

# 2018 PWS Trawl Survey Summary

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The 2018 Prince William Sound large-mesh bottom trawl survey was completed from June 13<sup>th</sup> to June 20<sup>th</sup>, and from August 29<sup>th</sup> to August 30<sup>th</sup>. Extensive gear damage from hang-ups at stations 105 and G24 in June necessitated the second cruise. A total of 44 successful 1 nmi tows were completed, with 36 of these in June and the remaining 8 in August (Figure 1). The Tanner catch consisted of 1,064 males and 946 females.

Although the legal carapace width was reduced from 135 mm (5.3 in) to 127 mm (5.0 in) in 2017, the historical legal size was retained for achieving minimum stock size thresholds and setting total allowable catch (5 AAC 35.308). Catch can be retained so long as it is larger than the legal size (127 mm). The abundance threshold for opening the commercial fishery is 200,000 males larger than the historical legal size (135 mm).

The 2018 catch included 85 males larger than the historical legal size. Mean historically legal male CPUE in the 2018 survey was 1.98 crab/nmi (SE = 0.37; CV = 122 %) and ranged from 0 to 7.87. The estimated abundance ( $\pm$  95% CI) of historically legal males in 2018 was 75,103  $\pm$  28,106 crab, a 50% decline from the previous year and well below the commercial threshold (Table 1, Figure 2). This decline was unexpected given the strength of the prerecruit-1 cohort observed in the 2017 survey. Generalizing, a declining trend is now apparent following the peak abundance of historically legal males in 2011 and 2013. Abundance estimates are not included for Valdez Arm because only 1 tow was completed in those ancillary stations.

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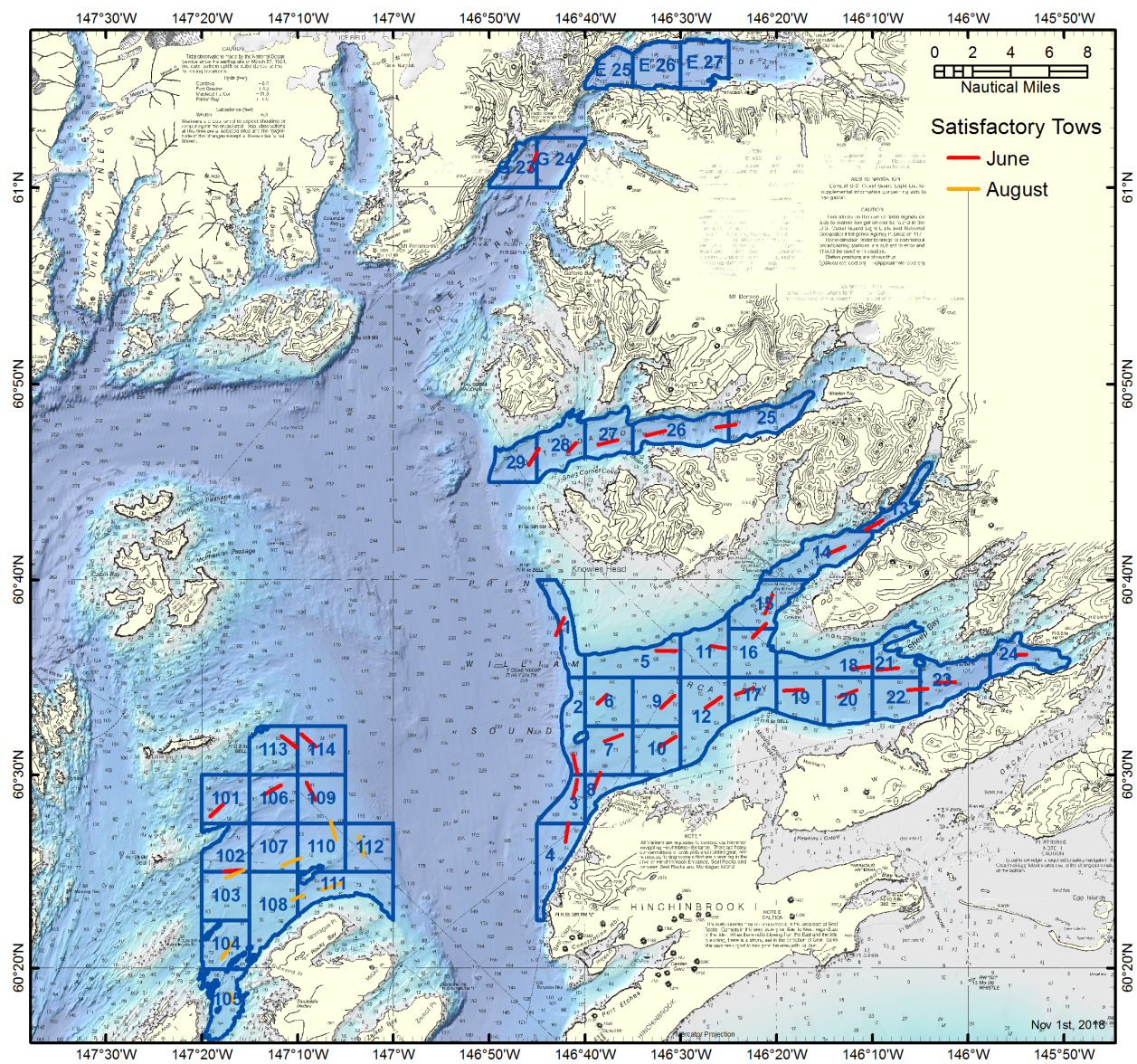


Figure 1: 2018 Prince William Sound large-mesh trawl survey grid and tow paths.

