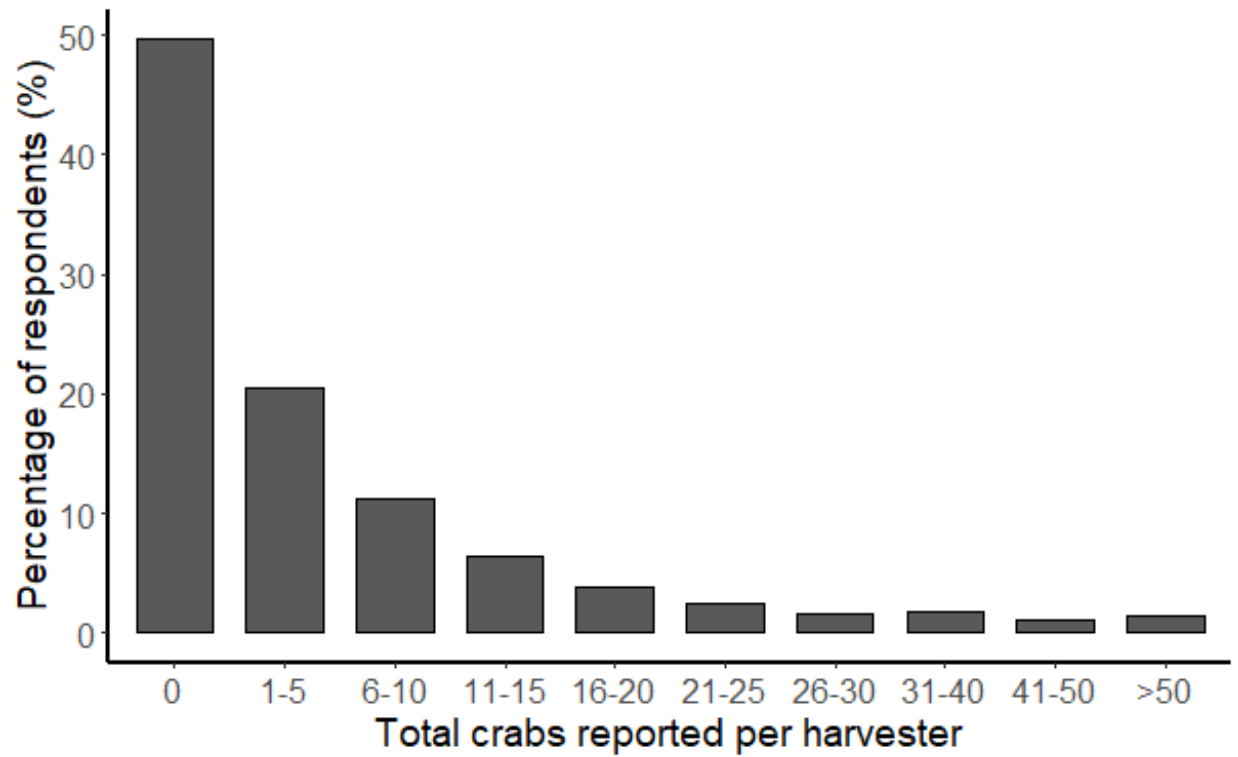


Figure A2: Total trips reported per CRC license holder as percentage of CRC respondents, Summer 2024.

