

ADF&G STAFF PRESENTATION

King and Tanner Task Force



Golden King Crab Commercial Fisheries

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Summary – Recent History

- Beginning with the 2005/2006 season, golden king crab (GKC) guideline harvest levels (GHLs) have been adjusted on a triennial basis.
- Less detailed analyses were conducted during the intervening years of each triennial cycle.
- GHLs were adjusted prior to the 2008/2009 season.
- A less detailed, intervening year analysis was planned prior to the 2009/2010 season, but this was expanded to a full three-year review to synchronize GHL adjustments with the new Board of Fisheries (BOF) schedule for Southeast king crab proposals.
- Southeast king crab proposals were addressed by the BOF in January of 2009, and guideline harvest ranges (GHRs) were adjusted for some areas at this meeting.
- No changes were made to GHRs at the 2012 BOF meeting.



Summary – GHL Review

- GHL recommendations are made triennially employing a precautionary approach to minimize the risk of recruitment failure.
- Three reasons for this approach:
 - 1) Data poor fishery with no fishery independent stock assessment program.
 - 2) Golden king crabs are a long-lived deep water species, on about a two-year reproductive cycle.
 - 3) Management precision is low.
- For these reasons, data are highly variable.

Data Sources and Limitations

- All data currently available to assess GKC in Southeast Alaska are fishery dependent:
 - 1) Onboard observer data.
 - 2) Standardized commercial CPUE.
 - 3) Dockside sampling size class proportions and CPUE.
- Each data type has specific limitations.





Observer data

- Provide a detailed examination of a given fisherman's catch, but has specific limitations:
 - 1) Small sample size.
 - 2) Small percentage of fishing grounds covered.
 - 3) Timing of observer trip (early or late in the season).
 - 4) Individual variability in fishing efficiency from year to year if different vessels are used.
- Due to the short duration of some seasons, or low effort exhibited in a given season, observer data may be lacking.

Standardized commercial CPUE

- Standardized CPUE is calculated using the season with the lowest number of pot lifts since the inception of the logbook program in 2003, and then using that number of pot lifts along with cumulative catch by date for each season from 2003 until present to calculate CPUE.



Standardized commercial CPUE

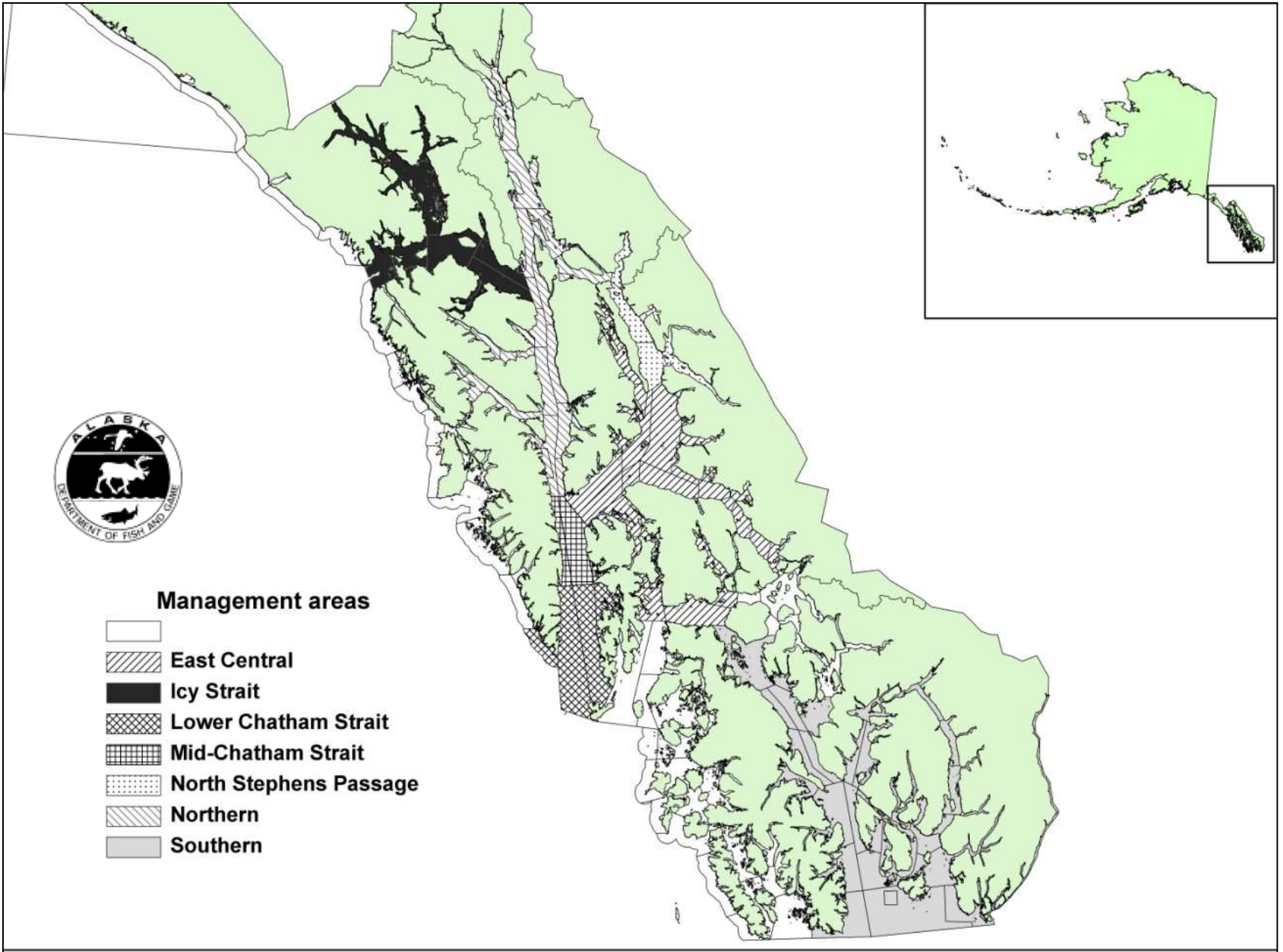
- Standardized CPUE provides a much broader view of fishery performance, but has limitations:
 - 1) Potential reporting errors (numbers of crab, pots lifted, etc.).
 - 2) Neither fish ticket nor logbook databases account for soak times, so soak times cannot be factored into catch/pot or catch/pot/day calculations.





Port sampling

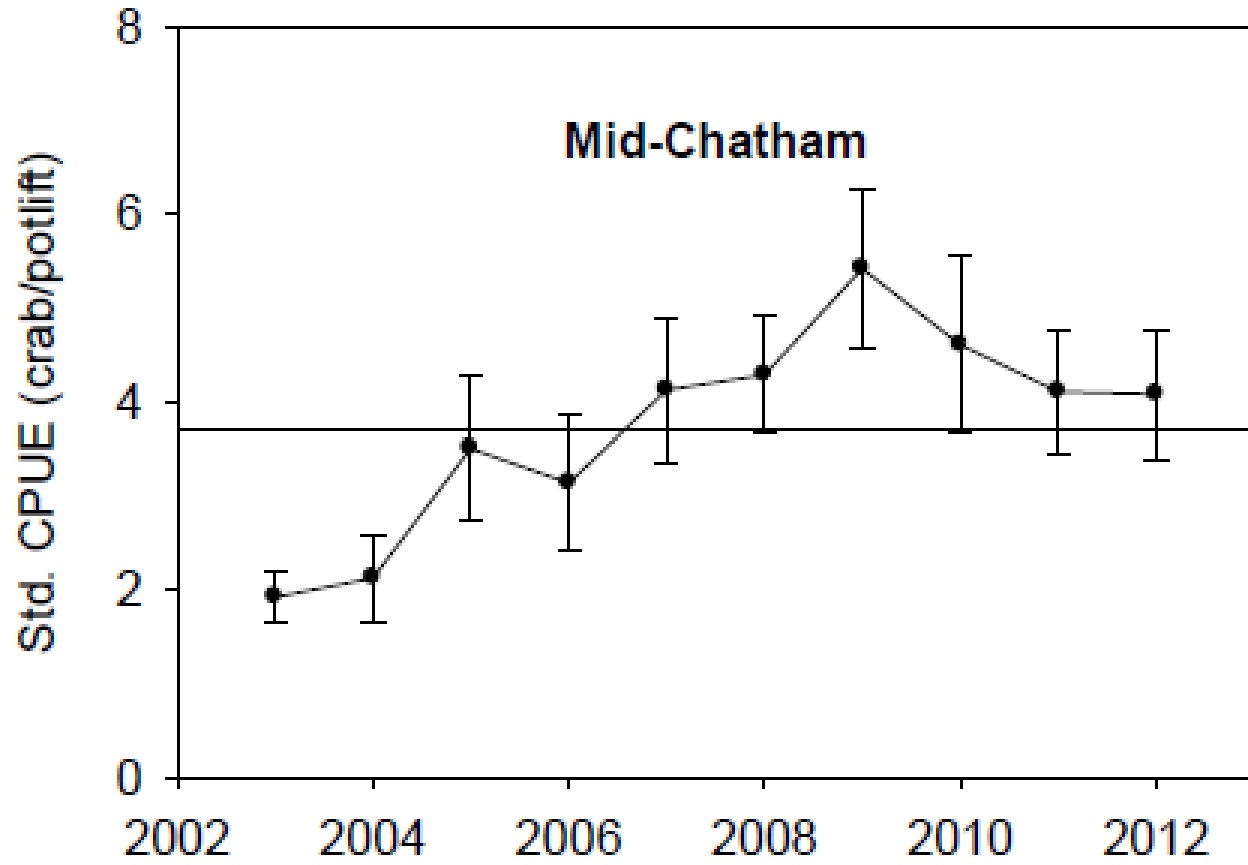
- Dockside sampling provides a wider look at the fishing grounds but possibly less precise CPUE information and depends to a great degree on a large number of trips being sampled each year.
- Dockside information on changes in the proportion of recruit to post-recruit crabs is difficult to interpret.
- Although significant carry-over of post-recruits is desirable, pulsed recruitment and changes in population abundance confounds the interpretation of changes in proportions.