Table 1: Male Tanner crab abundance estimates from trawl surveys in Prince William Sound, 1991-2018. Parenthetical size limits are carapace width in millimeters.

Year	Tows	Pre-Recruits				Historical Legal Males		Total Males	
		Pre-4 (<73)	Pre-3 (73-92)	Pre-2 (93-112)	Pre-1 (113-134)	Abund. (>135)	± 95% CI	Abund.	± 95% CI
1991	29	832,376	697,768	326,658	275,497	134,820	106,043	2,267,119	1,420,647
1992	37	598,511	319,585	487,258	318,010	68,119	39,590	1,791,483	606,616
1993	38	470,946	118,931	226,671	266,073	121,184	39,588	1,203,805	433,640
1994	38	669,317	79,685	123,373	182,595	55,544	23,511	1,110,513	484,107
1995	32	294,093	41,317	71,749	100,786	24,820	15,535	532,765	171,825
1996	-	-	-	-	No_Survey	-	-	-	-
1997	39	209,713	55,957	51,115	34,283	11,336	11,048	362,403	158,018
1998	-	-	-	-	No_Survey	-	-	-	-
1999	40	116,969	7,717	27,531	16,792	3,677	3,574	172,686	64,516
2000	-	-	-	-	No_Survey	-	-	-	-
2001	40	1,364,121	407,171	223,047	59,143	6,626	6,655	2,060,109	784,610
2002	-	-	-	-	No_Survey	-	-	-	-
2003	40	495,341	113,424	195,928	94,758	15,882	17,969	915,333	360,036
2004	-	-	-	-	No_Survey	-	-	-	-
2005	40	279,702	80,563	142,569	117,450	28,940	25,743	649,224	291,641
2006	-	-	-	-	No_Survey	-	-	-	-
2007	32	747,359	201,944	220,162	226,015	17,749	14,290	1,413,230	422,800
2008	-	-	-	-	No_Survey	-	-	-	-
2009	43	1,005,227	509,029	255,598	336,874	43,836	30,505	2,150,563	884,060
2010	-	-	-	-	No_Survey	-	-	-	-
2011	43	984,555	415,403	555,178	580,675	186,422	87,727	2,722,235	1,794,176
2012	-	-	-	-	No_Survey	-	-	-	-
2013	43	5,987,002	1,024,721	429,215	322,264	184,993	74,780	7,948,194	2,332,076
2014	41	817,813	634,475	421,009	329,437	134,929	80,188	2,337,664	647,323
2015	43	611,303	466,460	609,544	302,250	102,789	46,797	2,092,345	882,266
2016	-	-	-	-	No_Survey	-	-	-	-
2017	43	219,496	75,278	253,599	444,370	149,481	70,117	1,142,224	290,506
2018	43	347,925	114,176	209,609	227,648	75,103	28,106	974,462	322,243

Table 2: Female Tanner crab abundance estimates from trawl surveys in Prince William Sound, 1991-2018.

Year	Tows	Juvenile		Mature		Total Females	
		Abund.	$\pm$ 95% CI	Abund.	$\pm$ 95% CI	Abund.	$\pm$ 95% CI
1991	29	1,491,508	1,068,760	647,057	253,271	2,138,565	1,199,315
1992	37	664,373	194,489	859,627	389,421	1,524,000	456,074
1993	38	460,476	223,580	304,666	130,179	765,142	256,815
1994	38	700,447	481,601	223,479	107,325	923,926	506,303
1995	32	257,603	118,930	97,336	44,093	354,938	130,055
1996	-	No_Survey	-	-	-	-	-
1997	39	223,738	109,838	99,705	70,201	323,443	159,290
1998	-	No_Survey	-	-	-	-	-
1999	40	107,444	47,079	22,788	13,549	130,231	50,243
2000	-	No_Survey	-	-	-	-	-
2001	40	1,634,795	555,504	630,644	328,247	2,265,440	769,155
2002	-	No_Survey	-	-	-	-	-
2003	40	424,736	223,746	516,506	332,555	941,242	393,196
2004	-	No_Survey	-	-	-	-	-
2005	40	349,601	213,607	258,566	141,310	608,167	284,636
2006	-	No_Survey	-	-	-	-	-
2007	32	760,869	321,407	712,241	380,426	1,473,110	518,316
2008	-	No_Survey	-	-	-	-	-
2009	43	762,780	445,823	1,049,776	622,603	1,812,556	713,727
2010	-	No_Survey	-	-	-	-	-
2011	43	1,048,655	740,764	654,548	390,494	1,703,203	845,024
2012	-	No_Survey	-	-	-	-	-
2013	43	6,103,502	2,102,100	1,093,875	605,695	7,197,377	2,213,334
2014	41	1,011,616	373,678	811,606	380,555	1,823,222	500,318
2015	43	400,484	209,285	690,873	298,312	1,091,358	371,494
2016	-	No_Survey	-	-	-	-	-
2017	43	374,558	226,429	564,903	198,038	939,461	318,317
2018	43	535,104	448,644	322,154	114,641	857,259	514,575