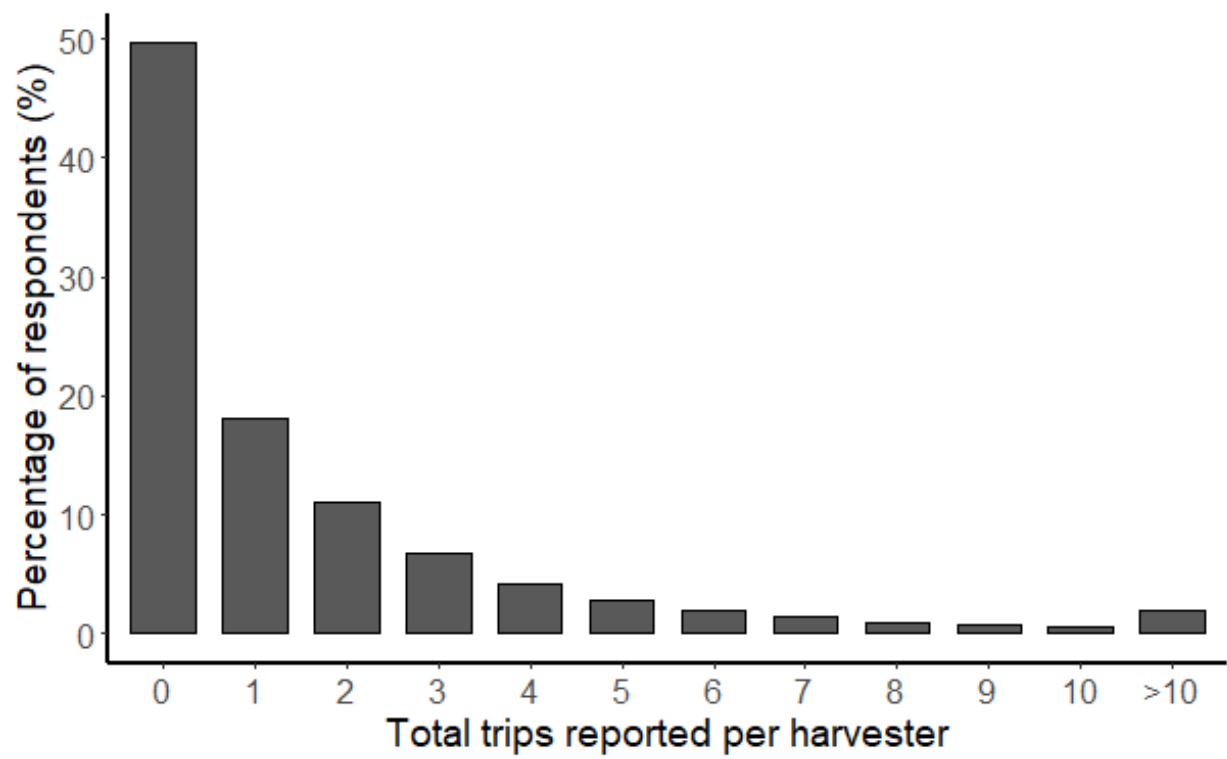


Figure A3: Histograms showing total catch reported on Summer 2024 CRCs by Marine Area. Trips with unknown Marine Areas are not shown.