Mid-Chatham Strait

- After the 2008/2009 review, the GHL for Mid-Chatham Strait was raised from 80,000 to 100,000 pounds.
- After the 2009/2010 review, The GHL for Mid-Chatham Strait was raised again from 100,000 to 110,000 pounds.

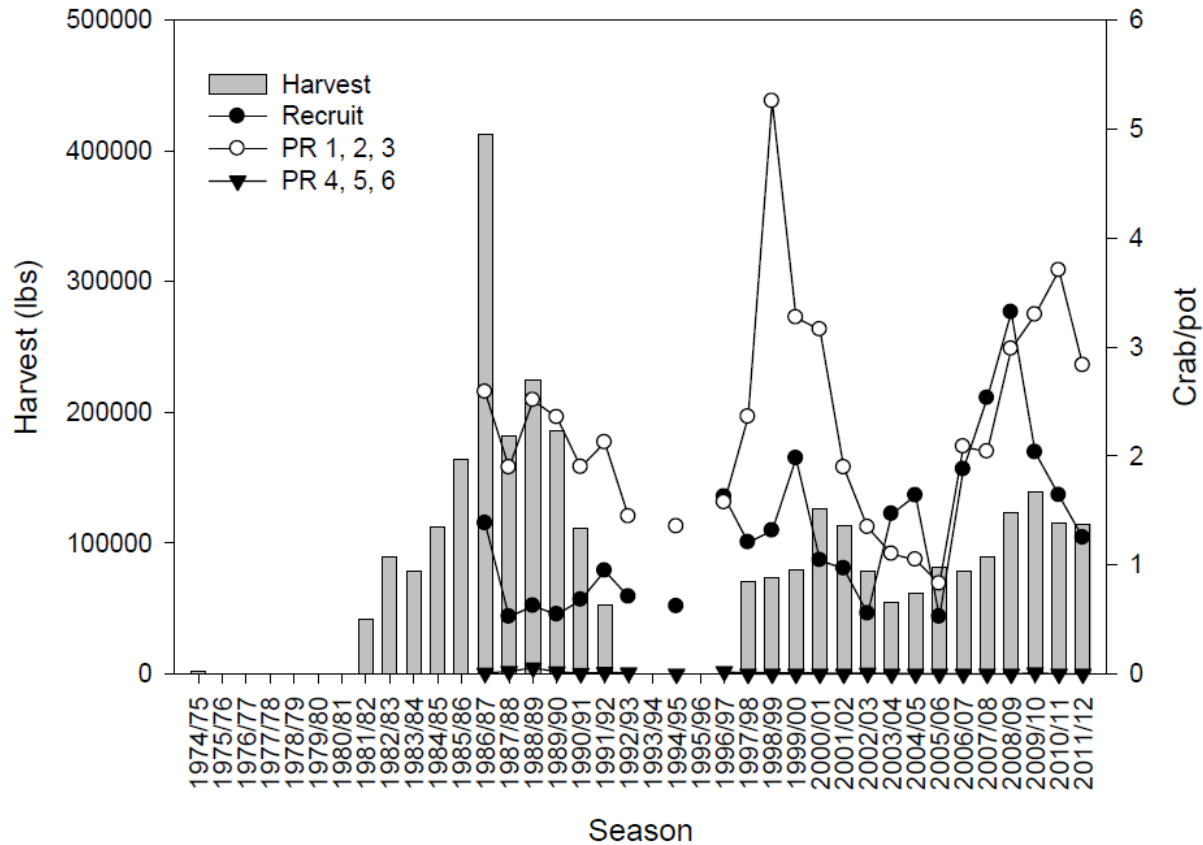




Logbook data show above average (2002/2003 through 2011/2012 seasons) CPUE.



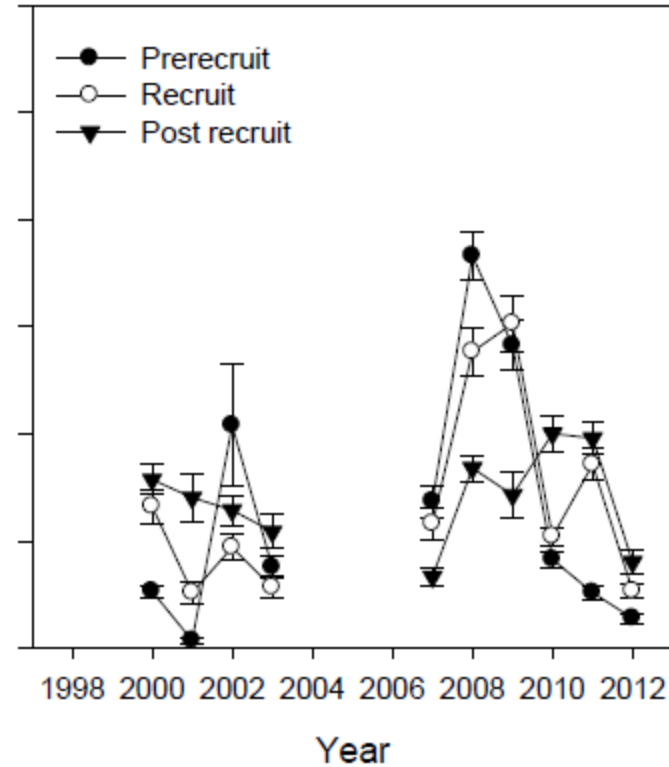
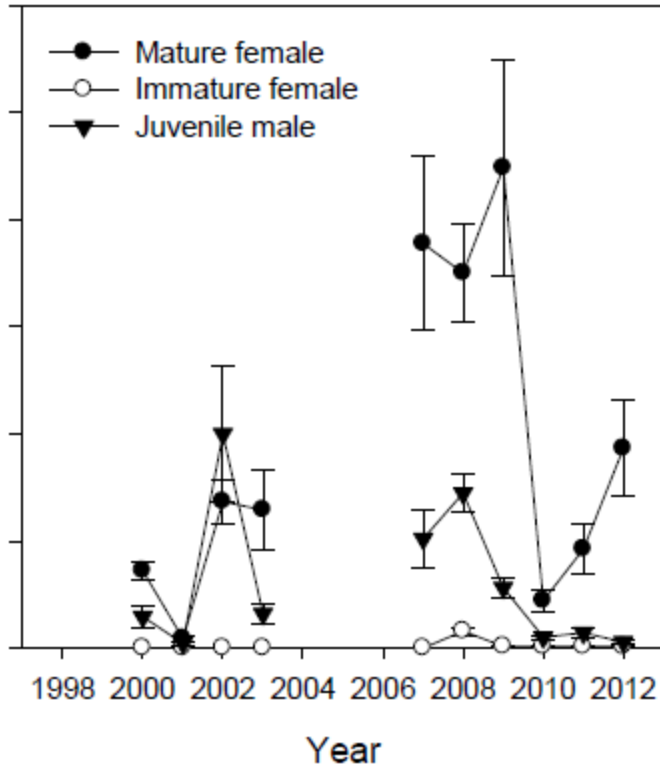
Mid-Chatham



Port sampling data show recruits to be at average CPUE, postrecruits at above average CPUE, with potential recruitment observed in 2008.



Mid-Chatham

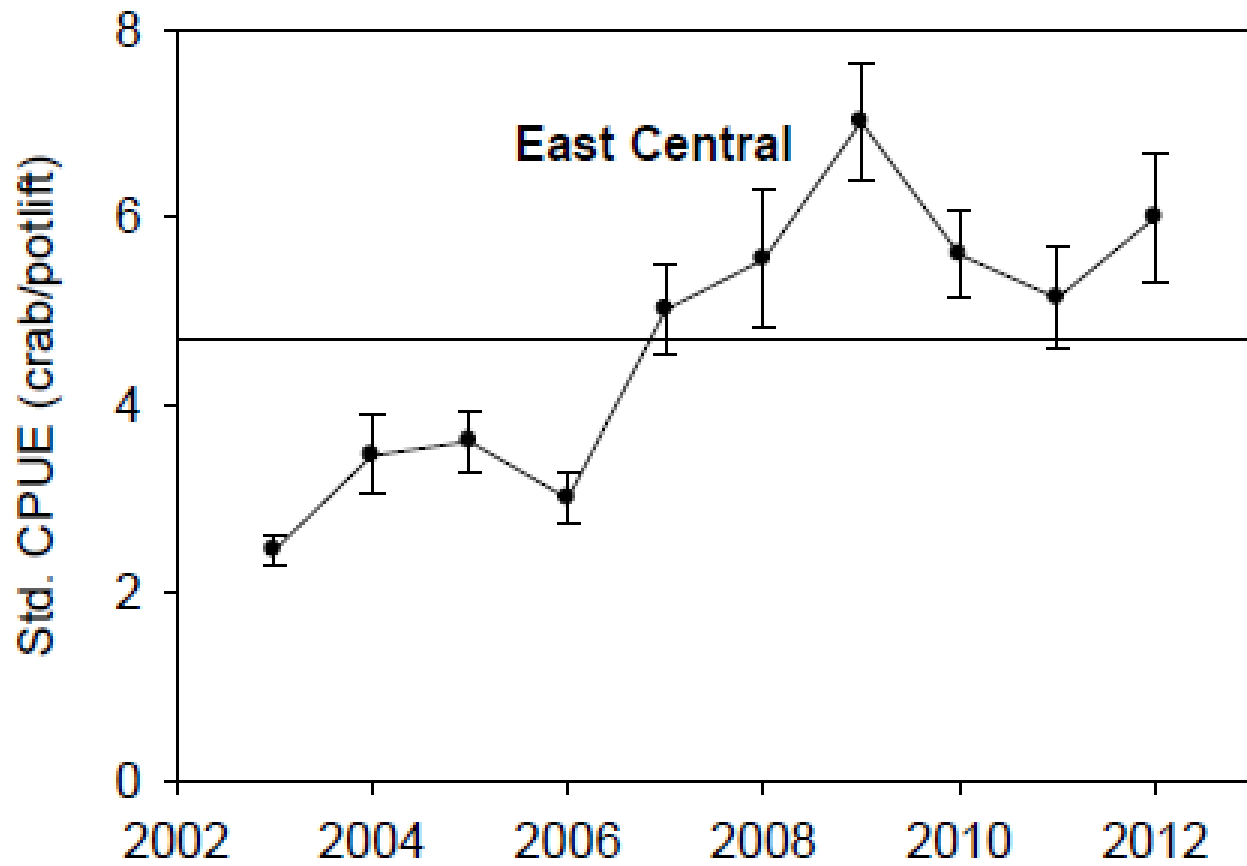


Observer data show only mature females to be trending up. Recruitment in 2008 and 2009.