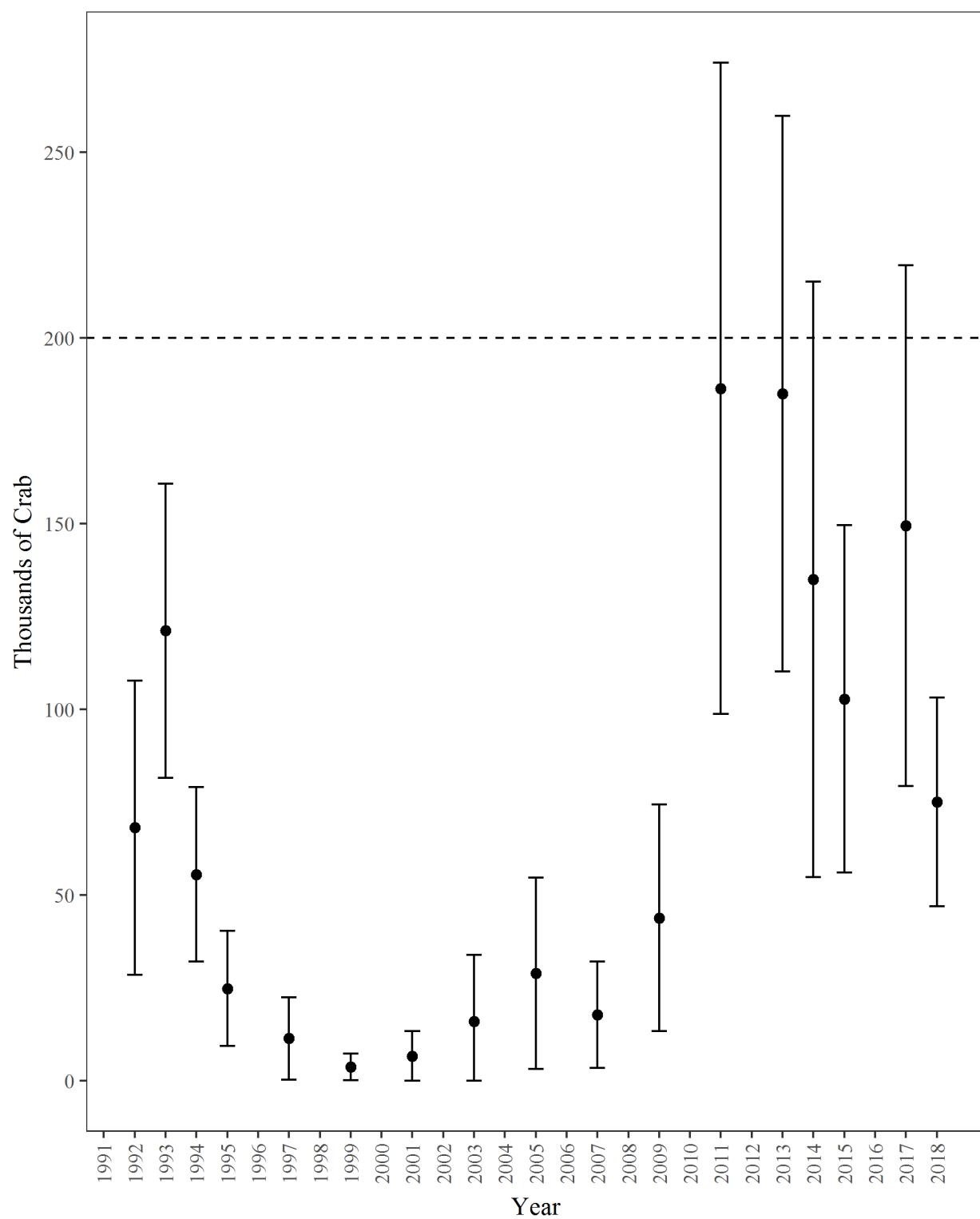


Figure 2: Historical legal male Tanner crab (carapace width > 135 mm) abundance estimates with 95% confidence intervals and commercial threshold in Prince William Sound.