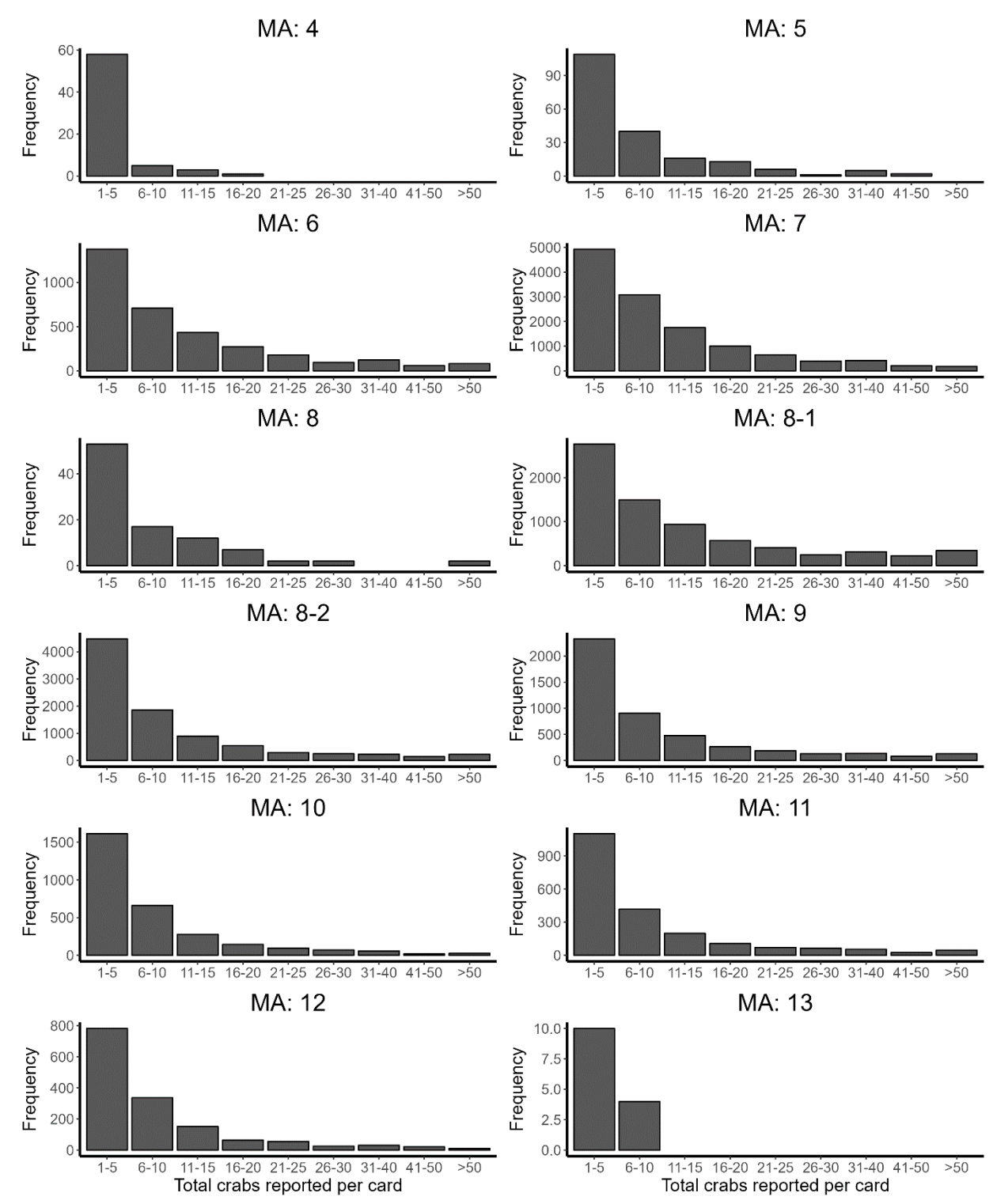


Figure A4: Average number of Dungeness crab reported for a successful trip by Marine Area. Error bars represent ± 1 standard deviation surrounding the mean crab per successful reported trip for each Marine Area. Only trips with at least 1 crab reported are used in the calculation. Trips with unknown area are not shown.