East Central

- The GHL for the East Central management area remained at the upper end of the GHR, 225,000 pounds, after the 2008/2009 review.
- At the 2009 BOF meeting, the upper end of the GHR was raised from 225,000 to 300,000 pounds.
- The GHL was raised to 260,000 pounds after the 2009/2010 review.



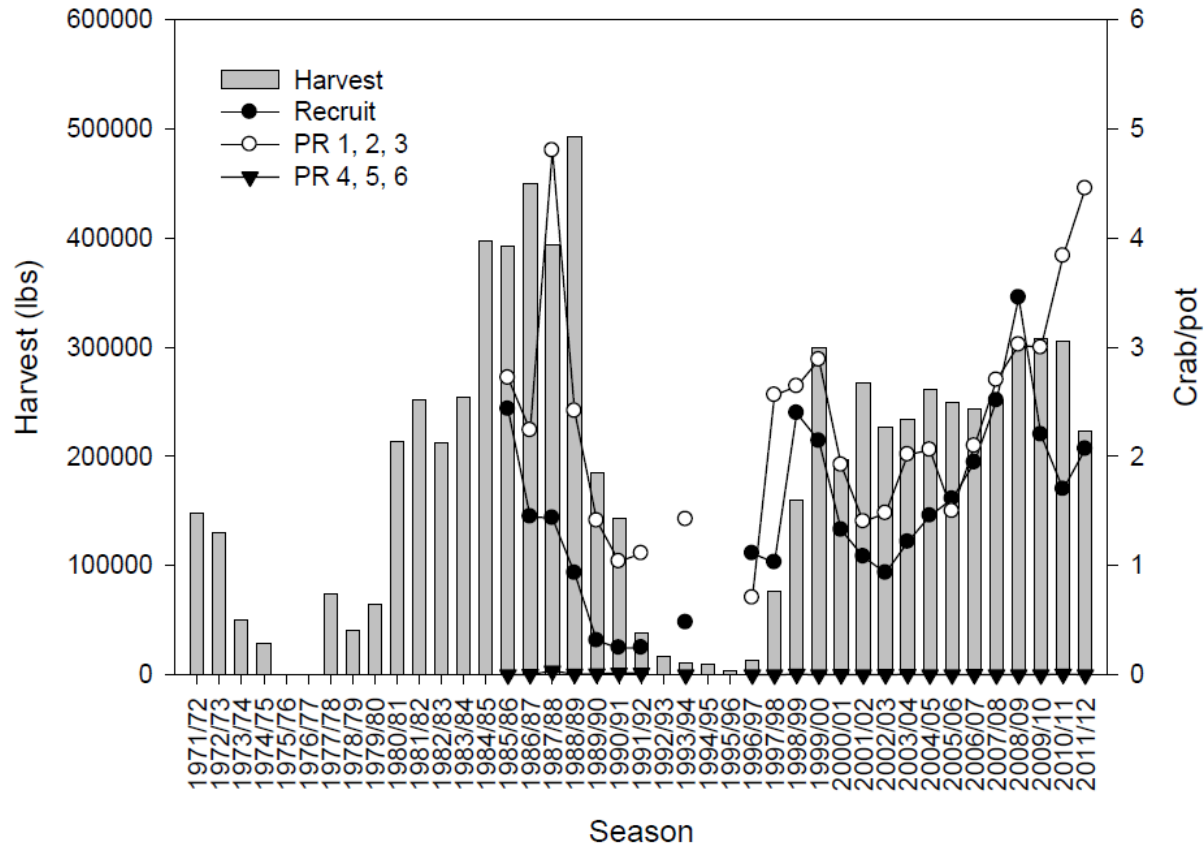


Logbook data show above average CPUE.





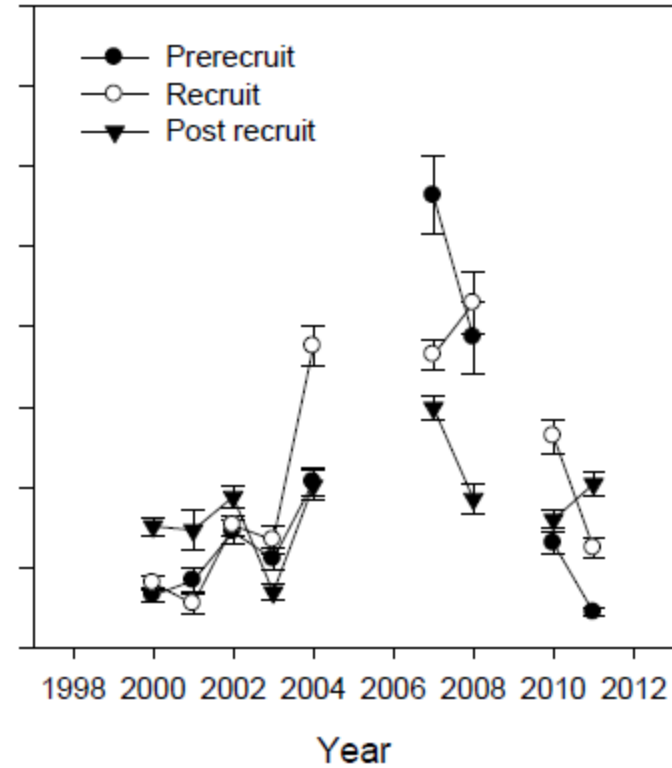
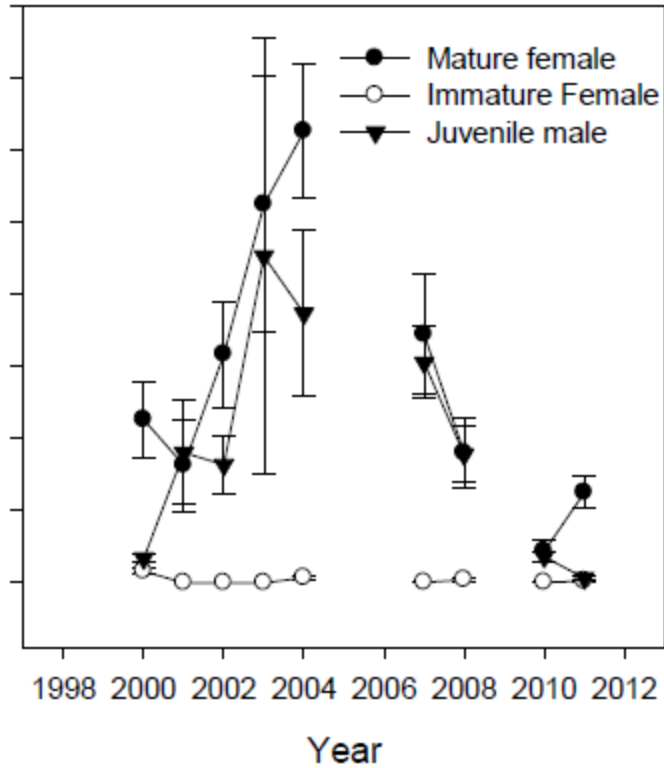
East Central



Port sampling data show both recruits and post recruits to be above their average CPUE, with potential recruitment events evident in 2009 and 2012.



East Central



Observer data are lacking for 2012, but 2010 and 2011 data show prerecruits and recruits at relatively low levels.

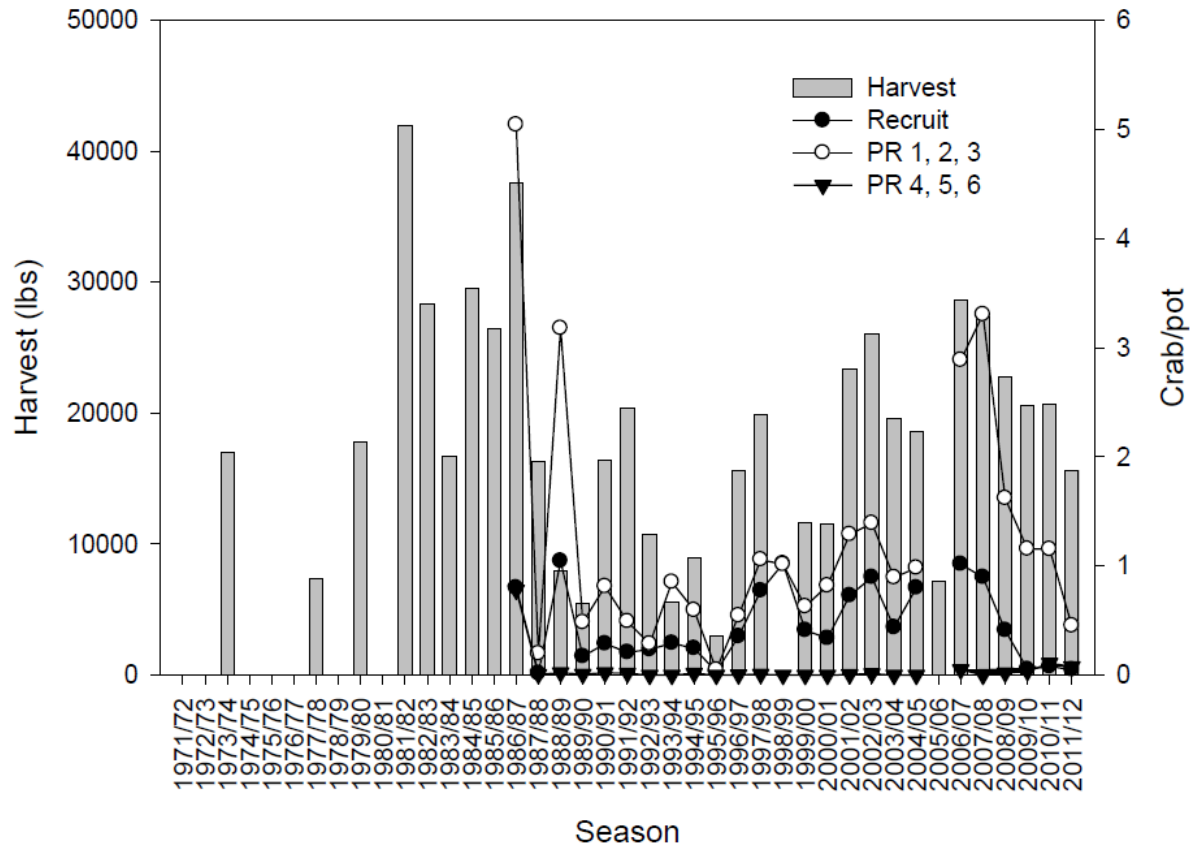
North Stephens Passage

- The GHL for the North Stephens Passage management area remained at 20,000 lbs after both the 2008/2009 review and the 2009/2010 review.
- Harvest data show 2011/2012 as the longest season since the 1999/2000 season, with the GHL not being reached.





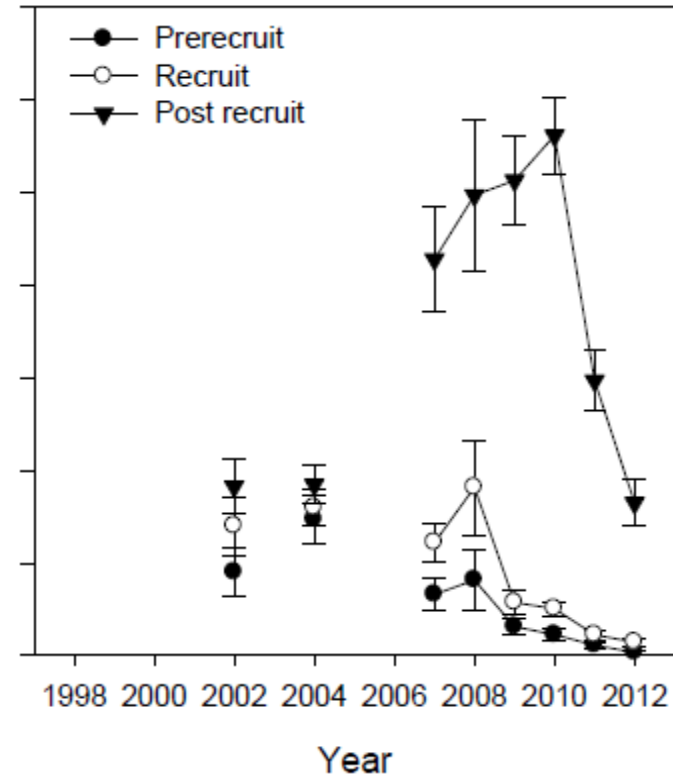
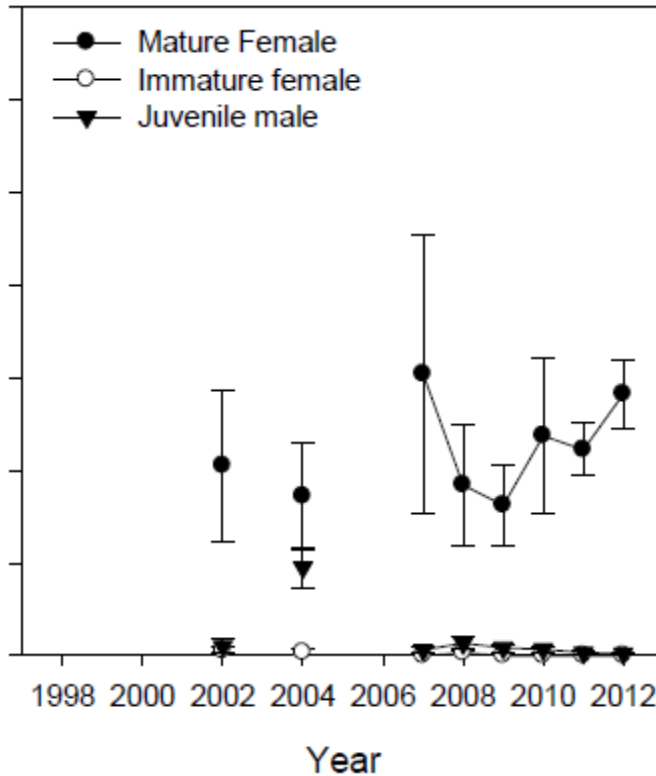
North Stephens Passage



Port sampling data show both recruits and postrecruits to be below their average CPUE. No recruitment is evident.



N. Stephens



Observer data show declining postrecruit CPUE, and prerecruits and recruits at very low levels.



Northern

- After the 2008/2009 triennial review, the GHL for the Northern management area was raised from 120,000 to 145,000 lbs, the upper end of the GHR.
- At the 2009 meeting of the BOF, the upper end of the GHR for the Northern management area was raised from 145,000 to 175,000 lbs.
- The GHL remained 145,000 lbs after the 2009/2010 review.

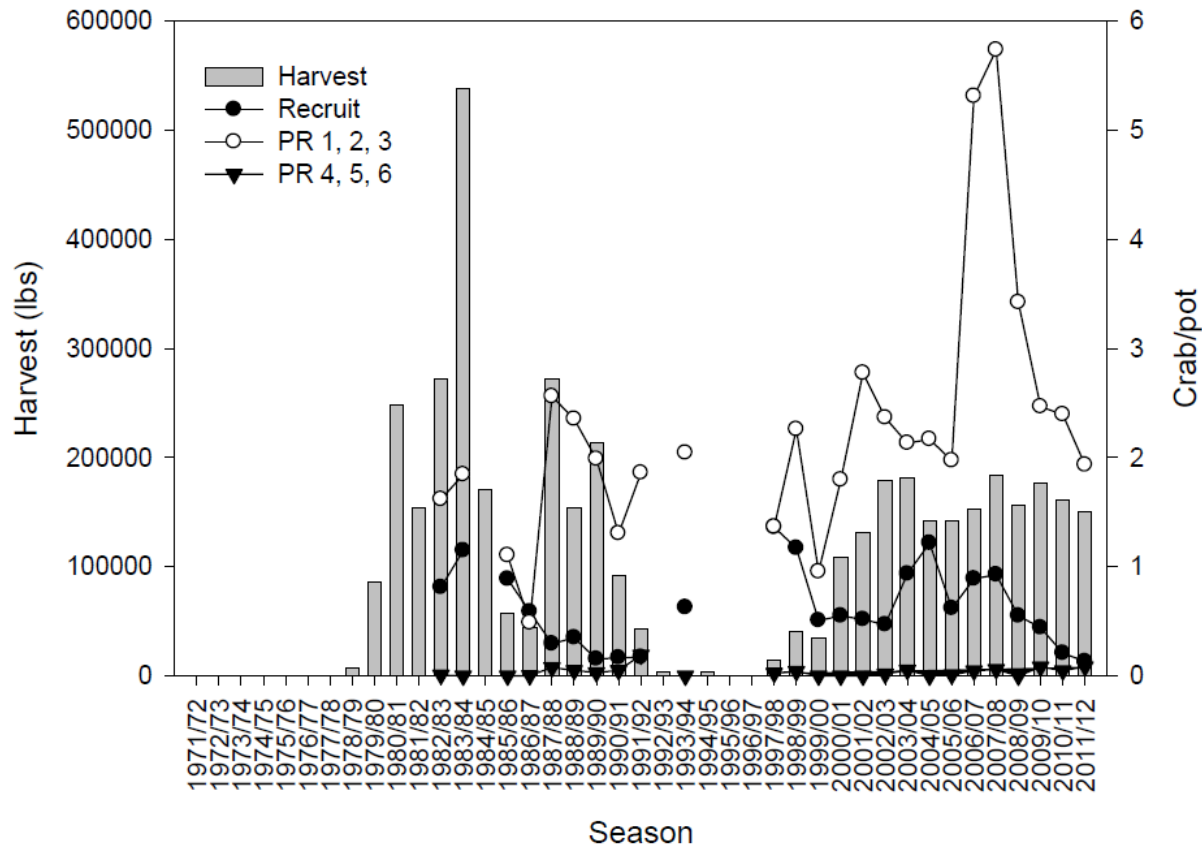
Northern

- Harvest data show progressively longer season length over the past four years with consistent effort.