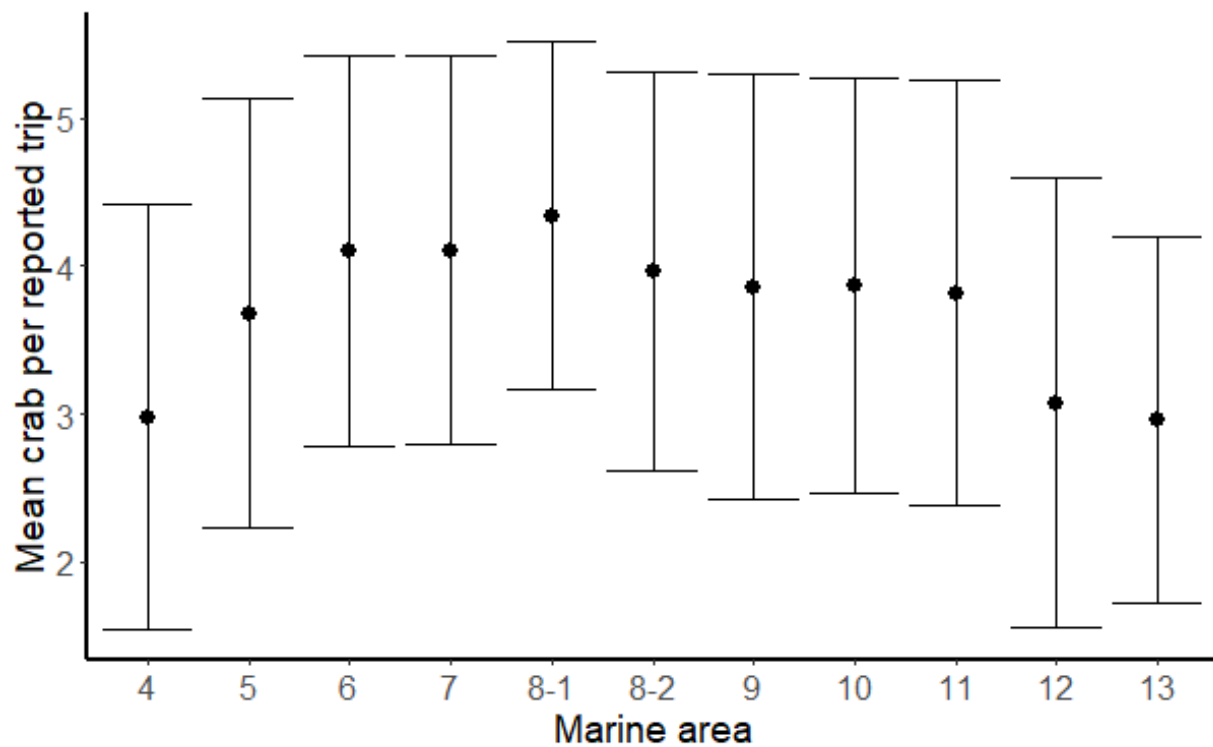


Figure A5: Total number of successful trips by Marine Area during the summer 2024 recreational crab season. Only trips with at least one crab reported are included. Trips with unknown Marine Areas are not shown.