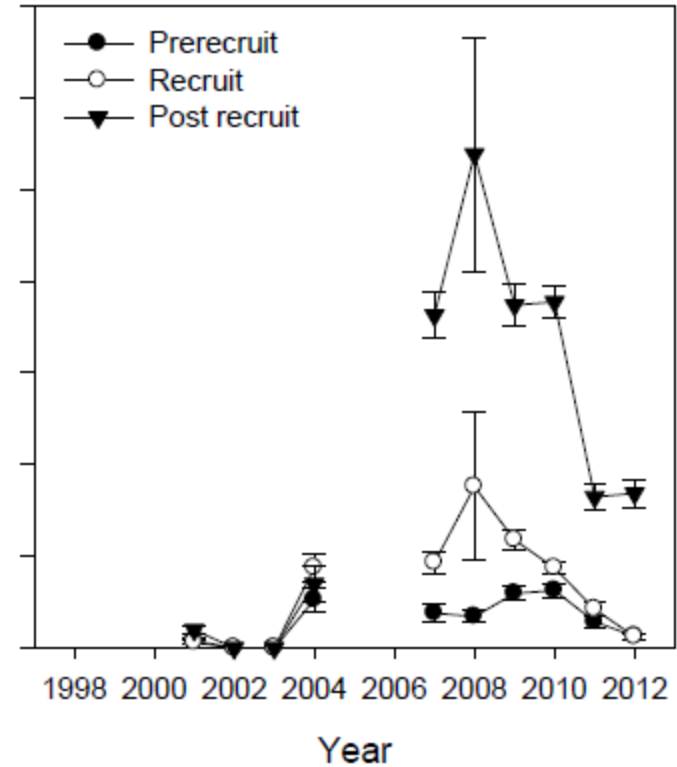
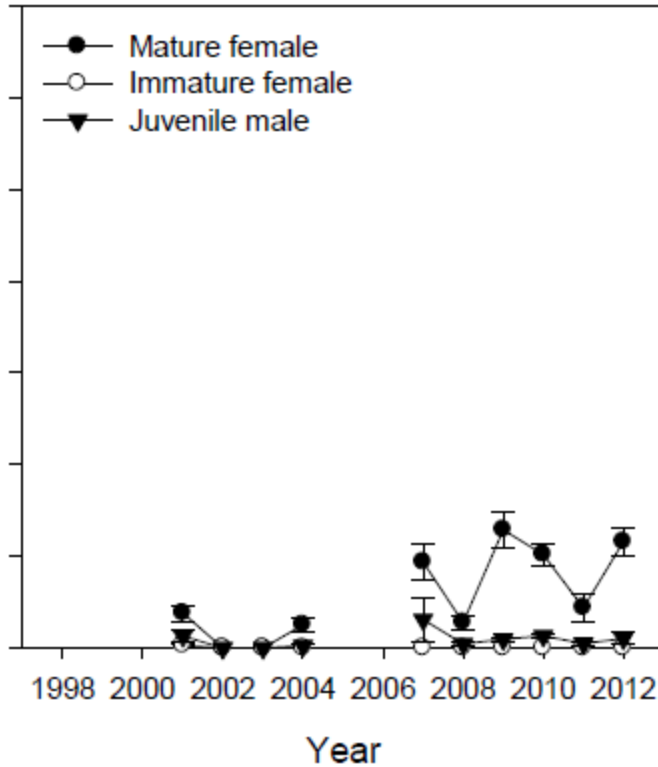
Northern



Port sampling data show both recruits and postrecruits to be below their average CPUE. Some recruitment potentially occurred in 2005 and 2008.



Northern



Observer data show only mature female CPUEs to be increasing. All other size/sex classes show declines or no improvement.



Icy Strait

- The GHL for the Icy Strait management area remained at 55,000 lbs after the 2008/2009 triennial review.
- At the 2009 meeting of the BOF, the upper end of the GHR was raised from 55,000 to 75,000 lbs.
- The GHL for the Icy Strait management area was lowered from 55,000 lbs to 45,000 lbs after the 2009/2010 review.

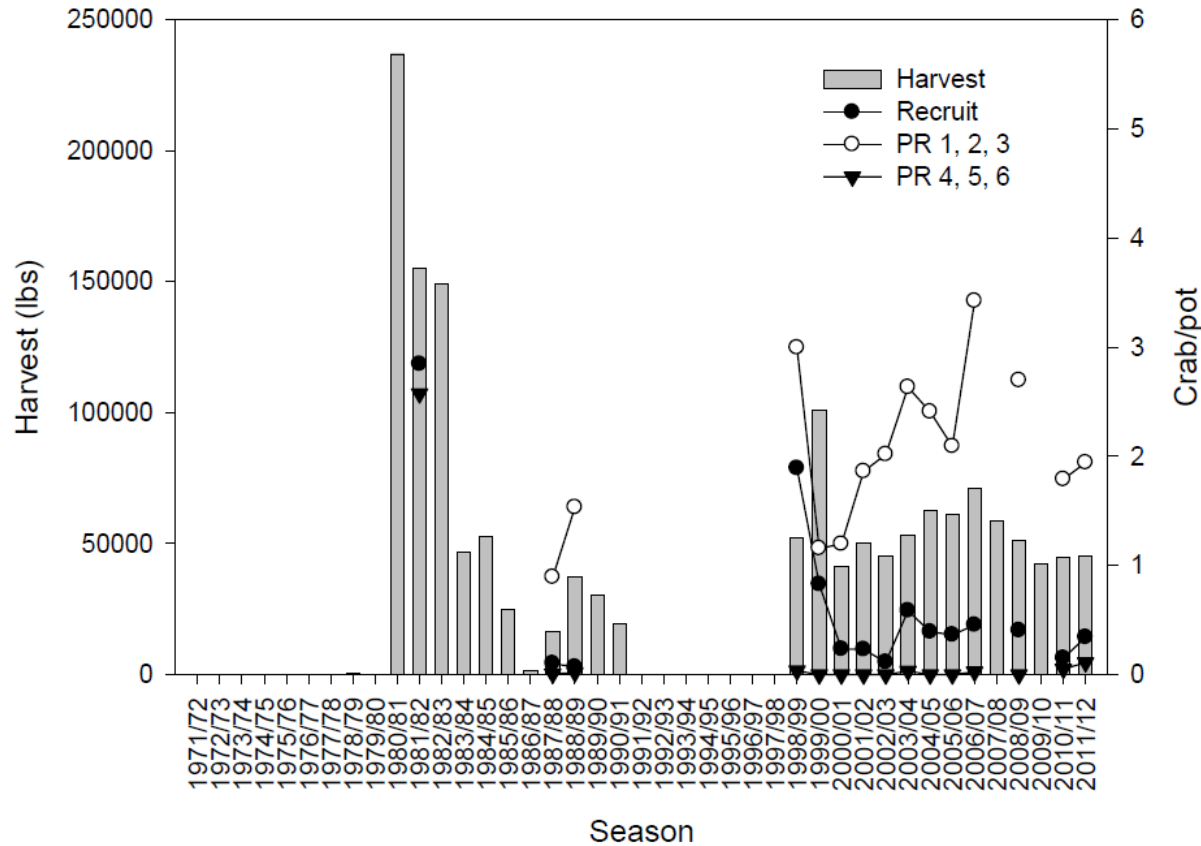
Icy Strait

- Harvest data show 2011/2012 as the longest season since the 1999/2000 season, with the GHL not being reached until late October.



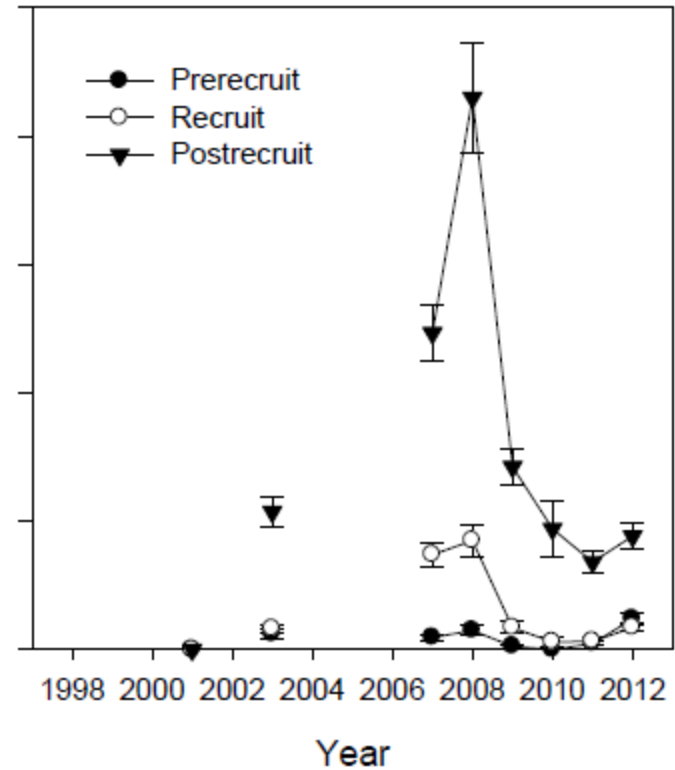
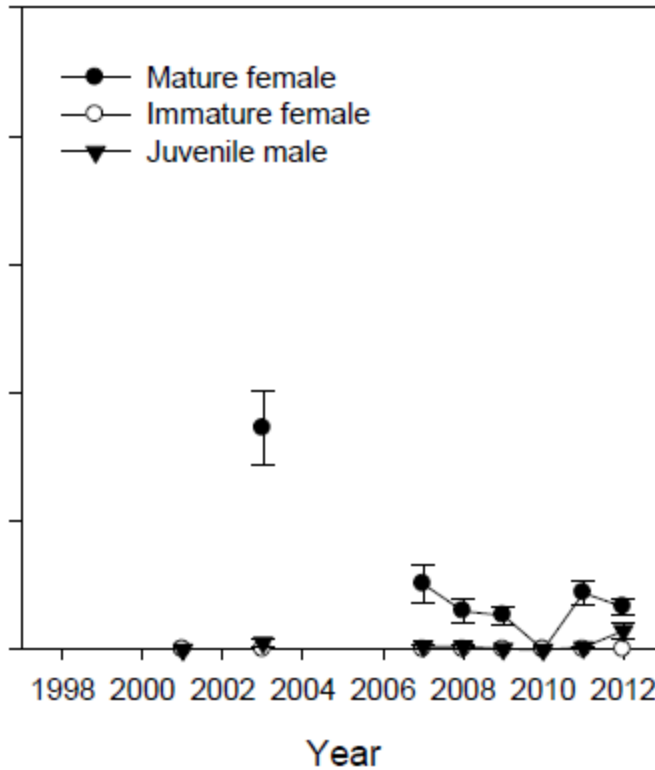


Icy Strait



Port sampling data show both recruits and postrecruits to be below their average CPUE. No recruitment is evident.