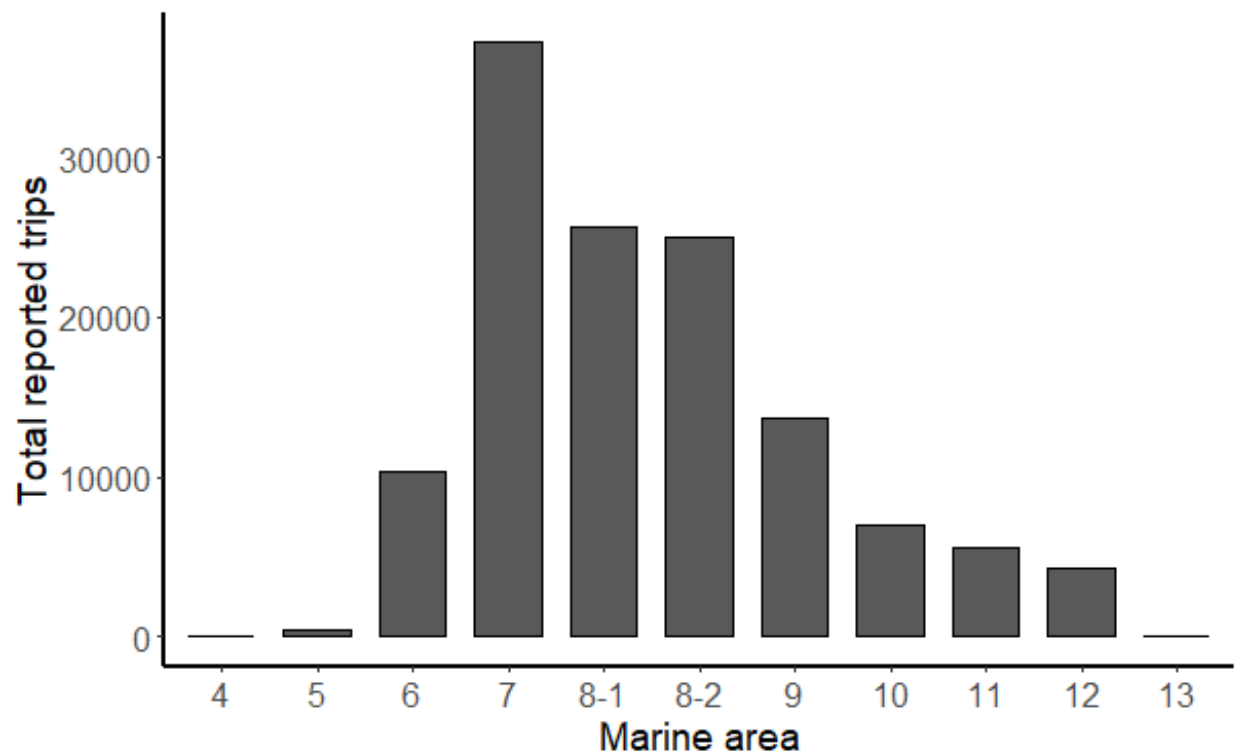


Figure A6: Map of Marine Area 9 with the 9A (25C) sub-area used in the 2024 online catch survey.

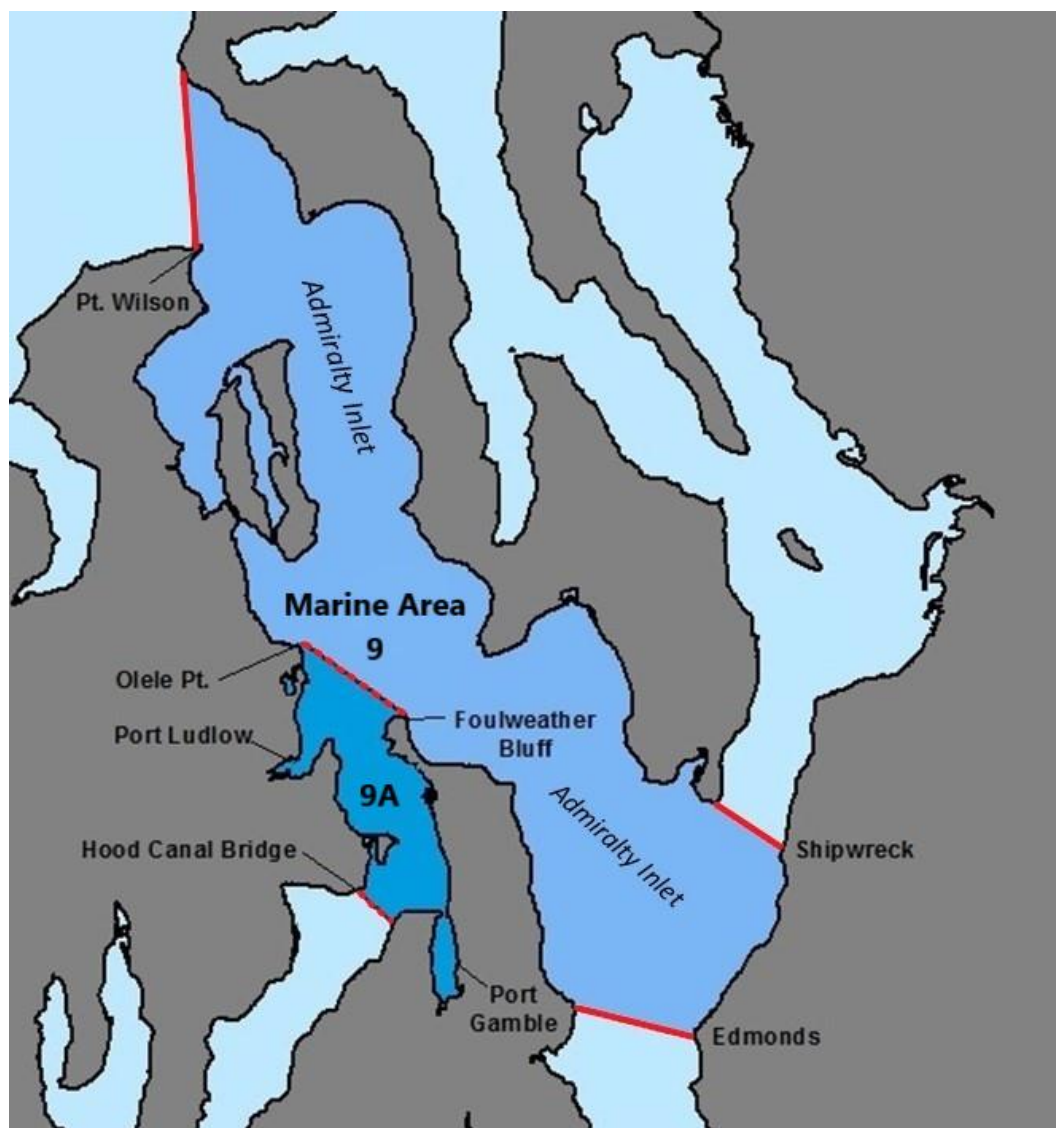


Figure A7: Map of Marine Area 6 with the 6A (Region 1 portion of MA6), 6B (Region 3-1), 6C (Region 3-2), and 6D (Region 3-3) sub-areas used in the 2024 online catch survey.

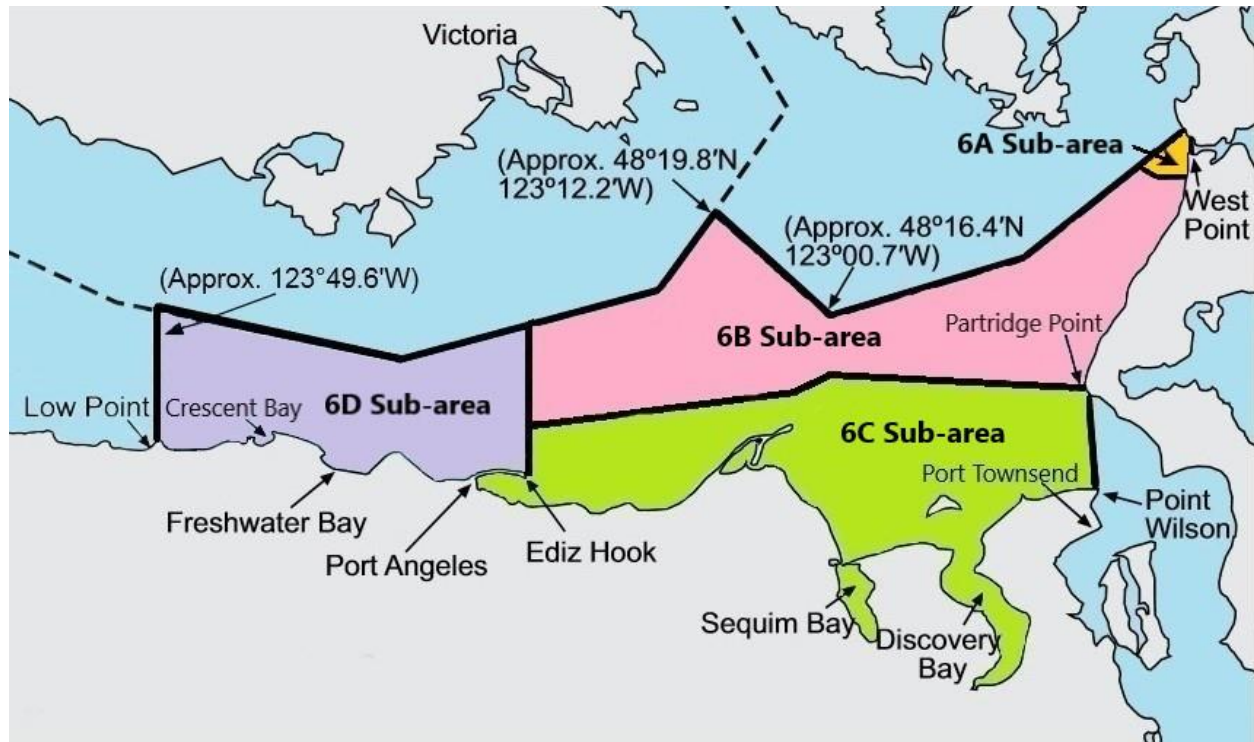


Figure A8: Map of Marine Area 7 with the 7A (Region 3-1 portion of MA7) sub-area used in the 2024 online catch survey.