Icy Strait



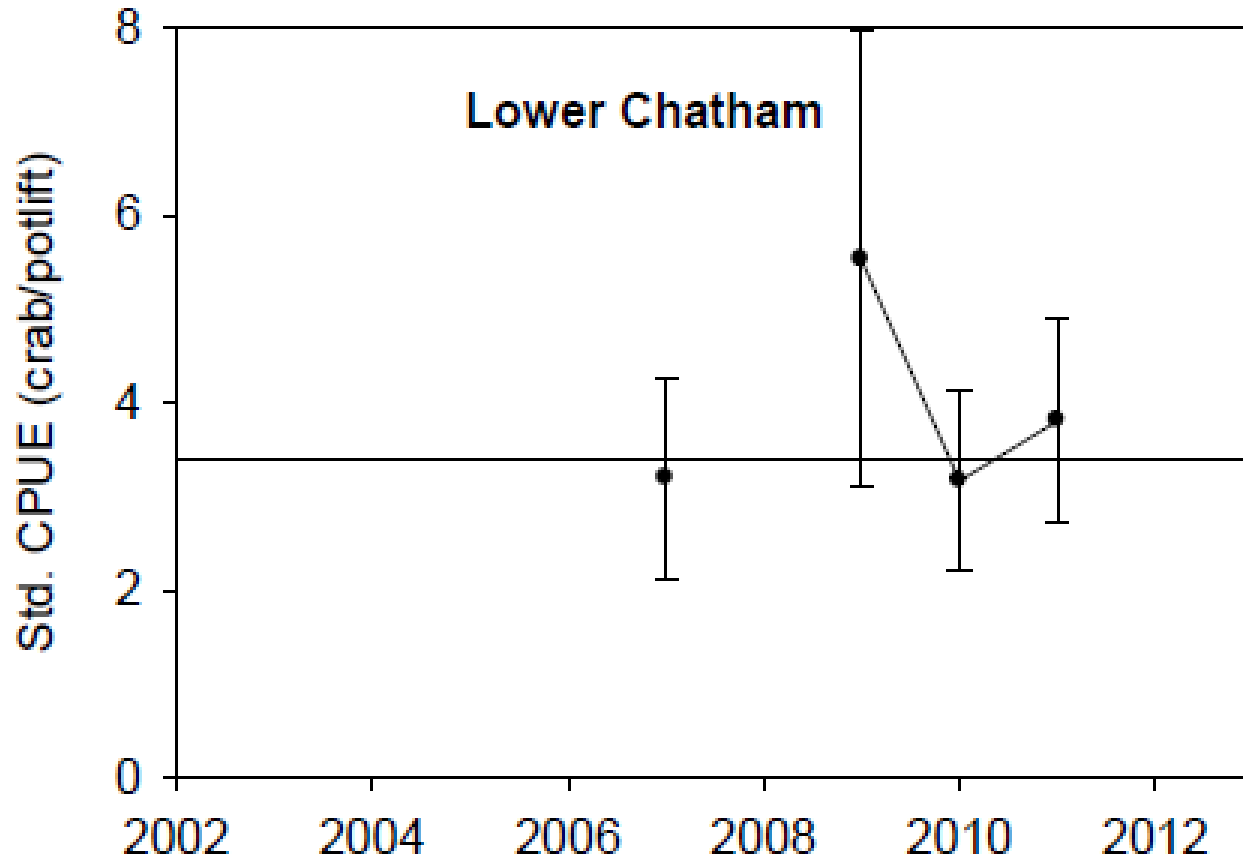
Observer data show declines in all size/sex classes since 2008.



Lower Chatham Strait

- The GHL for the Lower Chatham management area was raised from 15,000 to 25,000 lbs after the 2008/2009 triennial review.
- The GHL remained unchanged after the 2009/2010 review.



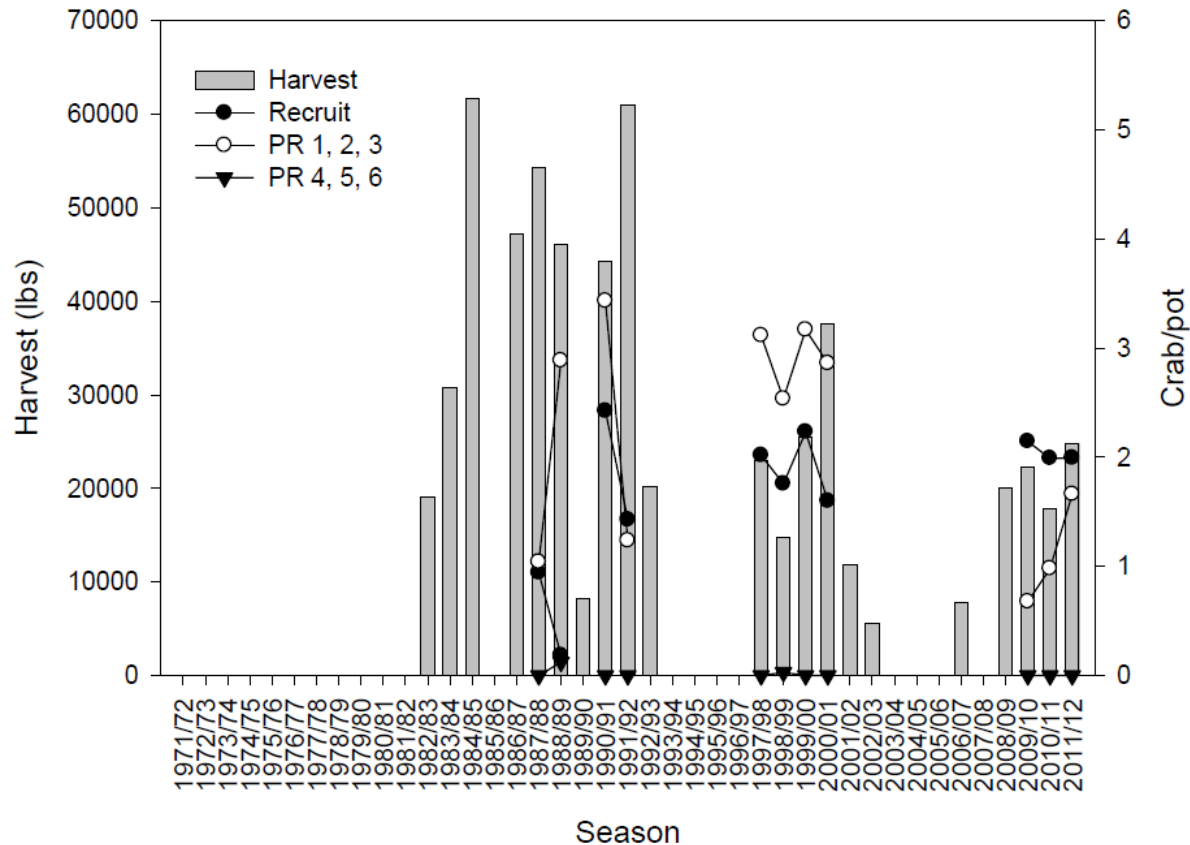


Logbook data show above average CPUE.





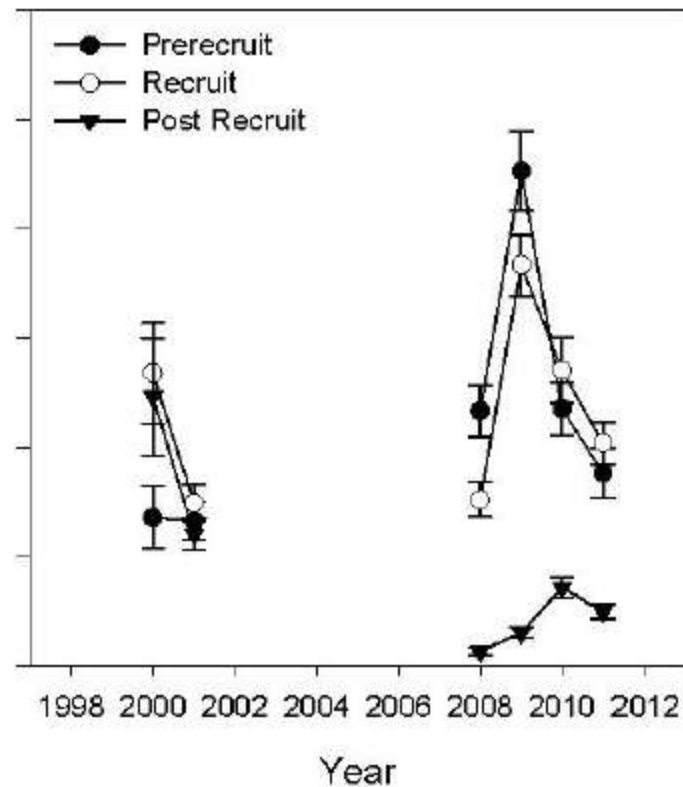
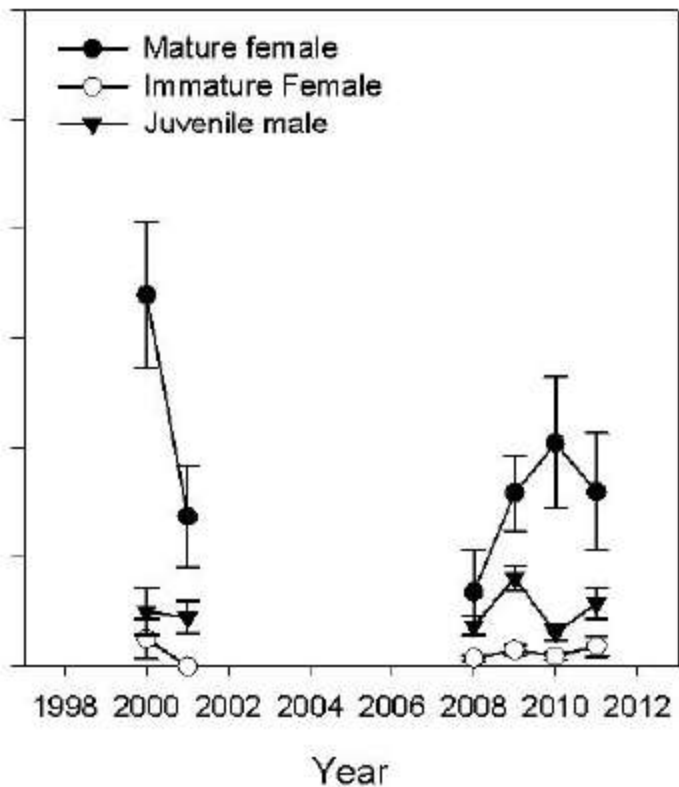
Lower Chatham



Port sampling data show recruits to be above their average CPUE and postrecruits to be below their average CPUE. Potential recruitment is evident over the past three seasons, and this area is the only area out of the seven currently predominated by recruit class crabs.



Lower Chatham



Observer data show no improvement since 2009, but point to a large recruitment event in 2009.