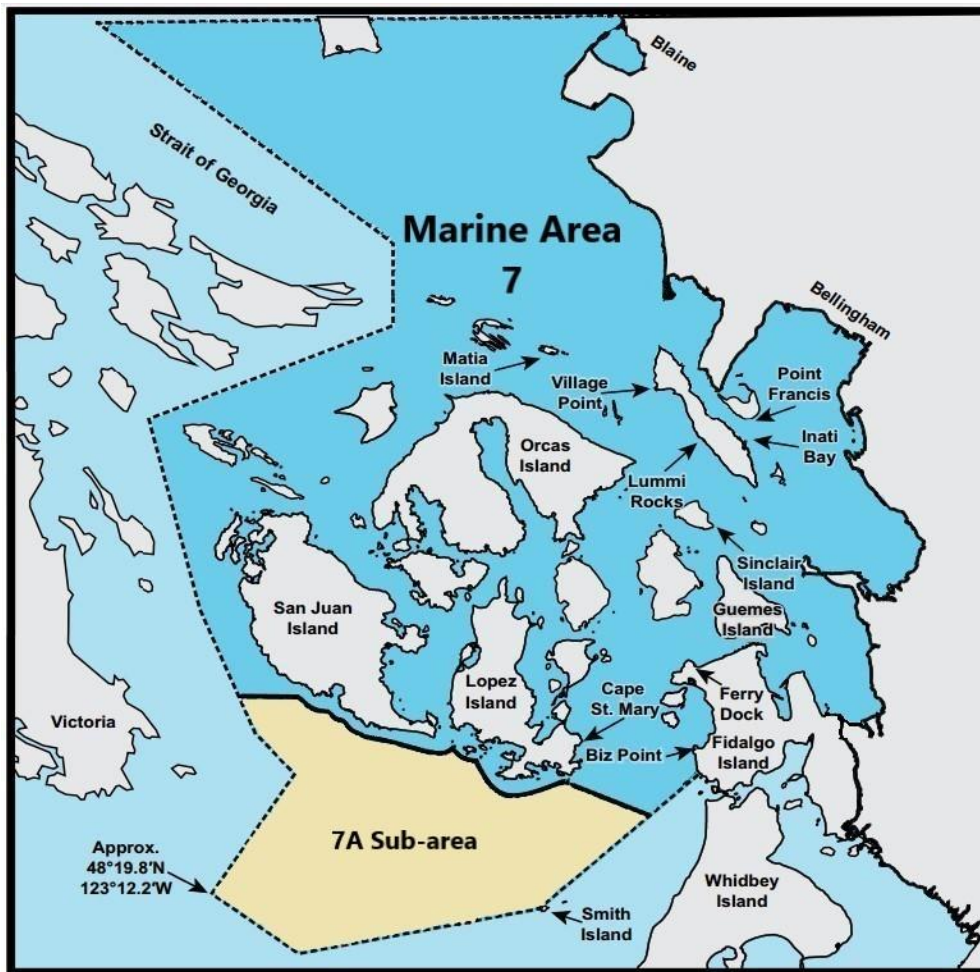


Table A1: Total number of successful trips reported on CRCs by month and Marine Area for summer 2024.

Marine Area	January - June	July	August	September 1-30	October
4	3	44	32	13	0
5	7	273	138	19	0
6	35	6,985	2,989	340	0
7	48	12,632	20,114	4,350	5
8	1	125	89	11	0
8-1	21	15,260	9,307	1,080	2
8-2	73	14,482	9,500	987	1
9	31	8,335	4,689	620	1
10	14	3,974	2,874	83	3
11	8	3,217	2,357	50	0
12	9	2,543	1,500	183	0
13	0	14	10	1	0