Southern

- The GHL for the Southern management area was raised from 10,000 to 20,000 lbs after the 2008/2009 triennial review
- The GHL remained unchanged after the 2009/2010 review.



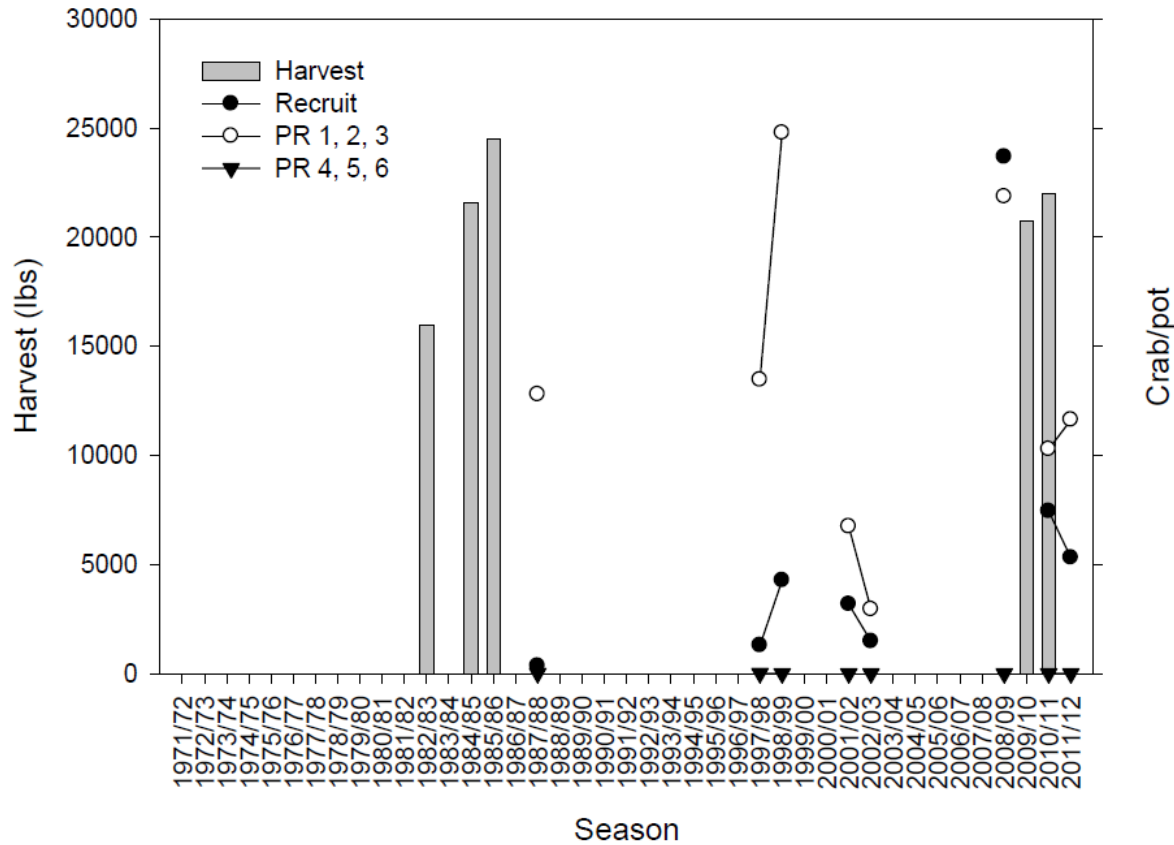
Southern

- Logbook data (all confidential) show above average CPUE.



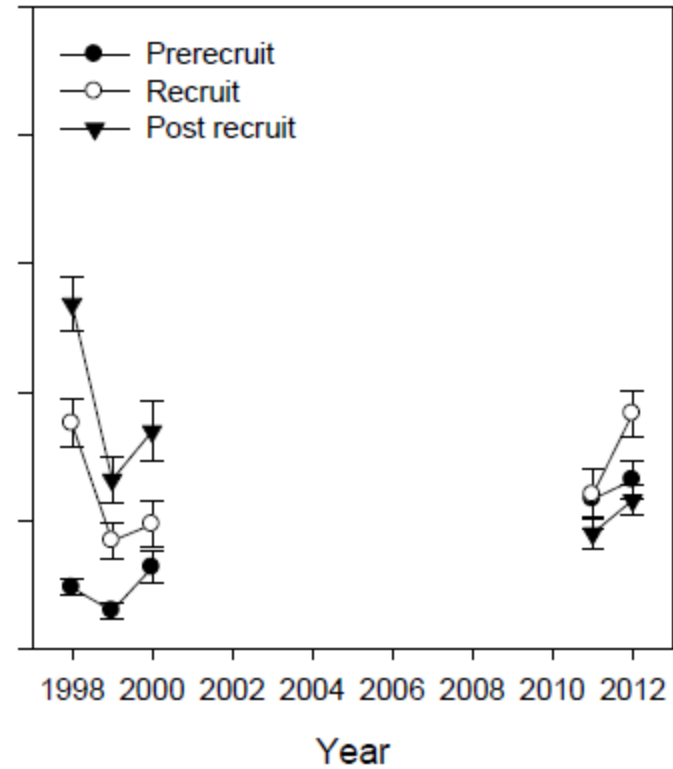
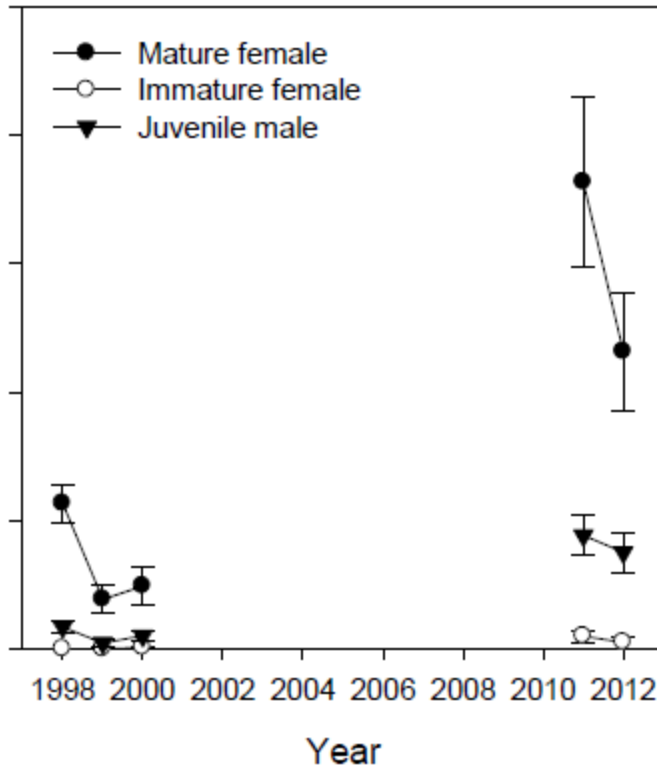


Southern



Port sampling data show recruits and postrecruits CPUE levels holding steady.

Southern



Observer data show the legal component of the catch to be strong.





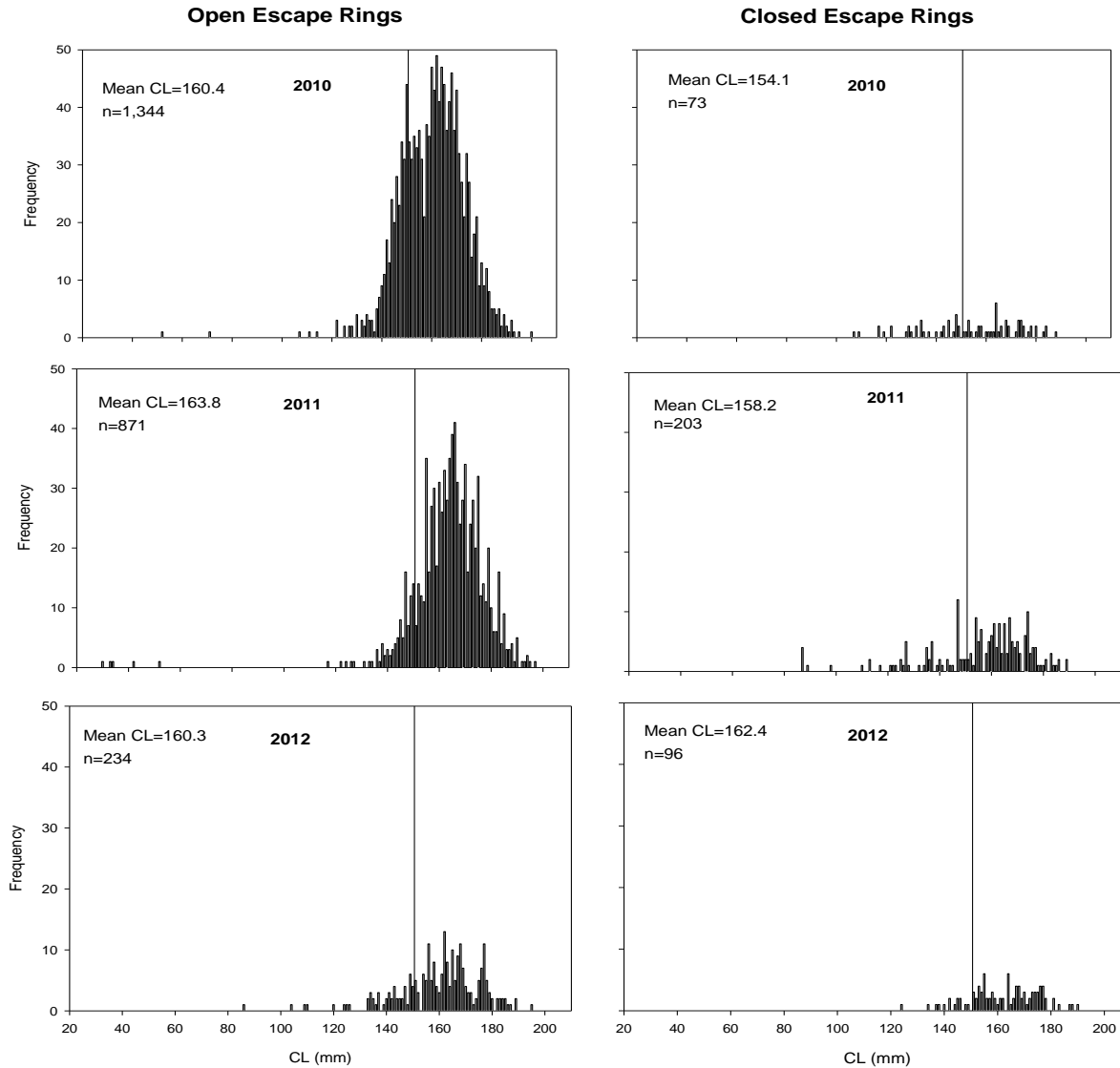
		Mid-Chatham Strait	East Central	N. Stephens Passage	Northern	Icy Strait	Lower Chatham	Southern
Data	GHR/ Year	0 - 150,000	0 - 300,000	0 - 25,000	0 - 175,000	0 - 75,000	0 - 50,000	0 - 25,000
Season length (days)	2000	59	26	26	30	30	104	133
	2001	76	18	162	76	162	153	162
	2002	82	39	39	54	54	132	132
	2003	146	37	29	37	37	228	228
	2004	178	26	75	21	17	178	228
	2005	177	31	111	19	15	177	211
	2006	243	52	253	52	54	319	319
	2007	228	57	98	33	20	298	298
	2008	78	21	36	18	17	209	227
	2009	61	11	89	17	25	176	263
	2010	56	9	78	26	28	127	299
	2011	54	19	114	42	26	217	112
	2012	59	6	255	101	255	95	85
GHL (lbs)	2000	75,000	175,000		100,000		25,000	25,000
	2001	125,000	225,000	10,000	100,000	40,000	40,000	15,000
	2002	110,000	225,000	10,000	100,000	40,000	40,000	15,000
	2003	100,000	200,000	20,000	100,000	40,000	15,000	10,000
	2004	100,000	200,000	20,000	100,000	40,000	15,000	10,000
	2005	100,000	200,000	20,000	100,000	40,000	15,000	10,000
	2006	80,000	225,000	20,000	120,000	55,000	15,000	10,000
	2007	80,000	225,000	20,000	120,000	55,000	15,000	10,000
	2008	80,000	225,000	20,000	120,000	55,000	15,000	10,000
	2009	100,000	225,000	20,000	145,000	55,000	25,000	20,000
	2010	110,000	260,000	20,000	145,000	45,000	25,000	20,000
	2011	110,000	260,000	20,000	145,000	45,000	25,000	20,000
	2012	110,000	260,000	20,000	145,000	45,000	25,000	20,000



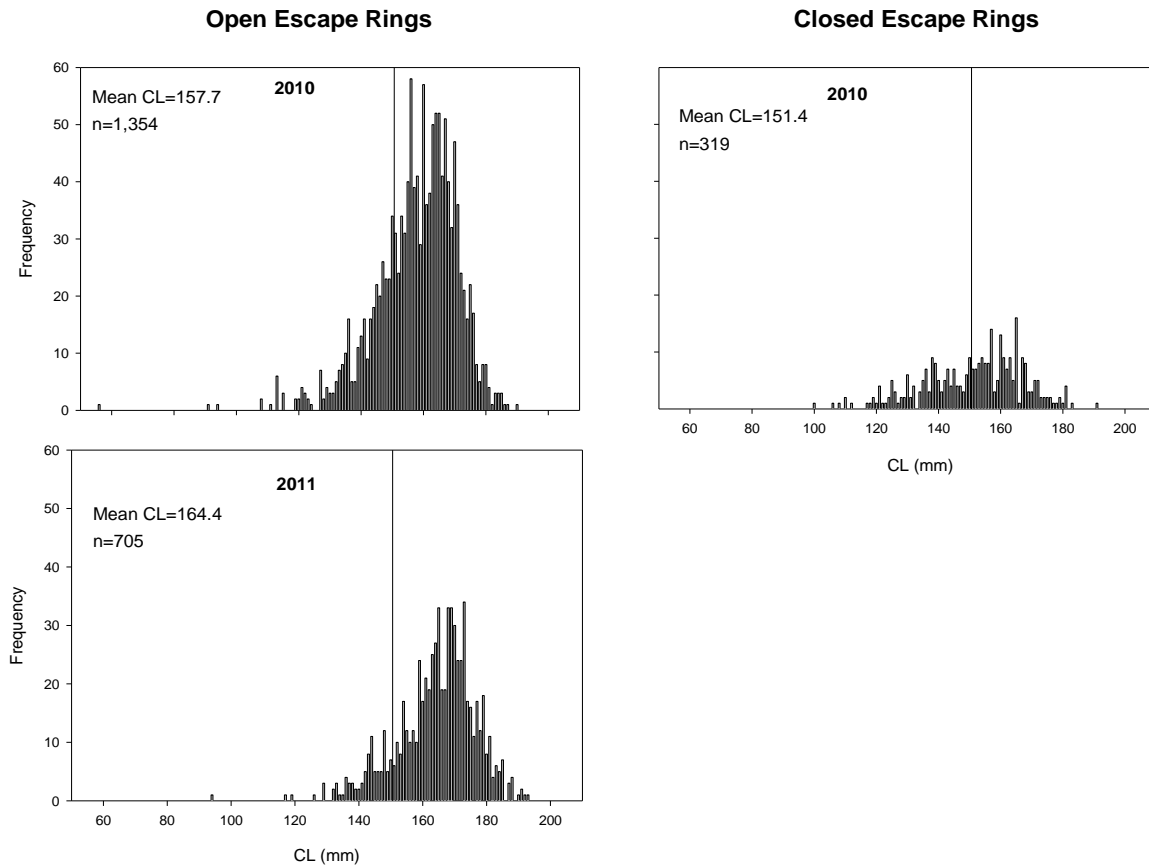
Data	GHR/ Year	Mid-Chatham Strait	East Central	N. Stephens Passage	Northern	Icy Strait	Lower Chatham	Southern
		0 - 150,000	0 - 300,000	0 - 25,000	0 - 175,000	0 - 75,000	0 - 50,000	0 - 25,000
Harvest (lbs)	2000	79,208	299,585	11,678	34,706	101,111	25,407	*
	2001	126,579	196,810	11,563	108,058	41,221	37,560	*
	2002	113,426	267,637	23,335	131,277	50,080	11,848	*
	2003	78,284	226,905	26,096	178,938	45,106	*	1,436
	2004	55,107	233,655	19,608	181,154	53,034	*	*
	2005	61,841	261,035	18,580	142,449	62,843	*	*
	2006	81,463	249,330	16,366	142,683	61,290	4,630	*
	2007	78,416	243,675	19,450	152,145	71,058	*	*
	2008	89,873	251,004	27,441	184,227	58,453	14,935	*
	2009	123,626	303,811	22,770	156,261	51,026	20,004	*
	2010	141,558	308,013	20,568	176,782	42,136	22,328	20,742
	2011	114,966	305,659	20,714	161,522	44,882	17,786	21,976
2012	114,660	223,616	15,657	153,979	45,244	*	*	
Effort (# pot lifts)	2000	2,627	9,276	652	2,545	6,568	934	*
	2001	3,585	8,976	2,610	6,190	3,150	1,481	*
	2002	4,899	14,901	2,634	5,695	3,419	958	*
	2003	4,633	13,057	2,131	6,832	3,392	*	280
	2004	3,487	10,237	2,173	8,016	2,280	*	*
	2005	3,090	11,010	1,499	6,276	2,859	*	*
	2006	4,200	11,657	1,030	6,986	3,466	209	*
	2007	3,326	9,173	1,037	4,406	3,179	*	*
	2008	3,050	6,725	1,351	4,877	2,515	599	*
	2009	3,339	7,241	1,812	5,231	2,595	794	*
	2010	4,119	9,646	1,871	7,335	1,704	1,210	768
	2011	3,745	8,906	2,071	6,473	2,778	1,093	1,110
2012	4,117	5,249	2,646	8,242	2,626	*	*	



		Mid-Chatham Strait	East Central	N. Stephens Passage	Northern	Icy Strait	Lower Chatham	Southern
Data	GHR/ Year	0 - 150,000	0 - 300,000	0 - 25,000	0 - 175,000	0 - 75,000	0 - 50,000	0 - 25,000
Catch (# crab)	2000	11,546	43,973	6,526	5,268	13,758	2,621	*
	2001	13,983	27,449	1,801	14,812	5,507	5,885	*
	2002	15,836	39,694	3,321	17,706	7,167	1,942	*
	2003	10,606	33,336	2,871	21,271	4,931	*	220
	2004	8,057	35,391	2,646	24,815	6,987	*	*
	2005	9,866	40,768	2,677	19,588	8,348	*	*
	2006	14,136	38,835	2,369	19,054	8,016	746	*
	2007	12,491	37,551	2,461	20,328	9,075	*	*
	2008	13,808	38,822	3,489	22,772	7,337	2,373	*
	2009	19,871	50,373	2,835	19,940	6,174	3,263	*
	2010	20,814	47,173	2,360	21,289	4,084	4,332	3,050
	2011	16,725	44,258	2,219	19,048	5,072	2,771	3,319
	2012	16,146	32,605	1,717	18,190	5,049	*	*
Effort (# vessels)	2000	6	22	11	6	15	5	*
	2001	10	25	11	19	10	4	*
	2002	12	30	10	20	8	7	*
	2003	17	24	7	23	16	*	4
	2004	7	24	10	23	12	*	*
	2005	4	26	9	20	13	*	*
	2006	5	16	2	19	13	3	*
	2007	5	18	6	15	13	*	*
	2008	7	14	7	17	14	3	*
	2009	8	19	10	17	10	3	*
	2010	10	24	7	22	9	5	3
	2011	10	20	8	21	10	5	4
	2012	10	19	6	19	11	*	*



Carapace length (CL) composition of male golden king crab sampled from pots with open and closed escape rings while observing onboard in the Mid-Chatham management area during 2010 through 2012 seasons.



Carapace length (CL) composition of male golden king crab sampled from pots with open and closed escape rings while observing onboard in the East Central management area during 2010 and 2011 seasons.